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**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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| Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues. | Rulemaking 13-11-005<br>(Filed November 14, 2013) |

# 2019 ENERGY EFFICIENCY ANNUAL REPORT OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 M)


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Dated: May 15, 2020

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# 2019 ENERGY EFFICIENCY ANNUAL REPORT OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 M)

Pacific Gas and Electric Company (PG&E) submits the attached 2019 Energy Efficiency Annual Report (2019 Report) in accordance with the August 8, 2007 Administrative Law Judge's Ruling Adopting Annual Reporting Requirements for Energy Efficiency and Addressing Related Reporting Issues (Ruling), in Rulemaking (R.) 06-04-010 and direction from the California Public Utilities Commission (CPUC) Energy Division. Ordering Paragraph 2 of the Ruling requires "each utility to file its annual report on May 1 of the year following the end of a given program year." On April 13, 2020, Administrative Law Judge Valerie Kao granted the utilities until May 15, 2020 to file their respective 2019 Annual Report.[1]

The 2019 Report is being filed and served to parties on this docket because R.13-11-005 is the successor proceeding to R.09-11-014, which succeeded R.06-04-010.

Additionally, in compliance with the Decision Addressing Third Party Solicitation Process for Energy Efficiency Programs, D.18-01-004, Ordering Paragraph 8, PG&E's 2019 Report includes a public version of the Third-party Contract List. The table is in Appendix C on

[1] Email from ALJ to service list re R1311005 procedural response granting extensions for reporting requirements dated April 13, 2020.

pages 85 to 88. A confidential version has been submitted to the Energy Division.

PG&E has prepared the 2019 Report in accordance with the Annual Reporting Requirements Manual, Version 4 (Manual), which is Attachment C to the ruling. The 2019 Report describes the programs that comprise the 2019 energy efficiency portfolio and summarizes PG&E's energy efficiency accomplishments for 2019. The 2019 report is posted to the Energy Efficiency Statistics website at: http://eestats.cpuc.ca.gov/Views/Documents.aspx.

To access the 2019 Report, follow these steps:

- In the Report Category, select Annual;
- Under Report Options, select 2019;
- In the Report Type, select Narrative and Spreadsheets; and
- In the Report Options, select PGE for Utility.

Respectfully Submitted,

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# ATTACHMENT

Pacific Gas and Electric Company®

# 2019 ENERGY EFFICIENCY ANNUAL REPORT

**MAY 15, 2020**

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# Executive Summary

Serving residential, commercial, industrial, agricultural, public, and other customers across the state, Pacific Gas and Electric Company (PG&E) delivers energy efficiency (EE) solutions that empower customers to eliminate unnecessary energy use, reduce their carbon footprint, and save money. In 2019, PG&E continued its role as a leader in EE, delivering a dynamic, cost-effective portfolio of programs.

PG&E serves the diverse needs of more than 16 million customers across a 70,000 square-mile service territory through 10 statewide program sectors and nearly 100 subprograms.[1] 2019 saw the continuation of ambitious EE partnerships and successful programs, as PG&E focused on key initiatives to drive deep energy savings and position the state to meet its ambitious EE and carbon reduction goals. These initiatives are described in the following sections.

### Transitioning to a New Energy Efficiency Paradigm

On January 11, 2018, the California Public Utility Commission (Commission or CPUC) issued Decision (D.)18-01-004, which formalized the third-party solicitation process for EE programs and established key milestones in the path to maintaining a predominantly third-party implemented EE portfolio by 2023. The first milestone established is June 30, 2020, by which PG&E is expected to have a minimum of 25% of the portfolio administered by third-parties.[2]

Preparations and management of the third-party program solicitations, as described in PG&E's Business Plan, were the central focus of 2019, with the first wave of Requests for Abstracts (RFAs) responses being submitted and scored in early 2019. PG&E also partnered with the other investor owned utilities (IOUs) to prepare for and launch ongoing waves of statewide solicitations and the new EE statewide structure, laying the groundwork for statewide programs in 2020 and beyond.

### Extending the Reach of Customers' Energy Efficiency Dollars through Financing

PG&E's EE financing subprograms continued to play a critical role in the overall portfolio in 2019, allowing customers to pursue large, comprehensive efficiency retrofit projects that might not have otherwise been financially feasible. The On-Bill Financing (OBF) subprogram issued more than $59 million in new loans to 668 customers. Overall, OBF saw a 60 percent increase in total funds issued as compared to 2018.

In 2018, PG&E filed a Petition for Modification (PFM), seeking permission to expand the loan limits and update the contract terms of OBF projects, enabling the program to reach previously underserved sectors with larger projects and great energy savings potential. The PFM was approved by Decision 19-03-001 in March 2019, granting PG&E the ability to offer all qualifying

[1] Note that some individual subprograms are called "programs" in their CEDARS name, but this report refers to them as subprograms.

[2] D.18-05-041 extended the 25% third-party portfolio implementation deadline to Dec 19, 2019, and the CPUC approved a joint IOU request to extend to June 30, 2020 in November 2019.

non-residential customers loans of $250,000 per premises, with exceptions, and up to $4 million for unique energy savings opportunities.[3] This change enabled PG&E to begin developing large loan projects across diverse sectors for the first time.

**Respond, Rebuild, Resilience**

As part of PG&E's commitment to meet the challenges of extreme weather resulting from climate change, PG&E began offering doubled new construction energy efficiency incentives, known as the Advanced Energy Rebuild (AER), for customers who lost their homes in the October 2017 Northern California wildfires. PG&E collaborated with Sonoma Clean Power (SCP), the Bay Area Air Quality Management District (BAAQMD), and Marin Clean Energy (MCE) to offer a one-stop shop for customers in Sonoma, Mendocino, and Napa counties who lost their homes to wildfires, allowing customers to access offerings from three different organizations with a single application.

In March 2019, the Commission granted PG&E's supplemental request[4] to provide this support to the victims of the 2018 wildfires, effectively expanding AER offerings to apply to all customers rebuilding a destroyed home or building subject to the 2016 Title 24 code. In July 2019, PG&E filed a request[5] to extend AER offerings to apply to customers rebuilding to 2019 Title 24 code, given that many customers were facing barriers to rebuilding ahead of the 2020 code change. Following PG&E's response to a Commission request for additional information[6], the Commission granted PG&E's request in January 2020. The AER offering has since expanded to serve customers impacted by 2018 wildfires in Butte County and will continue to provide support to wildfire victims on a first-come first-served basis.

**Expanding of Meter-Based Energy Efficiency Programs**

PG&E continues to launch programs that measure savings at the meter, an approach known as Normalized Metered Energy Consumption (NMEC). Unlike traditional methods for estimating energy savings, NMEC uses actual energy use to estimate the savings resulting from EE actions. Following solicitations in 2017, PG&E launched the Residential Pay-for-Performance program and the Industrial Strategic Energy Management (SEM) program and expanded the OBF offering to allow for the use of meter-based savings. These activities represent important milestones for the NMEC approach to savings estimation, and PG&E looks forward to sharing its learnings to develop best practices for NMEC statewide and accelerate the adoption of these approaches moving forward. PG&E saw expansion of meter-based savings offerings throughout 2019 and expects them to continue to expand in 2020 and beyond, further solidifying EE as a reliable and scalable grid resource.

[3] D.19-03-001
[4] PG&E Advice Letter 4068-G and 5479-E
[5] PG&E Advice Letter 4119-G and 5588-E
[6] PG&E Advice Letter 4194-G and 5719-E

## Supporting California's Energy Goals

PG&E's advocacy and compliance improvement activities extend to virtually all buildings and appliances sold in California and support California's ambitious climate and energy goals. PG&E's technical experts contributed to adoption of 2019 building EE codes that achieved the goal of having all new construction be "zero net energy" (ZNE) for all single family and low-rise multifamily by 2020. PG&E continues to move California towards the goal of ensuring non-residential new construction ZNE buildings by 2030 and other major objectives, including: carbon reduction targets to hit by 2020[7] and 2030[8]; a cumulative doubling of statewide EE savings in electricity and natural gas final end-uses by 2030[9] to reduce existing building energy usage by 50 percent; establishing near-zero-emission building technologies to significantly reduce the emissions of greenhouse gases from buildings.[10]

## Training the Energy Efficiency Workforce of the Future

PG&E provided people who design, build, operate, and maintain buildings and building systems the relevant education needed to create and effectively operate energy efficient buildings. Demonstrating leadership in the local, state, and national EE workforce arenas in 2019, PG&E held 582 classes, with a total attendance count of 13,462 students. To better serve hard-to-reach customers, PG&E continued to offer on-demand and web-based training, with 47% of attendees meeting the definition of disadvantaged worker.

## Conclusion

PG&E's 2019 Annual Report describes the full set of programs delivering cost-effective energy savings for our customers. PG&E will continue to deliver on its commitment to customers and its commitment to California to deliver cost-effective EE and carbon reduction goals through innovative program and pilot strategies and excellence in program administration.

[7] Assembly Bill (AB) 32 codified in California Global Warming Solutions Act of 2006.
[8] AB 398 and Senate Bill (SB) 32 codified in Health and Safety Code Sections 38501(i) and 38566.
[9] SB 350 codified in Clean Energy and Pollution Reduction Act of 2015.
[10] SB 1477 codified in Public Utilities Code 921.1.

# Annual Report Data

D.17-09-025 established annual energy savings and demand reduction targets for the 2019 investor-owned utilities (IOU) resource programs and Codes and Standards Advocacy on a net basis. In 2019, PG&E achieved 1,253 net GWh, which is 116 percent of its electric energy savings goal; 253 net summer peak MW, which is 114 percent of its electric demand reduction goal; and just under 28 million net therms, which is 84 percent of its gas savings goal. In addition to helping customers save energy and money, PG&E's portfolio of EE programs continued to contribute significantly to the state's goal of reducing greenhouse gas (GHG) emissions, with avoided annual emissions of 302,584 tons of carbon dioxide. PG&E's total portfolio was cost-effective, achieving a 1.32 Total Resource Cost (TRC) ratio[11] and 3.53 Program Administrator Cost (PAC) ratio, including Codes and Standards (C&S) advocacy. Please see Section 4 for more specifics on PG&E's portfolio cost-effectiveness.

The C&S Advocacy program achieved 129 percent of its net electric goal, (714 net annual GWh), 129 percent of its net electric demand reduction goal (157 net summer peak MW), and 107 percent of its net therm goal (15 million therms).

Total 2019 portfolio net energy savings shown in this report include savings associated with PG&E's deemed savings subprograms, comprised of Database for Energy Efficient Resources (DEER) and final approved work paper values from the 2019 customer energy savings projects; savings associated with custom projects that were installed in 2019; savings associated with behavioral subprograms implemented in 2019; savings for the Bay Area Regional Energy Network (BayREN) and Marin Clean Energy (MCE) as reported in their 2019 Annual Reports; and Energy Savings Assistance Program (ESA) savings.

D.09-09-047 defined and D.12-11-015 clarified the ten percent utility administrative cost cap, the six percent marketing cost cap, the four percent EM&V cost cap and the twenty percent direct implementation non-incentive (DINI) target. The 2019 EM&V budget is four percent of the program portfolio, including BayREN, MCE and statewide Marketing, Education and Outreach (ME&O). Statewide ME&O is excluded from the marketing cap.[12] PG&E reports its progress against these caps and targets in quarterly reports posted on the CPUC's California Energy Data and Reporting System (CEDARS)[13] along with quarterly fund shifting reports. PG&E's monthly expenditure and savings reports are also posted on EE Stats.[14]

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11 Includes net C&S. All savings values include 5% market spillover in cost-effectiveness calculations per D.12-11-015 (OP 37) including C&S. Excludes ESA, Bay Area Regional Energy Network (BayREN), Marin Clean Energy (MCE), and Statewide Emerging Technologies program costs and benefits. The Financing Program OBF Loan Pool amounts (loans issued and repaid) of $8.3M for 2017 are excluded per D.09-09-047, p.288.

12 D.13-12-038, p. 82.

13 https://cedars.sound-data.com/

14 http://eestats.cpuc.ca.gov/Views/Documents.aspx

# Program Descriptions and Strategies

In 2019, the IOUs administered a diverse portfolio of EE programs that covered every market sector and customer type, across all technology families. IOUs used a variety of market intervention strategies from upstream rebates – targeted at manufacturers and distributors to buy-down the cost of the product for the end-use customer – to midstream and downstream incentives. These programs supported California's Long-Term Energy Efficiency Strategic Plan goal to provide customers with a more integrated EE experience, access to information, and greater financing opportunities.

Covering 70,000 square miles in Northern and Central California, and serving approximately 16 million people, or five percent of the U.S. population, PG&E's territory and customers are diverse. Over 80 languages are spoken throughout PG&E's territory, covering rural to urban communities, with a diverse residential, commercial, agricultural and industrial base. To serve this diverse group of customers, PG&E leverages local partnerships and third-party programs to serve targeted and niche markets, harder-to-reach segments, and to focus customer groups with specific needs.

In 2018, PG&E's Business Plans for 2018-2025 were approved[15] and work to transition the EE portfolio towards increasing third-party implementation continued throughout 2019. To meet these outsourcing requirements, PG&E began to prepare program solicitations, many of which launched throughout 2019. Most notable was PG&E's Local Customer Programs Request for Abstracts (RFA) and Request for Proposals (RFP), which began in Q1 2019 and included Residential, Commercial, Industrial, Agricultural, and Public Sector programs. PG&E also began preparation and launch of RFAs for local non-resource programs and the PG&E-led statewide New Construction program.

PG&E's solicitations schedule, resources, and updates can be found on PG&E's website at https://www.pge.com/en_US/for-our-business-partners/energy-efficiency-solicitations/energy-efficiency-solicitations.page.

This section describes PG&E's successful strategies and accomplishments for the following program sectors in 2019:

1. Residential
2. Commercial
3. Public
4. Industrial
5. Agricultural
6. Emerging Technologies
7. Codes and Standards
8. Workforce Education and Training
9. Financing
10. Integrated Demand-Side Management

[15] D.18-05-041

# Residential Program

PG&E's vision for the Residential sector is to deliver a portfolio that will achieve deep energy savings and robust grid benefits through (1) focused customer engagement, (2) data-driven subprograms that leverage market actors, and (3) strong partnerships.

PG&E's Residential subprograms offer a suite of incentives, services, and tools aimed at helping all customers save energy and money, while meeting portfolio goals.

In 2019, subprograms engaged customers and other market actors through the following channels:

- Built environments such as whole home upgrades, Heating, Ventilation and Air Conditioning (HVAC), and new construction,
- Engaging retailers and manufacturers on more efficient plug loads and appliances,
- Offering behavioral and home energy management tools and initiatives.

**PG&E's Key Residential Program Goals**

- Deliver residential EE programs that are leveraged as a grid resource
- Make EE accessible through diverse residential program offerings
- Increase access to and use of energy use data
- Support state policy objectives around residential new construction
- Transform markets to create EE opportunities for customers

## Key Initiatives

***Residential Meter Based Offerings***

PG&E continued building on its first residential Normalized Metered Energy Consumption (NMEC) program, the Residential Pay for Performance (P4P) Program. The P4P Program employs energy meter data for customer targeting to deepen energy savings and to ensure the subprogram drives grid benefits. This program aims to achieve PG&E's goals of establishing savings persistence and on-going relationships between PG&E, the third-party program implementers, and our customers. P4P is driving innovative solutions for resource planning by both its use of the CalTRACK Methods[16], a newly established measurement and verification framework used to calculate avoided energy use, and a focus on the locational demand impacts of EE.

***Behavior-based Savings Expansion Through Home Energy Reports***

PG&E expanded the Home Energy Reports (HERs) program, reaching a total of 1.8 million customers in 2019. PG&E also incorporated new report enhancements for additional savings, for a better customer experience, and to drive additional completions of the Home Energy Checkup (HEC).

16 http://www.caltrack.org/

***Lighting***
PG&E focused manufacturer incentives on products that met or exceeded the CEC's Quality LED Lamp Specification that aligns directly with future Title 20 code. This alignment enabled Primary Lighting to directly support advancements of California Codes and Standards by preparing lighting manufacturers for code changes that began January 1, 2020. PG&E also supported manufacturers catering to smaller retailers and serving the Hard-to-Reach populations and Disadvantaged communities. This approach ensured that the subprogram supported code readiness across as much of the market as possible.

### Opportunities Moving Forward
Throughout 2019, PG&E continued to focus on the solicitations and portfolio balancing process. As solicitations continue, PG&E will pursue opportunities to build a dynamic, cost-effective portfolio, and to expand successful programs to serve customers and save energy. PG&E expects that pay-for-performance incentive programs, and robust behavior-based savings programs, and strategic partnerships will be the foundations of a successful residential program offering.

## Residential Subprograms

### Residential Energy Advisor Subprogram
The Residential Energy Advisor subprogram uses behavioral outreach initiatives and interactive tools, including the Home Energy Report (HER), Home Energy Checkup (HEC), and PG&E Marketplace, to engage customers and encourage participation in innovative energy initiatives. The suite of products and services enable customers to understand and manage their energy use, and where appropriate, be guided to other energy solutions.

The HER shows customers how their energy usage changes over time and how their usage compares with similar homes in their area. The HEC is an online self-guided online assessment that helps customers understand where they use energy in their homes. It also provides energy-saving tips and suggestions based on the customer's specific responses and generates a simple checklist plan. The checklist plan is saved on the customer's PG&E Your Account website to track progress as they complete the items.

PG&E's Marketplace is another tool that helps customers choose more efficient products. Marketplace presents an Energy Score and other energy related features, such as total cost and lifetime energy costs to add a product's efficiency into a buyer's decision making process. PG&E is required[17] to report separately on Marketplace program metrics, which are provided in Section 10 of this report.

***2019 Strategies and Successes***
By the end of 2019, the Home Energy Report program reached a lifetime savings of 968 GWh and 32.8 million therms. Over the course of the year, PG&E focused on the enhancement and expansion of the personalized energy report program. This work included distributing reports to 300,000 new customers, bringing the total report population to 1.8 million households. PG&E also incorporated new report enhancements responsible for additional therm savings, a better customer experience, as well as driving additional completions of the Home Energy Checkup.

[17] Assembly Bill (AB) 793 and OP 1c of Resolution E-4820.

PG&E continued to promote the Home Energy Checkup as a tool for customers to learn about their energy use and receive personalized saving recommendations. In 2019, over 151,000 customers complete the online audit.

In 2019, about 275,000 customers visited the Marketplace to research home appliance and consumer electronics. In early, 2019, PG&E conducted a search engine marketing pilot to test the channel as a way to drive customers to the site. The pilot was responsible for driving over 50,000 customers to the site. The most effective strategy for driving customers to the platform was the delivery of customer emails before major appliance and electronic retail sales. sales.

### Residential Energy Efficiency Subprogram

The Residential Energy Efficiency Program (REEP), previously known as Plug Load and Appliances (PLA), aimed to transform the market to achieve sustainable adoption of energy-efficient REEP products so that ongoing intervention would no longer be required. In 2019, PG&E offered rebates to customers who purchased and installed smart thermostats and electric heat pump water heaters. For the short- to mid-term timeframe where EE REEP products were still not the market's default choices, PG&E used incentives and industry collaboration to increase availability, awareness, and adoption of energy-efficient products. The subprogram's long-term strategy sought to create on-going demand for energy-efficient products thus motivating the industry to produce and sell highly energy-efficient REEP products as the market's standard offering.

During 2019, PG&E worked with the EPA ENERGY STAR® staff and other utilities to lead the national advancement of the Energy Star Retail Products Platform (ESRPP), a component of PG&E's REEP subprogram. ESRPP is a national market strategic effort to overcome barriers for residential customers to adopt energy-efficient products through a dedicated market transformation subprogram design. This design aimed to produce sustainable changes in retail markets for plug-loads and appliances by reducing barriers to the manufacturing, distribution, and sale of energy-efficient products. PG&E's local RPP program was a pilot effort, with its final pilot year running from April 2019 to March 2020.

#### *2019 Strategies and Successes*

In 2019, PG&E offered subprograms to residential end-use customers to cover some of the incremental costs of purchasing energy-efficient products. Eligible products included electric heat pump water heaters and smart thermostats.

Marketing of the rebate programs was conducted on a multi-touch, multi-channel level including tactics such as email, digital advertising, and use of PG&E-owned assets such as PG&E's website, residential digital newsletter, and HERs. The REEP subprogram was supported by a field services team who provided salesperson training, point of purchase materials, and in-field support to retail partners. PG&E received applications for the subprogram via mail, online, and at retail point-of-sale.

### Advanced Home Upgrade Subprogram

#### *Implementer: Franklin*

The Advanced Home Upgrade program, previously known as Energy Upgrade California™, captured savings potential and helped customers achieve deep energy reductions. The Advanced Home Upgrade pathway (AHUP) was the highest performing segment of the Energy Upgrade California subprogram, and became the sole focus of that subprogram's efforts through 2019. PG&E's investment in AHUP, specifically advanced contractor training,

enabled the sunset of the underperforming Home Upgrade pathway with minimal impacts to the participating contractor network in 2018.

Due to an interest in pursuing a performance-based model by claiming savings at the meter and improving cost effectiveness, AHUP was closed to new applications in December 2019. Customers enrolled in AHUP or pursuing AHUP-eligible projects have been transitioned to the Residential P4P program, which provides similar upgrades using the pilot pay-for-performance and meter-based model. model.

***2019 Strategies and Successes***
In 2019, PG&E began restructuring the program to continue to drive savings and remove barriers to customer participation. However, due to low cost effectiveness and a change in claimable savings methodology, that was ultimately unable to accommodate the program, AHUP was closed to new applications in December 2019. Customers enrolled in AHUP or pursuing AHUP-eligible projects were transitioned to the Residential P4P program.

### Multifamily Home Upgrade Subprogram
***Implementer: TRC***
PG&E's Multifamily Home Upgrade subprogram (MUP) promotes long term energy benefits for affordable and market-rate multifamily housing through comprehensive EE upgrades. Historically, owners and managers of multifamily properties have been less responsive to EE efforts than other residential customers. The MUP Program uses a tiered incentive approach which allows property owners to make informed decisions on energy efficiency measures. In addition, the MUP Program maximizes savings by conducting an energy audit and offers incentives to offset the cost of the assessment and the improvements. All multifamily customers, regardless of property type (e.g., affordable or market-rate), receive subprogram recommendations unique to their property.

***2019 Strategies and Successes***
In 2019, MUP continued expanded program offerings, including no-cost benchmarking services for all PG&E multifamily properties to drive AB 802 compliance, and piloted Operations and Maintenance (O&M) trainings. These training sessions were tailored to the host site where multiple properties were represented. Attendees completed the training with the ability to implement lessons of safety, troubleshooting, and preventative measures. MUP also offered a Single Point of Contact (SPOC) service, providing streamlined, personalized, and comprehensive support for multifamily customers to yield savings for low- and middle-income customers, safe indoor air quality, easier to operate buildings, more comfortable homes, and expanded retrofits of multifamily buildings throughout PG&E territory. As part of PG&E's ongoing portfolio balancing efforts, and due to low cost-effectiveness, the MUP program stopped accepting new applications in December 2019, with a plan to ramp down the committed pipeline of projects and the program in 2020.

### Residential New Construction Subprogram
***Implementer: TRC***
The Residential New Construction subprogram consists of the California Advanced Homes Program (CAHP) for single family homes, and PG&E's California New Homes Multifamily third-party subprogram. The CAHP and California New Homes Multifamily subprogram (discussed alongside other residential third-party programs below) work to encourage building and related industries to exceed California's Title 24 EE standards through a combination of education, design assistance, and financial support, and prepared builders to achieve Zero Net Energy (ZNE) by 2020.

***2019 Strategies and Successes***
The Residential New Construction subprograms updated their subprogram structures and designs to better guide participants towards the 2019 Title 24 updates, moving to use of the energy design rating (EDR) to determine eligibility and base incentive level. The subprogram has also placed an emphasis on advanced building envelope measures by offering cash bonuses for specific measures. These high-performance envelopes ensure the resiliency of the home energy savings for the life of the building.

As part of its Respond, Rebuild, Resilience commitment to meet the challenges of extreme weather resulting from climate change, PG&E continued offering doubled new construction energy efficiency incentives for customers who lost their homes in the October 2017 Northern California wildfires. These program incentives, known as the Advanced Energy Rebuild (AER) are an enhancement to the existing CAHP and are intended to help homes that were red-tagged by CAL FIRE. PG&E is also collaborated with Sonoma Clean Power (SCP) and the Bay Area Air Quality Management District (BAAQMD) to offer a one-stop shop for residential green building incentives for customers in Sonoma and Mendocino counties who lost their homes to wildfires. This has allowed customers to access incentives being offered from three different organizations with a single application. A similar program in also being offered in collaboration with Marin Clean Energy (MCE) and BAAQMD within Napa County.

In 2019, the Commission granted PG&E's requests[18] to provide this support to the victims of the 2018 wildfires and to customers who wished to rebuild wildfire-destroyed homes but were unable to do so ahead of the 2019 Title 24 code change, effectively expanding AER offerings to apply to all eligible customers rebuilding a destroyed home or building subject to the 2016 Title 24 code.

## Residential HVAC Subprogram

***Implementer: Build It Green/Franklin***
PG&E's Residential HVAC subprogram was focused on driving EE and peak load reduction from customers' use of air conditioning. The subprogram promoted increased quality levels in the HVAC market for technology, equipment, installation, and maintenance.

***2019 Strategies and Successes***
Residential HVAC Quality Maintenance efforts are increasingly popular among contractors and home owners, resulting in the treatment of over 6,000 HVAC systems in 2019. To enhance the quality of service offered through the subprogram, PG&E offered best-in-class technical training to the participating contractors and technicians. In 2019, 28 technicians were provided training under this initiative. PG&E also implemented subprogram enhancements to improve cost effectiveness and customer satisfaction, including introduction of smart data collection procedures, further strengthening of quality control, optimizing incentive levels, and ensuring the subprogram could serve a greater number of customers. Due to low cost effectiveness and interest in pursuing a performance-based model by claiming savings at the meter, the Residential HVAC program was closed to new applications in December 2019. Customers pursuing Residential HVAC-eligible projects were transitioned to the Residential P4P program, which provides similar incentives using the pilot pay-for-performance incentive model.

[18] PG&E Advice 4068-G /5479-E and Advice 4194-G/5719-E

### Primary Lighting Subprogram

The Primary Lighting subprogram offered rebates to manufacturers of LED lamps to reduce the cost of high-quality and energy-efficient lighting products for customers. Since 2014, incentives provided for LED measures in PG&E's Primary Lighting subprogram were devoted to products that meet or exceed the CEC's Quality LED Lamp Specification. The last several iterations of the CEC-spec have aligned directly with future Title 20 code changes, enabling Primary Lighting to directly support advancements of California Codes and Standards.

***2019 Strategies and Successes***

PG&E's focus in the Primary Lighting subprogram has been to offer customers the most energy efficient lamps and prepare participating manufacturers for upcoming code changes. PG&E also supported the manufacturers catering to smaller retailers and serving the Hard-to-Reach populations and Disadvantaged communities. This approach ensured that the subprogram supported code readiness across as much of the market as possible. PG&E's Primary Lighting program closed in December 2019, in order to transition to the new Statewide Lighting program that will be led by Southern California Edison. In order to transition to the new Statewide Lighting program that will be led by Southern California Edison. In order to transition to the new Statewide Lighting program that will be led by Southern California Edison. In order to transition to the new Statewide Lighting program that will be led by Southern California Edison.

## Residential Third-party Programs

PG&E's Residential Third-party Programs[19] are an integral component of its overall Residential sector strategy to help provide customers with energy-efficient solutions and services.

### Residential Pay for Performance (P4P) Subprogram

***Implementers: Franklin Energy, ICF, Home Energy Analytics, and Build it Green***

PG&E began offering the Residential Pay for Performance (P4P) Pilot subprogram to customers in 2017. The P4P model enables measurement of energy savings at the meter and aims to achieve persistent savings through an ongoing relationship between customers and their contractors. The subprogram uses CalTRACK Methods to track the time and locational demand impacts of EE. By leveraging these methods, the subprogram is operationalizing feedback to drive continuous improvement in program performance. The P4P Program approach limits risk to ratepayers by primarily paying incentives when energy savings are realized at the meter. Using energy meter data, the subprogram opens new possibilities to integrate demand flexibility into resource planning and to transform EE into a reliable grid resource.

The ResP4P subprogram is comprised of four aggregators, covering various parts of PG&E's service territory while offering a slight variation of services focused on behavioral, operational and deep retrofit measures. Having multiple aggregators helps customers and energy efficiency professionals successfully implement deeper retrofit projects by capturing multiple cost-effective energy savings opportunities throughout the customers' EE journey. The four aggregators are:

1. **HomeIntel, offered by Home Energy Analytics**: In-depth analysis of a home's energy use, customized recommendations and energy coaches to help reduce energy usage. Includes monthly energy efficiency progress report.

[19] These programs meet the third-party program definition as described in D.16-08-019.

2. **Home Energy Optimization, offered by ICF**: Includes smart thermostat, AC tune-up, AC and hot water monitoring and auto-optimization, lights, and other EE products and services. Includes monthly energy efficiency progress report.

3. **Home Energy Rewards, offered by Franklin Energy**: In-depth analysis of a home's energy use, customized recommendations and free energy savings kit (LEDs, water saving devices), and discounted energy efficient products.

4. **Comfortable Home Rebates, offered by Franklin Energy**: Deep retrofit home maintenance and upgrade program focused on air conditioning efficiency and other home comfort upgrades including new heating and cooling equipment, insulation, new ducts, weather stripping and air sealing.

***2019 Strategies and Successes***
The ResP4P subprogram submitted its first savings claim for 2017-2019 activities. As this subprogram is a pilot, implementers are continually evolving intervention strategies to provide savings at scale. Similarly, the subprogram is conducted with the expectation that valuable data and lessons learned will be collected and incorporated in any future scaled deployment of P4P models.

In December 2019, PG&E decided to incorporate two similar subprograms within the Residential sector into ResP4P, beginning in January 2020. These two programs were an ideal fit. One targets light touch measures aimed at HVAC tune-ups, and the other a deep retrofit solution aimed at driving deep and persistent savings performance. The inclusion of these programs is expected to increase customer participation in ResP4P. These latest program successes contribute to the PG&E Business Plan goal of realizing P4P program savings at scale.

### Energy Fitness & Moderate Income Direct Install Subprograms

***Implementer: Richard Heath & Associates, Inc. (RHA)***
The Residential Energy Fitness Program (REFP) was selected through a solicitation conducted in 2015. Key components include enhanced methods to target customers and deliver customer education. This direct install subprogram includes energy education, in-home assessment, installation of no cost and low-cost measures, and ongoing education to monitor energy usage after participating in the subprogram. The subprogram was launched in June 2016 and assisted targeted customers with EE upgrades, improving existing heating and air conditioner efficiency through duct sealing, efficient motors and fan controls, EnergyStar certified Smart Thermostats and refrigerant charge adjustment, among others.

Continuing the integration started in 2018, The Moderate Income Direct Install (MIDI) program, also administered by RHA, was offered to moderate income and Hard to Reach customers in this subprogram. No-cost measures included EnergyStar certified Smart Thermostats, Tier II Smart Power Strips, LED lighting, low flow showerheads and faucet aerators, and products and services to increase the efficiency of air conditioner units. Ongoing customer education and reporting was also offered through the subprogram utilizing a similar monitoring service as REFP above.

***2019 Strategies and Successes***
In 2019, MIDI expanded service to a record number of customers, and successfully conducted outreach in many CalEnviroScreen 2.0 identified disadvantaged communities. At the same time,

REFP expanded program services to include early field research into the market potential for smart, communicating heat pump water heaters that can dynamically respond to residential time-of-use (TOU) pricing signals.

As part of PG&E's ongoing portfolio balancing efforts, the MIDI program closed to new applications in December 2019, due to low cost-effectiveness. REFP is expected to continue conducting field research around smart thermostats and heat pump water heaters through mid-2020.

### California Multifamily New Homes Subprogram

***Implementer: TRC***

The California Multifamily New Homes (CMFNH) subprogram provides comprehensive support for saving energy in the Residential new construction sector with a cross-cutting focus on sustainable design and construction, green building practices, EE, and ET. Through a combination of education, design assistance, and financial support, the California New Homes Multifamily subprogram encourages building and related industries to exceed California's Title 24 standards and prepare builders for future changes to these standards.

***2019 Strategies and Successes***

In 2019, TRC's implementation team enrolled a growing number of Multifamily New Homes projects and worked with local municipalities to better promote the offerings and develop leads.

### Enhanced Time Delay Relay Subprogram

***Implementer: Proctor Engineering***

The Enhanced Time Delay Relay subprogram (also known as the Cooling Optimizer subprogram) is a direct install subprogram serving multifamily residential customers in targeted climate zones. To advance awareness in this hard-to-reach segment, this subprogram serves multifamily customers and is designed to address the unique EE challenges presented in property management-owned and tenant-occupied buildings. The subprogram offers property managers a no cost tune-up, fan delay relay installation, high-efficiency BPM fan motor installation, and Smart Thermostat. This focus on maintaining a properly tuned air conditioner, can improve tenant comfort and reduce their energy bills. The subprogram also offered an on-demand recirculation pump control for multifamily buildings with central water heating. Demand-based controls can reduce recirculation pump run time and provides equipment life and maintenance benefits.

***2019 Strategies and Successes***

In 2019, the Energy Star Certified smart thermostat was added as a new offering in the subprogram to help customers better manage heating and cooling energy use and the upcoming residential Time-of-Use transition and enable them to participate in the Demand Response programs. As part of PG&E's ongoing portfolio balancing efforts, the Enhanced Time Delay Relay subprogram is expected to ramp down and close by the end of 2020.

### Direct Install for Manufactured and Mobile Homes Subprogram

***Implementer: Synergy Companies***

The Direct Install for Manufactured and Mobile Homes subprogram is a direct install, no-cost-to-the-customer subprogram that serves the hard-to-reach residents of manufactured homes and mobile home parks. It also targets a variety of non-English speaking customers. The subprogram improves the efficiency of air conditioners by providing air conditioning tune-up and refrigerant charge adjustment, fan controls to save energy by running the fan at the end of the compressor cycle, and high-efficiency blower motor upgrades. The subprogram also offers

installation of Tier II Smart Power Strips and ENERGY STAR® rated products including lighting, low flow showerheads, and aerators. The program also offers duct test and seal measures to the customers to reduce duct leakage and improve overall efficiency of the heating and cooling systems.

***2019 Strategies and Successes***

Mobile and Manufactured homes ducting systems are very inefficient and beyond repair as they are rarely replaced and are in service much beyond their expected life. To address these challenges, the program added a duct replacement measure in 2018 and continued to offer this measure in 2019. Replacing these ailing ducts with new ducts not only improved the efficiency of the ducting system but also provided Improved Air Quality benefits to the occupants. In 2019, the program also began offering Energy Star certified Smart Thermostats. As part of PG&E's ongoing portfolio balancing efforts, and due to low cost-effectiveness, the Manufactured and Mobile Homes subprogram is expected to ramp down and close by June 2020.

# Commercial Program

The Commercial Program allows customers to install equipment and systems that are more efficient than they would install without the program. In addition, customer confidence in the persistence of their savings is increased by the program's commitment to installing high-quality, reliable, cost-effective measures.

PG&E's Commercial EE program offers commercial customers a suite of products and services to help overcome the market barriers to optimize energy management. The program targets integrated energy management solutions − including EE, DR, and DG − through strategic energy planning support; technical support services such as facility audits and calculation or design assistance; and financial support through rebates, incentives, and financing options.

PG&E's Commercial EE program is moving toward the Commercial Business Plan goal of ramping down the proportion of rebate and incentive funds to drive EE in favor of in-house and publicly available finance options. On Bill Financing (OBF) offers a strong solution to address 'first cost' barriers which affect project decisions. In 2019, OBF focused on EE savings without deemed or custom measures and, based on site energy savings, allows a broader adoption of EE strategies across building technologies without the restrictions that paid incentive measures sometimes require.

As stated in the Business Plan, PG&E's vision centers on empowering Large and Small to Medium-sized Business (SMB) customers to better understand, manage, and eliminate unnecessary energy use. PG&E is gearing up for the future of EE that includes a greater involvement in third-party-designed subprograms. After reviewing 2018 EE Program abstracts, PG&E, in 2019, requested and is considering detailed program proposals from the most promising of those third-party ideas. Prominent among these responses are meter- based approaches which encourage more comprehensive and persistent EE strategies for customers of all sizes and types. The Commercial EE portfolio will be redefined to meet the needs of the EE marketplace. PG&E looks forward to helping California achieve future energy savings and climate goals.

## Key Initiatives

PG&E focused on transformative strategies in 2019 to position its subprograms to achieve PG&E's vision for the Commercial sector: putting commercial buildings on a path to ZNE by 2030 for all new buildings and half of existing buildings.

Key initiatives to achieve these goals included:

- Moving programs away from incentives and rebates to pursue deeper, more comprehensive savings through financing offerings
- Promotion of more comprehensive and controls-based project strategies
- Introduction of NMEC-based projects, forging a longer-term EE relationship between customers and project developers

### Opportunities Moving Forward

PG&E will continue its efforts to advance the state's policy goals and place PG&E's customers on the path to deep and persistent energy savings. This includes an emphasis on data analytics for enhanced customer targeting, technical assistance and tools, new financial solutions, and developing new subprogram models for metered-based savings.

Many of the proposals PG&E received from the 2018 third-party program solicitations have included meter- based strategies and data analytics to target customers. In 2019, PG&E reviewed and selected the most promising third-party EE proposals and expects to negotiate and launch new data driven, meter-based programs in 2020 that service a broad Commercial customer base, and several select markets.

The goal of commercial program outsourcing with market designed programs is to develop a robust ecosystem of programs, supply chain, and contractors serving PG&E customers. 2019 goals included providing a streamlined EE product and qualified installation provider referral system which will empower customers to efficiently engage in cost reduction projects.

**Serving Our Customers**

Through its Third-party Program channel, PG&E offers commercial customers a suite of targeted, niche program offerings designed specifically to meet them on their energy journey.

In 2019, third-party programs targeted small and medium businesses, hospitality, hospitals, grocery stores, and focused on a variety of technologies including HVAC and advanced LEDs. Additional details may be found in the Third-party Programs section of this report.

## Commercial Subprograms

### Commercial Calculated Incentives Subprogram

The Calculated subprogram provides financial incentives for non-residential customers to install new equipment or systems that exceed applicable code and/or industry standards in existing buildings. PG&E's Calculated subprogram includes both customized incentives (formerly "Customized Retrofit") and Retro-commissioning (RCx) offerings. RCx represents an important element of PG&E's EE toolkit by reducing energy usage and optimizing the efficiency of mechanical equipment, lighting, and control systems to current standards in existing facilities. PG&E offers financial and technical assistance for customers to undertake RCx projects and implement measures that improve facility operations.

Customized New Construction (CNC) has been a subset of the Calculated offering since 2015. CNC serves the Commercial new construction segment for projects requiring more customized calculations, such as spaces with an industry standard practice (ISP) baseline rather than Title 24 (e.g., biotech buildings).

***2019 Strategies and Successes***

The CNC and RCx offerings paid incentives for 63 and 14 projects, respectively. PG&E has been working to improve its delivery of custom subprograms, leveraging lessons learned and best practices from ex ante review guidance. PG&E developed specific trainings for its engineering teams, program managers, and third-party vendors. These trainings help align the team on policy, baselines, measures, reports, calculation tools, and methods. PG&E also established more rigorous quality control among its technical reviewers, focused specifically on reporting quality and subprogram compliance, and has also undertaken a process review to ensure continuous improvement in customized workflow.

### Commercial Deemed Incentives Subprogram

The Commercial Deemed Incentives (Deemed) subprogram offers prescriptive rebates directly to customers, vendors, or distributors for the installation or sale of energy-efficient equipment. The subprogram offers a broad array of measures across technology segments including lighting, HVAC, food service, refrigeration, and water heating.

***2019 Strategies and Successes***

PG&E began shifting focus and marketing of the Commercial Deemed subprogram in 2018 to non-lighting EE measures, as lighting rebates and incentives levels continue to decline as performance requirements continue to rise. This diversification helped to provide a broader delivery of EE measure types and attracted new contractors and participants to the program. The message of diversification supports a whole building approach and was delivered by PG&E account representatives, Trade Professional Managers (TPMs), and third-party program implementers. While lighting savings still comprised the majority of savings, HVAC controls and food service equipment continued their upward trend in contribution.

Increased marketing and focus on food service opportunities and pipe insulation projects helped to drive additional therms savings, while successful recruitment of ozone laundry contractors added to the therms totals and established a strong presence in the program in 2019. Water heater and boiler programs continued to outperform yearly targets for savings through the mid-stream channel. The Deemed Commercial subprogram maintained its applicability to all commercial customer segments including small, medium, and large commercial customers, and the launch and socialization of an online E-Rebates platform helped contribute to the self-service nature of a substantial portion of this program.

### Commercial Direct Install Subprograms

PG&E's Commercial Direct Install (DI) offerings are administered through its Government and Community Partnership program. These DI subprograms provide small and medium business customers with the opportunity to have a third-party contractor retrofit existing systems with energy-efficient equipment at low or no cost to the customer. Because many small and medium business customers have short term leases and a split incentive barrier (in which the customer does not own the equipment that they pay bills for), these subprograms are an effective way to address the needs of this sector and overcome the barriers of limited capital, expertise, and understanding of EE benefits. For more information about PG&E's successes in Direct Install, please see the Government and Community Partnership program descriptions in the Public Sector chapter of this report.

### Commercial HVAC Subprogram

The Commercial HVAC subprogram delivers a comprehensive set of midstream and upstream strategies that builds on existing subprograms, education, and marketing efforts, and leverages relationships within the HVAC industry to foster a sustainable, quality-driven market. In 2019, PG&E also participated in the Western HVAC Performance Alliance (WHPA), a leading organization setting standards and promoting energy efficient HVAC in California.

***2019 Strategies and Successes***

The Commercial HVAC subprogram is composed of two elements that enable market transformation, direct energy savings, and demand reductions: Upstream HVAC equipment incentives and midstream Commercial Quality Maintenance (CQM). The Upstream HVAC subprogram has received positive feedback as one of the most successfully launched EE subprograms over the last 10 years.

***Upstream HVAC Equipment Incentives***

This subprogram element offers incentives to distributors who sell qualifying high-efficiency commercial HVAC equipment to increase the stocking and promotion of this equipment. As many of the sales of these products are determined by what is available, this strategy ensures customers have the choice of energy efficient products when the need arises.

***2019 Strategies and Successes***

In 2019, PG&E promoted the Commercial HVAC Upstream program to distributors which currently participate and also specifically targeted areas where distributor participation was low and potential was high. This resulted in the recruitment of strong distributor participants in the central valley and northern regions of PG&E's customer base. PG&E continues to evaluate new technologies and associated equipment categories for the subprogram - such as those with higher tiers for packaged equipment to achieve greater savings and move the market toward higher efficiency units - and engages in statewide collaboration to share best practices across IOUs for subprogram design and training. For 2020 EE programs and beyond, new technologies such as Variable Refrigerant Flow (VRF) and HVAC building controls are also being assessed for inclusion into commercial whole building EE programs.

***Commercial Quality Maintenance***

Commercial Quality Maintenance (C-QM) focuses on commercial maintenance practices to ensure equipment is serviced in accordance with industry standards. It seeks to transform Commercial HVAC maintenance from a commodity-based industry to a quality-based industry. This subprogram has had a significant effect on existing systems' EE performance on an ongoing basis, as described in further detail below.

***2019 Strategies and Successes***

In 2019, 410 new units were introduced into the C-QM program, bringing the total to 3,160, up 15 percent from 2018. This HVAC program provides incentives for system assessment, system optimization, and continued rooftop unit maintenance based on American National Standards Institute (ANSI), American Society of Heating, Refrigerating, Air Conditioning Engineers (ASHRAE), and Air Conditioning Contractors of America (ACCA) Standard 180. PG&E conducted 12 training sessions for commercial contractors on advanced diagnostics and other quality maintenance practices to ensure participating contractors and technicians have the skills necessary to assess, maintain, and optimize systems per industry standards. Thirty-seven contractors are certified on the subprogram specific requirements.

In 2019, 35 additional contractors were trained on the ACCA 180 maintenance standards. Rigorous oversight of technician work and random third-party audits ensure HVAC maintenance is fully compliant with highest industry standards. In addition to the increased quality maintenance of enrolled equipment, the program also drives additional EE upgrade measures. In 2019, 310 units were upgraded to advanced rooftop controls, the majority being economizer controls which were integrated into the building management systems.

Through this subprogram, PG&E also supported commercial contractors with marketing materials and outreach efforts to educate customers on the value of quality maintenance and using licensed and certified technicians. PG&E participates in monthly WHPA subcommittee meetings, discussing input and feedback regarding improvement to the C-QM initiative.

## Commercial Third-party Programs

Commercial third-party subprograms[20] offer a turnkey approach that continues to deliver savings, serve customer needs, and remains innovative by adapting to changing market needs. PG&E offers a variety of Commercial third-party subprograms that span various market segments, targeting many of PG&E's harder-to-reach customers. In 2019, the program implementers in the commercial sector delivered substantial additional savings through an expansion of scope which helped them to fill gaps left from sunset market-specific programs. Each of the programs successfully employed OBF as a tool to close projects and capture savings.

### Energy Smart Grocer Subprogram

***Implementer: CLEAResult***

The Energy Smart Grocer subprogram provides comprehensive EE services for medium to large grocery stores and supermarkets in the PG&E service territory. The subprogram provides comprehensive energy audits, long-term energy planning, and support for the implementation of efficiency measures.

***2019 Strategies and Successes***

The subprogram has successfully partnered with PG&E account representatives to leverage PG&E's OBF program to implement large-scale and complex retrofit projects delivering deeper savings.

### Hospitality Subprogram

***Implementer: Ecology Action***

PG&E's Hospitality subprogram offers a comprehensive list of EE measures and services specifically designed to meet the complex needs of the hospitality market, offering both custom and deemed measure, and assisting customers with EE projects from start to finish.

***2019 Strategies and Successes***

Existing relationships built from past years of program operation allowed this subprogram to continue work with these customers on multiple projects throughout 2019. Strong focus on identifying the decision makers of chain customers enabled this program to build on past success with lighting projects to obtain commitments on other building system EE projects.

### Healthcare Energy Efficiency Subprogram

***Implementer: Willdan***

The Healthcare Energy Efficiency Program (HEEP) provides hospital facilities (medical office buildings and acute care facilities) with a wide range of support services to address barriers to EE. HEEP delivers electric and gas savings through retrofits (deemed and calculated) and RCx services.

***2019 Strategies and Successes***

The Healthcare Energy Efficiency subprogram had success in HVAC deemed and custom measures, as well as deemed lighting measures, delivering a total of 17 paid projects in 2019. This savings contribution included five OBF projects that did not receive additional measure incentives, demonstrating the ability of financing to drive EE decision-making in the absence of

[20] These programs meet the third-party program definition as described in D.16-08-019.

an incentive or rebate. The HEEP program finished 2019 with not only a solid list of comprehensive EE projects, but started 2020 with a strong pipeline of committed projects which will carry it to its conclusion in June 2020.

### School Energy Efficiency Subprogram

***Implementer: CLEAResult***

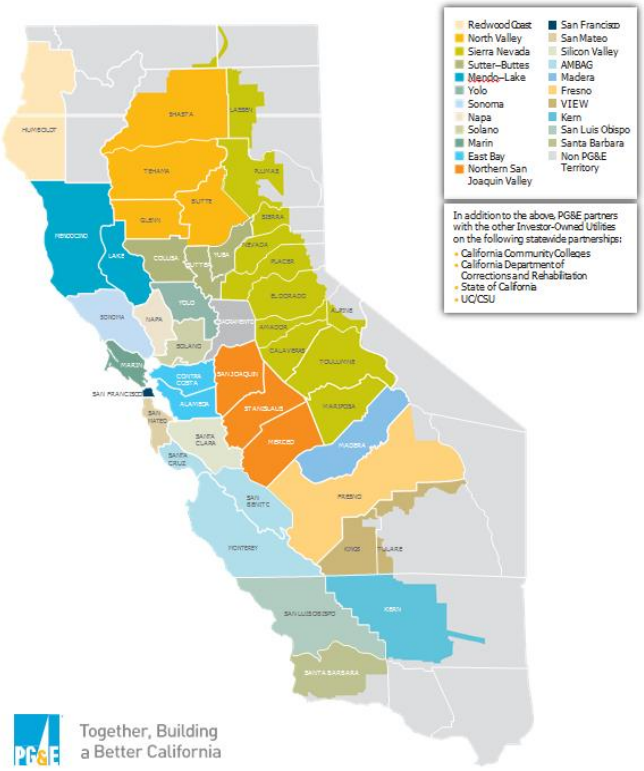
The School Energy Efficiency (SEE) subprogram helps K-12 public schools and their contractors identify, evaluate, and implement EE retrofit measures through technical analysis, measure prioritization, and engineering support.

***2019 Strategies and Successes***

The SEE subprogram is structured as a technical assistance and support subprogram to identify projects and see them through by working alongside the customer. This structure enables the SEE subprogram to work with the school district without triggering the construction, bidding, and wage requirements of California public school districts. In 2019, SEE was successful in assisting schools with re-working Energy Expenditure Plans (EEPs) to unlock maximum funding for EE projects.

# Public Program

**Government and Community Partnerships 2019**




PG&E's partnerships with local communities and governments help to shape EE and sustainability at the local, regional, and statewide level by meeting the needs of local and state government, and educational institutions. It offers comprehensive solutions that are flexible, innovative, and a reflection of the communities' needs.

PG&E administers 22 Local Government Partnership (LGP) programs, as well as four Institutional Statewide Partnership (ISP) programs with California Community Colleges, University of California/California State University (UC/CSU), the State of California, and the California Department of Corrections and Rehabilitation. PG&E also supports K-12 public schools.

While classified as public programs, LGP programs, branded as "Energy Watch", are PG&E's primary vehicle for serving commercial small and medium businesses (SMB). LGP programs consist of lead local partners (LLP) and third-party implementers. The LLPs are local governments or entities that have relationships with local governments. LLPs are generally focused on promoting EE within local government facilities and helping local governments implement California's Long-Term Energy Efficiency Strategic Plan objectives. The third-party implementers concentrate on resource acquisition activities that directly procure energy savings, mainly centered around SMB customers that are hard-to-reach and/or in disadvantaged communities. Each individual Energy Watch program is described in detail in the LGP section below.

## Key Initiatives

### *Cost-Effectiveness*

In pursuit of improving cost-effectiveness of LGP programs and meeting the third-party portfolio implementation goals as directed by the Commission, PG&E worked with LLPs and third-party implementers to better understand the drivers of cost-effectiveness and how to collectively produce more cost-effective programs. As a result of this engagement, PG&E introduced the concept of separating the resource and non-resource activities within LGP programs. This separation took place throughout 2019 so that in 2020, LGP programs would be non-resource only.

### *Pivot to Public Sector and Hard-to-Reach Customers*

In 2019, PG&E requested that LGPs refocus their efforts on engaging public sector customers and small and medium business (SMB) customers located in hard to reach (HTR) and disadvantaged communities (DACs). LGPs are in a unique position to understand the

challenges faced by other public sector customers when it comes to energy efficiency program participation and to promote available solutions that meet their needs.

### Opportunities Moving Forward

2019 was a year of transition for public programs as the solicitations process to bid program implementation to third-parties was underway and continues into 2020. The programs serving the public sector continued into 2020, with increasing attention focused on achieving cost-effective savings. Following the approval of PG&E's EE Business Plan in 2018, PG&E worked through 2019 to continue the transition away from pursuing the California Long-Term EE Strategic Plan goals and orienting toward program work and offerings towards fulfilling the objectives and metrics of the approved Business Plan.

## Institutional Partnership Programs

Institutional Partnership programs, designed across the four California IOUs, serve agencies of the state of California and state educational institutions. The objective of Institutional Partnerships is to reduce energy usage through facility and equipment improvements and share best practices among state institutions. There were four Institutional Partnership programs in 2019.

Through these programs, IOUs and partners encourage strategies that promote investment in EE through comprehensive resource support and internal capacity-building. Although these existing programs have made progress over the years, energy savings opportunities still exist within state government and higher educational facilities. For example, with California's Executive Order B-18-12 requiring reductions in grid-based electricity purchases and aggressive Zero Net Energy (ZNE) goals (50% of all new and existing facilities by 2020 and 2025 respectively), the State is well positioned to make significant progress towards reducing energy usage and the overall carbon footprint of its facilities and infrastructure.

PG&E's Institutional Partnership portfolio focused on achieving energy savings and supporting Demand-Side Management (DSM) integration and coordination, which includes improving regulatory coordination, establishing integration procedures, and piloting DSM integration programs.

### California Community Colleges (CCC)

The California Community Colleges/Investor-Owned Utility (CCC/IOU) Energy Efficiency Partnership advocates, promotes and supports EE in the California Community College system by leveraging resources from the Community College Districts, the Community College Chancellors Office, the four California IOUs, and the State of California. The CCC/IOU Partnership provided extensive outreach and support services to the districts within the California Community College system in support of their efforts to identify, develop, and implement projects funded through Proposition 39. This unique Partnership achieves common goals for energy use reduction, cost savings, and fostering a more sustainable future.

#### *2019 Strategies and Successes*

Partnership support has enabled full Prop 39 program participation from all 72 districts, helping to ensure the success of this important statewide initiative. In 2019, the program continued outreach efforts through participation in the CCC IOU Partnership Management team, and through PG&E participation in various workshops and conference presentations directed toward

campus facilities staff. The program focused on meeting campus and IOU annual energy savings goals for 2019 project completion and achievement and supported 6 Fellows as part of Strategic Energy Innovation's Bay Area Climate Corp program. These fellows were placed at campuses across PG&E territory to provide support for energy projects and other sustainability efforts.

### University of California and California State Universities (UC/CSU)

The UC/CSU/Utility Energy Efficiency Partnership is a unique, statewide program which includes California's four investor owned utilities, Pacific Gas and Electric (PG&E), Southern California Edison (SCE), Southern California Gas Company (SCG), and San Diego Gas and Electric (SDG&E), as well as the Los Angeles Department of Water and Power (LADWP), in partnership with the University of California (UC) and the California State University (CSU). The program generates energy savings through the identification and implementation of energy efficiency projects. The Partnership consists of three main project types: retrofit, commissioning, and new construction. Since its establishment in 2004, the Partnership has provided approximately 65 MW demand reduction and delivers approximately and 470 million kWh/yr and 25 million therms/yr in energy savings.

The program has a hierarchical management structure to ensure successful implementation. The Management Team meets monthly to conduct business at the operational level and the Executive Team meets on an as needed basis to discuss overall program status and policy issues. In addition to representatives from each Utility, the University of California Office of the President and California State University Chancellor's Office each have members on all three program management teams. Inclusion of all Partnership stakeholders at the various management levels provides the UC and CSU campuses with support in their efforts to implement energy efficiency projects. A Program Administrative Manager (PAM) organizes and facilitates team activities, works with individual stakeholders, actively tracks project savings and schedule data in a web-based tracking tool and creates regular reports to show overall status of the program and forecasts relative to goals.

#### *2019 Strategies and Successes*

In 2019, the Partnership focused widely on efforts surrounding normalized metered energy consumption (NMEC) in compliance with AB-802. PG&E launched a new Performance Based Retrofit Program in 2019 and began developing and implementing NMEC projects at UC Davis and UC San Francisco. In addition to NMEC projects, UC and CSU focused on addressing barriers to energy efficiency, continuing a second phase of UC's Million Lamps Challenge, and beginning work on a CEC Grant to develop a Master Enabling Agreement for energy efficiency at UC and CSU campuses. Finally, SCE's Clean Energy Optimization Pilot (CEOP) began at several campuses on July 1, 2019. CEOP and the Partnership are mutually exclusive, so Partnership activities at CEOP campuses are winding down.

The Partnership determined several programmatic changes which will take effect in the 2020 cycle. Beginning in 2020, the Savings by Design Program will transition to a statewide third-party program and its incentives will no longer be provided through the Partnership. Additionally, the integration of LADWP into the Partnership and the resulting collaboration between Investor Owned and Public Owned Utilities provides a working model for the Public Sector in California to deliver truly comprehensive energy efficiency programs.

## State of California Partnership

The State of California Investor Owned Utility (IOU) Partnership is a Statewide program designed to achieve long-term energy and peak demand savings and establish a permanent framework for sustainable, comprehensive energy management programs at state facilities served by California's IOUs. The IOUs work collaboratively with the Department of General Services (DGS), coordinate with the established pool of Energy Service Companies (ESCOs) to help implementation of comprehensive facility energy efficiency projects, and work with individual state agencies on technology-specific projects. DGS leverages Department of Finance Energy $mart program, along with the IOU's On Bill Financing, incentives and rebates to provide financing for project opportunities.

The State of California Partnership is a continual and collaborative effort to support DGS to manage projects for Departments without contracting authority. The State/IOU Partnership Program Administration Manager (PAM) continues to coordinate between the IOUs and the DGS through regular meetings to ensure that project documentation is shared as needed, projects are tracked, project momentum is maintained, new project approaches are identified, and customer concerns/support items are addressed in a coherent and sympathetic fashion.

### *2019 Strategies and Successes*

In 2019, the IOUs and DGS closed out a working group to address Savings by Design (SBD) participation barriers for DGS buildings. Working group efforts led to the development of a flow chart to better understand the DGS procurement process. The group finalized DGS contract language, reviewed established incentive structures and defined alternative payment solutions to better align with DGS systems. The Partnership continues to track an SBD project currently in progress to use as a test case for implementing solutions developed by the working group.

The IOUs continued attending the Sustainable Building Working Group meetings, a State of California working group that consists of agency sustainability managers, with the task of planning and implementing all aspects of B-18-12, the Governor's Executive Order. The IOUs attend in a supporting role to ensure that agency needs regarding energy data for benchmarking are met and continue to use this platform for agency outreach.

The IOUs also continued to work with the State to prioritize agencies that may benefit from ESCO work, both for large and pooled small buildings. The Partnership has provided extensive outreach and technical support to Agencies including California Highway Patrol (CHP), Department of Motor Vehicles (DMV), Department of Parks and Recreation (DPR), the Judicial Council of California (JCC), and the Department of Food and Agriculture (DFA). In response to the Public Safety Power Shutoffs, the Partnership coordinated on how to build resiliency for sites in the most critical zones. Outreach to these agencies continued to yield significant energy savings and continues to create a robust pipeline of future projects.

## California Department of Corrections and Rehabilitation

The California Department of Corrections and Rehabilitation/Investor Owned Utility (CDCR/IOU) partnership is a customized statewide energy efficiency partnership program that accomplishes immediate, long-term peak energy demand savings and establishes a permanent framework for sustainable, long-term comprehensive energy management programs at CDCR institutions served by California's four large IOUs.

This program capitalizes on the vast opportunities for efficiency improvements and utilizes the resources and expertise of CDCR and IOU staff to ensure a successful and cost-effective program that meets all objectives of the CPUC. The program also leverages the existing

contractual relationship between CDCR and Energy Service Companies (ESCOs) to develop and implement energy projects in CDCR facilities.

***2019 Strategies and Successes***

In 2019, CDCR continued implementing retrofit projects and performing Investment Grade Audits. The IOUs and the Program Administration Manger (PAM) supported development of the new projects, ensuring that they reached maximum efficiency and incentive potential. To support more project development, the IOUs performed energy audits of a subset of CDCR's facilities, which CDCR used to prioritize the next wave of projects.

## Local Government Partnership Programs

PG&E's Local Government Partnership programs work with local governments to deliver energy services to city and county facilities and their communities. PG&E had 22 LGPs in 2019, serving approximately 238 cities and 44 counties. Through LGPs, PG&E and local and regional partners work together to develop and implement subprograms that serve the public sector and the broader community, including SMB and non-profit customers. LGPs are the primary delivery channel supporting cities, counties, and other local agencies seeking energy savings and GHG emission reductions on a community-scale. Promoting energy planning at a statewide and local level is a major market driver in increasing the uptake of local government EE projects and extending the reach and effectiveness of PG&E's EE programs. Through LGPs, PG&E leverages the role of local governments to achieve deeper energy savings in both municipal facilities and the broader community as an integral part of other community climate action and sustainability programs.

PG&E LGPs are built around the communities which they serve. While local governments represent most lead local partners (LLP), many LGPs are led by local economic development groups, associations of governments, joint power authorities, and regional non-profit organizations. These local organizations have missions aligned with supporting the economic, environmental, and societal health of their communities. Local partners are best positioned to understand and identify customers within their communities and effectively partner with subprogram implementers to overcome barriers to EE adoption.

LGPs also work to meet the targets of the California Energy Efficiency Strategic Plan by implementing EE strategies that support California's larger climate and GHG goals. Strategic Planning activities, also known as Strategic Energy Resources (SER), include energy and climate action planning, green building codes, and benchmarking policies and training. The Statewide Energy Efficiency Collaborative (SEEC) also operates under the SER Program.

### Association of Monterey Bay Area Governments Energy Watch

The Association of Monterey Bay Area Governments (AMBAG) Energy Watch is a partnership between AMBAG and PG&E. AMBAG is a Council of Governments led by a 24-member Board of elected officials. The AMBAG Energy Watch region includes Santa Cruz, Monterey, and San Benito Counties, and the 18 incorporated cities within the Monterey Bay Area. AMBAG Energy Watch serves municipal jurisdictions, schools, special district, non-profit, small business, hospitality, and agriculture customers. Services include energy assessments and audits, Prop 39 support, technical assistance, assistance accessing 0% On-Bill Financing or CEC 1% financing, benchmarking assistance, development of and assisting with implementation of regional energy action strategies and greenhouse gas inventory development. Services provided by AMBAG include technical support, engineering services, and a Regional SMB

program implemented through Ecology Action. AMBAG Energy Watch also offers a robust public-sector program, providing both turn-key and customized EE solutions for municipal facilities and schools.

***2019 Strategies and Successes***

In 2019, the AMBAG Energy Watch subprogram continued to support 43 school districts with $33.3 million of Prop 39 funded EE projects. The subprogram provided school districts with customized EE solutions dependent on the unique needs of the school, and assisted school districts in completing their 5-year project plans.

### East Bay Energy Watch

East Bay Energy Watch (EBEW) is a partnership between PG&E, local governments, and energy service providers in the East Bay dedicated to providing the most cost-effective EE solutions for residents, businesses, and municipalities throughout Alameda and Contra Costa Counties. The EBEW partnership is guided by EBEW's Strategic Advisory Committee (coordinated by StopWaste), consisting of local government staff spanning across the two counties, with a local government staff cochair representing each county. Programs provided by EBEW include SMB direct install, and municipal EE technical support. Program implementers include: DNV GL and QuEST.

***2019 Strategies and Successes***

In 2019, EBEW was able to complete greenhouse gas (GHG) inventories for all 35 EBEW jurisdictions. Those inventories covered 3 years (2005, 2010, 2015), in addition to the 2017 inventory (completed in 2018), and included data from the waste sector. Sixteen fellows were placed in 16 jurisdictions for the 2018-2019 program year from both the ClimateCorps and CivicSpark programs to help with these efforts. Fellows also worked on supporting residential outreach and education, small business outreach, engagement with the Municipal Implementation Team (MIT) program for municipal energy efficiency projects. Host jurisdictions included Alameda (city), Albany, Antioch, Contra Costa County, Dublin, El Cerrito, Emeryville, Fremont, Hayward, Oakland, Orinda, Piedmont, Pleasanton, Richmond, San Leandro and San Pablo.

QUEST's Municipal Implementation Team supported 21 East Bay agencies in cities including Antioch, Berkeley, Dublin. Concord, EBMUD, Fremont, Hayward, Martinez, Moraga, Oakland, Orinda, Piedmont, Pleasanton, San Leandro and San Pablo with municipal retrofits and On-Bill Financing (OBF) application guidance. QUEST actively supported the OBF program by presenting examples of local governments who were able to successfully utilize financing to implement EE measures. In 2019, the MIT Program supported 21 East Bay agencies, including four special districts.

### Fresno Energy Watch

Fresno Energy Watch (FEW) is a partnership that provides comprehensive EE services to the City and County of Fresno. FEW is managed by the City of Fresno Department of Sustainability and the Economic Development Corporation serving Fresno County, striving to deliver cost-effective, comprehensive, and persistent energy savings through the leadership of the local government. The goals of the partnership are to provide comprehensive and integrated energy solutions, address community needs, and capture available energy savings. Locally based EE seminars are offered to expand the audience for EE. FEW also focuses on local energy policies that promote EE practices, codes, and standards.

***2019 Strategies and Successes***
In 2019, FEW focused on assisting municipal customers with prioritization of EE projects. Two Trade Pro training programs were held to help train local businesses to deliver this solution to SMB customers.

### Kern Energy Watch
Kern Energy Watch (KEW) is a cooperative partnership with PG&E, SCE, SoCalGas, the County of Kern, and the partner cities within Kern County. The County of Kern is the LLP and works with representatives from local governments throughout the County and other local agencies to provide support for outreach to local government customers. KEW provides assessments and the direct installation of energy saving measures by Staples Energy in qualifying municipal facilities throughout PG&E's service area in Kern County. The partnership also works to encourage the efficient use of energy by providing EE information at community events, by providing public and municipal education and training programs, and audits and financial assistance to municipal customers for the energy-efficient retrofit of municipal facilities.

***2019 Strategies and Successes***
In 2019, KEW focused on assisting municipal customers to get EE projects started. The key strategy was working with the County's legal team to acquaint them with OBF.

### Marin County Energy Watch
County of Marin supports implementation of Marin County Energy Watch Partnership Programs, offering comprehensive energy efficiency services to municipal, and small and medium business (SMB) customers. These services may include energy efficiency audits, retrofits, retro-commissioning, rebates, education and training and the development of long-term energy reduction strategies for cities and counties. Other activities may include the support of the California Long-Term Energy Efficiency Strategic Plan, community outreach and integrated marketing efforts.

***2019 Strategies and Successes***
In 2019, Marin County Energy Watch provided energy tracking services for 23 agencies with 417 sites and 1,910 accounts tracked, offered benchmarking services to 5 sites covering 1,138,973 square feet, assisted 9 schools with 28 sites with Prop 39 implementation and held 32 meetings with LG staff to engage on climate action planning, inventory and reach code efforts. Staff assisted with the adoption of updated energy reach codes for the 2019 Building Code Update. MEWP also conducted trainings of local building officials on statewide energy codes.

### Mendocino-Lake Energy Watch
Mendocino-Lake Energy Watch (MLEW) is a partnership between the Community Development Commission of Mendocino County and PG&E. MLEW offers energy benchmarking services and lighting audits to public municipalities and nonprofits in both Mendocino and Lake Counties. Using a locally-driven approach, MLEW offers these services in one of the more sparsely populated counties in the state. Commercial program elements include a coordinated direct install program for lighting and refrigeration, education and outreach, and comprehensive energy audits for public facilities . Services provided by MLEW include the Regional SMB Program via The Energy Alliance Association (TEAA), a third-party implementer.

***2019 Strategies and Successes***
In 2019, MLEW continued to support ongoing energy benchmarking of local government facilities and public K-12 schools in the most rural areas of the counties. This approach should

yield energy savings opportunities in those areas as these rural customers need guidance and technical assistance to plan and prioritize retrofit opportunities.

### Napa County Energy Watch

Napa County Energy Watch (NCEW) provides comprehensive EE services to municipalities, nonprofits, special districts and small and medium business customers in Napa County. Sustainable Napa County (SNC) serves as the lead local partner. Services include audits, retrofits, outreach, education, technical assistance and support for projects. NCEW is positioned to influence energy conservation because of its roots and reputation among municipalities, non-profits, and the vintner community. NCEW supports climate planning by assuring that energy conservation is included in broader sustainability ventures across Napa County. Services provided by NCEW include the Regional SMB program by TEAA.

***2019 Strategies and Successes***

In 2019, NCEW continued to partner with Napa Valley Vintners and the Napa County Green Business Program to create an energy audit protocol for wineries that set a higher bar for certification than the statewide Green Business Program. NCEW used this higher standard, coupled with water use and waste management criteria to implement comprehensive "Green Winery" evaluations for the wine industry. Results have included significant savings for many wineries post-rate analysis, increased EE project uptake, and increased support for education on O&M measures that can save energy beyond typical rebates. NCEW's "Green Winery" audits and follow up have been closely coordinated with both TEAA (for Direct Install) and CLEAResult's Dairy and Winery Industry Efficiency Solutions (DWIES) program. Audit data can also guide future EEM work with wineries across the PG&E service territory, substantially broadening the reach of the County in promoting EE across the board.

### North Valley Energy Watch

North Valley Energy Watch (NVEW) is managed by Northern Rural Communities Development, Inc. (NRCD). NVEW develops, implements, and promotes commercial EE programs in Butte, Shasta, Glenn, and Tehama counties to SMB customers and promotes EE education to residents. In addition to the local governments, NVEW works with local workforce investment boards to leverage existing relationships with SMBs.

***2019 Strategies and Successes***

In 2019, NVEW continued developing relationships with local agencies and municipalities providing continued educational support, EE planning, and implementation services. Through long-standing relationships with local governments, NVEW continued working with cities and counties on their unique EE needs, create training programs to meet those needs, and provide technical assistance to special districts around utility cost savings. NVEW continues to work with the Workforce Development Board to market EE programs to local jurisdictions and the hard-to-reach SMB market.

### Redwood Coast Energy Watch

Redwood Coast Energy Authority implements the Redwood Coast Energy Watch (RCEW) Program, offering comprehensive energy efficiency services to local governments and small and medium businesses (SMB). RCEW, administered by PG&E and Redwood Coast Energy Authority (Joint Powers Authority), aims to achieve energy savings in Humboldt County. Energy savings are realized through services such as energy efficiency audits, retrofits, retro-commissioning, rebates, education and training and the development of long-term energy reduction strategies for cities and counties. Other activities may include Community outreach

and integrated marketing efforts, workforce development programs, and direct collaboration with third party implementers and Redwood Coast Community Choice Energy.

***2019 Strategies and Successes***

In 2019, Redwood Coast Energy Authority developed a multi-jurisdictional Climate Action Plan/ Energy Action Plan and updated the Comprehensive Action Plan for Energy in Humboldt County. RCEA assisted over 22 Districts with their Proposition 39 funded projects and annual reporting. Prop 39 projects included HVAC, interior and exterior lighting measures. RCEA successfully assisted one public agency and four local educational agencies with applying for funding through the California Energy Commission's Energy Conservation Assistance Act. RCEA engaged with 21 local government agencies in 2019 and served many of them with efficiency projects by collaborating with the Lincus WISE program for wastewater treatment plant assessments. RCEA's Energy Career Experience Program provided nine students and recent graduates training and experience working in the field of energy.

### San Francisco Energy Watch

San Francisco Energy Watch (SFEW) is a partnership between the City and County of San Francisco and PG&E to deliver a broad spectrum of EE measures and savings for businesses and multifamily facilities in San Francisco. SFEW provides comprehensive energy management services and incentives through three channels: 1) the Small Business Direct Install Program offers small businesses turnkey services and project management by a program-assigned contractor, 2) the Commercial Plus and Multi-Family Plus programs use an in-house team of energy auditors but allows for a market-based, vendor-driven pathway to offer property owners and larger businesses technical assistance and energy assessments for installing a wide range of measures, and 3) SFEW also offers larger customers incentives for calculated, nonresidential retrofit projects. SFEW also leverages Strategic Energy Resource (SER) funding for long-term EE planning and bringing innovative solutions to San Francisco customers.

***2019 Strategies and Successes***

In 2019, the SFEW launched the Comprehensive Maintenance Program for SMB in Food & Beverage Sector (or "Keep It Tuned"). SFEW worked with customers to complete 47 interventions, which include refrigeration system upgrades (condensing and evaporator unit replacements), refrigerant gas replacement, and preventive maintenance. SFEW also worked on the Distribution Shaping project, where staff improved energy usage reporting by utilizing both 15-minute interval analysis (versus monthly usage) and energy benchmark data to assist customers in identifying energy efficiency opportunities in their buildings. Benchmark data was also used to identify energy usage trends in various market sectors in order to perform outreach in underperforming sectors.

### San Luis Obispo County Energy Watch

San Luis Obispo County Energy Watch (SLOCEW) is a partnership between PG&E, SoCalGas, the County of San Luis Obispo, the seven incorporated cities within San Luis Obispo County, participating Community Service Districts (CSD), and the San Joaquin Valley Clean Energy Organization (SJVCEO). SJVCEO served as the program's lead local partner and provided energy management services to the local governments in the county.

***2019 Strategies and Successes***

In 2019, SLOCEW identified high potential projects at municipal facilities. SLOCEW continued to assist cities in developing and implementing EE retrofit projects at their facilities, leveraging partnership technical expertise, rebates, and OBF programs.

### San Mateo County Energy Watch

San Mateo County Energy Watch Energy offers comprehensive energy efficiency services to municipal customers. These services may include energy efficiency audits, education, training and the development of long-term energy reduction strategies for cities and counties. Other activities may include community outreach and integrated marketing efforts and workforce development programs.

**2019 Strategies and Successes**

In 2019, SMCEW engaged with cities on Climate Action Plans through a variety of channels including presentations to city staff through RICAPS, the Resource Management & Climate Protection Committee in San Mateo County. These discussions, presentations and support have supported jurisdictions as they seek to adopt their first CAP or update an existing CAP with new measures and goals. Staff completed energy emissions calculations for all 42 inventories. By the end of 2019, the 2016 Community GHG Inventories were complete and pending review with individual cities. Completion of the 2017 Inventories is anticipated in 2020.

### Santa Barbara County Energy Watch

Santa Barbara County Energy Watch (SBCEW) is a partnership between PG&E, SoCalGas, and the Santa Maria Valley Chamber of Commerce. SBCEW covers the northern portion of the County at the southern limit of PG&E's service territory, and serves the municipalities of Buellton, Solvang, Guadalupe, Santa Maria, and the County of Santa Barbara. SBCEW provides assessments and the direct installation of energy saving measures to qualifying businesses and municipal facilities and works to encourage the efficient use of energy by providing EE information at community events and outreach to underserved areas. SBCEW also supports public and municipal training programs, as well as audits and financial assistance to qualifying customers for EE retrofits at their facilities.

***2019 Strategies and Successes***

In 2019, SBCEW completed EE retrofit projects for 46 SMBs and Municipal customers through the Regional SMB program. Additionally, SBCEW reached out directly to residents, businesses and local governments through targeted outreach, including events and presentations conducted in the community. SBCEW provided collaborative support to the Green Business Program of Santa Barbara County and other agencies that support EE and sustainability.

### Sierra Nevada Energy Watch

Sierra Nevada Energy Watch (SNEW) is a partnership between PG&E and Sierra Business Council, a non-profit sustainability organization serving the Sierra Nevada region. SNEW's territory is composed of 11 rural Sierra counties, including Lassen, Plumas, Sierra, Nevada, Placer, El Dorado, Amador, Calaveras, Alpine, Tuolumne, and Mariposa, providing innovative EE solutions for local governments and communities through comprehensive, sustained technical services to municipal, nonprofit, and small business customers. SNEW's Commercial Program includes the Energy Watch Tune-Up Program, helping businesses save energy and money by providing a comprehensive energy assessment, delivering money-saving measures, and connecting businesses with other energy saving opportunities. SNEW's Municipal Program assists with benchmarking and energy assessments of government facilities and provides low-cost EE equipment, as well as climate and energy planning to accelerate EE activities in the community; to date, SNEW has successfully engaged with several cities and counties in Energy Action Planning activities to help reduce community and municipal energy usage.

***2019 Strategies and Successes***

In 2019, the SNEW program worked with several public agencies and businesses . SNEW also worked with four new local governments to prepare Energy Action Plans designed to accelerate EE activities in the community and continued to provide implementation assistance to jurisdictions who completed Energy Action Planning activities to facilitate working group meetings, assist with outreach events, facilitate Title 24 trainings, benchmark municipal facilities, and assist with Beacon Program applications. SNEW continued their work in greenhouse gas inventories working with four agencies, completing three by year end.

### Silicon Valley Energy Watch

The City of San Jose implements the Silicon Valley Energy Watch partnership programs, offering comprehensive energy efficiency services to public sector customers including municipal agencies, K-12 schools, and special districts. These services may include energy efficiency audits, education and training and the development of long-term energy reduction strategies for cities and counties. Other activities may include community outreach, integrated marketing efforts, and workforce development programs.

***2019 Strategies and Successes***

In 2019, SVEW provided benchmarking assistance to approximately 11 municipal buildings reported as per the San Jose BPO; with 35 additional buildings in process of benchmarking to comply with BPO in 2020. SVEW continued to provide technical and support assistance under Proposition 39 there are currently eight school districts within SVEW territory with projects underway that must be fully completed by June 2020. SVEW magnified the reach of energy efficiency K-12 school programs through a pilot, which was implemented in low-income DAC areas to reduce energy use on campus and empowered students to take civic action related to energy efficiency. The pilot reached four high schools (James Lick, Independence, Piedmont Hills, and Yerba Buena) 240 students, and resulted in 54 student-developed energy efficiency projects.

### Solano Energy Watch

Solano Energy Watch (SEW) provides comprehensive EE services to municipalities, nonprofits, special districts, SMBs, and residential customers. The partnership is led by Solano Economic Development Corporation and leverages civic and business relationships and expertise to serve the community. Services include audits, retrofits and outreach. Services provided by SEW include the Regional SMB Program by TEAA, a third-party implementer, and residential direct install with the California Youth Energy Services Program by Rising Sun Energy Center.

***2019 Strategies and Successes***

SEW promoted EE through the perspective of economic development and strengthening economic viability, and actively engaged with municipal and SMB customers via direct outreach in coordination with TEAA, the direct install implementer. In 2019, SEW served over 90 customers and achieved approximately 2.5 GWh savings.

### Sonoma County Energy Watch

Sonoma County Energy Watch (SCEW) offers a comprehensive portfolio of EE programs that target municipalities, nonprofits, small and medium businesses, and residential customers. The local administrator, County of Sonoma General Services Department works in partnership with cities throughout the county and other countywide entities to promote a wide-range of programs and initiatives in energy conservation and efficiency, clean energy generation, and environmental programs. SCEW services include the Regional SMB Program implemented by TEAA and a residential direct install and education program that employs youth energy

specialists administered by Rising Sun Energy Center. Additionally, the County also hosts several complimentary programs that are integrated with SCEW outreach and marketing efforts, including the Sonoma County Energy Independence PACE financing program, the Sonoma Green Business certification program, and the BayREN Single Family Residential home upgrade program.

***2019 Strategies and Successes***

In 2019, SCEW worked closely with PG&E account representatives to identify projects for future work at county facilities, resulting in several high-profile upgrade opportunities. SCEW continues to work with internal facilities staff to identify funding resources to implement these upgrades. The County continues to invest resources to help fire survivors navigate the rebuilding process by connecting them to PG&E services, sponsoring workshops, and dedicating staff time to community outreach and support. Solano County Energy Watch successfully launched a Salesforce CRM that tracks participants across programs and identifies opportunities for integrative solutions designed to meet the customers' various needs and offer solutions across funding sources.

### Sutter Buttes Energy Watch

Sutter Buttes Energy Watch (SBEW) is a partnership that includes Colusa, Sutter, and Yuba Counties. SBEW's goal is to promote EE and the reduction of GHG emissions in local government operations, concentrating on government facilities and schools and promoting energy-efficient programs. SBEW offers a direct-install program that provides energy-efficient measures to municipal facilities and schools. In addition to the direct install program, SBEW raises EE awareness, provides EE training, and offers a tool lending library.

***2019 Strategies and Successes***

In 2019, SBEW continued to focus on promoting and developing new relationships within counties, incorporated cities and government municipalities. By promoting PG&E EE programs, SBEW worked to improve the EE of municipal buildings and support the California Long-Term Energy Efficiency Strategic Plan.

### Valley Innovative Energy Watch

Valley Innovative Energy Watch (VIEW) is a unique cooperative partnership between PG&E, SCE, SoCalGas, the County of Kings, the County of Tulare and the partner cities within these counties. The San Joaquin Valley Clean Energy Organization serves as the lead local partner, providing assessments, benchmarking, audits, and project management assistance for city and county facilities located in the PG&E service area. VIEW also works to encourage the efficient use of energy by providing EE information at community events, public and municipal education and training programs, and financial assistance to municipal customers for the energy-efficient retrofit of municipal facilities.

***2019 Strategies and Successes***

In 2019, VIEW continued efforts to assist the Partnerships throughout the San Joaquin Valley with benchmarking and EE project development for municipalities. VIEW also continued efforts to partner with County Supervisors to reach out to the small, rural, disadvantaged communities to assist the residents and businesses in utilizing the EE programs offered by PG&E, SCE, and SoCalGas.

### Yolo Energy Watch

Yolo Energy Watch (YEW), is a partnership focused predominantly on municipal facilities and programs, working toward the formation of "Green Teams" and encouraging energy efficient

retrofits in government facilities, including staff training and capacity building so that energy savings, and the pursuit of greater efficiency, is institutionalized and ongoing in the future. Once energy efficiency is measured and progress towards goals reported, the jurisdiction displays their progress to the community to demonstrate leadership and encourage and enlist engagement in meeting the jurisdiction's goals for itself and the broader community.

***2019 Strategies and Successes***

Recognizing the reality of staffing and funding constraints on developing and implementing plans and policies to promote energy efficiency in municipal facilities and programs, YEW arranged for Civic Spark interns to assist with the process; one for the City of Woodland, another for a regional collaboration involving all the jurisdictions. In addition, YEW facilitated the City of Winters in engaging a consultant to begin the climate action planning process, and is a participating in the process to update the Yolo County CAP.

### Statewide Energy Efficiency Collaborative

The Statewide Energy Efficiency Collaborative (SEEC) engages three statewide non-profit organizations and California's four IOUs. SEEC provides education and tools for climate action planning, venues for peer-to-peer networking, technical assistance and recognition for local agencies that reduce GHG emissions and energy use. SEEC partners include the Local Government Commission (LGC), the Institute for Local Government (ILG), and ICLEI – Local Governments for Sustainability. One of the main program offerings of the collaborative is the Statewide Local Government Energy Efficiency Best Practices Coordinator (BPC). The BPC produces the popular weekly digital newsletter that is distributed to over 800 California local government representatives and other EE stakeholders and facilitates conversations between local governments on a variety of EE topics including climate and energy action planning, streetlight retrofits, building energy codes, and revolving loan funds.

***2019 Strategies and Successes***

In 2019, the SEEC statewide partnership continued to focus on assisting DAC and rural-hard-to-reach (RHTR) communities, especially with technical assistance in using the ClearPath tool – a tool to help local governments develop and analyze GHG inventories for climate and energy action planning. LGC coordinated the 10th Annual SEEC Forum in Long Beach, which focused on educating local governments on cost-effectiveness and how to use energy efficiency to meet local needs and the State's ambitious climate and energy goals.

# Industrial Program

California's industrial sector is extremely diverse. In most cases, industrial facilities are heavy energy users. Throughout 2019, PG&E focused on EE solutions for its industrial sector customer base to help reduce energy consumption and GHG emissions while increasing customers' profitability by lowering energy costs. The 2019 Industrial EE program partnered with industry stakeholders to promote a comprehensive list of energy management solutions to end-use customers. This suite of program services not only overcomes the traditional market barriers to EE, but also uses efficiency to advance IDSM opportunities such as DR and DG. Key offerings included rebates and incentives for efficient equipment and systems, technical support such as facility audits and energy savings analysis, zero interest project financing, and strategic energy planning.

The Industrial subprograms targeted and completed projects in various facilities including oil production, printing plants, plastic injection molding, component fabrication, lumber and paper mills, cement and quarries, metals processing, petroleum refineries, chemical industries, assembly plants, and water and wastewater treatment plants.

**Serving Our Industrial Customers:**

PG&E's industrial customers benefit from segment specific program offerings delivered through its third-party program channel.

PG&E leverages its Industrial third-party subprograms to provide technical expertise relevant to the customer segment, test new and innovative measures, program strategies and design, and provide turn-key/concierge services which help to meet customer needs. In 2019, third-party programs specifically targeting oil fields, refineries, heavy industry, light industry, water/wastewater plants and food processors completed 91 efficiency projects.

PG&E marketed and delivered these offerings through several channels, including direct communication with facility personnel, presence at industry events, support for education and research activities, and close partnerships with engineering and installation firms. PG&E's portfolio of offerings also includes specialized third-party subprograms focused on specific technologies, segments, or approaches with specialized requirements.

## Key Initiatives

Industrial customers are sophisticated in their understanding of energy usage within their facilities. While these customers understand and appreciate EE, decisions to upgrade to energy-efficient equipment must be balanced with minimizing operational and production risks. PG&E works closely with customers to understand their business needs so that subprograms are thoughtfully designed, and offerings align with customers' requirements.

PG&E depends on a team of EE experts including account representatives, project engineers, contractors, and third-party implementers with deep technical knowledge and understanding of industrial processes to offer industrial customers the right EE solution at the right time—from EE audits and scoping EE projects via its Energy Advisor Program, to financial offerings to install EE projects through its calculated and deemed customer incentive subprograms or its OBF subprogram.

In 2019, PG&E supported and processed 39 projects through the Industrial statewide program. Gas savings are primarily attributed to oil production, while electric savings are primarily credited to improved process modification and controls, and pump and fan retrofits. The various cost savings and the non-energy benefits associated with reduced maintenance of higher efficiency equipment was a successful method of championing EE projects within all industrial sectors.

In addition to working with customers to support their analysis and project development needs, PG&E also invested time and resources in guiding and training project developers on best practices in selecting and qualifying appropriate industrial projects for custom incentives. PG&E's project development protocol was an important tool to help establish the necessary documentation to understand the customer's standard practices, measure eligibility, and general decision-making framework. The training and coaching provided by PG&E's in-house engineers was pivotal to helping these customers adapt to new policies.

### Opportunities Moving Forward

PG&E is focused on opportunities to support a swiftly evolving marketplace through the solicitation process. PG&E anticipates new industrial programs will be signed into contract in Q2 2020, with launch activities occurring in Q3 and Q4 2020. PG&E will continue conducting portfolio balancing reviews to form a cost-effective and well-performing set of programs following the outcomes of the sector solicitations process in 2020.

## Industrial Subprograms

### Industrial Calculated Incentives Subprogram

The Industrial Calculated Incentives subprogram provides customized incentives for non-residential EE retrofit and new construction projects involving the installation of high-efficiency equipment or systems. Incentives are paid on the energy savings and permanent peak demand reduction above and beyond baseline energy performance, which include state and federal-mandated codes, ISP, or other baseline energy performance standards. Focus areas included process and non-process loads at various industrial facilities that reduced energy usage associated with process modification and controls, boiler and steam systems, high bay and outdoor lighting measures, and pumps and fans.

#### *2019 Strategies and Successes*

In 2019, PG&E focused on direct engagement of customers by pursuing two primary strategies. First, PG&E used its team of experienced, local, and dedicated account representatives and field engineers via local workshops, trade shows and industry events. Second, PG&E continued to develop and enhance its partnerships with industry associations and equipment vendors. Finally, PG&E continued to make improvements in project quality and consistency in policy interpretation, including application of consistent baselines, measure costs, and ISP determinations across projects.

### Deemed Incentives Subprogram

The Industrial Deemed Incentives subprogram provides rebates for the installation of new EE equipment and measures. Deemed retrofit measures have fixed incentive amounts per unit/ measure and are intended for projects that have well-defined energy and demand savings. In

many cases, projects are identified through utility EE audits, customer communications with PG&E account representatives, or partnerships with equipment vendors and trade allies.

***2019 Strategies and Successes***
2019 was a challenging year for the Deemed Incentives program, due primarily to lighting measure sunsets or workpaper changes. This program is not expected to deliver significant savings in 2020.

### Industrial Energy Advisor Subprogram
The Industrial Energy Advisor subprogram provides customer education and encourages participation in EE, DR, self-generation subprograms and promotes awareness of GHG and water conservation activities. The subprogram works to assist customers in the implementation of the appropriate solutions for their business while placing an emphasis on deep energy savings opportunities and continuous improvement over time. Aligning integrated improvement opportunities with customers' needs, the Energy Advisor Program helps customers appreciate EE benefits therefore increasing subprogram participation and adoption rates.

***2019 Strategies and Successes***
PG&E continued to offer on-site and remote energy audits, including integrated audits that combine EE recommendations with DR and DG information. In addition, PG&E focused attention on close coordination with large end-use customers to understand project scope and timeframe constraints to better influence customer selection of state-of-the-art EE and demand management solutions.

## Industrial Third-party Programs
The third-party subprogram[21] delivery channel is important for the Industrial sectors. The Industrial third-party programs offer a thoughtful, niche approach that continues to deliver savings, serve customer needs, and stay innovative by adapting to changing market needs.

### Energy Efficiency Services for Oil and Gas Production
***Implementer: CLEAResult***
Energy Efficiency Services for Oil and Gas Production is a turnkey custom measure incentive subprogram designed to deliver reliable and persistent electric and gas savings by educating and assisting oil and gas producers and pipeline operators to take advantage of the latest technologies and processes to improve their operations to save energy and improve efficiency.

***2019 Strategies and Successes***
This subprogram targets oil and gas producers of all types, providing focused assessments, calculation and documentation support, and financial incentives based on actual energy use reductions. It has convinced the customer base to adopt changes through education and persistent follow through with customers to implement projects.

PG&E leveraged a promotional subprogram brochure that informed customers of qualifying projects and EE measures, participation process, and incentive amounts to reach out, introduce, stimulate and recruit eligible oil and gas producers to participate. PG&E also used PG&E Account Managers, Trade Allies (equipment vendors), and industry information to create customer contact lists, and participated in industry associations and other forums to reach out to

[21] These programs meet the third-party program definition as described in D.16-08-019.

qualifying customers. PG&E will continue to push for adoption of new technologies (e.g. MotorWise™), adjust marketing efforts to focus the communicated benefits of the subprogram on avoided energy costs rather than on available technology, and identify ways to expedite project commitment approvals so customers can act quickly once a qualified project has been identified.

### Heavy Industry Energy Efficiency Subprogram

***Implementer: Lockheed Martin Corporation***

The Heavy Industry Energy Efficiency Program (HIEEP) identifies and facilitates the implementation of major process-oriented and other EE upgrades for large industrial manufacturing customers and recently added Food Processing facilities in the Central Valley.

***2019 Strategies and Successes***

The Lockheed Martin Energy (LME) HIEEP subprogram and PG&E have worked collaboratively for years to enhance and streamline process and subprogram flow. Through close collaboration with PG&E, HIEEP has enhanced customer service throughout the PG&E service territory by strategically placing field offices closer to the customer. The opening of the Bakersfield, CA office resulted in greatly improved timeliness and responsiveness to PG&E's Central Valley customers while at the same time increased collaboration on a variety of EE projects with both PG&E and the end use customers.

### Industrial Refrigeration Performance Plus Subprogram (IRPP)

***Implementer: VaCom Technologies***

IRPP targets refrigerated warehouses, food processors, and related cooling operations that operate year-round or seasonally in the food and beverage sector, including processing, storage and distribution operations with industrial refrigeration systems. Under IRPP, existing facilities are retrofitted, emphasizing refrigeration system improvements as well as envelope, pumping, air handling, and related process equipment. Whole-facility simulation is used to quantify savings and economics. Two years of web-based automated performance monitoring and associated operator education is included to provide transparency and permanence of savings. IRPP provides more complex, comprehensive integrated solutions, higher savings levels and institutes a continuous improvement paradigm delivered through real-time performance monitoring and advisory services.

***2019 Strategies and Successes***

IRPP continued ramping down through 2019 and is expected to sunset by 2021.

### Industrial Retrocommissioning Subprogram

***Implementer: Nexant, Inc.***

The Industrial Retrocommissioning Program (IRCx) Program is the first of its kind in PG&E's service territory. It serves the industrial manufacturing sector and commercial processing facilities with built-in requirements designed to promote savings persistence. For some implemented measures, the maintenance plan can consist of a computerized maintenance management system, multi-year contract with a preventive maintenance contractor (typically three years) or purchasing equipment to review the operation of the system and training personnel on how to use this equipment.

IRCx targets the heavy industry, manufacturing, bio-tech, high tech, and food processing sectors and generates energy savings by helping PG&E customers optimize their manufacturing processes and process cooling systems by systematically studying low-profile energy losses that commonly occur in these facilities.

***2019 Strategies and Successes***
Because of the unique nature of each facility, the IRCx Program facilitates the delivery of audits, and if needed, implementation, by subject matter experts in these types of specific disciplines. The subprogram's consultants and service providers allow the subprogram to provide industries with the most comprehensive energy solutions available from their utility.

Instead of focusing on a small part of the equipment, the IRCx subprogram optimizes whole system operations, achieving deep energy savings for the customer. One example includes enhancing the control systems to allow the customer a more transparent operation of their system, so that they can monitor the system and maintain the energy savings level in the future. In 2019, the IRCx subprogram developed projects with biotech and hi-tech customers, focusing on their process cooling systems. These projects are a recent addition for the subprogram, with energy saving potential for these previously underserved customers.

### Industrial Compressed Air System Efficiency Subprogram (ICASE)
***Implementer: AALD***
The ICASE subprogram was selected as an innovative subprogram for the IDEEA 365 solicitation process. The subprogram targets industrial customers with large (greater than 100 horsepower) compressed air and vacuum systems and promotes and installs a state-of-the art control and data monitoring system called iZ. Compressed air and vacuum systems are dynamic systems that are constantly changing and deteriorate quickly when not closely monitored. iZ automation system delivers support and assists customers with keeping efficiencies that have been initially gained by implementing an EE project.

***2019 Strategies and Successes***
The subprogram developed outreach processes to provide extensive education to local account representatives and engineering staff about advantages, features, and capabilities of the new iZ control system. Staff also conducted parallel comprehensive market research to justify acceptance of the proposed control systems over others existing on the market. ICASE concentrated on targeting compressed systems by providing complete service and optimizing performance aiming compliance or exceeding codes, standards, and industry standard practices.

### Water Infrastructure System Efficiency Subprogram
***Implementer: Lincus***
The Water Infrastructure System Efficiency (WISE) subprogram focuses on the energy optimization of water and wastewater systems in California. The subprogram targets comprehensive system optimization by targeting component improvements first and then optimizing the whole system through measures such as pump sequencing and system optimization through hydraulic modeling.

***2019 Strategies and Successes***
Launched in 2014, the WISE Program has continued to develop water system benchmarks, project prioritization lists, and energy audits to demonstrate cost-effective EE opportunities with customers. In 2019, the WISE program targeted system optimization projects aimed at long-term EE improvements.

Through the technical support and incentives provided through the WISE subprogram, enrolled customers are identifying cost-effective opportunities to meet their customer demands while

reducing energy use. Depending on the embedded energy of their system, water conservation measures may yield significant energy savings as well.
This sector is slated to be implemented as a Statewide program, with Southern California Edison (SCE) as the lead. To transition to the Statewide program, this PG&E offering is set to close in June 2020.

### Food Processing Subprogram

***Implementer: CLEAResult***

The Food Processing Program is a comprehensive subprogram designed to assist food processing customers to identify plant-wide electric and gas energy savings opportunities by providing technical assistance to quantify energy savings and help with the application process to provide cash incentives that encourage implementation of EE projects. CLEAResult's comprehensive subprogram approach encourages deep savings and long-term engagement from many customers, as food processors have diverse operations with multiple opportunities for EE measures.

***2019 Strategies and Successes***

In 2019, the subprogram focused on marketing through direct outreach to customers, working closely with PG&E account representatives, and educating equipment vendors about eligible measures as applied to their equipment and services. The subprogram also utilized industry associations and other forums such as the California League of Food Processors (CLFP) to reach out to qualifying customers. A primary subprogram challenge has been the barrier to entry for customers pursuing calculated projects. The length of the pre-approval cycle can be long, depending on the complexity of the project, and this presents a challenge for food processing customers who commonly face strict internal timelines for production and for authorizing budgets.

### Agriculture and Food Processing Wastewater Energy Subprogram (WEP)

***Implementer: BASE Energy, Inc.***

The Agriculture and Food Processing Wastewater Energy Subprogram (WEP) helps customers in agriculture, food processing, and beverage processing facilities pursue EE and water conservation projects that yield energy savings in wastewater treatment. Through the Wastewater Energy Program, BASE Energy provides economic and engineering feasibility studies for potential projects, assistance in project design and implementation to ensure long-term energy savings, and calculated customer incentives to partially offset capital costs.

***2019 Strategies and Successes***

2019 was a difficult year for WEP. Key challenges included a low volume of projects and delays in project timelines, which decreased predictability of results throughout the year.
BASE Energy partnered with PG&E's Business Energy Solutions representatives to increase customer engagement in both new and existing projects and hired new marketing personnel to increase outreach. Other outreach and marketing efforts have included leveraging the California League of Food Processors (CLFP) and associated trade conventions.

### Industrial Strategic Energy Management

SEM is a holistic, long-term, whole facility approach that uses advanced implementation, measurement and verification services and tools to determine energy savings from all subprogram activities at the facility, including capital projects, maintenance and operation improvements, as well as retro-commissioning. The methodology and subprogram requirements were defined through a collaborative effort between the IOUs, CPUC, and external subject matter experts.

## SEM Manufacturing

***Implementer: Leidos, Inc.***

The SEM Manufacturing program combines cohort format, individual site visits and web-based activities to deliver program services to participating Industrial Manufacturing customers. Customers receive frequent communications identifying major opportunities for implementation, and implementers rigorously track energy usage before and after energy efficiency actions are performed to determine effectiveness and persistence.

***2019 Strategies and Successes***

In 2019, the program completed six workshops, seven individual site visits, and energy management assessments for each program participant. At the end of the year, PG&E completed regression analyses and modeling using the cumulative summary (CUSUM) statistical methodology to identify and report energy savings to program stakeholders and evaluators. During multiple web-based sessions with customers Implementer evaluates impacts of energy efficiency on processes and production metrics dialing directly to customers Human Machine Interface (HMI) tools and provide recommendations for process improvement resulting in saving of energy consumption. After each workshop Implementer conducts customer satisfaction survey. Since program inception Implementer maintains average satisfaction score at 4.8-5.0 out of maximum 5.

## SEM Food Processing

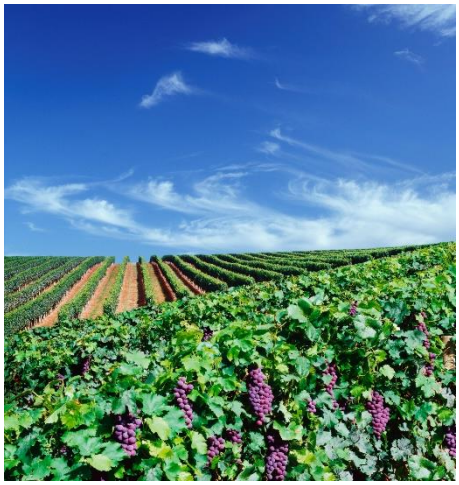
***Implementer: CleaResult***

The SEM Food Processing program was launched in 2018, and since then has successfully recruited a total of 12 participants, completing all milestones required by the SEM Design Guide from program inception through the end of 2019. Such milestones included kick-off meetings, scoping reports, six workshops and seven site activities called Treasure Hunt, and necessary Measurement and Verification (M&V) activities. Energy efficiency recommendations were consolidated in Opportunity Registers, which became a living “work-in-progress" document that is regularly updated to monitor and track project accomplishments.

***2019 Strategies and Successes***

In 2019, PG&E completed the entire set of activities defined in the California Industrial SEM Guide for the first 12-month program cycle. Long-term customer engagement and strategically positioning facility staff as energy efficiency experts became a major goal for the program. Continuous energy improvement and what actions should be taken to complete project action plans were constantly discussed at workshops and during site visits. Upon completion of the first program cycle, PG&E developed and submitted comprehensive reports with extensive statistical modeling and calculations for all participants. in the workshop conducted in October 2019 summarized accomplishments for the previous 12 months, as well upcoming activities and goals for the second implementation period. As a result of using the SEM approach and the high quality of services provided, 10 new customers signed up for SEM continuation in SEM pilot years three and four.

# Agricultural Program



In 2019, the Agricultural EE program provided a portfolio of offerings to support an industry heavily impacted by five years of statewide drought conditions. The Agricultural program, coupled with DR and DG programs, helped agricultural producers and processors manage energy costs and make informed investments in new equipment. Through three agricultural-focused subprograms, PG&E offered a full suite of tools to position California agricultural customers to eliminate unnecessary energy use. Key offerings included rebates and incentives for efficient equipment and systems, technical support such as facility audits and energy savings analysis, zero interest project financing, and pump efficiency education.

Programs in 2019 targeted the agricultural growers (field crops, fruits and nut trees, vegetables, and vineyards), post-harvest processors, dairies, irrigation districts/agencies, fruit and vegetable processors (canners, dryers and freezers), agricultural service providers, wineries, and other beverage manufacturers.

PG&E marketed and delivered these offerings through a variety of channels, including direct communication with customers, advertising in industry publications, presence at industry events, support for education and research activities, and close partnerships with engineering and installation firms. PG&E complements its statewide EE offerings with concierge EE solutions through its third-party programs focused on specific technologies, segments, or approaches with specialized requirements.

## Key Initiatives

**Local presence in agricultural communities**. PG&E focused on building trust with customers in their own communities by providing information about efficient irrigation equipment and operations via trusted trade professionals, scheduling workshops with partners such as local farm bureaus and the League of Food Processors and collaborating with agricultural universities such as California State University, Fresno and California Polytechnic State University, San Luis Obispo (Cal Poly).

**Water Energy Nexus.** The agricultural industry is a central stakeholder in California's water-energy nexus, with a footprint of nearly 80 percent of California's developed water usage, 4 percent[22] of annual energy use statewide. Using existing and new subprograms, PG&E continues to prioritize approaches to improve water and energy management for growers and manufacturers.

[22] California's Water Energy Relationship; Prepared in Support of the 2005 Integrated Energy Policy Report Proceeding (04-IEPR-01E). CPUC. 2005

### Opportunities Moving Forward

In 2019, an RFA was issued for new agricultural programs as part of PG&E's Business Plan strategies and to move towards meeting the CPUC's 60 percent third party program portfolio minimum for 2023. Bidders are expected to propose innovative EE solutions targeting agricultural customers that meet their unique needs and interests. This process will continue throughout 2020.

## Agricultural Subprograms

### Agricultural Calculated Incentives Subprogram

The Agricultural Calculated Incentives subprogram offers incentives for a wide range of energy-efficient technologies including steam systems, refrigeration equipment, and lighting technologies. PG&E account representatives and engineering experts work closely with customers throughout the design and installation process to evaluate, and help customers implement the most energy-efficient technologies. Customized projects were carefully tracked from audits through project completion, with PG&E EE experts involved at each step.

***2019 Strategies and Successes***

The Statewide Agricultural Calculated Incentives subprogram provided incentives for 23 applications, with incentives ranging from less than $10,000 to nearly $320,000. Following the geographical concentration of California's agricultural industry, projects were concentrated in the Central Valley and Central Coast.

### Agricultural Deemed Incentives Subprogram

The Agricultural Deemed Incentives subprogram provides fixed rebates for high volume measures, such as HVAC, lighting, and irrigation equipment. Projects are typically identified through utility EE audits, customer communications with local PG&E account representatives, or partnerships with equipment vendors and trade allies.

Program information was communicated to a customer base of over 35,000 growers through training events, mass media advertising, and the expertise of PG&E's dedicated agricultural local account representatives and call center representatives.

***201 Strategies and Successes***

PG&E continued a rebate offering for VFD equipment for agricultural irrigation pumps, which helped farmers control pumps in response to operational needs. The Deemed Program offers a better use of subprogram administration costs for this high-volume measure, while enabling a simpler customer experience.

### Agricultural Energy Advisor Subprogram

In addition to a range of on-site and online energy audit offerings, the Agricultural Energy Advisor subprogram provides pump efficiency services, known as the Advanced Pumping Efficiency Program (APEP). This subprogram offers pump tests and incentives for pump efficiency improvements to agricultural, municipal, and irrigation district customers.

***2019 Strategies and Successes***

To assist businesses and governments, PG&E has allocated substantial funding for pump efficiency tests. These services were communicated through training events, mass media

advertising, and PG&E's ongoing partnership with California State University, Fresno's Center for Irrigation Technology.

## Agricultural Third-party Program

The third-party agricultural subprogram[23] offers a tailored solution to the specific needs of PG&E's agricultural customers. Through customized solutions and thoughtful program delivery, PG&E's third-party implementers serve the unique energy needs of the diverse Agricultural sector.

### Dairy and Winery Industry Efficiency Solutions Subprogram (DWIES)

***Implementer: CLEAResult***

The subprogram provides a comprehensive approach to helping dairy, winery, and brewery customers identify and evaluate the energy saving opportunities and facilitating customer action. The objective of the Coordination Activities is to identify all parties that have programs related to the DWIES subprogram and to develop a strategy that minimizes customer confusion, avoids duplication of services or costs, and identifies synergistic opportunities.

***2019 Strategies and Successes***

DWIES leveraged vendor relationships to coordinate the timing of installation for qualifying high-efficiency ventilation equipment and smart controls to help dairy farmers and their cows beat the summer heat and reduce energy usage and demand. Retrofit projects replaced many small-diameter, inefficient fans with fewer large-diameter, high-efficiency fans, while new load projects successfully moved dairy farmers directly to systems that included highest efficiency, large-diameter fans with variable speed controls.

OBF is promoted and has been well received by this market. Dairy farmers have leveraged OBF as a resource to ensure that projects move forward. The greatest success continued to be the close working relationship between DWIES and PG&E account managers, where customer needs are shared and strategies are developed jointly to maintain a high level of customer service.

[23] This program meets the third-party program definition as described in D.16-08-019.

# Emerging Technologies Program

The Emerging Technologies Program (ETP) is designed to reduce time-to-market for introduction of EE technology solutions aligned with the California Energy Efficiency Strategic Plan (Strategic Plan). ETP's overall goal is to increase the supply of, and market demand for, EE technology solutions, delivered through three core subprograms: Technology Development Support (TDS), Technology Assessment (TA), and Technology Introduction Support (TIS).

**Testing Innovative Solutions through the Emerging Technologies Program**

PG&E's Emerging Technologies (ET) team actively seeks out new, innovative technology solutions and market approaches, soliciting ideas from both internal and external EE stakeholders to assess potential new technologies for PG&E's EE portfolio in a strategic way. ETP enables PG&E to test and benchmark new and innovative products, services, and market solutions to help bring our customers new and improved opportunities to save energy.

Under the ETP, the TDS subprogram's primary goal is to communicate and collaborate with entrepreneurs and technology providers to increase the supply of EE technology solutions. In parallel, the TA subprogram identifies and assesses the performance of emerging EE technology solutions in all sectors that may be offered to customers. Finally, the TIS subprogram seeks to introduce solutions to the market by exposing end users to applications of emerging EE technology solutions in real-world settings, and by harnessing third-party projects to deploy such technology solutions on a limited scale in the market.

ETP uses numerous strategies − such as Lab Testing, Field Testing, and Demonstration Showcases − to achieve the objectives of its three subprograms. ETP also enables PG&E to reduce certain market risks by testing and benchmarking new and innovative products, services, and market solution approaches. This helps EE programs understand potential barriers – technical or non-technical – to high adoption rates for new EE technology solutions.

Throughout 2019, PG&E scaled back ETP activities in preparation for the statewide administration of the ETP and did not initiate new projects in 2019. PG&E continued to co-fund statewide ETP activities but has elected to cancel participation in Caltech's Rocket Fund in 2020.

## Emerging Technologies Subprograms

### Technology Development Support (TDS) Subprogram

The TDS subprogram assists entrepreneurs, investors, and technology providers to develop new or improved EE technologies and solutions for the marketplace. IOUs are strongly positioned to undertake targeted, cost-effective activities that provide value in support of private industry product development efforts, decreasing innovator uncertainties. Product development constitutes the process of taking an early-stage technology or concept (including at the Research and Development (R&D) stage) and transforming it into a product that meets a market need.

Ultimately, the goal of the TDS subprogram is to communicate and collaborate with entrepreneurs and technology providers to increase the supply of EE technology solutions to the market, including breakthrough technologies and innovations.

### Technology Assessment (TA) Subprogram

Through the TA element of ETP, energy-efficient technology solutions that are either new to the market or underutilized for a given application are evaluated for performance claims and overall effectiveness – namely cost and end customer attractiveness – in reducing energy consumption and peak demand. Two key objectives of these assessments include 1) the adoption of new measures into PG&E's EE portfolio, and 2) the deeming of specific technology solutions as *not* market ready.

Historically, TAs have been a core strength of ETP and have provided critical support to EE programs. ETP assessments may utilize data and information from different sources to support assessment findings, including: in-situ testing (customer or other field sites), laboratory testing, and/or workpaper studies. In addition to other findings and/or information, assessments typically generate some of the data necessary for EE deemed rebate subprograms to construct a workpaper estimating energy and demand savings over the lifetime of the measure. Furthermore, technology solutions that are designated as "not market ready" nonetheless assist technology providers enhance their offerings for the EE marketplace.

### Technology Introduction Support (TIS) Subprogram

The TIS subprogram supports the introduction of new technology solutions to the market through several activities. Scaled Field Placement (SFP) projects are the deployment of a technology solution at multiple, participating customer sites as a key step to gain market traction and feedback. Typically, such measures have already undergone a technology assessment or similar evaluation to minimize the risk of failure. Demonstration and Showcase projects are designed to provide key stakeholders the opportunity to thoroughly vet and understand the value of proven technology solutions that advance ZNE, IDSM, and other Strategic Plan goals. The overall aim of Demonstration and Showcase projects is to introduce technology solutions to stakeholders from a systems-level, and potentially integrated level, rather than an individual (widget-based) perspective using data gathering and customer feedback in a real-world environment. In addition, the demonstration showcase exposes the technology solution to the public, investors, entrepreneurs and technology professionals, and increases market knowledge for the technology provider. Market and behavioral studies are designed to perform targeted research on customer behavior, decision making, and market behavior to gain a qualitative and quantitative understanding of customer perceptions and acceptance of new technology solutions and business models, as well as market readiness and potential for new EE measures.

#### *2019 Strategies and Successes*

PG&E completed two separate thermostat optimization assessment (TIS) projects for both 'smart' and 'non-smart' programmable thermostats; a field test (TA) at an almond orchard in Fresno that evaluated the water savings and corresponding energy savings potential of 'deep-root' irrigation; a Zero Net Energy (TIS) demonstration project with six established home builders at six sites; and a controls project (TIS) assessing the opportunities of lower cost, connected HVAC and lighting controls for the SMB segment. PG&E also continued in-flight ETP projects, including: large-scale pilot (TIS), in collaboration with a large northern California water utility, assessing the water-energy impacts of water smart meters in combination with online dashboards, alerts and other behavioral outreach tools; an assessment (TA) of building energy management controls for restaurants; a statewide ZNE pilot (TIS) that focused on demonstrating the feasibility of ZNE retrofits in K-14 schools, and; a field study (TIS) of the customer experience installing and using a Connected Home Bundle package, including a

hub/gateway, connected plug controls and LED lights, and a mobile app that allowed control of the connected devices, the home HVAC, and integrated with PG&E's Stream My Data.

Details around PG&E's completed ETP projects are accessible via the ETCC website: http://www.etcc-ca.com.

### Advanced Metering Infrastructure (AMI) and Water Savings Study

PG&E continued work on the pilot project launched in 2016 to further understand opportunities for electric utilities and water agencies to collaborate. This pilot focuses on the use of AMI to deliver water savings data. This study measures the value of communicating AMI dependent data (i.e., information collected and conveyed at an hourly temporal resolution at a minimum) to consumers in terms of household water, electricity, and gas consumption. The project will provide information on how behavior-based messaging affects both energy and water savings in the residential sector. This pilot spans multiple years and involves PG&E's water utility partner, East Bay Municipal Utility District (EBMUD), installing over 10,000 new smart water meters and associated infrastructure. In 2019, PG&E began the twelve-month observation period for new AMI installations, and anticipates monitor installations through 2020.

# Codes and Standards

The Statewide Codes and Standards (C&S) Program saves energy on behalf of ratepayers by collaborating with regulatory bodies, such as the California Energy Commission (Energy Commission) and the U.S. Department of Energy (DOE), to strengthen existing Energy Efficiency (EE) regulations as well as develop new EE regulations. The C&S Program conducts efforts to increase compliance with EE regulations to ensure that the State realizes the savings from codes and standards and supports local governments that include reach codes as a climate strategy. PG&E also conducts planning and coordination with other IOUs statewide to optimize collaboration as well as conducting code readiness activities to address data gaps and needs for future C&S activities.

**California 2019 C&S Savings[24]**

| | Gross Savings | | | Net Standard Savings | | | Net Program Savings | | |
|---|---|---|---|---|---|---|---|---|---|
| | GWh | MW | MMTherm | GWh | MW | MMTherm | GWh | MW | MMTherm |
| **Statewide** | 8,222 | 1,655 | 51.1 | 4,285 | 950 | 51.3 | 1,855 | 416 | 38.5 |
| **All IOUs** | 5,883 | 1,184 | 83.1 | 3,066 | 679 | 66.4 | 1,327 | 298 | 44.5 |
| **PG&E** | 2,597 | 523 | 18.6 | 1,353 | 300 | 18.7 | 586 | 131 | 14.1 |
| **SCE** | 2,678 | 539 | 0.0 | 1,396 | 309 | 0.0 | 604 | 136 | 0.0 |
| **SoCalGas** | 0 | 0 | 62.4 | 0 | 0 | 45.6 | 0 | 0 | 28.9 |
| **SDG&E** | 608 | 122 | 2.1 | 317 | 70 | 2.1 | 137 | 31 | 1.6 |

Program advocacy and compliance improvement activities extend to virtually all new constructed or renovated buildings and appliances sold in California in support of the California's ambitious climate and energy goals. Through adoption of 2019 Building Energy Efficiency Standards. Title 24, Part 6 (Energy Code), California has achieved the EE Strategic Plan goal that, "New construction will reach 'zero net energy' (ZNE) performance (including clean, onsite Distributed Generation) for all new single and low-rise multi-family homes by 2020"[25], and PG&E continues to move California towards non-residential new construction ZNE buildings by 2030 and other major objectives, including: carbon reduction targets in 2020 equivalent to 1990 emissions levels[26] and 40 percent below 1990 by 2030[27]; a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end-uses by

24 Gross Savings equal potential savings corrected for compliance rate. Net Standards Savings equal Gross Savings after correcting for normally occurring market adoption. Net Program Savings are calculated by applying an attribution factor to Net Standards savings. Savings are based on a combination of data from CPUC ex-post evaluation studies and C&S program forecasts and do not include market effects. Negative gas impacts due to interactive effects were applied to PG&E and SDG&E, but not SoCalGas. While therm savings for "All IOUs" are based on mixed treatment of negative gas impacts, statewide therm savings include negative gas impact for the whole state, so statewide therm savings are lower than those of "All IOUs".

25 California Long Term Energy Efficiency Strategic Plan

26 AB 32 (California Global Warming Solutions Act of 2006)

27 AB 398 and SB 32 (Health and Safety Code Sections 38501(i) and 38566)

January 1, 2030[28] to reduce existing building energy usage by 50 percent; near-zero-emission building technologies to significantly reduce the emissions of greenhouse gases from buildings.[29]

## Key Initiatives

PG&E's key initiatives for 2019 included:

- advocacy for new or updated sections of California's Energy Code and related American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE) and the International Energy Conservation Code (IECC) activities;[30]
- advocacy for new or updated sections of California's Title 20 Appliance Efficiency Regulations (Title 20) and DOE appliance standards, and related ENERGY STAR® activities;
- training, tools, and resources to support compliance with California's existing EE regulations;
- development of new cost-effectiveness studies to support local government reach codes;
- planning and coordination activities to guide implementation and optimize work;
- and code readiness activities aimed at specific industries and technologies for future code cycles.

## Opportunities Moving Forward

As the focus on grid harmonization increases, it is necessary for the Standards to encourage commercial buildings' electrical systems to be ready for integration with renewables, storage, and respond to signals from the electrical grid. It is likely that integration of on-site generation, storage and efficiency measures will continue into the next several code cycles as statewide commercial building 2030 ZNE goals and GHG reduction goal milestones near. As all building types approach ZNE and state zero carbon emissions goals evolve, a greater percentage of C&S program efforts will need to be focused on integrating efficiency measures with distributed energy resources, generally funded in non-EE proceedings. This area of work will be critical to advance in the next decade.

There is still significant room for improvement in the Energy Code and supporting compliance tools, with a specific need to address multifamily buildings, which represent a significant percentage of new housing being constructed to address California's affordable housing needs. This expected increase in construction is an opportunity to build energy efficient dwellings that can contribute to state energy goals. In the 2022 Energy Code cycle, the requirements for multifamily buildings may be extracted from the various sections in which they are found and consolidated into a dedicated section that will better serve the needs of this segment of the building industry. PG&E will work to ensure that revisions and additions to the prototypes used for multifamily energy models in the software used for code development and compliance reflect current building practices.

PG&E also sees the opportunity to promote balance between the stringency and accessibility of code, boosting compliance rates. The Compliance Improvement (CI) program will continue to simplify and automate the compliance process through development of dynamic, digital tools

[28] SB 350 (Clean Energy and Pollution Reduction Act of 2015)
[29] SB 1477 (Public Utilities Code 921.1)
[30] ASHRAE is the American Society of Heating, Refrigerating and Air-Conditioning Engineers. ICC is the International Code Council.

that automate and verify compliance for market actors. Throughout 2020, PG&E will conduct training to support compliance with the 2019 Energy Code while continuing to develop new training assets. Additionally, PG&E will continue identifying and reaching key market actors in the Title 20 compliance supply chain with whom PG&E may build relationships and pilot new performance solutions.

Interest in the adoption of local reach codes increased significantly in 2019. Through the reach codes subprogram, PG&E supported the creation of residential and non-residential cost-effectiveness assessments to support reach code development. These studies were referenced widely as approximately 50 jurisdictions statewide, more than any cycle prior, pursued local ordinances to help meet climate action goals.[31] Many of the reach codes contain pro-electrification policies, with varying approaches and stringency. Several cities, such as Berkeley and San Jose, passed all-electric ordinances impacting other parts of the building code in addition to pursuing energy reach codes. These actions sparked significant attention nationwide.

PG&E submitted letters of support to 20 cities who requested a public statement as part of their city council approvals process, with the C&S Program serving as a liaison to field requests and deliver letters on time. Local energy ordinances reaching above the Energy Code were approved by the Energy Commission for seven jurisdictions by the close of the year. Many more are expected to pass through the process in 2020. The subprogram continues to work closely with the local governments, obtaining input along the way to ensure the studies meet jurisdiction needs. Opportunities exist to improve communication resources and develop tools that increase the value of the support the subprogram offers to cities.

## Codes and Standards Subprograms

### State Building Codes Advocacy: Title 24, Part 6 & Part 11

The State Building Codes Advocacy subprogram supports the California Energy Commission's triennial update to the Energy Code (Title 24, Part 6) to include new EE regulations or to strengthen existing regulations for various technologies or measures. Advocacy activities include the development of Codes and Standards Enhancement (CASE) proposals, research to provide the data needed to advance EE regulations, and participation in the public rulemaking processes. The subprogram also supports the Energy Commission in preparing recommendations to the Building Standards Commission to updates the California Green Buildings Standards (Title 24, Part 11 or CALGreen). The energy measures in CALGreen provide foundational elements for local reach codes.

To comply with the Commission's Statewide program and outsourcing goals[32], PG&E's State Building Code Advocacy subprogram prepared for the transition to a Statewide Codes and Standards Advocacy program, which commenced in early 2020. Activities completed to support this included the introduction of a statewide balancing account, budget sharing negotiation, administrative costs agreements, and the continued implementation of contracts that were awarded as part of the public third party bid process that occurred in 2019.

31 https://localenergycodes.com/
32 D.18-05-041

***2019 Strategies and Successes***

On May 9, 2018, the Energy Commission adopted the 2019 update to California's Energy Code, which applies to all new construction, additions, and alteration projects permitted on or after January 1, 2020. The 2019 final CASE reports and Results Reports, which compare what was proposed to what was adopted, are available online.[33] Expected savings from the measures that were supported through the 2019 Title 24 CASE reports submitted to the Energy Commission are approximately 603 GWh/year, 3.2 million therms and 30 million gallons of water for each year's construction following the effective date.

PG&E has been a participant in the code-setting process since the Energy Code was first developed in the 1970s. PG&E is also part of the statewide IOU team that supports the development of the Energy Code. In 2019, Sacramento Municipal Utility Department (SMUD) and Los Angeles Department of Water and Power (LADWP) committed to financial and staff support for the 2022 Energy Code rulemaking cycle and are listed as part of the statewide team on public documents.

In 2019, the Statewide Utility Codes and Standards Program supported the Energy Commission's 2022 rulemaking by narrowing the potential measure pursuit list to 79 building code measure proposals which will be included in 24 Codes and Standards Enhancement (CASE) reports. The focus for the 2022 cycle is on multifamily and non-residential buildings. Single family CASE reports will explore compliance options that will prepare for added stringency in the 2025 cycle. Final CASE reports will be submitted to the Energy Commission for review in the third quarter of 2020. A list of these measures is available at Title24Stakeholders.com. This public website was redesigned for the 2022 rulemaking cycle to increase and encourage stakeholder participation in the process. A partial year snapshot of site usage indicates that from July 30 to November 11, 2019 there were 67,048 visits from 9,175 unique visitors.

In 2019, The Statewide CASE team hosted 12 online events in ten weeks to engage with stakeholders that may be impacted by the proposed code changes. 26 email campaigns led to an open rate of 30 percent and a click through rate of 17 percent, which is much higher than average. The outreach efforts led to 997 total attendees for all 12 meetings. This is a marked improvement from past cycles.

## National Codes and Standards Advocacy

To comply with the Commission's Statewide program and outsourcing goals[34], PG&E's National Code Advocacy subprogram will shift budgets and activity to the new statewide model in early 2020 with the completion of the implementer bidding process and establishment of statewide balancing accounts to share proportional costs amongst IOUs.

**National Codes & Standards: DOE, ASHRAE 90.1 and 189.1, IECC, Energy Star**

PG&E advocates for national building codes and appliance standards that support California by encouraging adoption of transformative technologies and construction processes. Alignment between national and state codes also helps reduce barriers to compliance by harmonizing the requirements across state borders. Organizations that work across multiple states, including California, can establish business practices that would result in less customization for the California market. Participation in the DOE, Environmental Protection Agency (EPA), Federal Trade Commission (FTC), ASHRAE and IECC code and standard update proceedings in

33 http://title24stakeholders.com/2019casetopics/

34 D.18-05-041

support of increasing requirements is important to minimize gaps, when regionally appropriate, between the California's EE regulations and the EE regulations that other states adopt.

***2019 Strategies and Successes***

A significant effort in 2019 was the IOU's support for the DOE's Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) negotiations for commercial Variable Refrigerant Flow (VRF) test procedure and efficiency standard. This effort will ensure that VRF equipment is as efficient in the field as it is rated and marketed to be. PG&E collaborated with DOE to demonstrate that equipment ratings, based on the new test procedure, could double the savings consumers would realize in their facilities. This collaborative effort between DOE and PG&E is expected to result in significant savings and more accurate equipment performance ratings. This effort is opening opportunities to collaborate on other test procedures such as rooftop HVAC (heating, ventilating and air conditioning) units. PG&E also completed laboratory testing for residential clothes dryers with results now being used to create or improve test procedure.

The IOUs advocated for changes to federal appliance standards through multiple efforts. Program staff researched and responded to specific issues related to federal rulemaking and specification processes conducted by the DOE and EPA ENERGY STAR® Program and participated in stakeholder meetings during rulemakings and specifications processes, resulting in 43 rulemaking advocacy letters issued in 2019.[35]

In 2019, versions of ASHRAE's 90.1 and 189.1 Standards were updated Prior to the update, the CASE team shared key findings with the ASHRAE 90.1 Lighting Subcommittee, to support analysis exploring whether LPDs could be adjusted in that Standard. The resulting finalized ASHRAE 90.1-2019 LPDs are now also based on LED lighting models and have made use of data and models developed by the CASE team.

The National Codes and Standards Advocacy subprogram also invested in supporting updates to the 2018 International Green Construction Code (IgCC) through participation in ASHRAE 189.1. In addition to lower interior lighting LPDs for general lighting, this effort resulted in updated energy savings requirements including: an approximately 50 percent reduction in interior lighting power allowances for display and ornamental lighting (unchanged in ASHRAE 90.1 since 1999), dropping the threshold wattage for outdoor lighting motion controls and expanding scope to outdoor sales lighting, supporting the creation of a zero energy performance index (zEPI) based on source energy, and supporting Fault Detection Diagnostics requirements for buildings larger than 25,000 $ft^2$.

Updates for the 2022 International Energy Conservation Code (IECC) concluded in the fall of 2019 as well. Support from this subprogram occurred through multiple pathways:

- development of ASHRAE standards brought into the IECC,
- assistance and review of proposals from ASHRAE, International Association of Lighting Designers (IALD), National Electrical Manufacturers Association (NEMA), and New Buildings Institute (NBI), and
- direct proposals brought to the hearings.

Proposals adopted into the IECC that were supported by these efforts include a points-based (multiple choice) approach to adding extra energy efficiency to each package, multi-level

[35] Several of the advocacy letters were submitted on the same topic to respond to DOE's ongoing rulemakings.

(dimming) daylighting controls, motion-controlled parking lot lighting, motion controlled and daylight-controlled parking garage lighting. A direct proposal that that was adopted into the IECC was a proposal to expand the daylighting requirements into the secondary side-lit zone and to remove an exception based on LPD. This approximately doubles the area controlled with side lighting controls.

### State Appliance Standards Advocacy Subprogram

The State Appliance Standards Advocacy (ASA) subprogram targets improvements to Title 20 by the California Energy Commission. Advocacy activities include developing Title 20 code enhancement proposals and participating in the California Energy Commission public rulemaking process. Additionally, the subprogram monitors state and federal legislation and intervenes, as appropriate.

To comply with the Commission's Statewide program and outsourcing goals[36], PG&E's Appliances Standards Advocacy subprogram ramped down in 2019 to shift budget and activity to the new Statewide Codes and Standards Advocacy program, which is expected to launch in 2020.

***2019 Strategies and Successes***

In 2019, ASA pursued several specific subprogram efforts. ASA subprogram staff participated in several Energy Commission webinars and workshops and advocacy for the Energy Commission rulemakings on several products: 1) spray sprinkler bodies, 2) commercial & industrial (C&I) fans and blowers, 3) expanded General Service Lamp (GSL) definition and 4) IOUs supported the adoption of the spray sprinkler body, general service lighting and compressors standards though advocacy, data analysis and data collection.

### Compliance Improvement Subprogram

PG&E supports increased compliance with adopted Title 24, Part 6, Title 20 and federal EE regulations. The C&S Compliance Improvement (CI) subprogram targets market actors throughout the entire compliance chain, providing education, outreach, and technical support and resources to improve compliance with Title 24, Part 6 and Title 20. CI subprogram activities complement other C&S subprogram work by maximizing persistent savings from C&S advocacy activities.

***2019 Strategies and Successes***

Throughout 2019, the CI subprogram continued to employ a systematic approach to enacting behavior change throughout the building and appliance efficiency supply chains. The three-pronged performance improvement approach addresses the essential elements of behavior change by providing 1) training to impart the knowledge and skills necessary to comply, 2) outreach to increase awareness and motivation, and 3) tools and resources to empower people to take the desired action. The work accomplished responds directly to key market actor's unique workflow and needs and was completed in close collaboration with the Energy Commission.

In 2019, PG&E delivered more than 101 classes across eight modalities and dozens of roles. PG&E reached more than 2,660 students and achieved a 98 percent satisfaction rate and an 18 percent knowledge swing, on average. While continuing to deliver training, PG&E facilitated updating the Energy Code Ace curriculum, online tools and resource library in preparation for

[36] D.18-05-041

the 2019 Energy Code effective date. The CI subprogram's target audience now includes the healthcare industry and the California Office of Statewide Health Planning and Development (OSHPD) selected Energy Code Ace as their preferred training provider for the healthcare practitioners who must now comply with 2019 Energy Code requirements. As a result, a new Decoding Talk and needs assessments were conducted and are informing a new curriculum for the health care industry. Currently, there are over 110 resource documents and seven interactive tools online.

PG&E worked alongside the Energy Commission in developing a "TurboTax" style online interface that building industry practitioners are now using to document and verify compliance for nonresidential additions and alterations. This enhanced version of the CI subprogram's Forms Ace builds on the dynamic PDFs compliance forms launched last year. The new interface guides permit applicants and the design community through important compliance decisions while completing the applicable forms and enables collaboration between key decision makers. Forms generated by the enhanced Forms Ace help expedite plan review by indicating project compliance.

Under PG&E's leadership, the CI subprogram continued outreach efforts including targeted email messages, ads, articles in industry publications and participation in more than 65 Title 24, Part 6 and Title 20 industry events in 2019. The Energy Code Ace website continues to gain traction growing to 8,276 registered users. In addition to serving as the gateway to training, tools and resources, the site also facilitates communication between industry and Energy Code Ace experts. In 2019 alone, the CI subprogram fielded over 1,125 email, responding through e-mail conversations and/or in-depth phone calls with various types of code practitioners.

The CI subprogram also continued supporting the development of Certified Energy Analysts (CEAs) through a new curriculum, mentoring program and exam proctoring while updating the CEA exam for 2019 energy code requirements.

### Reach Codes Subprogram

The C&S Reach Codes (RC) subprogram provides technical support to local governments that wish to adopt local energy ordinances (reach codes) that exceed statewide Title 24, Part 6 minimum requirements for new buildings, additions, or alterations. Reach codes support for local governments includes:

- Conducting research and analysis to establish performance levels and cost effectiveness relative to fundamental Title 24, Part 6 requirements by climate zone
- Drafting model ordinance templates to encourage regional consistency
- Assistance completing and expediting the application process required for approval by the Energy Commission
- Supporting ordinance implementation once effective

Many local jurisdictions have established goals within their Climate Action Plans to reduce energy use and GHG emissions from buildings through adopting and implementing reach codes. This has translated to unprecedented interest in reach codes as a policy tool to achieve those goals. In recognition of reducing GHG emissions reductions as high priority, there is a shift in focus from solely reducing energy use, to targeting energy use reductions associated with carbon emissions. This shift has resulted in an increased level of interest in all-electric designs, both at the local level, and at the state.

With adoption of the 2019 Energy Code, an all-electric baseline was created for low rise residential new construction, therefore allowing all-electric designs to comply with and exceed the Energy Code more readily. Changes to the state code created a path for local jurisdictions to accelerate emissions reductions in new construction. At the local level, most jurisdictions are opting for one of the following options, or a combination of the options applied by building use type:

- Electric Preferred: requires mixed fuel designs to exceed the code and all-electric designs to comply only.
- Electric-ready: requires mixed fuel designs to install conduit and or/wiring to enable future conversion to electric equipment,
- All-electric: restricts new construction to all-electric designs only
- Prohibition against new natural gas infrastructure (not amending building code)

Some jurisdictions are pursuing measure-based reach codes, such as requiring sustainable or cool roofs or PV systems on nonresidential projects, but most are assembling a pro-electrification package targeting the whole building.

***2019 Strategies and Successes***

In 2019, three additional reach codes over the 2016 Energy Code were passed to capture the permit pulled for those buildings in the last year of the cycle including Carlsbad, Davis and an update to a continuing cool roof ordinance in Los Angeles County. Approved local ordinances may be found on the Energy Commission website.[37] Local ordinances passed later in the year that will extend over the new 2019 Energy Code include:

- City of Carlsbad, August 14, 2019
- Marin County, December 11, 2019
- Menlo Park, December 11, 2019
- San Jose, December 11, 2019
- City of San Mateo, December 11, 2019
- Santa Monica, December 11, 2019
- West Hollywood, December 11, 2019

Throughout the year, work to support the jurisdictions pursuing reach codes included analysis and report development, technical support, reach code resource accessibility improvements, and other activities. The IOUs combined resources to complete the following cost-effectiveness studies: Residential New Construction, Non-residential New Construction, Residential Retrofits, 2019 Passive House Equivalency Analysis, and Energy Plus Water which is a complex package of measures to reduce water and energy use simultaneously.

PG&E continued partnering with the Bay Area Regional Energy Network (BayREN) to support the jurisdictions in the Bay Area through events, resources and training while avoiding overlapping efforts. Building relationships within the recently formed Building Decarbonization Coalition also assisted in providing a consistent message to jurisdictions looking for model code language and technical support. In the process of providing PG&E letters of support to jurisdictions who requested them, coordination with regional Community Choice Aggregation's (CCAs) improved outreach and provided an efficient request pipeline.

Following the adoption of the 2019 Energy Code, local interest in reach codes accelerated rapidly, fueled by the desire to decarbonize the building sector. Jurisdictions looked to a more

[37] Approved local ordinances, available at http://www.energy.ca.gov/title24/2019standards/ordinances/.

diverse community for information. To support improved outreach efforts to remain a trusted resource in this growing area, PG&E continued updating and adding content to LocalEnergyCodes.com, which contains all subprogram studies, as well as model ordinance and resolution language. Beginning from a common core helps to support consistency across jurisdictions.

The site includes an interactive map feature to display which jurisdictions have passed reach codes, and a companion matrix listing all information contained in the map to allow users to view the information in a different format, compare similar ordinances, and link directly to an ordinance posted on the jurisdiction's web site. From its launch in July 2017, the site has gained 763 registered users and has had more than 53,000 unique sessions. The 2019 Local Energy Ordinances page is the most popular with 4,525 views in 2019, followed by the About Us and Resources pages with 2,819 and 2,320 views in 2019 respectively.

The table here shows the top five studies, and the numbers of times each was downloaded in 2019:

| File Name | 2019 Downloads |
|---|---|
| 2019 Residential New Construction Cost-effectiveness Study | 1,194 |
| 2019 Nonresidential New Construction Cost-effectiveness Study | 731 |
| 2019 Reach Code Opportunities Matrix | 553 |
| 2019 Reach Code Options and Opportunities | 479 |
| 2019 Reach Codes Process and Timeline | 375 |

In addition to maintaining stakeholder engagement through the website, the team launched a monthly newsletter in September 2019 that offers insight into the rapidly evolving reach code landscape and highlights "Frontrunner" cities that are leading the way. A total of approximately 1,000 newsletters were sent over a three-month period. Out of the 1,000 sent, 45% of the emails were opened with a click-through rate of 17%, which is significantly higher than the average industry click-through rate of 2.5%[38]. The team also initiated a presence on social media and began posting relevant content.

### *Conferences and Events*

2019 SEEC Forum Webinar

Forum organizers contacted RC program staff following the Statewide Energy Efficiency Collaborative (SEEC) Forum to request the staff repeat the presentation titled *Transforming Energy Efficiency: Bridging Opportunity and Community Need* which was written in partnership with the Energy Commission, BayREN, and the Building Decarbonization Coalition, given at the Forum on a webinar (one of two offered) to allow additional participants access to the information provided. The webinar video is posted on YouTube and has been viewed 107 times.

[38] https://mailchimp.com/resources/email-marketing-benchmarks/

2019 Reach Codes Program Workshops
In response, PG&E was part of a collaborative effort that planned and hosted four regional Reach Codes Best Practices workshops throughout California. The workshops were held in San Francisco (partnered with BayREN), San Diego, Ontario, and Irvine and had a total of 200+ attendees from 66 organizations, including 40 city or county staff members. Presentations from the workshops were downloaded 873 times by the close of the year.

2019 Reach Codes Program Technical Webinar
PG&E, in collaboration with the other IOUs, held a webinar to discuss the early draft results of the Residential New Construction and Non-residential New Construction cost-effectiveness studies. The webinar was attended by 75 city and county staff members.

## Planning and Coordination Subprogram

The planning element of this subprogram includes long-term planning and scenario analyses, modeling of impacts from potential C&S program activities relative to California policy goals and incentive programs, development of business and implementation plans, responses to CPUC and other data requests, updating the incremental measure costs for C&S measures, and maintenance of a C&S savings database consistent with evaluation protocols.

The coordination element includes internal and external harmonization with other groups. Internal activities have traditionally included collaboration with several departments: a) incentive, training, and DR programs; b) policy, regulatory, and corporate affairs; and c) emerging technology and product teams. More recently, as building codes have begun to incorporate DG and batteries, coordination has expanded to strategy integration, DG programs, and others involved in grid management.

Since codes and standards impact the entire state and almost all building types, occupancy categories, and related technologies, external harmonization activities encompass: 1) California Public Utilities Commission, California Energy Commission, Air Resources Board, 2) other IOUs, municipal utilities, and utilities in other states, 3) national advocates such as the Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), Northwest Energy Efficiency Alliance (NEEA), Sierra Club, American Council for and Energy-Efficient Economy (ACEEE), Earthjustice, National Consumer Law Center, Consumer Federation of America, 4) representatives of various manufacturing companies and industry groups such as the Association of Home Appliance Manufacturers (AHAM), Consumer Technology Association (CTA), NEMA, Air-Conditioning, Heating and Refrigeration Institute (AHRI), American Gas Association (AGA), and 5) water utilities and local governments, and 6) other parts of the compliance improvement supply chain: building inspectors, Title 24 consultants, Contractor State Licensing Board (CSLB), and others.

### *2019 Strategies and Successes*

With the current absence of a formal Zero Net Energy subprogram, the C&S Planning and Coordination subprogram has taken a lead role for coordinating the various EE and non-EE aspects necessary to effectively support customers and the building industry to meet the state's ZNE goals. The ZNE effort is not only limited to the Energy Code, but also supports the California Department of General Services' ZNE goals, schools (Prop 39), and the design and construction industry's efforts to meet the various ZNE goals.

## Code Readiness Subprogram

The primary purpose of the Code Readiness (CR) subprogram is to accelerate achievement of state policy goals related to energy efficiency, decarbonization, and grid harmonization through C&S and long-term tactical planning, data acquisition, and industry outreach. Technologies and disruptive systems are tested and demonstrated with the aim of collecting high-quality information and data needed to support improvement to C&S; specifically, test procedure representativeness, as well as measure cost-effectiveness, feasibility, and compliance efficacy.

### *2019 Strategies and Successes*

PG&E expanded and made progress on tactical planning activities in 2019. Two key elements of tactical planning involve development of a research measure package (defined package of measures and minimum performance specifications for each) and building simulations to establish current Title 24, Part 6 baselines and future code cycle goals for the measure packages that achieve ZNE goals by 2030. Modeling and simulation for a typical multifamily prototype was completed in 2019.

Interim regulatory objectives for the next three Title 24, Part 6 code cycles (2022, 2025, and 2028) were updated for initial priority measures such as dedicated outdoor air systems (DOAS) and variable refrigerant flow (VRF) systems and networked lighting controls, based on research plans and early research results. Various CR subprogram approaches, tools, and processes were refined or standardized. A central long-term data storage solution continued to capture and quality-assure project monitoring data from the six projects producing monitoring results in 2019.

Field research activities also expanded in 2019. PG&E completed monitoring of its first office retrofit project that began in 2016. This project demonstrated the effectiveness of the advanced energy systems and provided significant insights on the performance of measures, including Power over Ethernet (PoE) LED lighting, DOAS, and VRF units. Calibrated building energy models showed savings of 56 percent relative to the Title 24, Part 6 2016 code baseline for this project, while occupant surveys documented high levels of satisfaction with the new building systems. Furthermore, data from this project site, together with laboratory testing described below, was critical to convincing DOE that AHRI certified IEER ratings for some VRF systems overstated performance by as much as 100%. This led to a collaborative effort through DOE's ASRAC process to revise the AHRI Standard 1230 for VRF systems. In reference to this negotiation, several standards advocates noted that they had never had as much impact in a federal rulemaking before, and field and laboratory data was the difference. Recruitment for additional commercial new construction and retrofit sites continued in 2019 with projects in the pipeline by year end. Two commercial retrofit projects identified in 2018 were constructed in 2019 with monitoring to start in early 2020.

In 2019, recruitment efforts continued for the second wave of project sites for the field monitoring assessment of existing DOAS and VRF installations. Five nonresidential buildings were monitored during 2019 to measure system performance. Final monitoring results will start arriving in early 2020, with additional monitoring sites to be added in 2020. PG&E also continued roof-top unit (RTU) economizer research and field study intended to improve code baseline assumptions. Due to challenges with recruiting an unbiased sample, progress continued more slowly than anticipated, pushing the expected completion date of the research project into 2020.

PG&E's CR team is worked with PG&E's Applied Technology Services (ATS) laboratory and other accredited laboratories to test prioritized appliance equipment categories. Seven categories were identified in 2017 (residential water heaters, commercial air conditioners (AC), residential dryers, residential HVAC, commercial boilers, DOAS, and air-to-water heat pumps). Testing plans for the first group of products were launched in 2018 with results expected to inform the future advocacy efforts with respect to test procedures and standard updates, including for the DOE, ASHRAE, and AHRI test procedures.

In 2019, testing was completed for residential clothes dryers, residential mini-splits, VRFs, and residential furnaces. Testing of commercial RTUs began in early 2020, with testing of commercial boilers, residential ACs and DOAS equipment expected to begin in Q2 2020. As described above, VRF test results from ATS, alongside field monitoring data from the office retrofit project, and in tandem with testing at an accredited laboratory, provided evidence that allowed PG&E and other stakeholders to support development of a representative test procedure through the DOE ASRAC process.

In 2019, the CR subprogram continued with a multifamily new construction research project where the application of heat pump water heaters (HPWH) in a central water heating configuration will assess the performance of certain grid-interactive HPWH control strategies. The CR subprogram continued research and modeling work to develop a prioritized measure package and coordinated with the California Multifamily New Homes (CMFNH) program to develop a Code Readiness overlay program element that would recruit a select subset of CMFNH program projects to also participate in additional CR subprogram measures and data collection.

# Workforce Education & Training

PG&E's Workforce Education and Training (WE&T) Program provides people who design, build, operate, and maintain buildings and building systems the relevant skills needed to eliminate unnecessary energy use. WE&T teaches the energy workforce the best practices to save energy in support of PG&E's and the California's energy efficiency and carbon-reduction goals.

PG&E continued to demonstrate leadership in the local, state, and national EE workforce arenas in 2019. While administering the WE&T subprograms—Integrated Energy Education & Training (IEET) and Connections—PG&E collaborated with and provided technical advice to local workforce development organizations, educational institutions, and building trades training programs. PG&E also presented at local and national workforce development and technical conferences and served as technical advisors to PG&E resource programs and to external industry groups.

## Key Initiatives

***On-Demand Training***

In 2019, PG&E continued to expand online training capabilities by maintaining and introducing relevant on-demand offerings, with a focus on refining content and evaluating the relative demand for existing on-demand classes. PG&E started the year with 41 on-demand classes and ended the year with 33; PG&E sunset 12 classes due to low demand, replaced two Title 24 classes with fully updated classes reflecting 2019 Standards, and added four new classes covering topics from heat pumps to zero net energy. While the overall number of on-demand offerings reduced, interest grew by approximately 15% year-over-year as indicated by overall enrollment: approximately 1,300 in 2018 and 1,500 in 2019.

PG&E continued to support the Energy Savings Assistance (ESA) Program by offering a blended learning experience comprised of on-demand and in-person training for the Energy Specialist role. Modifications made in 2019 to deliver part of the training as on-demand reduced the length of in-person training for 174 contractors by one full day, thus optimizing the time and travel costs associated with ESA contractor training.

***Expanding Program Reach through Collaborations***

For several decades, PG&E has collaborated with professional, trade, and workforce development organizations that share common goals, including safety, energy efficiency, and a highly skilled energy workforce. In 2019, PG&E collaborated with various organizations to reach additional and new members of the energy workforce. Six of those collaborations resulted in formal Statements of Collaborations in support of PG&E's WE&T Business Plan metrics. Those formal collaborations included

1) providing San Francisco's Stationary Engineers, Local 39 with energy efficiency training modules to incorporate into their training program;
2) reviewing, expanding, and updating the energy efficiency content of the Illuminating Engineering Society's (IES) Intermediate Quality Energy Efficient Lighting Course;
3) upskilling un- and under-employed workers to complete an 8-day Building Operator Certification course and providing career support services;

4) supporting faculty and staff at five higher educational institutions with training resources for energy efficiency training and energy projects support;
5) supporting students at five higher educational institutions with energy efficiency training, internships, fellowships, and sustainability outreach campaigns; and
6) piloting a program with Oakland Unified School District to teach foodservice workers advanced equipment and food preparation techniques featuring high-performance, energy efficient equipment.

In 2020, PG&E expects to continue some of these collaborations and develop new working relationships with other organizations across our territory.

## Strategies and Successes

2019 was a year of delivering educational programs, technical advice, community outreach, and energy measurement tools to a diverse set of building professionals who have the potential to design, build, and operate in ways that will save energy in the short and long term.

Access to online training and an increased emphasis on multiple marketing channels including email promotions, print mailing, quarterly newsletters, partner organizations and social media, contributed to approximately 8 percent increase in total participation from 2018. Streamlining operations resulted in reduced contract and labor costs in 2019, and these savings increased PG&E's cost efficiency while meeting audience needs and achieving the outcomes outlined in the Business Plan.

In 2019, the Tool Lending Library (TLL) made substantial updates to the myTurn tool management platform to streamline tool management and calibration to better serve borrowers with important tool information and consistently well-maintained equipment. The TLL also incorporated the Stockton Energy Training Center's tool inventory into the myTurn tool management platform. The TLL conducted a complete review of the tool inventories at both training centers to retire old and obsolete equipment, making room for new equipment to support emerging energy efficiency technologies.

## Opportunities Moving Forward

The four IOU WE&T teams collaborated to share information and resources as a way of improving cost efficiency. Building on the 2018 sharing of jointly developed on-demand training, the IOUs piloted shared simulcasts in 2019. Shared simulcasts included a Programmable Logic Controls series and an Agriculture and Industrial Refrigeration Systems Efficiency class. Given the interest in online sessions, the IOUs will continue to explore opportunities to share virtual content. In addition to collaborating between IOUs, the IOU WE&T programs also collaborated with 3C-REN, Marin Clean Energy and BayREN under Joint Cooperation Memos (JCMs). The intent of the JCMs is to share existing training resources, to increase attendance, and to avoid duplicative efforts in developing new training.

In support of WE&T Business Plan goals and strategies, PG&E prepared to launch two third-party WE&T solicitations—Career Connections and Career & Workforce Readiness. Career Connections will support K-12 teachers and organizations training future generations of the energy workforce. Career & Workforce Readiness (CWR) will support and train disadvantaged workers to enter the energy workforce. In July 2019, PG&E presented draft program outcomes

and RFA plans to the Program Review Group (PRG). The RFAs will be issued in April 2020, and both WE&T Third-Party Programs are expected to launch in Q1 2021.

PG&E recognizes that there are opportunities to increase the participation of disadvantaged workers in available trainings. PG&E will increase the focus on collaboration with organizations that reach disadvantaged workers and will develop targeted marketing efforts to reach these students.

## WE&T Subprograms

In 2019, PG&E implemented two WE&T subprograms—Integrated Energy Education & Training (IEET) and Connections. IEET's audience is the incumbent workforce and people who are about to enter the workforce. The Connections audience consists of K-12 students and their teachers.

### WE&T Integrated Energy Education & Training (IEET)

The Integrated Energy Education & Training (IEET) subprogram includes PG&E Energy Centers—the Pacific Energy Center (PEC) in San Francisco, the Energy Training Center (ETC) in Stockton —as well as the support of the Food Service Technology Center (FSTC) in San Ramon operated by Frontier Energy. IEET targets the incumbent EE workforce in several market segments, including agriculture, foodservice, commercial, industrial, and residential. IEET also provides in-person and web-based education and training programs, technical advice, outreach events, and energy measurement tool loans.

**2019 WE&T Accomplishments Summary Table**

| Metric / Deliverable | Quantity |
|---|---|
| Formal Collaborations with other organizations* | 6 |
| Total Class Attendance* | 13,462 |
| Class participants as a percent of eligible target population* | 3.1% |
| Percent of participants meeting the definition of Disadvantaged Worker* | 47.3% |
| Number of Classes | 582 |
| Tool Lending Library Transactions | 710 |
| Tool Lending Library Tools Loaned | 8355 |
| Tool Lending Library Projects Supported | 502 |

***Formal WE&T Business Plan Metric**

***2019 Strategies and Successes***

In 2019, PG&E focused on delivering high-quality and industry-relevant classes, outreach events and tool loans that prepare California's building industry to meet the state's energy and climate goals. PG&E undertook continuous improvement initiatives to improve student records

processes and to decrease the average cost per student. These initiatives included streamlining marketing efforts and simulcasting additional classes to reach more students. PG&E continued to leverage existing industry events to reach a broader audience and delivered training to over 400 participants at the New Building Institute's Getting to Zero Forum.

PG&E increased focus on redesigning and proactively canceling classes with high per student costs and/or low turnout. To improve access for target audiences, training associated with the Tool Lending Library (TLL) continued to expand. To broaden access and increase participation , PG&E expanded its WE&T marketing plan to include quarterly newsletters, partner organization promotion, creation and distribution of Spring and Fall class calendars, enhanced weekly email promotions, and promoting WE&T offerings via LinkedIn.

PG&E continued to offer training solutions to employees and contractors ahead of third-party solicitations. This support, referred to as "Training as a Service," involved meeting with internal business partners, creating learning solution proposals, and delivering corresponding training or training-related support. PG&E led five projects in 2019, supporting key functions of the Portfolio, such as Cost Effectiveness, On-Bill Financing, the Custom Incentive Program, the Small/Medium Business Direct Install Programs, and the ShareMyData platform. Training as a Service benefits the EE Portfolio by incorporating adult learning principles, achieving consistent branding and graphics, and complying with the Americans with Disabilities Act (ADA) design requirements.

In support of PG&E's wildfire rebuild effort, PG&E collaborated with the Northern Rural Training and Employment Consortium to bring simulcast EE and renewables classes to Butte County and support energy efficient rebuilding.

### WE&T Connections

Connections develops, inspires, and trains future generations of the energy workforce. Connections provides teaching and career information resources to kindergarten through postsecondary teachers and students to educate and inspire students on topics such as energy, EE and sustainability education, green career awareness and experiences. Connections also informs students about career and education pathways in the energy sector and provides students with career exploration opportunities. In 2020, PG&E will be preparing for Connections to sunset as the work for the K-12 sector will be replaced by the Career Connections third-party solicitation. Connections activities serving the post-secondary sector will continue as part of the Integrated Energy Education & Training (IEET) WE&T subprogram.

#### *2019 Strategies and Successes*

In 2019, local PG&E K-12 programs were replaced by co-funded K-12 programs. The co-funding of the programs increased collaborations, expanded program reach and resources, and increased student access to career pathway exploration.

PEAK Student Energy Actions (PEAK) teaches K-8 students how to manage energy use at their homes and schools and inspires students to pursue green careers. The K-8th grade PEAK Student Energy Actions program highlights include the expansion of the Field Educator train-the-trainer program. Rising Sun's Field Educators received PEAK training and digital training materials which allowed them to provide energy efficiency information to customers during in-home audits to educate students and families. Rising Sun's Field Educator program benefitted customers in Alameda, San Francisco, and Oakland. PEAK collaborated with Merced County Office of Education (MCOE) to provide professional development training to their After-School

Student Education Teamwork for Success (ASSETS) program. ASSETS educators now co-facilitate PEAK training at each of their 42 sites.

Energize Schools provides teacher training and prepares 9th – 12th grade students for energy careers and higher education programs through project-based sustainability curriculum and student-led action projects. Energize Schools teamed with Sonoma Technology, Inc.'s Kids Making Sense program to provide students in Pittsburg, Antioch, and Oakland Unified School Districts energy efficiency curricula. Energize Schools also partnered with Sun Power Horizons program to expand training venues, reach, and connecting students to additional green career resources. Teachers participated from Alameda, Contra Costa, Los Angeles, Napa, San Bernardino, Santa Clara, Tulare, and Yolo counties.

| Connections Subprogram | Grades Served | Total # of Students | Total # of Schools | % Title 1 of > 40% FRPM[39] |
|---|---|---|---|---|
| PEAK | K-8 | 12,315 | 71 | 75% |
| Energize Schools | 9-12 | 12,582 | 51 | 63% |
| Total | | 24,897 | 122 | 69% |

## WE&T Summary

PG&E is looking forward to launching new programs in 2021 as a result of the third-party solicitations and will continue to focus on continuous improvements to provide the right training to the right audience through the WE&T program.

[39] Connections targets Title 1 schools, or, schools where more than 40% of its students are on the Free & Reduced Meal Pricing (FRPM) plan. The definition for FRPM includes ".those who are directly certified for meals at no cost, on the basis of their participation in CalFresh, CalWORKs, the Food Distribution Program on Indian Reservations, and Medi-Cal free, and the extension of these benefits go to students within the same household. Also included are students certified as homeless, migrant, foster, runaway, or participating in the Head Start program."

# Financing Program

PG&E's EE Financing program is designed to help customers finance the up-front cost of EE projects. The statewide financing program is offered in conjunction with other PG&E EE programs to stimulate and enable higher levels of customer participation.

### PG&E's OBF Program Continues Growth

In 2019, PG&E maintained the success of the OBF program while making significant investments to improve processing time and scalability for the future.

OBF delivered $59m loans across the agricultural, commercial, institutional, industrial and multifamily sectors in 2019, 60% over the $37m loans extended in 2018.

## Key Initiatives

***On-Bill Financing Program Expansion***
2019 saw significant expansion of the OBF program, with the Commission issuing Decision . 19-03-001 in March 2019, granting PG&E the ability to offer all qualifying non-residential customers loans of $250,000 per premises with exceptions, and up to $4 million for unique energy savings opportunities.[40] This change enabled expanded projects across many of PG&E's diverse customer sectors with the potential for greater energy savings.

***Financing Pilots***
Throughout 2019, PG&E and the statewide Financing team worked closely with Commission Staff, the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA), and the Center for Sustainable Energy on the development of the Statewide Finance Pilots. 2019 saw the continued growth of the Residential Energy Efficiency Loan assistance program and the launch of the Small Business Finance Program.

## Strategies and Successes

PG&E's EE Financing subprograms facilitate portfolio energy savings by allowing customers to pursue large, comprehensive efficiency retrofit projects that might not have been financially feasible otherwise. In 2019, the OBF Program maintained its strong growth in financed projects, totaling 668 loans issued for a total of $59 million. PG&E has also continued collaborative efforts with the statewide IOUs and CAEATFA, to develop financing pilots that will offer more flexible terms to a broader array of customers.

PG&E's EE financing subprograms allow customers to pay for their EE projects as they save money on their energy bill. Doing so allows them to undertake more comprehensive projects and, in some cases, projects that would not have been feasible without financing.

[40] D.19-03-001

# Financing Subprograms

## On-Bill Financing

OBF is a key enabler of energy savings across customer classes, providing zero percent financing for qualifying EE retrofits, with loan payments appearing as fixed monthly charges on the customer's PG&E bill. OBF helps customers, who would otherwise have difficulty qualifying for commercial credit, get over the first-cost hurdle to EE investment, unlocking broader and deeper cost savings while supporting PG&E's energy savings targets.

***2019 Strategies and Successes***

In 2019, the OBF Program issued more than $59 million in new loans to 668 customers. Overall, OBF saw a 60 percent increase in total funds issued as compared to 2018.

Following the approval of PG&E's request to modify the OBF offering, the Commission requires PG&E to provide additional reporting on the OBF program as part of the Energy Efficiency Annual Reports.[41] PG&E is required to report on "default rates, energy savings, status of efforts to replace incentives with loans, and the degree of free ridership, if any, associated with energy efficiency projects financed through the OBF program."[42]

In 2019, the OBF program saw a default rate of 0.003%, with loans resulting in an estimated total of 32 GWh in energy savings. PG&E also saw significant growth in the use of OBF without incentives in 2019, with 60% of OBF funds issued without incentives, compared to 6% in 2018. PG&E anticipates that, in 2020, the overwhelming majority of OBF loans will be issued without incentives. In order to continue encouraging customers to pursue financing in lieu of incentives, PG&E has worked to make the OBF application and program participation process as user friendly as possible. Energy Division, in collaboration with the PG&E Financing team, is in the process of evaluating free ridership in the OBF program, with study results expected in Q2 2020.[43]

## Financing Pilot Subprograms

The IOUs have supported CAEATFA in the development of a set of statewide Financing pilot subprograms designed to encourage private lenders to offer financing products specifically for EE projects by offering both credit enhancements in the form of loan loss reserves, and the option of loan collection by the utility on behalf of the lender (On-Bill Repayment or OBR). The pilots include ratepayer-supported credit enhancements (CE) for residential properties and small businesses. The CEs are expected to provide additional security to third-party lenders and private capital, intended to extend or improve credit terms for EE projects.

In 2019, the State Treasurer's Office created the Master Metered Multi-family program, and the Small Business Finance program issued its first loans to small business customers.

41 D.19-03-001, OP 4

42 Ibid.

43 Until the free ridership evaluation has been completed, the OBF program will continue to assume a net-to-gross (NTG) of 0.95, consistent with Commission guidance regarding Normalized Metered Energy Consumption (NMEC) programs.

### Third-Party Financing

In 2019, PG&E collaborated with the Golden State Finance Authority loan loss reserve to make financing available specifically for EE projects. The loans are available across the PG&E territory and can provide up to $50,000 of funding to customers at affordable rates. The subprogram is important as it provides an option for customers looking to perform whole house retrofits under the Advanced Home Upgrade Program.

Due to low customer participation and the ramp down and closure of the Advanced Home Upgrade Program in December 2019, the Third-Party Financing subprogram, Empower Central Coast, ramped down and closed in January 2019.

# Integrated Demand-Side Management

The Strategic Plan was originally established in 2009 and recognizes the integration of DSM options, including EE, DR, and DG, as fundamental to achieving California's strategic energy goals.[44] To support that initiative, the IOUs identified IDSM as an important strategic DSM policy priority and engaged in a series of activities, pilots and other subprograms in response to the Strategic Plan DSM Coordination and Integration Strategy.

**Achieving IDSM Objectives**

PG&E continues to work towards taking a holistic approach to customers' needs when offering potential solutions to customers. Collaboration is a focus amongst many different internal departments including EE, DR, rates, customer support, emerging technology, electric vehicles, net metering, energy assistance and others to develop the offer the right solutions, to the right customer, at the right time. PG&E continues to emphasize the importance of this approach as IDSM becomes embedded through the EE portfolio.

As the focus of IDSM evolved, as directed by the CPUC[45], the program prioritized assisting customers in preparation for transitioning to time-varying electric rates. In 2018, the IOUs leveraged the statewide IDSM initiatives to create integrated and cost-effective approaches to scale energy savings. In PG&E's 2019 Annual Budget Advice Letter (ABAL)[46], PG&E signaled that, to further align with CPUC goals for program integration, the statewide IDSM program would be sunsetting in 2019 and IDSM activities would be transitioned to the appropriate residential (Middle Income Direct Install and Pay for Performance) and commercial (Commercial Calculated Incentives) resource programs. The goal is to enable increased adoption of IDSM solutions by embedding integrated activities into existing resource programs.

While previously oriented towards the Strategic Plan goals and directives, 2019 was a transition year for IDSM activities. 2019 saw the conclusion of work and reporting driven by the 2009 Strategic Plan goals, and a shift towards pursuing PG&E's Business Plan goals and objectives as approved by the Commission in 2018.[47]

In 2019, the statewide IDSM program focused on the following initiatives:

1) Development of a proposed method to measure cost-effectiveness for integrated projects and programs including quantification and attribution methods that includes GHG and water reductions benefits and the potential long-term economic and electric/gas hedging benefits.
2) Development of proposed measurement and evaluation protocols for IDSM subprograms and projects.

44 D. 09-09-047
45 D. 18-05-041
46 PG&E Advice 4011-G/5375-E, filed September 4, 2018.
47 D. 18-05-041

3) Review of IDSM-enabling emerging technologies for potential inclusion in integrated programs.
4) Development of cross-utility standardized integrated audit tools using PG&E's developed audits as a starting point.
5) Tracking of integration pilot programs to estimate energy savings and lessons learned and develop standard integration best practices that can be applied to all IOU programs based on pilot program evaluations and the results of additional integration promoting activities (e.g, EM&V and cost-benefit results).
6) Development of regular reports on progress and recommendations to the CPUC.
7) Organizing and overseeing internal utility IDSM strategies by establishing internal Integration Teams with staff from EE, DR, DG, marketing, and delivery channels.
8) Providing feedback and recommendations for the utilities' integrated marketing campaigns, including how the working group will ensure that DR marketing programs approved as Category 9 programs are coordinated with EE integrated marketing efforts.

## Strategies and Successes

### Statewide IDSM[48]

The IOUs have developed well established processes ensuring delivery of integrated messaging via marketing, education, and outreach to residential and business customers. In 2019, the statewide IDSM Task Force completed the following activities related to the eight directives provided in D. 09-09-047:

- Directives 1 & 2 - The Task Force explored a phased approach to developing an appropriate methodology to calculate integrated cost-effectiveness and an integrated EM&V approach for IDSM programs and projects. Further efforts on integrating cost effectiveness are being addressed in the Integrated Distributed Energy Resources (IDER) proceeding. An integrated EM&V Whitepaper is expected to show how the IOUs and the CPUC's Energy Division (ED) document and attributed energy savings and demand reduction to IDSM project implementation, using methodologies established from evaluation. Further efforts on integrating EM&V methodologies are being addressed in the Integrated Distributed Energy Resources (IDER) proceeding.

- Directives 3 & 5 - Both the IOUs and the Task Force tracked emerging technologies that have some combination of EE, DR and/or renewable self-generation capabilities. The Task Force regularly reviewed and tracked results of various programs, IDSM Pilots and other activities. The Task Force identified and promoted integration opportunities and tracked projects where there are integrated efforts underway to identify and develop best practices.

- Directive 4 - The IOUs created online integrated audit tools for residential and small to medium size business customers with customized audit recommendations based on customer profiles, operating characteristics, market sector potential and cost-effectiveness. The IOUs also enhanced existing integrated tools to include solar-related

[48] The Statewide program information provided in this report is an overview. For more in-depth details refer to the IDSM Excel Tracking File located at http//eestats.cpuc.ca.gov.

functionality. The IOUs continue to offer on-site integrated audits to small, medium, and large customers.

- Directive 6 - The Task Force reviewed integration activities and tracked results through statewide meetings and formal reports to the CPUC. The reports can be found at http//eestats.cpuc.ca.gov. The SW IDSM Task Force will dis-continue submitting quarterly reports in 2020 and will proceed with providing updates in the annual report.

- Directive 7 - The IOU internal integration teams met monthly or on an as-needed basis with IOU staff from EE, DR, DG/CSI, ESA Program, Marketing and Delivery channels, such as utility account representatives, and Third Party/Government Partnerships. In compliance with Directive 7, the IOUs developed internal utility Integration Teams.

- Directive 8 - Delivery of IDSM marketing continued to be more than just promotion of multiple programs within specific tactics like collateral or websites. It is a key component in the planning phases of integrated Marketing, Education & Outreach (ME&O) to help provide the right solutions to the right customer, at the right time. The Task Force tracked, reported and shared best practices related to local integrated marketing campaigns for residential and business customers.

**PG&E's IDSM Efforts**

PG&E's 2019 IDSM efforts focused on sunsetting Strategic Plan-oriented activities and launching embedded IDSM opportunities that support PG&E Business Plan goals, with a focus on the following program offerings within PG&E's EE portfolio:

- Pay for Performance Pilot Program – This third-party residential sector program provided targeted interventions to high energy use customers in 2019. These targeted interventions provided participants data access and technical assistance to facilitate customer understanding of energy efficiency. Performance-based implementer contracts ensured that program savings aligned with the peak pricing periods of time-varying residential rates and promoted cost-effective savings.

- Commercial Calculated Incentives – This program launched a new enrollment strategy in 2019 which offered increased customer incentives for projects dual enrolled in the PG&E Automated Demand Response program. 2019 approved projects are expected to complete work by mid-2020.

- Moderate Income Direct Install (MIDI) Program – Continuing program efforts started in 2018, this third-party residential sector program offered smart communicating thermostats to targeted moderate income and hard to reach customers. In addition to fulfilling the requirements under AB 793 by promoting energy management technologies, the smart communicating thermostats allowed customers to automatically respond to new time varying rate structures. This program was sunset in 2019, and this customer sub-segment will be served by the Pay for Performance Pilot program in 2020.

## Opportunities Moving Forward

PG&E invited bidders to propose IDSM solutions in the Third-Party Energy Efficiency Programs Solicitations that were ongoing in 2019. The solicitations allowed bidders to propose EE and DR integrated solutions for both the residential and non-residential sectors.[49] Final negotiations and program selections are ongoing with new third-party designed IDSM program expected to launch in 2020. Updated information on this process is shared with the EE Solicitations PRG[50] on a regular basis.

49 https://www.pge.com/pge_global/common/pdfs/for-our-business-partners/energy-efficiency-solicitations/RFA_General_Instructions.pdf
50 https://www.caeecc.org/third-party-solicitation-process

# Tables and Appendices

## Section 1
Energy Savings

### Table 1

*Electricity and Natural Gas Savings and Demand Reduction (Net)*

| Annual Results | 2019 Installed Savings | CPUC 2019 Adopted Goals (D.15-10-028) | % of Goals (2019) |
|---|---|---|---|
| ***2019 Energy Savings (GWh) – Annual*** | *1,253* | *1,079* | *116%* |
| ***2019 Energy Savings (GWh) – Lifecycle*** | *14,680* | | |
| ***2019 Natural Gas Savings (MMth) – Annual*** | *27.64* | *33.00* | *84%* |
| ***2019 Natural Gas Savings (MMth) – Lifecycle*** | *274* | | |
| ***2019 Peak Demand savings (MW)*** | *253* | *222* | *114%* |

(1) All energy savings numbers are on a net basis, with 5% market spillover.
Energy savings are based on the actual accomplishments recorded in 2019.

(2) Installed savings for PG&E includes Codes and Standards (C&S), Energy Savings Assistance (ESA) Program; Bay Area Regional Energy Network (Bay REN) and Marin Clean Energy (MCE) as reported in their 2019 Annual Report, filed on April 16, 2020 and Marin Clean Energy (MCE) as reported in their 2019 Annual Claims filed on April 9, 2020.

## Section 2
Emission Reductions

### Table 2

*Environmental Impacts (Net)*

| Annual Results | Annual tons of CO2 avoided | Lifecycle tons of CO2 avoided | Annual tons of NOx avoided | Lifecycle tons of NOx avoided | Annual tons of PM10 avoided | Lifecycle tons of PM10 avoided |
|---|---|---|---|---|---|---|
| ***2019 Portfolio Targets*** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| PG&E | 302,584 | 3,248,931 | 189 | 2,039 | 40 | 462 |
| **2019 Total** | **302,584** | **3,248,931** | **189** | **2,039** | **40** | **462** |

(1) Excludes Energy Savings Assistance (ESA) Program, BayREN, and MCE.

(2) All Environmental Impacts are net with 5% market spillover.
(3) As of April 30, 2020, electric C02 emissions reduction values output by the Cost Effectiveness Tool (CET) and displayed in CEDARS are under investigation. Per an email from Energy Division staff to Program Administrators on February 6, 2020, these values appear to undercount C02 emissions reductions. As a result, the C02 emissions reduction values show in the table above may be revised in the future, with final, up-to-date values available for review in CEDARS. This table reports the values in CEDARS as April 30, 2020, the date the report was finalized.

# Section 3
Expenditures

## Table 3

All expenditure data can be found in the "PGE.AnnualExcel.2019.1.xlsx" spreadsheet, under Tab "T-3 Exp's". The spreadsheet can be accessed on the Energy Efficiency Statistics website at http://eestats.cpuc.ca.gov/Views/Documents.aspx. To access the 2019 spreadsheet, follow these steps:

- In the Report Category, select Annual
- Under Report Options, select 2019
- In the Report Type, select Narrative and Spreadsheets
- In Report Options, select PGE for Utility

# Section 4
Cost-Effectiveness

## Table 4

*Cost Effectiveness (Net)*

| Annual Results | Total Cost to Billpayers (TRC) (3) | Total Savings to Billpayers (TRC/PAC) | Net Benefits to Billpayers (TRC) (3) | TRC Ratio (4) | Total PAC Cost (3) | PAC Ratio (4) | PAC Cost per kW Saved ($/kW) (1) | PAC Cost per kWh Saved ($/kWh) (2) | PAC Cost per therm Saved ($/therm) (2) |
|---|---|---|---|---|---|---|---|---|---|
| **PG&E 2019** | $828,518,914 | $1,090,770,861 | $262,251,947 | 1.32 | $309,169,965 | 3.53 | | 0.02 | 0.20 |
| **PG&E TOTAL** | **$828,518,914** | **$1,090,770,861** | **$262,251,947** | **1.32** | **$309,169,965** | **3.53** | **$-** | **0.02** | **0.20** |

(1) The adopted avoided cost methodology does not provide information to provide a meaningful value for PAC Cost per kW. The adopted avoided cost methodology created kWh costs values that vary for each hour of the year that includes kW generation.

(2) PAC cost per kWh or per therm is (PAC Cost x (Electric Benefits/Total Benefits)/net kWh) or (PAC Cost x (Gas Benefits/Total Benefits)/net therm) respectively per CET based definition provided by CPUC to PG&E via e-mail on April 8, 2016.

(3) The cost-effectiveness calculations are based on the actual accomplishments recorded in 2019.

Includes:
- ESPI payment of $21.57M recorded in 2019 per Final Resolution E-5062, Table 2: Approved ESPI Awards per Component, Codes and Standards costs and benefits.
- Installed savings for Energy Savings Assistance (ESA) Program.

Excludes:
- ESA, Bay Area Regional Energy Network (BayREN), and Marin Clean Energy (MCE) Program costs and benefits.
- Statewide Emerging Technologies Program costs per D.12-11-015 (p.52).
- Financing Program OBF Loan Pool amounts (loans issued and repaid) of $31.1M for 2019 are excluded per D.09-09-047 (p.288).

(4) All savings values include 5% market spillover in cost-effectiveness calculations per D.12-11-015 (OP 37) including Codes and Standards.

## Table 5

*Ratepayer Impacts*

| 2019 | Electric Average Rate (Res and Non-Res) $/kwh | Gas Average Rate (Core and Non-Core) $/therm | Average First Year Bill Savings ($) | Average Lifecycle Bill Savings ($) |
|---|---|---|---|---|
| PG&E Average | $0.211 | $1.615 | $309,042,674 | $3,539,531,560 |
| **PG&E Average** | **$0.211** | **$1.615** | **$309,042,674** | **$3,539,531,560** |

Notes: (Consistent with SPM TRC/PAC/RIM tests, all savings used from actuals and forecasts in this table are net not gross)

(1) Average first year electric bill savings is calculated by multiplying an average electric rate (as of 10/1/19) with first year net kWh energy savings.

(2) Average first year gas bill savings is calculated by multiplying an average gas rate (as of 12/31/19) with first year net therm energy savings.

(3) Total average first year bill savings is the sum of Notes 1 and 2.

(4) Average lifecycle electric bill savings is calculated by multiplying an average electric rate with lifecycle net kWh energy savings.

(5) Average lifecycle gas bill savings is calculated by multiplying an average gas rate with lifecycle net therm energy savings.

(6) Total average lifecycle bill savings is the sum of Notes 4 and 5.

(7) Total Average Bill Savings by Year and Lifecycle Bill Savings include C&S net savings and net lifecycle savings respectively; and includes ESA Program, BayREN, and MCE savings.

## Table 6

*Annual Savings By Use Category 2019 Only* (1) (2)

| Use Category | GWH | % of Total | MW | % of Total | MMTh | % of Total |
|---|---|---|---|---|---|---|
| Appliance or Plug Load | 105.38 | 8% | 15.39 | 6.1% | -0.20 | -0.7% |
| Building Envelope | 18.44 | 1% | 3.28 | 1.3% | 0.88 | 3.2% |
| Compressed Air | 2.39 | 0% | 0.00 | 0.0% | - | 0.0% |
| Commercial Refrigeration | 29.52 | 2% | 4.16 | 1.6% | -0.10 | -0.4% |
| Codes & Standards | 26.86 | 2% | 3.43 | 1.4% | -0.00 | 0.0% |
| Food Service | 1.07 | 0% | 0.18 | 0.1% | 0.36 | 1.3% |
| HVAC | 118.15 | 9% | 41.26 | 16.3% | 4.32 | 15.6% |
| Irrigation | 10.15 | 1% | 6.11 | 2.4% | - | 0.0% |
| Lighting | 533.54 | 43% | 85.10 | 33.6% | -5.06 | -18.3% |
| Non-Savings Measure | - | 0% | - | 0.0% | - | 0.0% |
| Process Distribution | 12.74 | 1% | 0.42 | 0.2% | 0.02 | 0.1% |
| Process Drying | - | 0% | - | 0.0% | - | 0.0% |
| Process Heat | 1.83 | 0% | 0.17 | 0.1% | 1.71 | 6.2% |
| Process Refrigeration | 2.75 | 0% | 0.43 | 0.2% | - | 0.0% |
| Recreation | 13.38 | 1% | 2.77 | 1.1% | 0.06 | 0.2% |
| Service | 6.17 | 0% | 0.83 | 0.3% | 0.25 | 0.9% |
| Service and Domestic Hot Water | 19.25 | 2% | 1.01 | 0.4% | 14.87 | 53.8% |
| Whole Building | 351.52 | 28% | 88.51 | 35.0% | 10.54 | 38.1% |
| **PG&E ANNUAL PORTFOLIO SAVINGS** | **1,253.2** | **100.0%** | **253.0** | **100.0%** | **27.64** | **100.0%** |

(1) All energy savings numbers are net with 5% market spillover.

(2) Includes savings for ESA Program; BayREN savings as reported in their 2019 Annual Claims filed on April 16, 2020 and MCE savings as reported in their 2019 Annual Claims filed on April 9, 2020.

(3) ESA Program savings are included in Whole Building use category.

(4) Codes and Standards savings are assigned to a more specific use category where possible.

## Table 7

*Commitments* [4]

| Commitments Made in the Past with Expected Implementation after December 2010-2012 | | | | |
|---|---|---|---|---|
| | Committed Funds [1] | Expected Energy Savings | | |
| **2010-2012[1]** | **$** | GWH | MW | MMth |
| **Resource** | N/A | N/A | N/A | N/A |
| **Non-Resource** | N/A | N/A | N/A | N/A |
| **Codes & Standards** | N/A | N/A | N/A | N/A |
| **PG&E Total** | **N/A** | **N/A** | **N/A** | **N/A** |
| | | | | |
| **Commitments Made in the Past Year with Expected Implementation after December 2015** | | | | |
| | Committed Funds [2] | Expected Energy Savings | | |
| **2013-2015[2]** | **$** | GWH | MW | MMth |
| **Resource** | N/A | N/A | N/A | N/A |
| **Non-Resource** | N/A | N/A | N/A | N/A |
| **Codes & Standards** | N/A | N/A | N/A | N/A |
| **PG&E Total** | **N/A** | **N/A** | **N/A** | **N/A** |
| | | | | |
| **Commitments Made in the Past Year with Expected Implementation after December 2016** | | | | |
| | Committed Funds [3] | Expected Energy Savings | | |
| **2016 [3]** | **$** | GWH | MW | MMth |
| **Resource** | N/A | N/A | N/A | N/A |
| **Non-Resource** | N/A | N/A | N/A | N/A |
| **Codes & Standards** | N/A | N/A | N/A | N/A |
| **PG&E Total** | **N/A** | **N/A** | **N/A** | **N/A** |
| | | | | |
| **Commitments Made in the Past Year with Expected Implementation after December 2019** | | | | |
| | Committed Funds [3] | Expected Energy Savings | | |
| **2019 [3]** | **$** | GWH | MW | MMth |
| **Resource** | 33,862,198.5 | 87.0 | 13.0 | 5.3 |
| **Non-Resource** | N/A | N/A | N/A | N/A |
| **Codes & Standards** | N/A | N/A | N/A | N/A |
| **PG&E Total** | **33,862,199** | **87.0** | **13.0** | **5.3** |

[1] Note: Committed funds are associated with the 2010-2012 program cycle. These funds are reserved or encumbered for future work permitted per Ordering Paragraph 13 and Conclusion of Law 12 of D.12-11-015.

(2) Note: Committed funds are associated with the 2013-2015 program cycle. These funds are reserved or encumbered for future work permitted per the EESTATS CPUC Guidance Document and EE decision (D.15-10-025).

(3) Note: Committed funds are associated with the 2016, 2018 program years, respectively. These funds are reserved or encumbered for future work permitted per the EESTATS CPUC Guidance Document and EE decision (D.15-10-025).

Committed Funds for 2019 include incentives related to PG&E EE projects committed in prior year(s) but not completed by December 2019.

(4) Note: All energy savings numbers are on a net basis.

# Section 8
## Shareholder Performance Incentives

In 2019, PG&E requested shareholder earnings from EE activities performed in program years 2016, 2017, and 2018. The Commission issued Resolution E-5062 on February 27, 2020 approving a shareholder award for PG&E for these activities.

The shareholder payment for 2019 was based on the Efficiency Savings and Performance Incentive (ESPI) mechanism as approved in D.13-09-023. The ESPI mechanism is a multi-component incentive structure. The ESPI mechanism was established with the goal and objective to encourage and motivate IOUs to invest in EE programs that are quantifiable, as well as other non-quantifiable programs that help transform the market. The four components contributing to 2018 ESPI earnings are:

1. **Component 1**: A performance award for energy savings of up to 9% of the resource program budget (excluding C&S program budgets),
2. **Component 2:** A performance award for ex ante review activities of up to 3% of resource program budget (excluding C&S program budgets),
3. **Component 3:** A management fee for C&S programs of up to 12% of C&S program budgets, and
4. **Component 4:** A management fee for non-resource programs of up to 3% of non-resource program budgets.

PG&E filed an Advice Letter on September 3, 2019 requesting an award for certain EE Program Year 2016, 2017, and 2018 activities including custom projects, uncertain measures, codes and standards and a true-up of the 2016-2018 incentive payments.[51]

The earnings requested in 2019 were issued in draft form on February 27,2020 through Resolution E-5062 in response to PG&E's Advice Letter 4137-G/5628-E, per direction from D.13-09-023. The table below provides the draft payment awarded to PG&E for program years 2016, 2017, and 2018.

[51] 2016-2018 true-ups are for codes and standards and non-resource incentive payments.

**2019 Requested and Draft Approved ESPI**

| Program Year for Activities Paid | Year Incentive Requested and Approved | DRAFT Authorizing Decision | Shareholder Incentive |
|---|---|---|---|
| 2016 | 2019/2020 | Resolution E-5062 | $718,406 |
| 2017 | 2019/2020 | Resolution E-5062 | $12,060,716 |
| 2018 | 2019/2020 | Resolution E-5062 | $8,786,854 |

# Section 9
# Metrics

All metrics data can be found in the "PGE.AnnualExcel.2019.1.xlsx" spreadsheet, under Tab "T-9 Metrics". The spreadsheet can be accessed on the Energy Efficiency Statistics website at http://eestats.cpuc.ca.gov/Views/Documents.aspx. To access the 2019 spreadsheet, follow these steps:

- In the Report Category, select Annual
- Under Report Options, select 2019
- In the Report Type, select Narrative and Spreadsheets
- In Report Options, select PGE for Utility

# Section 10
# PG&E's Marketplace Metrics

On December 21, 2017, as directed in ordering paragraph (OP) 1c of Resolution E-4820, PG&E proposed to the Energy Division a format and schedule for reporting the targets for Energy Management Technology (EMT) related activities. PG&E proposed metrics for the Marketplace program that focus on the relevant sections of the platform for Assembly Bill 793 (AB 793) and EMTs. These are standard marketing industry accepted website metrics.

All Marketplace reporting data can be found in the "PGE.AnnualExcel.2019.1.xlsx" spreadsheet, under Tab "T-10 Marketplace Metrics". The spreadsheet can be accessed on the Energy Efficiency Statistics website at http://eestats.cpuc.ca.gov/Views/Documents.aspx. To access the 2019 spreadsheet, follow these steps:

- In the Report Category, select Annual
- Under Report Options, select 2019
- In the Report Type, select Narrative and Spreadsheets
- In Report Options, select PGE for Utility

# Appendix A

## PG&E Program ID Numbers

| Program ID | Program Name |
|---|---|
| PGE21001 | Residential Energy Advisor |
| PGE210010 | Pay for Performance Pilot |
| PGE210011 | Residential Energy Fitness program |
| PGE21002 | Plug Load and Appliances |
| PGE21003 | Multifamily Energy Efficiency |
| PGE21004 | Advanced Home Upgrade |
| PGE21005 | Residential New Construction |
| PGE21006 | Residential HVAC |
| PGE21007 | California New Homes Multifamily |
| PGE21008 | Enhance Time Delay Relay |
| PGE21009 | Direct Install for Manufactured and Mobile Homes |
| PGE21011 | Commercial Calculated Incentives |
| PGE210112 | School Energy Efficiency |
| PGE21012 | Commercial Deemed Incentives |
| PGE210123 | Healthcare Energy Efficiency Program |
| PGE210135 | Water Infrastructure and System Efficiency |
| PGE210143 | Hospitality Program |
| PGE21015 | Commercial HVAC |
| PGE21018 | EnergySmart Grocer |
| PGE21021 | Industrial Calculated Incentives |
| PGE210210 | Industrial Retrocommissioning Program |
| PGE210212 | Compressed Air and Vacuum Optimization Program |
| PGE210213 | Small Petrochemical Energy Efficiency |
| PGE21022 | Industrial Deemed Incentives |
| PGE21026 | Energy Efficiency Services for Oil Production |
| PGE21027 | Heavy Industry Energy Efficiency Program |
| PGE21028 | Industrial Compressed Air Program |
| PGE21030 | Industrial Strategic Energy Management |
| PGE21031 | Agricultural Calculated Incentives |
| PGE210311 | Agriculture and Food Processing Wastewater Energy |
| PGE210312 | Dairy and Winery Industry Efficiency Solutions |
| PGE21032 | Agricultural Deemed Incentives |
| PGE21034 | Agricultural Energy Advisor |
| PGE21039 | Comprehensive Food Process Audit & Resource Efficiency |
| PGE21041 | Primary Lighting |
| PGE21051 | Building Codes Advocacy |
| PGE21052 | Appliance Standards Advocacy |
| PGE21053 | Compliance Improvement |
| PGE21054 | Reach Codes |
| PGE21055 | Planning and Coordination |
| PGE21056 | Code Readiness |
| PGE21057 | National Codes and Standards Advocacy |
| PGE21061 | Technology Development Support |

| Program ID | Program Name |
|---|---|
| PGE21062 | Technology Assessments |
| PGE21063 | Technology Introduction Support |
| PGE21071 | Centergies (WE&T) |
| PGE21072 | Connections (WE&T) |
| PGE21091 | On-Bill Financing (excludes Loan Pool) |
| PGE210911 | On-Bill Financing Alternative Pathway |
| PGE21091LP | Financing Loan Pool Addition |
| PGE21092 | Third-Party Financing |
| PGE2110011 | California Community Colleges |
| PGE2110012 | University of California/California State University |
| PGE2110013 | State of California |
| PGE2110014 | Department of Corrections and Rehabilitation |
| PGE2110051 | Local Government Energy Action Resources (LGEAR) |
| PGE2110052 | Strategic Energy Resources |
| PGE211007 | Association of Monterey Bay Area Governments (AMBAG) |
| PGE211009 | East Bay |
| PGE211010 | Fresno |
| PGE211011 | Kern |
| PGE211012 | Madera |
| PGE211013 | Marin County |
| PGE211014 | Mendocino-Lake County |
| PGE211015 | Napa County |
| PGE211016 | Redwood Coast |
| PGE211018 | San Luis Obispo County |
| PGE211019 | San Mateo County |
| PGE211020 | Santa Barbara |
| PGE211021 | Sierra Nevada |
| PGE211022 | Sonoma County |
| PGE211023 | Silicon Valley |
| PGE211024 | San Francisco |
| PGE211026 | North Valley |
| PGE211027 | Sutter Buttes |
| PGE211028 | Yolo |
| PGE211029 | Solano |
| PGE211030 | Northern San Joaquin Valley |
| PGE211031 | Valley Innovative Energy Watch (VIEW) |
| PGE_WATER | Water Energy Nexus |

# Appendix B

## Regulatory Decisions, Rulings, and Advice Letters

**EE Rulemaking Phase I**

In 2014, the Commission completed Phase I of the *Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation and Related Issues* (R.13-11-005) that was issued on November 21, 2013. Phase I focused on approving EE funding and portfolios for 2015. PG&E filed its *Energy Efficiency 2015 Funding Proposal* on March 26, 2014. On October 24, 2014, the Commission issued approved D.14-10-046: *Decision Establishing Energy Efficiency Savings Goals and Approving 2015 Energy Efficiency Programs and Budgets*.

The Phase I Decision, as corrected by D.15-01-002 and D.15-01-023, approved PG&E's total 2015 EE portfolio budget of $430.1 million, including $379.3 million for PG&E's program budget, $16.8 million for EM&V, $12.8 million for BayREN's EE programs, and $1.2 million for MCE's EE programs. The Phase I Decision also approved PG&E's request for $3.3 million for 2015 DR funding for IDSM.

The Phase I Decision (pp. 30-32) determined that 2015 is the third year of a 2013-2015 portfolio cycle, allowing the IOUs and RENs to use unspent 2013-2014 funds in 2015, to count savings from 2013-2014 towards 2015 goals and cost effectiveness, and to calculate regulatory caps and targets. The Commission directed Staff to undertake EM&V activities for 2013-2014 and 2015 combined.

The Phase I Decision (OP 21 and pp. 31-32) leaves the 2015 programs and funding in place until the earlier of when the Commission provides superseding direction, or 2025.

The Phase I Decision (OP 16) required the IOUs and MCE to file Tier 2 advice letters within 60 days to reflect the budget adjustments adopted in the decision, including recalculated TRC and PAC test results exceeding a 1.0 threshold for 2015. PG&E filed this advice letter on December 15, 2014, with superseding supplemental advice letters in 2015, as detailed below. The Phase I Decision also required a number of other advice letters to be filed in 2015.

**EE Rulemaking Phase IIa**

On February 24, 2015, the Commission issued the Scoping Memorandum for Phase II of this proceeding. Based on prehearing conference statements from the parties involved, the Commission identified three broad categories of items to address in Phase II: (1) developing "Rolling Portfolio" review processes; (2) providing guidance on changes for 2016 portfolios; and (3) updating various portfolio metrics (e.g., Database for Energy Efficiency Resources (DEER) values) to keep portfolios on course through 2016 and beyond.

On October 28, 2015, the Commission issued D.15-10-028: *Decision Re Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics*. (Phase IIa Decision). In this decision, the Commission adopted energy savings goals for EE portfolios from 2016 to 2024; established a "Rolling Portfolio" process for reviewing and revising portfolios; and updated various EE program portfolio metrics, including Database of Energy Efficient Resources values.

**EE Rulemaking Phase IIb**

On August 25, 2016, the Commission issued D.16-08-019: *Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings*. (Phase IIb Decision). In this Decision, the Commission set forth policy guidance on several issued related to the filing of EE business plans, as previously contemplated in D.15-10-028. The Decision also addressed next steps for regional energy networks, the appropriate baselines to be used to measure energy savings for specific programs and measures, transition for statewide and third-party programs, and changes to the evaluation and shareholder incentive frameworks.

The Commission issued a Scoping Memo on April 14, 2017 to evaluate the reasonableness of the IOU, REN, and CCA proposals for EE business plans, filed in January 2017. The Scoping Memo identified the scope of issues to be evaluated in the proceeding and established the schedule for 2017 activities, which included requests for supplemental information, revised metrics, and comprehensive solicitation plans. The Commission issued the Proposed Decision Addressing Third-party Solicitation Process for Energy Efficiency on November 13, 2017. The Proposed Decision was subsequently finalized as D.18-01-004 in January 2018, and established solicitation oversight mechanisms, directed the IOUs to develop standard contract terms, and set the schedule for transitioning to the third-party model.

On October 2, 2017, the Commission issued D. 17-09-025: *Decision Adopting Energy Efficiency Goals for 2018-2030*. In this Decision, the Commission adopted energy savings goals for EE portfolios from 2018 to 2030.

**EE Rulemaking Phase III**

On November 2, 2016, the Commission issued the Scoping Memorandum for Phase III of this proceeding. The Commission acknowledged that this proceeding was already well underway when Senate Bill (SB) 350 (2015) and Assembly Bill (AB) 802 (2015) both became law, creating a significant impact on the Commission's oversight of EE programs and policy. The key provisions of SB 350 for EE to include a goal of doubling the amount of EE savings in California by 2030, with emphasis on market transformation and pay-for-performance approaches, among other things. AB 802's provisions primarily affect the way baselines are set for measuring energy savings towards goals. This broad set of topics were covered, to some degree, in D.16-08-019. However, two specific areas warrant additional policy development in Phase III: (1) market transformation, as discussed in SB 350 and (2) custom projects, particularly in the industrial sector, as discussed in D.16-08-019.

A number of final decisions were issued in 2019. D. 19-08-009: *Decision Modifying the Energy Efficiency Three-prong Test Related to Fuel Substitution,* issued on August 5, 2019, modified and clarified the formulation of the three-prong test. On August 23, 2019, the Commission issued D.19-08-034: *Decision Adopting Energy Efficiency Goals for 2020 – 2030*, adopting energy savings goals for ratepayer-funded energy efficiency program portfolios for 2020 to 2030. D. 19-12-021: *Decision Regarding Frameworks for Energy Efficiency Regional Energy Networks and Market Transformation*, issued on December 12, 2019, adopted frameworks for two areas of energy efficiency policy: regional energy networks (RENs) and market transformation initiatives (MTIs).

On March 20, 2019, under A. 08-07-021, the Commission issued D. 19-03-001: *Decision Granting Petition for Modification of Decision 09-09-047 Concerning On-bill Financing,* granting a PG&E petition for modification and allowing PG&E to expand its on-bill financing program.

This proceeding is still the ongoing venue for any policymaking related to EE. The ongoing policy issues identified including: updates to DEER and EE potential and goals; updates to the EE Strategic Plan; updates to the EM&V framework; the role of the California Technical Forum; updates to the ESPI mechanism; updates to the cost-effectiveness framework for EE, in coordination with the integrated distributed energy resource (IDER) rulemaking (R.14-10-003) and with the decarbonization rulemaking (R.19-11-011); coordination with statewide marketing, education, and outreach efforts; approached for evaluations using normalized metered energy consumption and/or dynamic baselines; and Industry Standard Practice determinations.

**Business Plan Application**

Application (A.)17-01-013, et.al, established the process for reviewing, submitting, approving, and implementing program administration business plans for the rolling portfolio years 2018-2025.

On January 11, 2018, the Commission issued D.18-01-004: *Decision Addressing Third-Party Solicitation Process for Energy Efficiency Programs*, which formalized the third-party solicitation process for EE programs. In this Decision, the Commission set timelines for the EE portfolio's transition to predominantly third-party program implementation, with December 31, 2018 marking the first milestone with a minimum of 25 percent third-party program administration. 40 percent of programs should be third-party administered by the end of 2020, with the ultimate vision of reaching 60 percent third-party administration in the EE portfolio by the end of 2022.

On May 31, 2018, the Commission issued D. 18-05-041: *Decision Addressing Energy Efficiency Business Plans.* In this Decision, the Commission approved the 2018-2015 Business Plans, formalized the statewide program governance structure, and established the annual Joint Cooperation Memo (JCM) filings between program administrators with overlapping territories. This Application is ongoing for any policymaking related to solicitations and Business Plan updates and implementation.

**Advice Letters**

PG&E filed the following advice letters related to EE in 2019.

1) Second Supplement: PG&E's 2019 Energy Efficiency Annual Budget Advice Letter in Compliance with Decisions 15-10-028 and 18-05-041, filed January 23, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4011-G-B.pdf
2) Supplemental Request for Energy Efficiency Program Enhancements to Assist Wildfire Impacted Customers, filed February 21, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4068-G.pdf
3) Request for Authority to Continue the Retail Products Platform Pilot within PG&E's Residential Energy Efficiency Plug-Load and Appliances Sub-Program, filed March 5, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4071-G.pdf
4) Modifications and Additions to the Pacific Gas and Electric Company On-Bill Financing Loan Program Rate Schedules and Loan Agreements Pursuant to D.19-03-001, filed April 3, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4085-G.pdf

5) Marin Clean Energy's and Pacific Gas and Electric Company's Annual Joint Memorandum of Cooperation for Program Year, filed June 17, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4107-G.pdf
6) PG&E and BayREN's 2020 Joint Cooperation Memo in Compliance with Decision 18-05-041, Ordering Paragraph 38, filed June 17, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4110-G.pdf
7) 2020 Joint Cooperation Memorandum (JCM) of 3C-REN, SoCalGas, SCE, and PG&E Pursuant to Decision (D.) 18-05-041, filed June 17, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4109-G.pdf
8) PG&E's Annual Advanced Energy Rebuild Advice Letter, filed June 28, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4115-G.pdf

9) Supplemental Request for Energy Efficiency Program Enhancements to Assist Wildfire Impacted Customers, filed July 15, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4119-G.pdf
10) Southern California Edison Company, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Gas Company's 2018 Energy Efficiency Incentive Award Earnings Rates and Award, filed July 26, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4124-G.pdf
11) Request of Pacific Gas and Electric Company for 2017 and 2018 Energy Efficiency Incentive Award, filed September 3, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4137-G.pdf
12) PG&E's 2020 Energy Efficiency Annual Budget Advice Letter in Compliance with Decisions 15-10-028 and 18-05-041, filed September 3, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4136-G.pdf
13) PG&E's Supplemental 2020 Energy Efficiency Annual Budget Advice Letter in Compliance with Decisions 15-10-028 and 18-05-041, filed November 15, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4136-G-A.pdf
14) Response to Non-Standard Disposition of PG&E Advice Letter Requesting an Extension of Advanced Energy Rebuild Program Eligibility, filed December 9, 2019. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4194-G.pdf

# Appendix C

## Third Party Contract List

| Program ID | Program Name | Primary Sector (Market Segment) | Sector (Sub-segment / Type of Customers) | Delivery Channel | Vendor | Length (Years) | Customer Size (S/M/L) | Dollar Value |
|---|---|---|---|---|---|---|---|---|
| PGE21001 | Residential Energy Advisor | Residential | Residential (Res) | Downstream | ORACLE AMERICA INC | 5.4 | S/M/L | [redacted] |
| PGE21001 | Residential Energy Advisor | Residential | Residential (Res) | Downstream | ENERVEE CORPORATION | 5.9 | S/M/L | [redacted] |
| PGE21002 | Plug Load and Appliances | Residential | Residential (Res) | Midstream/ Downstream | ICF RESOURCES LLC | 2.2 | S | [redacted] |
| PGE21002 | Plug Load and Appliances | Residential | Residential (Res) | Midstream/ Downstream | ICF RESOURCES LLC | 4.5 | S | [redacted] |
| PGE21003 | Multifamily Energy Efficiency Rebates | Residential | Residential (Res) | Downstream | TRC SOLUTIONS INC | 3.2 | S/M/L | [redacted] |
| PGE21005 | Residential New Construction | Residential | Residential (Res) | Upstream | TRC SOLUTIONS INC | 4.1 | S/M/L | [redacted] |
| PGE21007 | California New Homes Multifamily | Residential | Residential (Res) | Midstream/ Downstream | TRC SOLUTIONS INC | 3.2 | S/M | [redacted] |
| PGE21008 | Enhance Time Delay Relay | Residential | Residential (Res) | Downstream | PROCTOR ENGINEERING GRP LTD | 4.2 | S | [redacted] |
| PGE21009 | Direct Install for Manufactured and Mobile Homes | Residential | Residential (Res) | Downstream | ENERGY EFFICIENCY INC | 4.2 | S | [redacted] |
| PGE210010 | Pay for Performance Pilot | Residential | Residential (Res) | Downstream | BUILD IT GREEN | 3.7 | S | [redacted] |
| PGE210010 | Pay for Performance Pilot | Residential | Residential (Res) | Downstream | HIGH ENERGY ANALYTICS INC | 6.5 | S | [redacted] |
| PGE210011 | Residential Energy Fitness Program | Residential | Residential (Res) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S | [redacted] |
| PGE210112 | School Energy Efficiency | Commercial | Commercial (Com) | Downstream | CLEARESULT CONSULTING INC | 5.0 | S/M/L | [redacted] |
| PGE210119 | LED Accelerator | Commercial | Commercial (Com) | Downstream | COHEN VENTURES INC | 3.6 | S/L | [redacted] |
| PGE21012 | Commercial Deemed Incentives | Commercial | Commercial (Com) | Upstream/ Midstream/ Downstream | ICF RESOURCES LLC | 2.2 | S/M/L | [redacted] |

| Program ID | Program Name | Primary Sector (Market Segment) | Sector (Sub-segment / Type of Customers) | Delivery Channel | Vendor | Length (Years) | Customer Size (S/M/L) | Dollar Value |
|---|---|---|---|---|---|---|---|---|
| PGE210123 | Healthcare Energy Efficiency Program | Commercial | Commercial (Com) | Downstream | WILLDAN ENERGY SOLUTIONS | 4.2 | S/L | [redacted] |
| PGE210143 | Hospitality Program | Commercial | Commercial (Com) | Downstream | ECOLOGY ACTION OF SANTA CRUZ | 4.5 | S/M/L | [redacted] |
| PGE21015 | Commercial HVAC | Commercial | Commercial (Com) | Upstream/ Midstream | PROCTOR ENGINEERING GRP LTD | 4.2 | S/M/L | [redacted] |
| PGE21015 | Commercial HVAC | Commercial | Commercial (Com) | Upstream/ Midstream | HONEYWELL INTERNATIONAL INC | 3.5 | S/M/L | [redacted] |
| PGE21018 | EnergySmart Grocer | Commercial | Commercial (Com) | Downstream | CLEARESULT CONSULTING INC | 5.0 | S/M/L | [redacted] |
| PGE210135 | LINCUS WISE | Industrial | Industrial (Ind) | Downstream | LINCUS INC | 4.5 | L | [redacted] |
| PGE210210 | Industrial Recommissioning Program | Industrial | Industrial (Ind) | Downstream | NEXANT INC | 4.4 | L | [redacted] |
| PGE210211 | Light Industrial Energy Efficiency Prog | Industrial | Industrial (Ind) | Downstream | NEXANT INC | 4.4 | M/L | [redacted] |
| PGE210212 | Ind Compressed Air Systems Efficiency | Industrial | Industrial (Ind) | Downstream | ADVANCED AIR LEAK DETECTION | 3.8 | L | [redacted] |
| PGE21025 | California Wastewater Process Optimization | Industrial | Industrial (Ind) | Downstream | QUANTUM ENERGY SERVICES AND | 4.2 | L | [redacted] |
| PGE21026 | Energy Efficiency Services for Oil Production | Industrial | Industrial (Ind) | Downstream | CLEARESULT CONSULTING INC | 3.5 | L | [redacted] |
| PGE21027 | Heavy Industry Energy Efficiency Program | Industrial | Industrial (Ind) | Downstream | LOCKHEED MARTIN CORPORATION | 4.2 | S/M/L | [redacted] |
| PGE21030 | Industrial Strategic Energy Management | Industrial | Industrial (Ind) | Downstream | CLEARESULT CONSULTING INC | 5.0 | L | [redacted] |
| PGE210312 | Dairy & WIES | Agricultural | Agricultural (Ag) | Downstream | CLEARESULT CONSULTING INC | 5.0 | S/M/L | [redacted] |
| PGE21036 | Industrial Refrigeration Performance Plus | Agricultural | Agricultural (Ag) | Downstream | VCCT INC | 4.2 | L | [redacted] |
| PGE21039 | Comprehensive Food Process Audit & Resources | Agricultural | Agricultural (Ag) | Downstream | CLEARESULT CONSULTING INC | 5.0 | L | [redacted] |
| PGE21041 | Primary Lighting | Cross Cutting | Cross Cutting | Upstream/ Midstream/ Downstream | ICF RESOURCES LLC | 2.2 | S | [redacted] |

| Program ID | Program Name | Primary Sector (Market Segment) | Sector (Sub-segment / Type of Customers) | Delivery Channel | Vendor | Length (Years) | Customer Size (S/M/L) | Dollar Value |
|---|---|---|---|---|---|---|---|---|
| PGE2110051 | Local Govt Energy Action Resources | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M/L | [redacted] |
| PGE2110051 | Local Govt Energy Action Resources | Public | Commercial (Com) | Downstream | ECOLOGY ACTION OF SANTA CRUZ | 4.5 | S/M/L | [redacted] |
| PGE211007 | Association of Monterey Bay Area Govts | Public | Commercial (Com) | Downstream | ECOLOGY ACTION OF SANTA CRUZ | 4.5 | S/M/L | [redacted] |
| PGE211010 | Fresno | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M/L | [redacted] |
| PGE211011 | Kern | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211012 | Madera | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M | [redacted] |
| PGE211014 | Mendocino County | Public | Commercial (Com) | Downstream | ENERGY ALLIANCE ASSOCIATION | 4.5 | S/M/L | [redacted] |
| PGE211015 | Napa County | Public | Commercial (Com) | Downstream | ENERGY ALLIANCE ASSOCIATION | 4.5 | S/M/L | [redacted] |
| PGE211018 | San Luis Obispo County | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211019 | San Mateo County | Public | Commercial (Com) | Downstream | ECOLOGY ACTION OF SANTA CRUZ | 4.5 | S/M/L | [redacted] |
| PGE211020 | Santa Barbara | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211021 | Sierra Nevada | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M/L | [redacted] |
| PGE211021 | Sierra Nevada | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211022 | Sonoma County | Public | Commercial (Com) | Downstream | ENERGY ALLIANCE ASSOCIATION | 4.5 | S/M/L | [redacted] |
| PGE211023 | Silicon Valley | Public | Commercial (Com) | Downstream | ECOLOGY ACTION OF SANTA CRUZ | 4.5 | S/M/L | [redacted] |
| PGE211026 | North Valley | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M/L | [redacted] |
| PGE211027 | Sutter Buttes | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211028 | Yolo | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M | [redacted] |
| PGE211029 | Solano | Public | Commercial (Com) | Downstream | ENERGY ALLIANCE ASSOCIATION | 4.5 | S/M/L | [redacted] |

| Program ID | Program Name | Primary Sector (Market Segment) | Sector (Sub-segment / Type of Customers) | Delivery Channel | Vendor | Length (Years) | Customer Size (S/M/L) | Dollar Value |
|---|---|---|---|---|---|---|---|---|
| PGE211030 | Northern San Joaquin Valley | Public | Commercial (Com) | Downstream | RICHARD HEATH & ASSOCIATES INC | 4.7 | S/M/L | [redacted] |
| PGE211030 | Northern San Joaquin Valley | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE211031 | Valley Innovative Energy Watch (VIEW) | Public | Commercial (Com) | Downstream | STAPLES & ASSOCIATES | 4.5 | S/M/L | [redacted] |
| PGE21001 | Residential Energy Advisor | Residential | Residential (Res) | Downstream | ORACLE AMERICA INC | 5.4 | S/M/L | [redacted] |
| | | | | | | | **GRAND TOTAL:** | **$494,674,407** |

(1) This table only covers programs, not services (consistent with Table T-3 which only lists Third-party programs).
(2) A non-redacted and redacted version have been produced. The redacted information is the individual values of the contracts. The Total Portfolio contract value is public.
(3) Primary sector and sector classifications are from CEDARS.
(4) Delivery channels are consistent with the Joint AL for ESPI Coefficients and CEDARS.
(5) Length of contract is the timeframe between contract effective date through the contract termination date.
(6) Contract duration includes 2019 and beyond. Contracts concluded prior to 2019 are excluded. Contracts with "end dates" in 2019 and beyond are included.
(7) Vendors and subprograms in this list should qualify under the old 20% third party definition, which includes both 3P implementers and any CORE/GP competitively-bid implementer contracts.
(8) Customer Sizes are based on KWh and Therms usage and are defined as follows: Large (L): ≥ 500,000 KWh or ≥ 250,000 Therms; Medium (M): 40,000 – 500,000 KWh or 10,000 – 250,000 Therms; Small (S): < 40,000 KWh or < 10,000 Therms. This definition is used in PG&E's 2018-2025 Business Plan, approved by the CPUC in D.18-05-041.