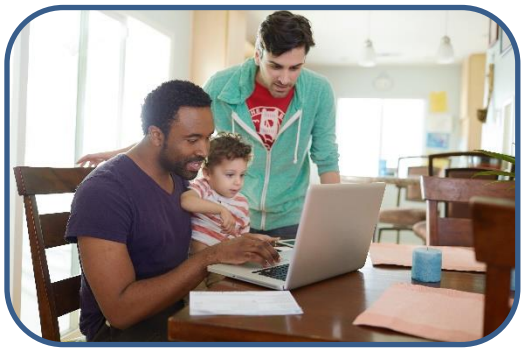
Pacific Gas and Electric Company®

2022 ENERGY EFFICIENCY ANNUAL REPORT



JUNE 1, 2023

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Executive Summary

Pacific Gas and Electric Company (PG&E) has worked for more than four decades to help customers reduce their energy use and carbon footprint. Today, PG&E's energy efficiency (EE) programs serve customers across the residential, commercial, agricultural, industrial, and public sectors. In 2022, PG&E continued its role as a leader in EE, delivering a dynamic portfolio of programs structured to meet customers' evolving needs.

PG&E's energy efficiency priorities include:

- Supporting customers, California's climate goals, and the electric grid and gas system through a diverse portfolio across all customer sectors.
- Meeting customers where they are by personalizing customer journeys, enhancing digital strategies, and removing barriers to participation.
- Pursuing a multi-pronged approach to building decarbonization, including targeted electrification of existing and new buildings and equipment, as well as technical support and advocacy through codes and standards.
- Deploying technologies that are grid-responsive and demand flexible to support a coordinated energy supply load strategy.
- Contributing to cost-saving resiliency solutions for customers, such as partnering across microgrids, remote grids, and individual customers to provide permanent load reducing solutions.

In 2022, PG&E worked through programs and partnerships to drive energy savings, greenhouse gas (GHG) emissions reductions, and long-term total system benefit to the electric grid and gas system. PG&E works to support California's energy goals and serve the diverse needs of more than 16 million customers across a 70,000 square-mile service territory. PG&E's energy efficiency programs are designed to reach customers across all sectors using a variety of channels, from self-service software tools to PG&E's business customer account representatives. To increase our impact, we also partner with state and local governments, community partners, and trade professionals, and offer education and training to building professionals.

This report is being filed in compliance with California Public Utilities Commission (CPUC or Commission) guidance on Energy Efficiency program reporting[1], which was expanded following approval of the Energy Efficiency Business Plans in Decision (D.)18-05-041 and updated in D.21-05-031. This report focuses on program activities and accomplishments in the year 2022 and describes the full set of programs in PG&E's 2022 portfolio.

[1] Pursuant to Attachment C of ALJ Ruling Adopting Annual Reporting Requirements for Energy Efficiency and Addressing Related Reporting Issues, dated August 8, 2007.

PG&E's 2022 milestones include:

- **Supporting decarbonization through statewide new construction all-electric programs, codes and standards, and education and training on electrification for industry professionals.** PG&E offered education and training to over 20,000 on-demand classes. Overall, electrification topics comprised over one-fourth of our hundreds of classes, webinars, and on-demand courses.
- **Expanding Home Energy Reports** from approximately 2.9 million customers in 2022, to 3.1 million customers in 2023. PG&E is a national utility leader in home energy reports and runs one of the largest programs in the nation.
- **Enhancing PG&E's online guide for residential customers**. The new marketplace website, which launched in June 2022, guides residential customers to find the best programs, resources, and customer energy products that suit their needs, like smart thermostats, EV chargers, and portable batteries. In 2022, the site saw over 237,000 unique visitors and over 1.2 million page views.
- **Offering no-interest energy efficiency financing** through an on-bill financing (OBF) program that provides commercial customers and government agencies with loans for energy efficiency upgrades with no out-of-pocket costs and zero interest. The OBF program funded 448 loans worth a total of $43 million in 2022, with most loans going to small and medium businesses, and public organizations.
- **Helping industrial customers reduce their energy usage through strategic energy management programs**. PG&E retrocommissions and upgrades equipment, works with industrial facility employees to pursue energy savings, and provides planning resources for future energy needs. More than 40 customers participated in 2022 and are expected to save over 18 GWh and 4.2 million therms annually by implementing energy management practices at their facilities and changing the way operations teams think about energy use.

Planning For the Future

In 2021, the Commission issued D.21-05-031, which outlined an ambitious new future for EE in California, including total system benefit goals, portfolio segmentation, and a new portfolio planning cycle. PG&E began to plan for that future in 2021, including filing the 2022-2023 Biennial Budget Advice Letter that oriented PG&E toward the new EE paradigm. In February 2022, PG&E filed its 2024-2031 business plan application, with approval still pending as of May 2023. PG&E will continue to deliver on its commitment to customers and support California's EE and climate goals through innovative program and pilot strategies and excellence in program administration.

Annual Report Data

D.19-08-034 established net energy savings and demand reduction goals for 2021 for investor-owned utility (IOU) territories, for both incentive and codes and standards programs. Achievements discussed in this section comprise total impacts across both incentive and codes and standards programs combined. In 2022, PG&E achieved savings of 1,782 GWh; 295 MW of peak demand reduction; and 43 million therms.[2] 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 nearly 678,000 tons[3] of carbon dioxide. Please see Section 6 for more specifics on PG&E's portfolio cost-effectiveness.

D.09-09-047 defined and D.12-11-015 clarified the 10 percent utility administrative cost cap, the 6 percent marketing cost cap, the 4 percent EM&V budget allocation[4] and the 20 percent direct implementation non-incentive (DINI) target. Statewide ME&O is excluded from the marketing cap.[5] PG&E reports its progress against these caps and targets in quarterly reports posted in the CPUC's California Energy Data and Reporting System (CEDARS)[6] along with PG&E's monthly expenditure and savings reports.

As part of the statewide shift to portfolios that are primarily implemented by third-party vendors, D.18-05-041[7] directed IOUs to track the number and proportion of third parties that forego the option of using utility account representatives. IOUs must include this information in their annual reports. As of May 2023, no third-party vendor has foregone the use of PG&E account representatives.

PG&E has also added a new section to the 2022 Annual Report, which provides details about corrections to previous annual reports (Appendix C). Corrections include updates to 2020 Statewide Codes & Standards (C&S) claims and to 2021 Statewide Upstream Lighting claims.

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2 Energy savings include savings from Regional Energy Network (REN) and Community Choice Aggregator (CCA) programs in PG&E's service area, which represented approximately 1% or less of total annual savings.

3 The figure reported above is in net annual ("short" or US) tons of CO_2 avoided, using the unit provided by the CPUC's Cost Effectiveness Tool (CET). GHG emissions are commonly reported in metric tons.

4 Affirmed in D.16-08-019, Conclusion of Law 67.

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

6 See Cap and Target reports at https://cedars.sound-data.com/documents/standalone/list/.

7 D. 18-05-041, Ordering Paragraph (OP) 17.

Program Descriptions and Strategies

In 2022, PG&E administered a broad portfolio of EE programs that served an array of market sectors and customer types and supported energy efficiency across numerous technologies. 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 PG&E's 2018-2025 Energy Efficiency Business Plan goals to provide customers with a more integrated EE experience, access to information, and greater financing opportunities.

PG&E's service area is approximately 70,000 square miles in Northern and Central California, and the company serves approximately 16 million customers. 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 meet customers' needs, PG&E offers programs that serve broad market segments and leverages local partnerships and third-party programs to serve targeted markets, harder-to-reach segments, and groups with specific needs.

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 2022:

1. Statewide
2. Residential
3. Commercial
4. Public
5. Industrial
6. Agricultural
7. Financing
8. Emerging Technologies
9. Codes, Standards, and New Construction
10. Workforce Education and Training

Statewide Program Implementation

Starting in 2016, the Commission directed the California investor-owned Utilities to begin transitioning California toward greater statewide program administration and third-party involvement in the proposal, design, implementation, and delivery of energy efficiency programs.[8] IOUs are required to allocate at least 25 percent of their proposed Business Plan budgets to statewide programs[9] and at least 60 percent to third-party programs by the end of 2022.[10]

The Commission established statewide programs and the associated lead IOU[11] in 2018, as described in Table 1:

Table 1. Lead Program Administrator for Statewide Programs by Area

Program Category	Lead IOU
Plug Load and Appliance	SDG&E
HVAC (Upstream Residential, Upstream Commercial)	SDG&E
New Construction (Residential)	PG&E
New Construction (Non-Residential)	PG&E
Codes & Standards (Building Codes Advocacy)	PG&E
Codes & Standards (Appliance Standards Advocacy)	PG&E
Codes & Standards (National Advocacy)	PG&E
Lighting	SCE
Emerging Technologies (Gas)	SoCalGas
Emerging Technologies (Electric)	SCE
Workforce Education & Training (Career Connections)	PG&E
Institutional Partnerships (University of California, California State University), called “Higher Education”	SCE
Institutional Partnerships (State of California, California Department of Corrections)	PG&E
Foodservice Point of Sale	SoCalGas
Midstream Commercial Water Heating	SoCalGas

[8] D.16-08-019, Decision providing guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings.
[9] D.16-08-019, OP 6.
[10] D.18-01-004, OP 1.
[11] D.18-10-041, OP 26.

Table 2. Lead Program Administrator for Statewide Downstream Pilot Programs

Program	Lead IOU
HVAC Quality Installation/Quality Maintenance (QI/QM)	SDG&E
Water/Wastewater Pumping Program	SCE
Workforce Education & Training (Career and Workforce Readiness)	PG&E

The Commission also outlined the roles and responsibilities for statewide program leads[12], noting that they would each have sole responsibility for the following:

a. Program vision development, design/delivery, and intervention strategies;
b. Procurement, contract administration, and co-funding management from partner program administrators;
c. Implementer oversight;
d. Implementer management, rewards, and any necessary corrective action;
e. Review of implementer performance and program performance on a quarterly basis;
f. Meeting savings goals and customer satisfaction levels;
g. Metrics development; and
h. Reporting.

The IOUs intended to outsource the proposal, design, implementation, and delivery of statewide programs to third parties as part of their third-party solicitations, associated with the implementation of 2018 – 2025 EE Business Plans. Therefore, the budgets for statewide programs will count towards both the 25 percent statewide and 60 percent third-party outsourcing requirements. Statewide programs are designed and delivered by one or more statewide implementers, under contract to the Lead IOU.[13]

Program administrators collaborate to keep each other informed on statewide program progress, enabling coordination on program delivery and timely updates on statewide program budgets. Statewide coordination is intended to keep all program administrators informed of each individual IOU's required allocations toward statewide programs for use in portfolio planning, as well as regulatory budget filings. This statewide coordination aligns with Commission guidance, which confirms that "statewide activities are clearly in support of state policy and actively supervised by, and a priority for the Commission"[14] and helps to avoid a conflict with the scope of a statewide program as described in D.18-05-041.[15] Additional compliance reporting on statewide program administration is detailed in Section 11 of this report.

[12] D.18-05-041, p. 185-186, OP 18.
[13] D.16-08-019, p. 109, OP 5.
[14] D.18-05-041, p. 81.
[15] D.18-05-041, p, 173, COL 17 which states, "All PAs should have the ability to continue local pilot activities that would otherwise qualify for statewide administration but that are not yet ready for such statewide treatment, provided that such local pilots or programs do not compete with, or otherwise impede the progress or activities of, operational statewide programs."

Statewide Energy Efficiency Programs

Below, PG&E provides a status update on the PG&E-led statewide programs listed in Table 1.[16] A summary narrative has been provided for PG&E-led statewide programs that have either already launched or have reached the stage of seeking Commission approval of contracts through the Advice Letter process. PG&E provides funding to the lead program administrator for each program as shown in Tables 3 and 4 of D.18-05-041. PG&E receives credit for the proportional benefits from statewide programs through the CPUC's California Energy Data Reporting System (CEDARS). Please refer to the lead program administrators' respective 2022 Annual Reports for information on statewide programs.[17] Descriptions of PG&E-led statewide programs follow.

State Building Codes Advocacy Program: Title 24, Part 6 & Part 11 (PGE_SW_CSA_Bldg)

Lead IOU: PG&E

The Statewide Building Codes Advocacy program supports the California Energy Commission's (CEC or Energy Commission) 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 public rulemaking processes. The program also supports the Energy Commission in preparing recommendations to the Building Standards Commission to update the California Green Buildings Standards (Title 24, Part 11 or CALGreen). The voluntary energy measures in CALGreen provide foundational elements for local reach codes.

State Appliance Standards Advocacy Program (PGE_SW_CSA_Appl)

Lead IOU: PG&E

The State of California Appliance Standards Advocacy (ASA) program targets improvements to Title 20 through advocacy at the CEC. Advocacy activities include developing Title 20 code enhancement proposals and participating in the CEC public rulemaking process. Additionally, the program monitors state and federal legislation. To learn more about state ASA activities in 2022, please see the Codes, Standards, and New Construction chapter of this report.

National Codes and Standards Advocacy Program (PGE_SW_CSA_Natl)

Lead IOU: PG&E

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 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. PG&E participation in the DOE, Environmental Protection Agency (EPA), Federal Trade Commission (FTC), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and International Energy Conservation Code (IECC) proceedings supports increasing requirements to important to minimize gaps, when regionally appropriate, between California's EE regulations and the EE regulations that other states adopt.

[16] Solicitations status is based on the Joint IOU Energy Efficiency Solicitation Schedule, available at https://www.caeecc.org/third-party-solicitation-process

[17] Available on the "Documents" section of CEDARS: https://cedars.sound-data.com/documents/standalone/list/

California Energy-Smart Homes All-Electric Residential Program (PGE_SW_NC_Res_electric)

Statewide Program Lead: PG&E
Implementer: TRC

The California Energy-Smart Homes All-Electric Residential Program (CESH-AE) supports a high-level approach to achieving California's advanced energy efficiency policy goals through 2025 by engaging with builders and developers to recruit projects and influence them to build all-electric. The program is available to customers in the PG&E, SCE, and SDG&E territories. The all-electric program offering serves five residential sub-sectors: Single family and duplexes, multifamily low-rise (three or fewer stories), manufactured housing, accessory dwelling unit (ADUs,) and addition/alteration (A&A, additions greater than 700 square feet). The program influences the decision and eases the transition to adopt all-electric new construction practices by educating potential participants and stakeholders on the features of all-electric homes, enrolling projects, emphasizing the installation of advanced EE measures, and facilitating future opportunities through non-incentivized, prerequisite measures that position homes to install high-impact demand response technologies more easily in the future.

California Energy-Smart Homes Mixed-Fuel Residential Program (PGE_SW_NC_Res_mixed)

Statewide Program Lead: PG&E
Implementer: TRC

The California Energy-Smart Homes Mixed-Fuel Residential Program (CESH-MF) supports a high-level approach to achieving California's advanced energy efficiency policy goals through 2025 by engaging with builders and developers and recruiting projects in the project development phase. The program works with new construction projects that are unable to make the switch to all-electric or alteration projects that are only able to partially convert to all-electric and influencing them to adopt advanced energy measures. The program is available to customers in the PG&E, SCE, SoCalGas, and SDG&E territories. The mixed-fuel program offering serves three residential subsectors: Single family and duplex, multifamily low-rise (three or fewer stories), and alterations.

The program influences the decision and eases the transition to adopt advanced energy measures and facilitates future opportunities through non-incentivized, pre-requisite measures that position homes to transition to all-electric and install demand response technologies more easily in the future. To accomplish this, the program educates potential participants and stakeholders on the features of mixed-fuel and electric-ready homes, enrolls projects, emphasizes the installation of advanced energy efficiency measures, and facilitates future opportunities through non-incentivized, prerequisite measures that position homes to install electric equipment and appliances, as well as high-impact demand response technologies more easily in the future.

Due to changes in the 2022 California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6), many of the electric readiness program prerequisites initially included in the CESH-MF program have been rendered ineligible for incentives. Additionally, the solicitation and initial design of the CESH-MF program predated Decision (D.) 21-05-031, which directed portfolio administrators to "segment" their portfolios beginning in 2022 into resource acquisition, market support, and equity segments.[18] Market support programs are defined as "Programs with a primary objective of supporting the long-term

[18] D.21-05-031, Ordering Paragraph (OP) 5

success of the energy efficiency market by educating customers, training contractors, building partnerships, or moving beneficial technologies towards greater cost-effectiveness."[19]

In accordance with this definition, statewide new construction programs were included in the market support segment in the PG&E Program Year (PY) 2022-2023 Biennial Budget Advice Letter (BBAL)[20] and in the PG&E Energy Efficiency (EE) 2024-2027 Portfolio Plan.[21] As part of a strategy to optimize for market support segmentation and in recognition that building electrification is a key strategy to achieve California's decarbonization goals, the California Energy-Smart Homes Mixed-Fuel Residential Program closed to new applications on December 31, 2022.[22]

California Energy Design Assistance All-Electric (CEDAE) Program (PGE_SW_NC_NonRes_Com_electric)

Statewide Program Lead: PG&E
Implementer: Willdan Energy Solutions

The CEDAE program serves commercial, public, high-rise multifamily residential, industrial, and agricultural new construction sectors, and major alterations in facilities across the PG&E, SCE, and SDG&E territories. This program contributes to the IOUs' efforts to achieve their share of California's ambitious EE, greenhouse gas emission reduction, and Zero Net Energy (ZNE) goals by offering EE options tailored to each building during the design and construction process. CEDAE also offers technical assistance early in the process, when it has the greatest influence on design and operation, driving energy savings beyond code and gathering data to further advance future codes. The CEDAE program both directly supports projects and influences the non-residential new construction market to achieve deeper energy savings and decarbonize through key activities such as outreach and education, energy modeling, verification, and data tracking to inform future codes and standards.

California Energy Design Assistance Mixed Fuel (CEDAM) Program (PGE_SW_NC_NonRes_Com_mixed)

Statewide Program Lead: PG&E
Implementer: Willdan Energy Solutions

The CEDAM program serves commercial, public, high-rise multifamily, industrial, agricultural, new construction sectors, and major alterations in facilities across the PG&E, SCE, SoCalGas, and SDG&E territories. CEDAM contributes to the IOUs' efforts to achieve their share of California's ambitious EE, greenhouse gas emission reduction, and ZNE goals by offering technical assistance early in the process, when it has the greatest influence on design and operation, driving energy savings beyond code and gathering data to further advance future codes. The CEDAM program will both directly support projects and influence the non-residential new construction market to achieve deeper energy savings and decarbonization through outreach and education, energy modeling, verification, and data tracking to inform future codes and standards.

[19] Ibid, pg. 14
[20] PG&E Advice 4521-G/6385-E, as filed on November 8, 2021, and supplemented (PG&E Advice 4521-G-A/6385-E-A) on January 7, 2022
[21] PG&E Energy Efficiency 2024-2027 Portfolio Plan, Exhibit 2, Chapter 3, pgs. 3-12 - 3-17
[22] PG&E Advice 4680-G/6760-E

State of California Energy Strategy and Support Program (PGE_SW_IP_Gov)

Statewide Program Lead: PG&E

Implementer: AESC

The State of California Energy Strategy and Support Program (SOC ESS) opened to customers in September 2021. SOC ESS helps California State Agencies (excluding higher education, which will be served by a Statewide program led by SCE) reach their greenhouse gas (GHG) emission reductions goals while reducing energy use through EE and Integrated Demand-side Management (IDSM) project planning, technical support, and financial assistance. The program builds on the State's successful existing approaches while adding new channels to address key barriers California state agencies. SOC ESS is designed to overcome structural and operational barriers related to staffing and capacity, capital and financing, and safety to support successful realization of energy savings in state buildings.

The Program offers two pathways with varying levels of support. Pathway 1 provides agencies that are committed to a minimum level of energy savings and program engagement with high-touch, customized, and strategic portfolio-wide and engineering support plus staff augmentation. Pathway 2 provides support on individual projects as identified and pursued. Additionally, the Program continues to provide all agencies with the services they relied on through the prior statewide partnership programs, including financial, policy, technical, project, and program application support.

Career Connections: Energy is Everything (PGE_SW_WET_CC)

Statewide Program Lead: PG&E

Implementer: The Energy Coalition (TEC)

The Statewide Career Connections third-party "Energy is Everything" (EisE) program helps to build the next generation of energy workers. EisE provides Kindergarten through 12th grade students the knowledge, skills, and abilities they need for college and career opportunities in the energy industry and motivates students to adopt pro-environmental behaviors. EisE incorporates career concepts for all learners, since early exposure to career options increases the chances of students pursuing and securing high-demand energy and STEM careers. Education providers targeted will primarily focus on those classified as "disadvantaged".

Career and Workforce Readiness: Energize Careers (PGE_SW_WET_Work)

Statewide Program Lead: PG&E

Implementer: Strategic Energy Innovations (SEI)

Energize Careers aims to create a diverse and representative energy workforce through the economic empowerment of people who experience personal or systemic barriers to employment. Energize Careers assists program participants in accessing technical training and living wage energy career opportunities. Energize Careers provides holistic services to support disadvantaged workers through technical training and job placement, as well as wrap-around service support. Energize Careers collaborates with pre-apprenticeship programs, apprenticeship programs, community-based training organizations, and community colleges to provide technical energy job training to disadvantaged workers. Energize Careers also collaborates with wrap-around service providers and industry partners to provide people with services and support to access career pathways into jobs where they can leverage their energy efficiency knowledge and skills.

Table 3. Status of Upcoming Statewide Programs[23]

Program Category	Lead IOU	Status
Plug Load and Appliance	SDG&E	Launched in September 2022
Emerging Technology (Electric)	SCE	Launched in April 2022
Institutional Partnerships (Higher Education)	SCE	Launched in December 2022

Table 4. Status of Upcoming Statewide Pilots[24]

Program	Lead IOU	Status
HVAC Quality Installation/Quality Maintenance (QI/QM)	SDG&E	Program Expected to Launch Q2 2023
Water/Wastewater Pumping Program	SCE	Launched in September 2022

[23] Solicitations status is based on the Joint IOU Energy Efficiency Solicitation Schedule, available at https://www.caeecc.org/third-party-solicitation-process.

[24] Solicitations status is based on the Joint IOU Energy Efficiency Solicitation Schedule, available at https://www.caeecc.org/third-party-solicitation-process.

Residential Programs

PG&E's vision for the residential sector is to help customers reduce energy use in their homes, reduce energy demand on the grid, build resiliency, and advance building decarbonization in California.

PG&E's residential programs offer an array of services and tools that guide customers to their energy- and money-saving goals, while meeting portfolio targets.

PG&E's Key Residential Program Goals

- Make EE accessible through a variety of residential program offerings
- Educate customers about programs they can utilize to reduce energy use and lower bills
- Deliver residential EE programs that are leveraged as a grid resource
- Support state policy objectives around residential homes, including new construction
- Support customers with Energy Efficiency

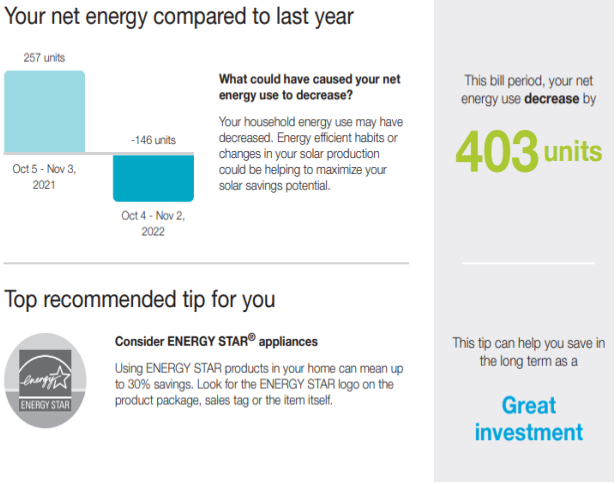
In 2022, programs engaged customers and other market actors through the following channels:

- Improvements to the built environment, such as whole home upgrades, heating, ventilation and air conditioning (HVAC), water heating, and new construction
- Behavioral and home energy management tips, tools, and initiatives
- Education and tools to help customers to make informed decisions on more energy efficient products and appliances

Key Initiatives and Notable Changes in 2022

Continuous Energy Feedback Program: Behavior-based Program Expansion

The Continuous Energy Feedback Program (CEFP) includes several elements that make up the behavior-based energy savings program. The foundational element is the PG&E Home Energy Reports (HERs), which reached 2.9 million customers in 2022. Throughout 2022, PG&E introduced new HER elements to further help customers save energy: Solar Home Energy Reports, Weekly Home Energy Reports, Time-of-Use Rate Coach, and an innovative new product called Video Home Energy Reports. PG&E also implemented enhancements including migrating to the updated HER3 platform and enabling new HER experiences (including a new FAQ module to help customers self-serve questions about HERs), and a new eHER optimization process to streamline customers opting for digital-only communications.

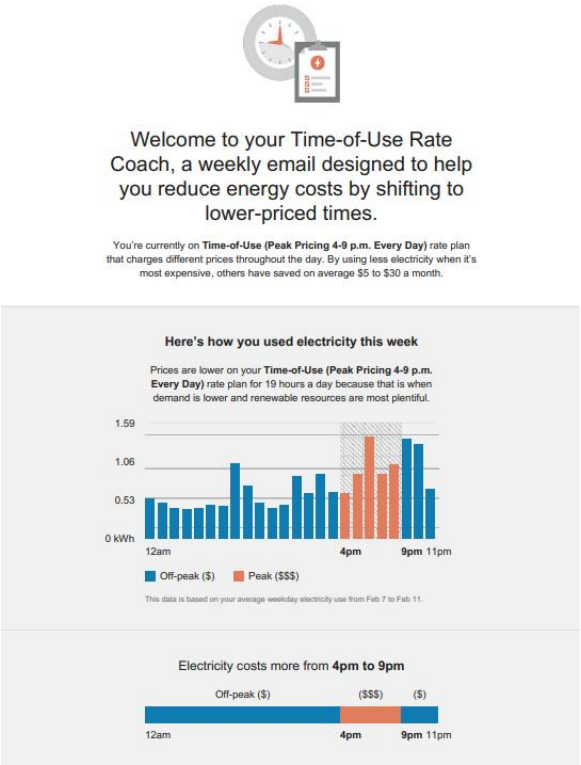


Implementation of Energy Action Guide (EAG)

PG&E updated the original marketplace website with an enhanced tool that provides tailored information about products and resources that helps customers meet their unique energy goals. Over 237,000 unique users were able to benefit from the relevant guidance the tool offers during the six months the tool was active during 2022. More information about the Guide can be found in the Residential Third-Party Programs section, below.

Residential Meter-Based Offerings

PG&E continued its residential Normalized Metered Energy Consumption (NMEC) programs, the residential Pay for Performance (P4P) programs. The P4P programs employ metered energy consumption data to help customers targeting deeper energy savings and drive grid benefits. These programs aim 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. PG&E had two active P4P programs in 2022: Comfortable Home Rebates, and Home Intel.



Supporting Customers During the Pandemic

In addition to taking safety precautions with energy efficiency (EE) programs, PG&E continued to support customers during the COVID-19 pandemic by expanding the reach of behavioral programs. PG&E continued regular communications to drive customers' awareness and understanding of the resources available to help them. These communications highlighted EE programs, energy saving tips, energy management tools, customer protections, income-qualified programs, and alternative payment arrangement options.

Looking Ahead

Opportunities in 2023 will focus on customer expansions of behavior programs, as well as the introduction of new behavioral offerings to customers, including Peak Day Alerts and a new electric vehicle (EV) experience for Home Energy Report customers. PG&E also plans to launch custom-tailored enhancements to PG&E's online product and resource tool, Energy Action Guide, that include a personalized recommendation engine, a products comparison tool, and an educational post-action message to support a customer's searches.

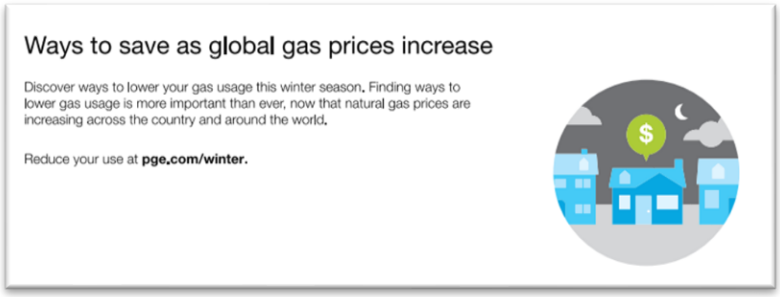
PG&E is also in the process of launching two equity-focused residential program requests for proposals (RFPs) in alignment with the CPUC's EE segmentation framework. One is a community-focused residential equity building electrification program, while the other is a zonal equity electrification program. These programs are expected to launch in 2024.

As outlined in PG&E's Portfolio Plan for 2024-2027, PG&E will continue to look for opportunities to expand integrated demand-side management (IDSM) and electrification support for its residential customers. In support of this, PG&E intends to launch two additional RFP's in the latter half of 2023. One will be for a residential market support program intended to serve customers pursuing electrification, and another is a load management program to help customers control their load in a dynamic fashion.

Residential Programs

Residential Energy Efficiency Program (PGE21002)

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 products so that ongoing intervention would no longer be required. Through REEP, PG&E offered rebates to customers who purchased and installed qualifying smart thermostats and electric heat pump water heaters (HPWH). For the short- to mid-term timeframe, where REEP products were still not the market's default choices, PG&E used incentives to increase availability, awareness, and adoption of energy-efficient products. This program, especially when layered with California's Technology and Equipment for Clean Heating (TECH) initiative, created a generous incentive that attracted both customers and contractors to invest in the newer HPWH technology. The program's overall 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.



The Statewide Plug Load and Appliance (PLA) program, led by SDG&E, launched in September 2022. The Statewide program offers instant rebates for smart thermostats and electric heat pump water heaters. Following the opening of the Statewide PLA program, PG&E's REEP program closed in November 2022 to avoid program overlap.

Residential New Construction Program (PGE21005)

Implementer: TRC

The Residential New Construction program consists of the California Advanced Homes Program (CAHP) for single family homes, and PG&E's California New Homes Multifamily third-party program. The CAHP and California New Homes Multifamily program (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.

The Statewide California Energy-Smart Homes Mixed-Fuel (CESH-MF) Residential Program and the California Energy-Smart Homes All Electric (CESH-AE) Residential Program launched in Q3 2021. In 2022, PG&E completed projects remaining in the CAHP pipeline and closed the program at the end of 2022. Customers previously served by PG&E's CAHP will now be served by the California Energy-Smart Homes programs. More details on these new Statewide Programs can be found in the Codes, Standards, and New Construction chapter of this report.

PG&E also continued the ramp down of the Advanced Energy Rebuild (AER) program, which had offered increased new construction energy efficiency incentives for customers who lost their homes in Northern California wildfires. These program incentives were an enhancement to the existing CAHP and were intended to help rebuild homes that were red tagged by CAL FIRE. AER was closed to new applications at the end of 2020 in anticipation of the launch of the Statewide Wildfire and Natural Disaster Resiliency Rebuild (WNDRR) program but projects still in the program pipeline were completed throughout 2022. The AER program was closed in December 2022.

California Multifamily New Homes Program (PGE21007)

Implementer: TRC

The California Multifamily New Homes (CMFNH) program 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 emerging technologies. Through a combination of education, design assistance, and financial support, the California New Homes Multifamily program encourages building and related industries to exceed California's Title 24 standards and prepares builders for future changes to these standards.

In 2022, PG&E continued to work on completing a robust pipeline of long-term projects that had been recruited and enrolled into the CMFNH program in 2019. The CMFNH ramped down throughout 2022 and the program closed at the end of 2022. Going forward, the multifamily sector will be served by the Statewide Non-Residential New Construction programs—the California Energy Design Assistance All-Electric (CEDAE) Program, and the California Energy Design Assistance Mixed Fuel (CEDAM) Program— both led by PG&E. Additional details on the new Statewide Non-Residential New Construction programs can be found in the Codes, Standards, and New Construction chapter of this report.

Residential Pay for Performance (P4P) Program

Implementers: Franklin Energy and Home Energy Analytics

The Pay for Performance (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.

In 2022, the ResP4P program included two active offerings covering PG&E's service territory and offering variations of services focused on behavioral, operational and deep retrofit measures. The programs are:

1. **Comfortable Home Rebates, offered by Franklin Energy (PGE_Res_001a)**: 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.

2. **Home Intel, offered by Home Energy Analytics (PGE_Res_001b)**: 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.

Due to a lack of realized savings at the meter, Comfortable Home Rebates (PGE_Res_001a) closed to new enrollments in December 2022.

Home Energy Checkup (PGE_Res_002a)

Implementer: Oracle

The Home Energy Checkup (HEC) program is a 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 plan is saved on the customer's PG&E My Account website to track progress as they complete the items. In 2022, roughly 265,000 customers completed a Home Energy Checkup.

PG&E Marketplace (PGE_Res_002b)

PG&E's Marketplace was a website tool that helped customers choose efficient products and find eligible rebates. Marketplace presented an Energy Score and other energy-related features, such as total cost and lifetime energy costs, to add a product's energy efficiency into a buyer's decision-making process. PG&E reports separately on Marketplace program metrics, which are detailed in Section 14 of this report.

Following successful solicitations work in 2021, PG&E selected a vendor to work on PG&E's refresh of the Marketplace, aiming to simplify and enhance the customer journey by providing customized product and program recommendations based on the customer's needs and profile. PG&E's original Marketplace program was replaced by the Energy Action Guide[25] in June 2022. The Energy Action Guide is described in the Residential Third-party Programs section, below.

Residential Third-party Programs

PG&E's Residential Third-party Programs[26] are an integral component of its overall residential sector strategy to help provide many customers with energy-efficient solutions and services.

Continuous Energy Feedback Program (PGE_Res_002d)

Continuous Energy Feedback Program (CEFP)

Implementer: Oracle The Continuous Energy Feedback Program (CEFP) uses multiple behavior-based energy efficiency strategies to support customers in understanding and empowering them to manage and lower their household electricity and gas consumption. This program uses information and customer engagement strategies to prompt non-rebated behavior change that can be measured using randomized controlled trials to validate savings and demonstrate attribution. As a result of their changed behaviors, customers can manage their energy use and energy behaviors, make more efficient purchasing decisions, and take energy related actions to lower their energy use.

The CEFP includes the following program elements and offerings:

- Home Energy Reports (~2,900,000 customers, sent about 12 times per year[27]). HERs aim to give customers actionable insights about their energy use and motivate them to lower their electricity and/or gas usage.
- Solar Home Energy Reports (~350,000 customers, sent about 12 times per year). Solar HERs serve customers with installed solar and aims to motivate them to reduce their energy use and form energy-saving habits.

[25] https://guide.pge.com/

[26] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in Decision 18-01-004.

[27] Although HERs are available on a monthly basis, individual customers may receive HERs somewhere between four to 12 times per year, depending on their chosen delivery method (email or paper mail) and desired frequency.

- Summer Video Home Energy Reports (~1,000,000 customers, sent once per year). This is a new HER experience, designed to reach customers through a new media channel: video emails. Customized summer Video HERs include normative comparisons, personalized energy insights, summer specific tips, and a call to action through the Home Energy Checkup.
- Bill Forecast Alerts (~1,450,000 customers, sent three to four times per year). These alerts, primarily sent through email, but available through text messages and phone calls, notify customers of upcoming potential high bills and give them the opportunity to take action to save energy and money. Alerts are sent based on set bill thresholds, forecasted usage, and projected costs.
- Time-of-Use (TOU) Rate Coach (~150,000 customers, sent once per week). These weekly emails deliver insights to TOU rate customers that educate them about their peak energy usage and encourage them to shift their use to off-peak hours to help them reduce their peak spending and lower their monthly energy bills.
- Weekly Home Energy Reports (60,000 customers, sent once per week). These weekly emails deliver personalized information to customers about their energy use, including a neighbor comparison, energy history information, tips, and marketing modules. The goals of the Weekly HERs are to give customers actionable insights about their energy use and motivate them to lower their electricity and/or gas usage.

PG&E Marketplace Refresh – Energy Action Guide (PGE_Res_002e)

Implementer: ZappyRide and Bellawat

PG&E's online marketplace refresh, which launched in June 2022, provides a one-stop solution that guides PG&E customers with relevant, timely, and contextual personalization to help them make the best possible decision—all while supporting PG&E's carbon reduction strategies. PG&E's Energy Action Guide raises awareness of, and increases engagement with, energy management technology (EMT), provides incentive information for adopting EMTs, educates residential and small-medium business (SMB) customers about EMT programs, including income qualified customer programs.

The Energy Action Guide also simplifies the customer experience with relevant, actionable recommendations for whatever energy-related issues they are looking to resolve. Straight-forward filters and an easy-to-use recommendation engine are tools that customers can use with confidence and effectiveness. Once a customer clicks on their interests, they are provided with the relevant products and related programs, rebates, calculators, and FAQ's. Modern design principles along with fast page load and search times, twice those of energy industry standards, ensure that customers' time is being utilized responsibly.

By empowering customers to take control of their energy consumption, reduce costs, and enhance resiliency, the Energy Action Guide is positioned to create a lasting, positive impact on their lives. Since its launch on July 1, 2022, the Energy Action Guide has attracted over 340,000 visitors, resulting in over 1.8 million page views and over 3 million event counts. With enhanced features and PG&E's renewed marketing effort, the Energy Action Guide has acquired nearly double the number of users and customer engagement as PG&E's previous e-commerce platform during the same time period.

Multifamily Energy Savings Program (MESP, PGE_Res_003)

Implementer: TRC

The Multifamily Energy Savings Program (MESP) aims to provide property owners EE upgrade services for multifamily buildings of five units or greater throughout PG&E's service territory. The program provides end-to-end program implementation services, including marketing, outreach, engineering, operations, customer service, data management, and reporting. MESP is tailored to serve multifamily customers, inclusive of smaller properties and underserved regions that will most benefit from property upgrades. The program aims to create new EE opportunities by targeting underserved property stakeholders, while at the same time providing scalability to achieve deeper retrofit opportunities with larger and more modern properties. In 2022, MESP achieved therm savings through the domestic hot water loop measure.

Due to the lack of kW and kWh savings over 2021 and 2022, PG&E requested that the CPUC approve the closure of the MESP program in May 2023.[28] Pending CPUC approval of the request, the MESP is expected to ramp down and close by Q3 2023.

WatterSaver Program

Implementer: Association for Energy Affordability (AEA)

The goal of WatterSaver is to shift 1 MW of demand out of peak hours (4pm to 9pm) by 2025. Participants who enroll in WatterSaver can optimize their energy use and save money by connecting their water heaters, via internet or cellular data, to the program. WatterSaver automatically takes advantage of lower electricity rates, heating water at less expensive off-peak times of the day. Participants will also receive a $50 gift card for enrolling plus an additional $5 gift card for each month of active participation. Enrolled customers will help increase electric grid reliability and support increased renewable energy generation like solar and wind power by shifting energy use to off-peak times. Though managed by PG&E's EE residential team, WatterSaver is funded separately from other EE programs, through funding authorized under Assembly Bill 2868 of 2016, which was adopted to accelerate the deployment of connected distributed energy storage systems in California.

[28] PG&E Advice #4754-G.6943-E, filed 5/15/23.

Commercial Programs

PG&E's commercial EE programs offer non-residential customers a suite of approaches, products, and services to help overcome the market barriers to optimizing energy management. These programs offer comprehensive energy management solutions, which may include EE, as well as IDSM, 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.

In 2022, PG&E's commercial EE programs continued to ramp down the proportion of rebate and incentive funds to drive EE in favor of meter-based programs and in-house and publicly available financing options. OBF offers can help customers address the cost barriers which drive project decisions. For more details on PG&E's OBF program, see the Financing Programs chapter of this report.

Key Initiatives

PG&E focused on strategies in 2022 that will position its programs to achieve PG&E's vision for the commercial sector: putting commercial buildings on a path to Zero Net Energy (ZNE) by 2030 for all new construction buildings and for half of existing buildings.

Key initiatives to achieve these goals included:

- Reduced program dependence on incentives and rebates by increasing focus on financing offerings;
- Continuing to evolve programs to pursue deeper savings: promoting more comprehensive and controls-based project strategies, encouraging conservation at times when it will yield greater grid benefits, increasingly emphasizing behavioral and operational interventions;
- Building longer-term EE relationships between customers and project developers, resulting in a deeper understanding of a customer's EE goals and challenges;
- Increased funding for commercial programs that provided smaller commercial customers opportunities to reduce electric usage at their business and equity program support for the smallest commercial customers to reduce their electrical usage and energy costs as a result of the 2021 solicitation for micro and small business customers.

Looking Ahead

In Q3 of 2022, PG&E awarded implementation of its first equity program, a micro-small business program called Simplified Savings, which is expected to launch to customers by July 2023. Simplified Savings aims to achieve increased participation and provide targeted services to customers and regions which have not historically engaged with EE programs. Key characteristics for customers in this underserved segment include a peak demand of less than 50kW, which fit the California Code of Regulations definition of a small business enterprise, and customers located in Disadvantaged Communities (DAC).

As discussed in PG&E's 2024-2027 Business Plan[29], one of the key strategies to achieve commercial sector goals is to expand Strategic Energy Management (SEM) programs beyond the industrial sector. 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 program activities at the facility including capital projects, maintenance and operation improvements, as well as retrocommissioning. Participants receive coaching to develop their own energy management practices that will persist beyond their engagement with the program. As authorized in D.23-02-002[30], PG&E will launch a solicitation for a commercial SEM program. Publication of the Request for Proposals (RFP) is anticipated to open in Q3 2023. The commercial expansion of SEM will adhere to the same design guidelines as its industrial counterparts and combine long term energy efficiency savings, operational changes, and IDSM opportunities.

Commercial Programs

Commercial Calculated Incentives Program (PGE21011)

The Commercial Calculated Incentives program provides financial incentives for non-residential customers to install new equipment or systems which meet or exceed applicable code and/or industry standards in existing buildings when projects don't have a good fit with a third-party program. The program includes both custom incentives and retrocommissioning (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.

Commercial Deemed Incentives Program (PGE21012)

The Commercial Deemed Incentives (Deemed) program offers a limited number of prescriptive rebates directly to customers, vendors, or distributors for the installation or sale of energy-efficient equipment. These measures reach across technology segments including agriculture, HVAC, refrigeration, and water heating, where there is not an overlap with statewide programs. While reduced, the prescriptive rebate approach continues to fill gaps in other programs and remains an attractive option for smaller projects.

Savings by Design (PGE211025)

Savings by Design (SBD) encourages energy-efficient building design and construction practices and promotes the efficient use of energy by offering up-front design assistance, supported by financial incentives. SBD uses the applicable California Building Energy Efficiency Standards (Title 24, Part 6) as reference baselines, and when appropriate, uses other industry standards to determine reference baselines for comparisons. PG&E's SBD program stopped accepting new applications in 2019 and is continuing to complete projects that were already in the pipeline. Legacy projects are expected to be completed by the end of 2023.

Hospitality Program (PGE210143)

Implementer: Ecology Action

PG&E's hospitality program was closed as scheduled in December 2022 and offered a comprehensive list of EE measures and services to the hospitality, retail, and commercial real

[29] PG&E Energy Efficiency 2024-2027 Portfolio Plan, Exhibit 2, Chapter 4, pg.4-41.
[30] D.23-02-002, OP 14

estate markets. Most customers served by the Hospitality Program transitioned to the Commercial NetOne Program, described in the Commercial Third-Party Programs section below.

Commercial Third-party Programs

Commercial third-party programs[31] offer a turnkey approach that continues to deliver savings, serve customer needs, and remains innovative by adapting to changing market needs. In 2022, third-party programs focused on supporting customers through audits, project design and development, installation planning, coordination with installing contractors, and incentive and financing assistance. This comprehensive approach mirrors the nature of projects in 2022 and beyond, which look at entire buildings or systems rather than a single component. Each of the third-party programs described below focuses on the opportunity to build on previous customer upgrade efforts, obtaining momentum from savings realized at the meter. On-bill and third-party financing also play a larger role in customer choice to move EE planning to actual projects.

CoolSave Grocery Comprehensive Retrofit & Commissioning (PGE_Com_001)

Implementer: kW Engineering

CoolSave Grocery Comprehensive Retrofit & Commissioning (GCx) targets the energy intensive supermarket sector. The program optimizes scheduling and controls of commercial refrigeration and HVAC controls, lighting, cooking, and packaging, with a mix of low- or no-cost RCx recommendations and capital investment equipment projects. This is a meter-based and pay-for-performance program which uses the NMEC approach to calculate savings.

Smart Labs (PGE_Com_002)

Implementer: kW Engineering

The SmartLabs program specializes in laboratory ventilation system optimization. It offers lab owners expert technical assessments and the development of a performance management plan, including extensive hazard reports which establishes the foundation for adjustments to ventilation, fume hoods, and controls, as well as performance-based incentives to drive product completion. This is a meter-based and pay-for-performance program which uses the NMEC approach to calculate savings.

NetOne (PGE_Com_003)

Implementer: Ecology Action

The NetOne Commercial Efficiency Program is a downstream program that provides energy efficiency services, technical services, and incentive processing. Primarily serving the commercial real estate and retail markets, NetOne provides a suite of incentives to commercial customers to install refrigeration, HVAC, lighting, and meter-based energy savings using the Deemed, Custom, and NMEC platforms. The broad offering also puts NetOne in the position of accepting project types and sizes from a wide variety of market segments.

[31] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in D.18-01-004.

Advanced Energy Program for High Tech & Biotech (PGE_Com_004)

Implementer: Resource Innovations

The Advanced Energy Program (AEP) supports PG&E's high-tech and biotech customers in achieving next-generation energy performance by providing comprehensive support, multi-stage strategic engagements, expert technical assistance, innovative incentives and financing solutions, and turnkey project implementation.

Healthcare Energy Fitness Initiative (PGE_Com_005)

Implementer: Resource Innovations

The Healthcare Energy Fitness Initiative Program (HEFI) supports PG&E's healthcare customers to optimize the energy performance of their complex and sensitive facilities by providing concierge-level support, multi-stage strategic engagements, expert technical assistance, innovative incentives and financing solutions, and turnkey project implementation.

Simplified Savings Micro-Small Business Program (PGE_Com_SmallBiz)

Implementer: Resource Innovations

The Simplified Savings Program is PG&E's first equity segment[32] program, and will provide meaningful marketing, outreach, and education, as well as direct install services, financing, and incentives for a traditionally underserved segment. Simplified Savings will focus on customers with a demand of less than 50kW and located within a CalEnviroscreen Disadvantaged Community (DAC). Hard to Reach (HTR) customers who meet the demand requirements but are not located within a DAC community may also qualify for the program. Bill reduction and customer engagement are the primary measures of success of this equity program. Simplified Savings intends to engage 7,500 micro- and small business customers over its current three-year term.

[32] This follows the equity segment definition as outlined in D.21-05-031, p. 14.

Public Programs

Public sector programs support both local governments and public institutions in meeting their EE goals. PG&E in 2022 administered eight Local Government Partnerships (LGPs), the statewide State of California Energy Strategy and Support Program (SOC ESS), and four legacy institutional statewide partnership programs, which were ramped down and closed to new applications throughout 2022 in preparation for transition to new statewide programs run by other IOUs.

LGPs are generally focused on promoting EE within local government facilities and helping local governments implement California's EE objectives. These programs are led by third-party implementers, local governments, or entities that have relationships with local governments The third-party implementers concentrate on resource acquisition activities that directly procure energy savings, mainly centered around public entities and small- and medium business customers that are hard-to-reach and/or in disadvantaged communities.

In 2022, PG&E administered eight LGP programs, serving 32 counties. The LGPs offer comprehensive solutions that reflect the communities' needs. PG&E's partnerships with local governments and their communities help to shape EE and sustainability at the local, regional, and statewide level by meeting the needs of local governments, as well as educational institutions like K-12 public schools. Each individual program is described in the LGP section below. Public institution programs include those focused on the government entities themselves, such as federal and local government buildings, and those focused on facilities such as water treatment plants, and public K-12 schools.

In addition, PG&E administered four legacy institutional statewide partnership 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 is also the lead for the statewide State of California Energy Strategy and Support Program (SOC ESS).

Key Initiatives and Notable Changes in 2022

Local Government Partnerships Electrification Initiatives

In 2022, LGPs identified and enabled energy savings through leads to PG&E resource acquisition programs, including 145 heat pump water heaters (HPWHs) installed in partnership with the Government and K-12 schools (GK-12) program. In addition, the local government partners delivered an estimated 500 educational opportunities highlighting PG&E EE programs, including outreach at local events partnering with community-based organizations (CBOs), sponsoring building operator certification for facilities managers, and promoting the PG&E Induction Cooktop Loaner Program. The local government partners supported their communities

by authoring approximately 170 Energy Action Plans and/or Climate Action Plans, along with 200 benchmarking reports and greenhouse gas reports. The local government partners served as trusted energy efficiency advisors in their communities, managing and/or consulting 150 public projects focused on Energy efficiency. Through all this work facilitated by LGPs in 2022, EE was implemented in local government facilities and local governments are supporting the implementation of California's EE objectives.

Looking Ahead

Local Government Partnership Contract Extension

In February 2023, PG&E filed Advice 4713-G/6860-E, requesting approval to extend seven of PG&E's eight Local Government Partnership contracts through December 31, 2025. The contract extensions, which were approved in March 2023, grant additional budget, refresh labor rates to present day, and update the Key Performance Indicators (KPIs) used to measure program performance.

Preparing to Achieve Public Sector Business Plan Goals in 2024 and Beyond

PG&E's proposed 2024-2027 Business Plan includes sector-specific strategies that will enable PG&E to deliver on forecasted Business Plan goals in the coming years. Public sector goals include providing flexible offerings for customers to pursue EE opportunities and advancing clean energy objectives. PG&E's public sector objectives are to provide programs to all subsectors of the public sector, increase the number of projects financed, and support energy resiliency. Strategies to achieve these objectives include leveraging statewide and local programs, aligning financing opportunities with customer needs, and promotion of clean energy solutions.

Institutional Partnership Programs

PG&E administered four institutional partnership programs in 2022, which served agencies of the State of California and state educational institutions. The objective of institutional partnership programs is to reduce energy usage through facility and equipment improvements and share best practices among state institutions. The California IOUs have moved toward statewide administration of institutional partnership programs, so 2022 was a transition year in which PG&E's four local institutional partnership programs continued the ramp down process initiated in 2020.

Through institutional partnership 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, California's Executive Order B-18-12 required reductions in grid-based electricity purchases and aggressive Zero Net Energy (ZNE) goals in state buildings. PG&E's institutional partnership programs focused on achieving energy savings and supporting demand-side management (DSM) integration and coordination. The statewide institutional partnership programs will carry on the work of partnering with state agencies and educational institutions to reduce energy usage and support sustainability goals.

California Community Colleges (CCC, PGE2110011)

The California Community Colleges/Investor-Owned Utility Energy Efficiency Partnership (CCC Partnership) advocated, promoted, and supported EE in the California Community College system by leveraging resources from the community college districts, the Community College Chancellor's 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 EE projects. The partnership pursued common goals of long-term energy use reduction, cost savings, and fostering a more sustainable future.

PG&E's CCC Partnership program closed to new applications in December 2022 to transition to a statewide third-party program that will include the California community colleges. This new program is led by SCE and launched in December 2022.

University of California and California State Universities (UC/CSU, PGE2110012)

The UC/CSU/Utility Energy Efficiency Partnership is a statewide program that includes California's four IOUs, the University of California (UC), and the California State University (CSU). The program generates energy savings through by identifying and implementing retrofit, commissioning, and new construction EE projects. The UC/CSU Partnership program closed to new applications in December 2022, and work has been transitioning to a statewide third-party program led by SCE. This new program, Higher Education Efficiency Performance Program, launched in December 2022. New construction opportunities previously supported by this partnership will be served by the statewide New Construction third-party programs. More details on these programs can be found in the Codes, Standards, and New Construction chapter of this report.

State of California Partnership (PGE2110013)

The State of California 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 worked collaboratively with the Department of General Services (DGS) and coordinated with the established pool of Energy Service Companies to support implementation of comprehensive facility EE projects. The IOUs also worked with individual state agencies on technology-specific projects. DGS leveraged the Department of Finance Energy $mart program, along with the IOU OBF, incentives, and rebates, to provide financing for projects.

The State of California partnership program closed to new applications at the end of 2021, upon the launch of the statewide third-party program, Statewide State of California Energy Strategy and Support Program, led by PG&E and described below. Legacy applications remained in the previous partnership program to meet customer commitments and for continuity, and the program continued to complete projects already in the pipeline throughout 2022.

California Department of Corrections and Rehabilitation (PGE2110014)

The California Department of Corrections and Rehabilitation/IOU (CDCR/IOU) Partnership aimed to save energy and reduce peak demand in the near term and establish a permanent framework for comprehensive energy management programs at CDCR institutions served by California's four large IOUs. The partnership utilized the resources and expertise of CDCR and IOU staff and leveraged the existing contractual relationship between CDCR and Energy Service Companies to develop and implement energy projects in CDCR facilities.

The CDCR partnership program closed to new applications at the end of 2021, upon launch of the statewide third-party program, SOC ESS, led by PG&E and described below. Legacy applications remained in the previous partnership program to meet customer commitments and for continuity, and the program continued to complete projects already in the pipeline throughout 2022.

Third-party Statewide Institutional Partnership Program

State of California Energy Strategy and Support Program (PGE_SW_IP_Gov)

Lead IOU: PG&E
Implementer: AESC

The State of California Energy Strategy and Support (SOC ESS) program helps California State Agencies (excluding higher education, which will be served by a statewide program led by SCE) reach their greenhouse gas (GHG) emission reductions goals while reducing energy use through EE and IDSM project planning, technical support, and financial assistance. The program builds on the State's successful existing approaches while adding new channels to address key barriers California state agencies. SOC ESS is designed to overcome structural and operational barriers related to staffing and capacity, capital and financing, and safety to ensure successful realization of energy savings in state buildings.

The Program offers two pathways with varying levels of support. Pathway 1 provides agencies that are committed to a minimum level of energy savings and program engagement with high-touch, customized, and strategic portfolio-wide and engineering support plus staff augmentation. Pathway 2 provides support on individual projects as identified and pursued. Additionally, the Program continues to provide all agencies with the services they relied on through the prior statewide partnership programs, including financial, policy, technical, project, and program application support.

Local Government Partnership Programs

The Local Government Energy Action Resources (LGEAR) program closed in December 2022 as planned. Customers served by this program are being redirected to a new third-party Micro-Small Business Program, Simplified Savings program(s), as well as other market focused third-party programs listed in the Commercial Programs chapter of this report.

Local Government Energy Action Resources (LGEAR) Direct Install Program (PGE2110051)

Implementer: Staples Energy

This program ramped down and was closed in December of 2022. The LGEAR program served 75 SMB customers in 2022, enabling 1,645,899 kWh of savings for the program year. The program provided funding for commercial direct install (DI) projects and offered SMB customers the opportunity to have a third-party contractor retrofit existing systems with energy-efficient equipment at low or no cost. Many of the most valuable features for SMB customers are now components of the newly launched Simplified Savings program.

Third-party Local Government Partnership Programs[33]

PG&E had eight LGPs that were active in 2022, serving approximately 32 counties. Through LGPs, PG&E and local and regional partners work together to develop and implement programs that serve the public sector and the broader community, including SMBs 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

[33] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in D.18-01-004.

local government uptake of 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 they serve. While local governments represent most lead local partners, some LGPs are led by local economic development groups, associations of governments, joint power authorities, or 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 who can benefit from EE programs within their communities and effectively partner with program implementers to overcome barriers to EE adoption.

Central California Energy Watch (CCEW, PGE_Pub_004)

Implementer: San Joaquin Valley Clean Energy Organization

The Central California Energy Watch (CCEW) is a non-resource program covering cities, counties, special districts, and K-12 school districts in the counties of Kings, Tulare, Stanislaus, San Joaquin, Merced, Fresno, Kern, Monterey, Madera, Santa Cruz and San Benito. The CCEW is designed to identify energy savings opportunities in public sector infrastructure, develop and deliver project leads to one of PG&E's third-party direct installers, and develop short, mid-term and long-term energy efficiency project pipelines. The CCEW focuses on helping hard-to-reach (HTR) and Disadvantaged Communities (DAC) access, understand, and participate in EE through IOU-administered third-party programs.

Central Coast Leaders in Energy Action Program (CC-LEAP, PGE_Pub_001)

Implementer: The Energy Coalition

The Central Coast Leaders in Energy Action Program (CC-LEAP) offers energy efficiency project delivery services within the County of San Luis Obispo, County of San Benito and portions of the County of Santa Barbara served by PG&E. CC-LEAP is a resource hub that helps public agencies to complete energy upgrades expeditiously and cost-effectively. CC-LEAP not only provides connections and resources, but also directly supports energy projects with project management, engineering, and financing support services. CC-LEAP is driven by the following three objectives: to expand the implementation of cost-effective energy efficiency projects, make energy efficiency expertise accessible and available, and integrate energy efficiency as a standard business practice for public agencies.

EnergyAccess SF (PGE_Pub_006)

Implementer: City and County of San Francisco

EnergyAccess SF is a partnership between PG&E and the City and County of San Francisco, Department of the Environment (SFE). EnergyAccess SF aims to support energy saving opportunities for HTR and DAC customers and seeks to build capacity to help save energy community-wide. The partnership's goals are to increase EE participation in residential and HTR small and medium businesses (SMBs); influence customers to take energy efficiency actions; drive well-qualified leads to third-party PG&E programs, reduce customer acquisition costs, and achieve deeper energy savings for PG&E programs.

Due to the increased availability of EE programs in this region supporting residential and HTR small and medium businesses (SMBs), the EnergyAccess SF partnership will close in June 2023, at the end of the program's original contract term. Customers in San Francisco's territory will continue to have access to PG&E EE programs upon contract completion.

Marin Energy Watch Partnership (PGE_Pub_002)

Implementer: County of Marin - Community Development Agency

The Marin Energy Watch Partnership's (MEWP) key objectives are to support public agencies to understand energy use and achieve energy savings, and to connect local HTR communities to available energy efficiency programs. MEWP offers three overarching programs: Public Agency Climate Action Plans, Public Agency Energy Efficiency Support, and Empowering HTR Communities. MEWP's programs support PG&E by acting as a proven trusted advisor to Marin's public sector and HTR customers. MEWP focuses on building trust and relationships with public sector staff to assist them in identifying opportunities and navigating EE programs and financing opportunities, using existing networks and established relationships in the community.

Redwood Coast Energy Watch (PGE_Pub_003)

Implementer: Redwood Coast Energy Authority

Redwood Coast Energy Watch (RCEW) serves the Humboldt County region. RCEW is intended to overcome the geographic barriers that affect the customers of the region and to lead customers to more comprehensive energy actions. The primary objective is to support cost-effective resource acquisition program services for public and commercial HTR customers while growing local EE capacity. RCEW serves public agencies, non-residential HTR customers, and residential HTR customers. The program applies innovative approaches to enroll customers and build trusting relationships, with an end goal of motivating participants to continue pursuing deeper retrofits in the future. RCEW aims to drive comprehensive public agency energy projects, increase cost-effectiveness for resource acquisition programs, increase opportunities for HTR customers to save energy, integrate deep-reaching energy projects with demand side management, and build local capacity for EE through education.

San Mateo County Energy Watch Program (PGE_Pub_005)

Implementer: City/County Association of Governments of San Mateo County (C/CAG), administered by the County of San Mateo Office of Sustainability

The San Mateo County Energy Watch Program (SMCEW) serves the public and commercial market sectors across San Mateo County. SMCEW assists municipalities, special districts, public agencies, K-12 public schools, and small, HTR businesses in accessing EE programs, trade professional networks, and financing opportunities. SMCEW provides coordination, outreach, referrals, and educational resources to help community members pursue EE projects. SMCEW runs a public facility quarterly working group to help facility staff increase their understanding of energy efficiency and energy management. Through San Mateo County's Regionally Integrated Climate Action Planning Suite initiative, SMCEW assists cities in reducing energy use and achieving GHG reduction goals. SMCEW hosts a monthly climate action working group for sustainability staff; develops annual community GHG inventories; and supports staff in developing, implementing, and tracking climate action plans.

Sierra Nevada Energy Watch (SNEW, PGE_Pub_007)

Implementer: Sierra Business Council

The Sierra Business Council's Sierra Nevada Energy Watch (SNEW) program furthers PG&E and CPUC EE goals through EE project development activities, planning and policy work, and outreach/education efforts. These program activities motivate public sector leaders and SMBs to increase their capacity for EE action, especially in the rural Sierra Nevada counties and their HTR communities and DACs.

Sonoma Public Energy (PGE_Pub_008)

Implementer: County of Sonoma

The Energy and Sustainability Division of Sonoma County developed "Sonoma Public Energy", a suite of comprehensive services aimed primarily at the reduction of energy use, reduction of energy cost, and assistance with access to existing and future resources and services. These services are focused on facilitating upgrades to public facilities, K-12 Schools, special districts, and HTR and DAC customers located within Sonoma County.

Third-party Public Sector Programs[34]

These public sector programs target publicly-funded entities that receive revenue from state and local governments or are local governments themselves.

Government and K-12 (GK-12) Comprehensive Program (PGE_Pub_009)

Implementer: Willdan Energy

The Government and K-12 program includes a broad offering of EE measures to diverse markets of local governments and K-12 public and charter schools. GK-12 has a strong focus on electrification, which aligns with substantial interest in the government and K-12 sectors. Utilizing the meter-based savings platforms, the program offers HVAC and Lighting equipment and control system upgrades, retrocommissioning recommendations, and behavioral strategies to optimize system efficiencies. The program is designed to cost-effectively complete all sizes and scopes of projects and has a goal of engaging nearly half of its customers from the HTR and DAC sectors.

RAPIDS Wastewater Treatment Optimization Program (PGE_Pub_010)

Implementer: AESC

The RAPIDS program targets the wastewater treatment and collection system market, offering technical analysis, design assistance, project development support, incentives, and financing. While the program does offer capital project solutions, it also focuses on the cascading effects of operational measures on downstream energy, process loads, and operational efficiency. Development of an action plan, including an ongoing system monitoring strategy, can contribute to energy savings persistence for customers. The program considers the operation of clarifiers, blowers, pumps, filters, and dewatering processes to optimize the complex interaction between systems and flow volumes.

[34] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in Decision 18-01-004.

Industrial Programs

California's industrial sector is extremely diverse and, in most cases, industrial customers tend to be heavy energy users. In 2022, PG&E supported customers in 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. PG&E's programs focused on EE solutions for its industrial sector to help reduce energy consumption and GHG emissions while increasing customers' profitability by lowering energy costs.

PG&E's industrial EE programs also 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 Demand Response (DR) and Distributed Generation (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.

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 programs focused on specific technologies, segments, or approaches with specialized requirements.

Key Initiatives

While industrial 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 programs 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 the Energy Advisor Program, to financial offerings to install EE projects through the calculated, deemed, or financing programs.

Looking Ahead

In 2023, PG&E's goal for industrial programs is to work towards high industrial customer satisfaction for program participants. Strategic Energy Management (SEM) programs yield high energy savings and customer satisfaction; PG&E will be working to increase participation in the two existing industrial SEM programs, and will look to expand beyond the industrial sector, as outlined in PG&E's 2024-2027 Business Plan. PG&E's industrial SEM programs are described in more detail, below.

Industrial Programs

Industrial Calculated Incentives Program (PGE21021)

The Industrial Calculated Incentives program provides custom incentives for non-residential EE retrofit and new construction projects involving the installation of high-efficiency equipment or systems. This is a legacy program implemented by PG&E, and it will be ramping down throughout 2023 to accommodate the third-party programs described below. Projects still in the Industrial Calculated program pipeline are expected to be completed by the end of 2024.

Industrial Deemed Incentives Program (PGE21022)

The Industrial Deemed Incentives program 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. . This is a legacy program implemented by PG&E, and it will be ramping down throughout 2023 to accommodate the third-party programs described below. Projects still in the Industrial Deemed program pipeline are expected to be completed by the end of 2024.

Industrial Energy Advisor Program (PGE21024)

The Industrial Energy Advisor program provides energy savings opportunities and continuous improvement over time by supporting online self-service tools, such as Business Energy Checkup[35], for industrial customers. Through Business Energy Checkup, customers receive rate analysis, check their bills, and receive tips and tricks for saving energy. Aligning integrated improvement opportunities with customers' needs, the Energy Advisor Program also increases program participation and adoption rates by helping customers to better understand EE benefits.

Industrial Strategic Energy Management (SEM)

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 program activities at the facility, including capital projects, maintenance and operation improvements, and retrocommissioning. Participants receive coaching to develop their own energy management practices that will persist beyond their engagement with the program. The methodology and program requirements were defined through a collaborative effort between the IOUs, CPUC, and external subject matter experts.

In 2022, the SEM methodology and program requirements were expanded to include two more years of curriculum and activities, meaning qualifying customers may now participate in SEM for up to six years total. Alongside the primary focus of EE, SEM also promotes IDSM concepts as part of its holistic vision of energy management, both through educational content and through assisting participants in creating action plans for IDSM opportunities such as load shifting or co-generation that are relevant to their facilities. SEM is well-received by participants and enjoyed both high retention rates and successful recruitment in 2022; of the 44 participants previously enrolled, 40 elected to continue, and an additional 25 were recruited for a grand total of 65 participants by the end of the year.

[35] https://www.pge.com/en_US/small-medium-business/save-energy-and-money/energy-savings-tools-and-tips/business-energy-savings-tool.page

SEM Food Processing (PGE_Ind_001a)

Implementer: CLEAResult

The SEM Food Processing program serves food processors and producers and takes a whole-facility approach that uses NMEC and dynamic baseline modeling to determine energy savings from all program activity at the facility, including capital projects, custom and deemed calculated retrofits, maintenance and operation, and retrocommissioning projects. The program requires a multi-year customer commitment to participation in multiple cohort training workshops, individual or cohort energy analysis, and measurement and verification (M&V) activities based on information and characteristics of the facility's specific processes.

SEM Manufacturing (PGE_Ind_001b)

Implementer: Leidos, Inc.

The SEM Manufacturing program combines cohort participation, 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 the program rigorously tracks energy usage before and after energy efficiency actions are performed to determine effectiveness and persistence.

Industrial Third-party Programs

Industrial third-party programs[36] offer a thoughtful, niche approach that continues to deliver savings, serve customer needs, and stay innovative by adapting to changing markets.

Industrial Compressed Air System Efficiency Program (ICASE, PGE210212)

Implementer: ALDI

The ICASE program was selected as an innovative program for the IDEEA 365 solicitation process. The program serves 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 maintaining efficiencies that have been initially gained by implementing an EE project.

Business Energy Performance (BEP) Program (PGE_Ind_002)

Implementer: CLEAResult

The Business Energy Performance (BEP) Program provides energy efficiency services, technical assistance, and incentives to the industrial sector within PG&E's service territory. BEP targets the Petroleum, Chemical, and Minerals subsegments using a downstream market approach and by leveraging the deemed and custom savings platforms to deliver cost-effective energy savings. BEP also promotes and

[36] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in Decision 18-01-004.

leverages OBF as a tool to off-set the barrier of capital to fund projects. More information on OBF can be found in the Financing Programs chapter of this report.

Industrial Systems Optimization Program (ISOP, PGE_Ind_003)

Implementer: Cascade

The Industrial Systems Optimization Program (ISOP) serves the industrial manufacturing and food processing market segments throughout PG&E's territory, focusing on training, retrocommissioning, and capital projects with systems-level optimization. ISOP offers technical support to identify and implement projects, energy management coaching, energy management and collaboration software, and ongoing energy coach support to drive projects. The program uses the deemed, custom, and meter-based platforms (where applicable) to achieve savings, and supports all relevant measure types, with a focus on complex mechanical systems such as refrigeration, compressed air, pumping, fans, blowers, boiler and steam systems, and the industrial processes they serve.

Agricultural Programs

In 2022, PG&E's agricultural programs provided a portfolio of offerings to support an industry impacted by fluctuating availability of surface water and increasing oversight on ground water pumping. The EE agricultural programs, coupled with Demand Response (DR) and Distributed Generation (DG) programs, helped agricultural producers and processors manage energy costs and make informed investments in new equipment. PG&E offered a full suite of tools to position California agricultural customers to eliminate unnecessary energy use, including 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.

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. In 2022, PG&E programs served 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.

Key Initiatives

In 2022, PG&E continued to focus on building trust with agricultural 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).

Looking Ahead

PG&E continues to support a geographically widespread and diverse market with opportunities that support customer and grid resiliency. With customer interest in decreasing demand and electrifying equipment in mind, PG&E plans to educate and support customers with innovative EE and IDSM opportunities, as part of the larger effort to make the grid safer and more reliable.

Agricultural Programs

Agricultural Calculated Incentives Program (PGE21031)

The Agricultural Calculated Incentives Program is a site-specific program providing financial incentives for agricultural customers to install new equipment or systems that exceed applicable code and/or industry standards in buildings and sites which do not qualify for a current third-party implemented program. This is a legacy program implemented by PG&E, and it will be

ramping down throughout 2023 to accommodate the third-party program described below. Projects still in the Agricultural Calculated program pipeline are expected to be completed by the end of 2024.

Agricultural Deemed Incentives Program (PGE21032)

The Agricultural Deemed Incentives program provides fixed rebates for high volume measures such as variable frequency drives (VFDs) for irrigation pumps or process fans. Deemed retrofit measures have fixed incentive amounts per unit/measure and are intended for projects that have well-defined energy and demand savings. This is a legacy program implemented by PG&E, and it will be ramping down throughout 2023 to accommodate the third-party program described below. Projects still in the Agricultural Deemed program pipeline are expected to be completed by the end of 2024.

Agricultural Energy Advisor Program (PGE21034)

The Agricultural Energy Advisor program provides customer education and encourages participation in EE, DR, self-generation programs and promotes awareness of GHG and water conservation activities. The program provides energy savings opportunities and continuous improvement over time by supporting online self-service tools, such as Business Energy Checkup[37], for agricultural customers. Through Business Energy Checkup, customers receive rate analysis, check their bills, and receive tips and tricks for saving energy. Aligning integrated improvement opportunities with customers' needs, the Energy Advisor Program also increases program participation and adoption rates by helping customers to better understand EE benefits.

Agricultural Third-party Programs

Third-party agricultural programs[38] offer 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.

Agricultural Energy Savings Action Plan (AESAP) Program (PGE_Ag_001)

Implementer: TRC

The Agricultural Energy Savings Action Plan (AESAP) Program supports PG&E's vision for the agricultural sector to maximize yield while reducing energy consumption. AESAP uses data, technical assistance, analytics, energy efficiency measures and marketing to reduce demand, increase operational efficiency, and broaden customer participation while leveraging the custom, deemed, and meter-based savings platforms. AESAP also promotes and leverages OBF and other private financing options as a tool to off-set the barrier of lack of capital to fund projects. Please see the Financing Programs chapter of this report to learn more about OBF.

[37] https://www.pge.com/en_US/small-medium-business/save-energy-and-money/energy-savings-tools-and-tips/business-energy-savings-tool.page

[38] These programs were launched following the Commission-approved solicitations process and meet the third-party program definition as described in D.18-01-004.

Financing Programs

PG&E's EE financing programs are designed to help customers finance the up-front cost of EE projects. Financing programs facilitate portfolio energy savings by enabling customers to pursue large, comprehensive efficiency retrofit projects that might not have been financially feasible otherwise.

Financing is offered in conjunction with other PG&E EE programs or on its own to stimulate and enable higher levels of customer participation.

PG&E's OBF Program Continues Popularity

In 2022, PG&E maintained the success of the OBF program while making significant investments to improve processing time and scalability for the future.

Since launching, OBF has issued over $363 million in loans across the agricultural, commercial, institutional, industrial, and multifamily sectors.

Key Initiatives and Notable Changes in 2022

On-Bill Financing Program
In 2022, PG&E issued 448 loans for a total value of $43 million. OBF loans are primarily issued directly to the customer through industry trade professionals, though many PG&E-contracted programs also incorporate OBF into their program offerings.

Streamlined Financing Solutions
In 2022, OBF issued 48 loans for projects using the Tier 1A pathway which was launched in 2021. This pathway offers a streamlined review process for measures with predictable savings methodologies and simplified inputs, removing barriers to participation for smaller projects by allowing for expedited project review. For these select measures, the energy savings estimates were confirmed through a workbook template, eliminating detailed and unnecessary engineering steps.

Looking Ahead

PG&E has identified two primary goals to continue the financing programs' support of PG&E's EE portfolio: 1) make attractive financing options available to all customers, and 2) use financing to reduce the cost of delivering EE. PG&E plans to do this by obtaining regulatory approval to expand OBF and create new financing tools, seeking alternatives to EE funds for use in financing EE programs, and increasing the use of financing without incentives.

Financing Programs

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.

Following the approval of PG&E's request to expand the OBF offering, the Commission required PG&E to provide additional reporting on the OBF program as part of the Energy Efficiency Annual Reports.[39] 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."[40] In 2022, the OBF program recorded 2 loan defaults, bringing the total number of loan defaults since program launch to 45 (a 0.81% default rate, based on 5,557 loans issued since program launch).[41] The COVID-19-related loan deferral program ended in 2022 with great success. Only one of the 237 deferred loans has defaulted, and 90 deferred loans have been fully repaid.

In March 2023, Opinion Dynamics completed an impact evaluation of the OBF program years 2018-2019, highlighting lower free-ridership in the OBF Alternate Pathway (AP) program (average net-to-gross ratio = 0.71) compared to OBF + Rebate (average net-to-gross ratio = 0.62).[42] This is the most up-to-date net-to-gross analysis of the OBF program as of May 2023.

Financing Pilot Programs

PG&E has continued collaboration with the California IOUs and the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to develop financing programs that will offer more flexible terms to a broader array of customers.

The IOUs have supported CAEATFA in the development of a set of statewide financing programs 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 programs include ratepayer-supported credit enhancements (CE) for residential, business, and multifamily properties. The CEs provide additional security to third-party lenders, who are thus enabled to extend or improve credit terms for EE projects.

39 D.19-03-001, OP 4.

40 Ibid.

41 Most defaults occur after the year of loan initiation; loans that defaulted in 2021 were issued between 2014 and 2016. Therefore, loan default rates are calculated for the length of the OBF program's operation. These loan defaults are also separate from the loan deferral process as detailed in PG&E Advice Letter 4397-G/6110-E.

42 Evaluation of the On-Bill Financing - Alternative Pathway, PY2018-2019, *CADMUS,* (August 2020). The report is publicly available at http://www.calmac.org/publications/OBF-AP_PY18-19_Process_Evaluation_Final.pdf

Emerging Technologies Programs

Emerging Technologies (ET) local programs were designed to reduce time-to-market for introduction of EE technology solutions, with an overall goal of increasing the supply of, and market demand for, EE technology solutions, delivered through two core programs: Technology Assessment (TA) and Technology Introduction Support (TIS). The TA program identifies and assesses the performance of emerging EE technology solutions in all sectors that may be offered to customers. The TIS program seeks to introduce solutions to the market by exposing end users to applications of emerging EE technology solutions in real world settings.

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. ET 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.

ET uses numerous strategies, such as lab testing, field testing, and demonstration showcases, to achieve program objectives. ET also enables program administrators to reduce certain market risks by testing and benchmarking new and innovative products, services, and market solution approaches. This helps EE programs administrators understand potential barriers, technical or non-technical, to high adoption rates for new EE technology solutions.

Key Initiatives and Notable Changes in 2022

Throughout 2022, PG&E ramped down ET local programs in response to the transition to new statewide ET programs (ETP) led by Southern California Edison and SoCalGas, which launched in October 2021 and January 2022, respectively. To finalize the transition to the statewide ET programs, PG&E's TA and TIS programs both closed in December 2022. Details on statewide programs led by other IOUs are available in the lead IOUs' Annual Reports.

Emerging Technologies Programs

Technology Assessment Program

Through the TA program, EE technology solutions that are either new to the market or underutilized for a given application are evaluated for performance claims and overall effectiveness. Key objectives are inclusion of new measures into PG&E's EE portfolio and determination of market readiness. To transition customers to the newly launched statewide ETP programs, PG&E's TA program was closed in December 2022.

Technology Introduction Support Program

The overall aim of the TIS 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. The demonstration showcase exposes the public, investors, entrepreneurs, and technology professionals to the technology solution 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. To transition customers to the newly launched statewide ETP programs, PG&E's TIS program was closed in December 2022.

Emerging Technology Projects

Below are descriptions of key projects and programs conducted by PG&E in 2022.

Central Valley Research Homes (CVRH) Project

The CVRH project is the product of multiple years of effort by leading energy efficiency researchers and represents a significant investment of funding from the CEC, California IOUs, and industry. Testing at three of the four houses has focused on the performance of variable capacity heat pumps (VCHP, alternatively called mini-split heat pumps) while the fourth house has been focused on air-to-water heat pump (AWHP) systems operating with various hydronic delivery options (fan coils and radiant ceiling panels), load-shifting strategies, and in three function operating mode with integrated domestic water heating.

In 2022, two of the VCHP homes began testing mid and high static pressure ducted units and through-wall package VCHP systems. The third home is looking at advanced low-global warming potential (GWP) HVAC solutions by evaluating a Sanden HPWH (for space heating and hot water) that uses CO_2 as refrigerant and an indirect-direct evaporative cooling system that uses water as the working fluid. The fourth house continues to evaluate hydronic systems, now with variable capacity AWHPs coupled to central ducted hydronic fan coils and integrated thermal energy storage to evaluate the ability of the system to provide space conditioning with little or no on-peak electrical demand. This effort focused on performance and finding thermal storage solutions that are more attractive to mainstream production home builders.

Testing and reporting activities continued in 2022, with the comprehensive best practices guide for VCHP design, installation, and field commissioning to be completed in Q2 of 2023. A report on using thermal energy storage with AWHPs and radiant ceilings to use little to no on-peak electricity was posted at the Emerging Technologies Coordinating Council (ETCC)[43] website. Findings from CVRH AWHP research were used in a 2022 Codes and Standards Enhancement report to improve the recognition of the AWHPs within the Title 24 compliance software.

XeroHome Existing Home Energy Modeling

In 2022, PG&E continued collaborating with XeroHome™ to conduct analysis of the residential building stock in San Louis Obispo and Petaluma. The goal of the project was to provide the two cities and their residents with actionable data to inspire existing home energy retrofits, and to address barriers to the large-scale deployment of residential energy efficiency and decarbonization technologies.

The project delivered analysis to aid the cities in furthering their climate action plans and decarbonization goals, and a web-platform for their residents to evaluate options for cost-effectively retrofitting their homes with energy upgrades. The large-scale analysis conducted showed that in these cities, electrification upgrades such as replacing existing space and water heating equipment with more efficient electric heat pumps, can result in overall utility bill reductions for most homes, but not all. The analysis further identified energy efficiency and renewable energy upgrades such as rooftop solar that can be paired with the electrification

[43] https://www.etcc-ca.com/reports/central-valley-research-homes-phase-2-assessment-residential-radiant-ceiling-panel-space

upgrade to provide a cost-effective package that is expected to lower utility costs for all homes. The project report was published on the ETCC site in December 2022.

New Buildings Institute Advanced Water Heating Initiative and Grid Optimal Support
Two of New Buildings Institute's keystone programs, supported in part by funding from PG&E in 2022, are the Advanced Water Heating Initiative and the GridOptimal Buildings Initiative.

The Advanced Water Heating Initiative (AWHI) is a collaborative effort of over 50 organizations working to catalyze a transition to high-efficiency, grid-connected Heat Pump Water Heaters (HPWH). With input from the Advanced Water Heating Initiative's 120-volt Working Group, M&V contractors, and manufacturers, NBI developed a field study to show the potential of low power designs that can plug into existing residential wall receptacles without requiring panel upgrades and/or significant home rewiring. The field study, with 32 installs across the state to date, will bring understanding of the emerging technology opportunities and gaps to support program design for market adoption. The study is a collaboration among multiple IOUs, including PG&E and SCE.

NBI's GridOptimal Buildings Initiative developed new metrics by which building features and operating characteristics that support more effective grid operation can be measured and quantified. As part of this program, PG&E co-funded Phase 3 of this initiative in 2021 and 2022. In NBI delivered a PG&E specific dashboard and summary report which can be used to assess program designs to assure that grid management is appropriately valued when determining which measures to support.

PG&E Midstream HPWH Field Study
In 2022, PG&E continued the Midstream HPWH Study and Field Test to conduct a market assessment and study strategies to engage midstream market actors to accelerate the adoption of connected HPWHs for load-shifting. This project serves the residential sector, single family and multi-family, and results could potentially benefit small commercial buildings.

The project included a technical assessment of the market status and available resources and working closely with key partners to identify barriers and develop solutions to test in the field. All HPWHs installed through the project have "smart" controls embedded within the equipment or connected to an external control device. All HPWHs in the study are expected to be connected and capable of shifting load in response to a daily load shifting signal. The project coordinated with the WatterSaver program as the entity responsible for sending this signal on behalf of PG&E.

The project resulted in the following primary outcomes that are posted in the final report Midstream Heat Pump Water Heater (HPWH) Study and Field Test on the ETCC website:[44]
The Midstream Market Study can be found in Appendix A of the final report and includes results from 44 interviews across different types of HPWH supply chain stakeholders to assess knowledge, perceptions, and barriers to increasing adoption of connected HPWHs and HPWH supply chain market implementation strategies. HPWH midstream incentive field test resulting in distributor sales of 139 connected HPWHs and 115 thermal mixing valves.
Within the primary goal categories, there were several discrete project objectives:

- Identify changes to existing processes required to mitigate barriers to replacing gas water heaters with HPWHs in emergency and planned water heater replacements.

[44] https://www.etcc-ca.com/reports/midstream-heat-pump-water-heater-hpwh-market-study-and-field-test

- Identify barriers and solutions specifically related to existing site conditions.
- Test different strategies to influence midstream market actors to adopt connected HPWHs.
- Educate distributors to increase knowledge of technologies/benefits and to encourage them to stock connected HPWH models.
- Collaborate with distributors to facilitate regional contractor trainings.
- Gather cost data, that may include but not limited to panel upgrades, ancillary equipment costs (e.g., bollards), and incremental labor costs.
- Determine installation costs to the customer and identify factors that influence customer decisions.
- Gather data on issues and barriers regarding the installation of thermal mixing valves.

Controlled Environment Horticulture (CEH)
Given the newness to regulation under Title 24 and the fact that some key segments of the CEH industry are in a state of rapid growth, notably cannabis production operations, finding existing and developing new raw data sources has been and will continue to be a key challenge for Codes and Standards (C&S) advocacy. There are significant savings opportunities that remain to be pursued through Title 24 “covered process” regulations. The large savings potential through future regulations and need for raw data collection efforts make CEH a priority topic for consideration by the PG&E ET programs so that subsequent C&S advocacy efforts are better positioned to succeed with capturing remaining CEH savings opportunities.

The CEH Project resulted in the completion of three separate publications that were posted on the ETCC website:

- Literature Review of Energy and Water Use in Controlled Environment Horticulture and Potential Efficiency Opportunities[45]
- Controlled Environment Horticulture Facility Assessment and Industry Survey Report[46]
- Controlled Environment Horticulture (CEH) Field Study: Adaptive Daylighting Controls[47]

Frontier Energy Inc. Induction Cooktop Loaner Program
The Induction Cooktop Loaner Program (ICLP) is a collaborative effort between the PG&E C&S and Workforce Education and Training (WE&T) programs, the PG&E Tool Lending Library, and the PG&E Emerging Technologies programs. In 2022, the Induction Cooktop Loaner Program was set up and funding extended through 2022. Under the direction of PG&E and its contractor, the Induction Cooktop Loaner Program supported the Tool Lending Library located at PG&E’s San Ramon Valley Conference Center with day-to-day operations that support the logistics of including induction cooktops in the Tool Lending Library.

The Induction Cooktop Loaner Program was developed to allow residential and commercial customers to try an induction cooktop without having to make a substantial investment in a technology they are uncertain of; this “try it before you buy it” approach will not only allow PG&E customers to try an induction cooktop, the program also provides technical support and will collect follow up surveys that will provide PG&E with more insight into the customer experience with these products.

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45 https://www.etcc-ca.com/reports/literature-review-energy-and-water-use-controlled-environment-horticulture-and-potential
46 https://www.etcc-ca.com/reports/controlled-environment-horticulture-facility-assessment-and-industry-survey-report
47 https://www.etcc-ca.com/reports/controlled-environment-horticulture-ceh-field-study-adaptive-daylighting-controls

A final report on the ICLP, which was completed in early December 2022, noted that the ICLP successfully completed 379 loans to participants who submitted a reservation and pre-loan survey, borrowed the induction cooking kit, and returned the kit at the end of their loan period. Of those completed loans, the ICLP had a response rate of 60% on the post-survey, meaning that 226 successfully borrowed and returned the kit took the time to contribute meaningful feedback about their experience with ICT and the ICLP. The final report provides a detailed analysis of the pre and post surveys and has been posted to the Emerging Technologies Coordinating Council (ETCC) website.[48]

[48] https://www.etcc-ca.com/reports/induction-cooktop-lending-program

Codes, Standards, and New Construction

PG&E's Codes and Standards (C&S) programs collaborate with regulatory bodies—such as the CEC and the U.S. Department of Energy (DOE—to strengthen or develop new EE and GHG emissions- reducing regulations. C&S programs undertake efforts to increase compliance with regulations so that the State realizes the savings from C&S. The programs also support local governments that include adopting local energy ordinances as a climate strategy. Additionally, PG&E leads four statewide new construction programs, across the residential and non-residential sectors, supporting California's ambitious new construction goals. Planning and coordination, across a broad range of internal and related external activities, are conducted to optimize programs and to capture organizational efficiencies.

C&S advocacy and compliance improvement activities extend to newly constructed or renovated buildings and appliances sold in California. In so doing, C&S efforts not only support California's ambitious climate and energy goals but also extend the successes of voluntary EE programs to all customers and resolve market barriers such as split incentives.

California 2022 C&S Savings[49]

	Gross First Year Savings			Net Standard First Year Savings			Net First Year Program Savings		
	GWh	MW	MMTherm	GWh	MW	MMTherm	GWh	MW	MMTherm
Statewide	14,557	2,025	83.7	6,934	1,086	64.0	4,051	671	46.2
All IOUs	11,597	1,613	82.6	5,524	865	63.1	3,228	535	45.6
PG&E	5,149	716	41.6	2,453	384	31.8	1,433	237	23.0
SCE	4,650	647	-	2,215	347	-	1,294	214	-
SoCalGas	-	-	34.5	-	-	26.4	-	-	19.0
SDG&E	1,798	250	6.4	856	134	4.9	500	83	3.6

Key Initiatives and Notable Changes in 2022

PG&E's key initiatives for 2022 included:

- Continuing statewide administration of C&S advocacy programs and commencing statewide administration of nonresidential new construction programs;
- Advocacy for measures to be developed into proposals to update California's 2025 Energy Code;
- Advocacy for energy efficiency and GHG reducing measures as part of updates to relevant American Society of Heating Refrigeration and Air-Conditioning Engineers

49 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 and then adjusted by market effects. Savings are based on a combination of data from CPUC ex-post evaluation studies and C&S program forecasts. All energy savings values in the table include interactive effects between building space heating and cooling energy use and the installation of energy efficient lighting and appliance measures.

(ASHRAE) standards and the triennial update to the International Energy Conservation Code (IECC);
- Advocacy for energy efficiency and DR-capable equipment through California's Title 20 Appliance Efficiency Regulations (Title 20) and SB-49 rulemakings, DOE appliance standards, and related ENERGY STAR® activities;
- Support for over 50 adopted local energy ordinances;
- Delivering training, tools, and resources to support compliance with California's existing EE regulations;
- Primary data collection to support DOE and CEC rulemakings, and to inform California Building Energy Code Compliance (CBECC)-Res and CBECC-Com (CEC code compliance software);
- Development of cost-effectiveness studies and other resources to support local government reach codes;
- Code readiness activities aimed at specific industries and technologies for future code cycles;
- Launching the statewide nonresidential new construction (all-electric and mixed fuel) programs; and
- Planning and coordination activities to guide implementation and optimize work across teams within PG&E and with other California utilities.

Notable changes in 2022 included:
- Closure of the Statewide California Energy Smart Homes – Mixed Fuel (CESH-MF) program, in order to support California's electrification goals.
- Reclassifying the residential and nonresidential new construction programs from resource acquisition to market support and refining the programs to better align with market support objectives.

Looking Ahead
Emerging issues of focus in the C&S and new construction sectors include demand management; integration of EE with EV charging infrastructure, renewables, and energy storage; and affordable, all-electric multifamily buildings that also provide appropriate indoor air quality and well-managed water use features. PG&E's C&S and new construction programs will continue to advocate for more efficient building codes and appliance standards; collect primary data to inform code and standard development; develop tools to support code compliance; support local governments that pursue reach codes; and support efficient, all-electric and electric-ready new construction projects that can serve as a model for the architecture, engineering design, and builder communities.

Codes and Standards Programs

State Building Codes Advocacy: Title 24, Part 6 & Part 11 (PGE_SW_CSA_Bldg)
Statewide Program Lead: PG&E
The Statewide Building Codes Advocacy program supports the CEC'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 program also supports the Energy Commission in preparing recommendations to the Building Standards Commission to update the California Green Buildings Standards (Title 24, Part 11 or

CALGreen). The voluntary energy measures in CALGreen provide foundational elements for local reach codes. In 2022, a portfolio of approximately 70 measures was developed to prepare for the 2025 Energy Code rulemaking. Descriptions of the 2025 Energy Code proposals, timeline, and other supporting documentation is available at title24stakeholders.com.

National Codes & Standards: DOE, ASHRAE 90.1 and 189.1, IECC, ENERGY STAR® (PGE_SW_CSA_Natl)

Statewide Program Lead: PG&E

PG&E advocates for national building codes and appliance standards that support California by encouraging broader market 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. Advocacy during DOE proceedings supports large cost-effective savings in California through more stringent federal appliance standards, including final rules in 2022 for general service lamps and direct expansion dedicated outdoor air systems. Participation in Environmental Protection Agency (EPA), Federal Trade Commission, ASHRAE, and IECC code and standard update proceedings in 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. In 2022, the program supported approximately seven measures in the ASHRAE / ANSI / IES 90.1 maintenance process, and over 20 measures in the IECC 2024 update proceedings.

State Appliance Standards Advocacy Program (PGE_SW_CSA_Appl)

Statewide Program Lead: PG&E

The Statewide Appliance Standards Advocacy (ASA) program 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 program monitors state and federal legislation and intervenes, as appropriate. In 2022, the CEC adopted new commercial and industrial fans regulations with support from IOUs, and advocacy expanded to support SB 49 proceedings which help increase the stock of DR-capable equipment.

Compliance Improvement Program (PGE21053)

The Compliance Improvement (CI) program aims to increase compliance with adopted Title 24, Part 6, Title 20, and federal EE regulations. CI serves market actors throughout the entire compliance chain, including designers, builders, installers, manufacturers, retailers, etc. Training, which reached more than 7,000 students in 2022, is based on adult learning theory and delivered in person and virtually across multiple platforms. Compliance is further supported by outreach, technical support, resources, and tools such as the Virtual Compliance Assistant, which leads market actors through compliance requirements for their individual nonresidential projects. CI program activities complement other C&S program work by maximizing persistent savings from C&S advocacy activities.

Reach Codes Program (PGE21054)

In addition to state and national building codes advocacy, the C&S Reach Codes Program provides support to local governments that wish to adopt local energy ordinances ("reach codes") that exceed statewide Title 24 minimum requirements for new and existing buildings, additions, or alterations. The primary objective of the program is to facilitate the adoption process by filling resource or expertise gaps at the jurisdiction through:

- Conducting research and analyses to establish performance levels and cost effectiveness relative to fundamental Title 24, Part 6 (Energy) and Part 11 (CALGreen) requirements by climate zone
- Drafting model ordinance language to encourage consistency and minimize duplication
- Assistance completing and expediting the application process required for approval by City Councils, the California Energy Commission, or California Building Standards Commission
- Providing customized implementation support to improve compliance with the requirements once effective
- Providing a robust policy analysis tool to assist jurisdictions in developing geographically specific cost-effective energy ordinances.

Adoption momentum remained strong in 2022 with approximately 50 jurisdictions adopting a reach code. A majority of those adopting requirements opted to amend CALGreen, Part 11 of the California Building Code. Nearly all the ordinances target new construction with a handful containing specific requirements for existing buildings. Although most ordinances included exceptions for certain occupancies or technologies, there is a trend amongst many jurisdictions to begin reducing the number and scope of exceptions, moving toward disallowing gas in all new construction. More information and a list of adopted ordinances is available at https://localenergycodes.com/ and https://explorer.localenergycodes.com/.

Planning and Coordination Program (PGE21055)

The planning element of this program includes long-term planning and scenario analyses, modeling of impacts from potential C&S program activities relative to California policy goals and voluntary programs, development of business and implementation plans, 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, including voluntary and workforce education and training EE programs; other PG&E program areas; and 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) CPUC, Energy Commission, and California Air Resources Board (CARB), 2) other IOUs, municipal utilities, and utilities in other states, 3) national advocates such as the Appliance Standards Awareness Project, Natural Resources Defense Council, Northwest Energy Efficiency Alliance, Sierra Club, American Council for an Energy-Efficient Economy, 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, Consumer Technology Association, NEMA, Air-Conditioning, Heating and Refrigeration Institute, American Gas Association, 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, and others.

Code Readiness Program (PGE21056)

The primary purpose of the Code Readiness program is to accelerate achievement of state policy goals related to energy efficiency, decarbonization, and grid harmonization through data acquisition and industry outreach. Technologies and market-disruptive systems, such as LED, are tested and demonstrated with the aim of collecting high-quality information and data needed to support improvements to state and federal C&S building codes and appliance standards proposals; specifically, test procedure representativeness, as well as measure cost-

effectiveness, feasibility, and compliance efficacy. The Multifamily Air-Sealing project tested air leakage in multifamily buildings for the first time. Data was collected on the compartmentalization rates of individual units as well as overall building air leakage. This data was then given directly to the 2025 CASE team to aid in the development of their Multifamily Indoor Air Quality CASE report.

New Construction Programs

PG&E led four statewide new construction programs in 2022, including all-electric and mixed fuel projects in both residential and nonresidential subsectors. The goal of these new construction programs is to influence the new construction market to achieve deeper energy savings and decarbonize new buildings through key activities such as outreach and education, real-time energy modeling, verification, and data tracking to inform future codes and standards.

California Energy-Smart Homes All Electric Residential Program (PGE_SW_NC_Res_electric)

Statewide Program Lead: PG&E
Implementer: TRC

The California Energy-Smart Homes All-Electric Residential Program (CESH-AE) supports a high-level approach to achieving California's advanced EE policy goals through 2025 by engaging with builders and developers to recruit potential projects and convince them to build all-electric. The program is available to customers in the PG&E, SCE, and SDG&E territories. The all-electric program offering serves five residential sub-sectors: Single family and duplexes, multifamily low-rise (three or fewer stories), manufactured housing, accessory dwelling units, and addition/alteration (additions greater than 700 square feet). The program influences the decision and eases the transition to adopt all-electric new construction practices by educating potential participants and stakeholders on the features of all-electric homes, enrolling projects, emphasizing and incentivizing the installation of advanced energy efficiency measures, and facilitating future opportunities through non-incentivized, prerequisite measures that position homes to install high-impact demand response technologies more easily in the future.

California Energy-Smart Homes Mixed-Fuel Residential Program (PGE_SW_NC_Res_mixed)

Statewide Program Lead: PG&E
Implementer: TRC

The California Energy-Smart Homes Mixed-Fuel Residential Program (CESH-MF) supports a high-level approach to achieving California's advanced energy efficiency policy goals through 2025 by engaging with builders and developers to recruit potential new construction projects that are unable to make the switch to all-electric, and alteration projects that are only able to partially convert to all-electric. The program is available to customers in the PG&E, SCE, SoCalGas, and SDG&E territories. The mixed-fuel program offering serves three residential subsectors: Single family and duplex, multifamily low-rise (three or fewer stories), and alterations.

The program influences the decision and eases the adoption of future advanced energy electric measures through requiring non-incentivized, pre-requisite measures to qualify for program participation. To accomplish this, the program educates potential participants and stakeholders on the features of mixed-fuel and electric-ready homes, enrolls projects, emphasizes the installation of advanced energy efficiency measures, and facilitates future opportunities through

non-incentivized, prerequisite measures that position homes to install electric equipment and appliances, as well as high-impact demand response technologies more easily in the future.

Due to changes in the 2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6), many of the electric readiness program prerequisites initially included in the CESH-MF program have been rendered ineligible for incentives, as they have now moved into the building code. Additionally, the solicitation and initial design of the CESH-MF program predated D. 21-05-031, which directed portfolio administrators to "segment" their portfolios
beginning in 2022 into resource acquisition, market support, and equity segments.[50] Market support programs are defined as "Programs with a primary objective of supporting the long-term success of the energy efficiency market by educating customers, training contractors, building partnerships, or moving beneficial technologies towards greater cost-effectiveness."[51]

In accordance with this definition, statewide new construction programs were included in the market support segment in the PG&E Program Year (PY) 2022-2023 Biennial Budget Advice Letter (BBAL)[52] and in the PG&E Energy Efficiency (EE) 2024-2027 Portfolio Plan.[53] As part of a strategy to optimize for market support segmentation and in recognition that building electrification is a key strategy to achieve California's decarbonization goals, the California Energy-Smart Homes Mixed-Fuel Residential Program closed to new applications on December 31, 2022.[54]

California Energy Design Assistance All-Electric (CEDAE) Program (PGE_SW_NC_NonRes_Com_electric)

Statewide Program Lead: PG&E
Implementer: Willdan Energy Solutions

The CEDAE program serves commercial, public, high-rise multifamily residential, industrial, and agricultural new construction sectors, and major alterations facilities across the PG&E, SCE, and SDG&E territories. This program contributes to the IOUs' efforts to achieve their share of California's ambitious energy efficiency (EE), greenhouse gas reductions, and meet electrification goals by offering EE options tailored to each building during the design and construction process. CEDAE also offers technical assistance early in the process when it has the greatest influence on design and operation, driving energy savings beyond code and gathering data to further advance future codes. The CEDAE program enrolls and influences the non-residential new construction market to achieve deeper energy savings and decarbonization goals through key activities such as outreach and education, real-time energy modeling, verification, and data tracking to inform future codes and standards.

California Energy Design Assistance Mixed Fuel (CEDAM) Program (PGE_SW_NC_NonRes_Com_mixed)

Statewide Program Lead: PG&E
Implementer: Willdan Energy Solutions

The CEDAM program serves commercial, public, high-rise multifamily, industrial, and agricultural new construction sectors, and major alterations facilities across the PG&E, SCE,

50 D.21-05-031, Ordering Paragraph (OP) 5
51 Ibid, pg. 14
52 PG&E Advice 4521-G/6385-E, as filed on November 8, 2021, and supplemented (PG&E Advice 4521-G-A/6385-E-A) on January 7, 2022
53 PG&E Energy Efficiency 2024-2027 Portfolio Plan, Exhibit 2, Chapter 3, pgs. 3-12 - 3-17
54 PG&E Advice 4680-G/6760-E

SoCalGas, and SDG&E territories. CEDAM contributes to the IOUs' efforts to achieve their share of California's ambitious energy efficiency (EE), greenhouse gas reduction, and electrification goals by offering technical assistance early in the process when it has the greatest influence on design and operation, driving energy savings beyond code and gathers data to further advance future codes. The CEDAM program will enroll and influence the non-residential new construction market to achieve deeper energy savings and decarbonize through key activities such as outreach and education, real-time energy modeling, verification, and data tracking to inform future codes and standards.

Workforce Education and Training

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

PG&E continued to demonstrate leadership in the local, state, and national EE workforce arenas in 2022. While administering the WE&T program (Integrated Energy Education & Training or IEET) locally and launching the Statewide WE&T programs (Career & Workforce Readiness and Career Connections), PG&E collaborated with and provided technical advice to educational institutions, professional organizations, and building trades training programs.

2022 WE&T Accomplishments

Metric / Deliverable	Quantity
Formal Collaborations with other organizations*	10
Total Class Attendance*	20,697
Class participants as a percent of eligible target population*	5.1%
Percent of participants meeting the definition of Disadvantaged Worker*[55]	45.1%
Number of Classes	790
Tool Lending Library (TLL) Transactions**	268
Tool Lending Library Tools Loaned **	2577
Tool Lending Library Projects Supported **	202

*Formal WE&T Business Plan Metric
**To comply with COVID-19 safety and health guidelines, the TLL operated under modified protocols in 2022.

Key Initiatives and Notable Changes in 2022

Supporting Electrification Readiness

As dozens of California municipalities have instituted new or continued existing local electrification and decarbonization ordinances, the topics of electrification and decarbonization became increasingly important and relevant to the WE&T audience. In 2022, approximately 28 percent of PG&E's training focused on electrification topics including heat pump water heaters,

[55] D.18-10-008 defines a disadvantaged worker as "an individual that meets at least one of the following criteria: lives in a household where total income is below 50 percent of Area Median Income; is a recipient of public assistance; lacks a high school diploma or GED; has previous history of incarceration lasting one year or more following a conviction under the criminal justice system; is a custodial single parent; is chronically unemployed; has been aged out or emancipated from the foster care system; has limited English proficiency; or lives in a high unemployment ZIP code that is in the top 25 percent of only the unemployment indicator of the CalEnviroScreen Tool."

induction cooking, heat pump space conditioning, battery storage, and grid integration. In 2023, WE&T will continue to offer such classes and develop new ones to address the rapidly changing landscape and the customers' need for information on how to decarbonize buildings and cities. A list of current electrification classes is available at www.pge.com/energyclasses.

For residential customers, commercial food service customers, and for the design community, PG&E developed and delivered residential and commercial induction cooking classes, a subset of which were recorded and made available as on-demand classes. PG&E provided eight induction cooking demonstrations at the Food Service Technology Center in San Ramon to chefs, restaurant owners, designers, and commercial foodservice establishments. These demos allowed customers to try a full-size commercial induction stove and to learn about the benefits of induction cooking and commercial kitchen decarbonization.

Furthermore, in collaboration with the PG&E emerging technologies program, PG&E launched and operated a no-cost Induction Cooktop Loaner Program (ICLP), which gives residential customers, commercial food service customers, and other customers the opportunity to try an induction cooktop at their homes and businesses. Through the ICLP, customers have two weeks to try a countertop induction cooktop and provide PG&E their impressions of induction cooking before and after the two-week loaner period. By the end of 2022, 411 PG&E customers had borrowed and returned an induction cooktop; over 90% of them stated that they would switch to induction the next time they had to replace their current stove, if not sooner.

Supporting the Energy Savings Assistance (ESA) Program

PG&E's WE&T programs continued to support PG&E's Energy Savings Assistance (ESA) Program by offering a blended learning experience comprised of on-demand, webinar, and in-person training for the Energy Specialist, Weatherization Specialist, and Natural Gas Appliance Testing Technician roles. PG&E continued to deliver training safely through webinars, thus optimizing the time and travel costs associated with ESA contractor training. In 2022, PG&E completed preparation for a transition in 2023 to a new Train-the-Trainer model with the ESA Program training team. The drivers for this new model include increasing flexibility of training schedules for contractors, streamlining training processes, expanding on webinar to on-demand and blended training delivery during COVID-19, and reducing training cost to benefit rate payers.

Expanding Program Reach through Collaborations

For several decades, PG&E has collaborated with professional, trade, and workforce development organizations that share common workforce goals, including safety, energy efficiency, and a highly skilled energy workforce. In 2022, PG&E collaborated with various organizations to reach additional and new members of the energy workforce. Ten of those collaborations resulted in formal statements of collaboration, which included:

- Providing instruction and energy efficiency training modules for San Francisco's Stationary Engineers Local 39 to incorporate into their training program;
- Supporting faculty and staff at four higher educational institutions with curriculum and training resources for energy efficiency training and energy projects support through Energize Colleges;
- Supporting students at four higher educational institutions with energy efficiency training, internships, fellowships, and sustainability outreach campaigns through Energize Colleges;

- Joining all four California IOUs to sponsor/support the 2021-2022 and 2022-2023 Architecture at Zero design competitions, which promotes decarbonization, equity and resilience, open to students and professionals.
- Teaching advanced equipment and food preparation techniques—featuring high-performance and energy efficient equipment—to San Francisco Bay Area school foodservice and nutrition staff;
- Expanding and introducing energy efficiency content into the Center for Employment Training's training programs;
- Providing training resources for the U.S. Army's Construction Engineering Research Laboratory (CERL) Academy and for PG&E's Existing Buildings Commissioning (EBCx) Workshop series.
- Leverage PG&E's specialized training facilities to deliver training for weatherization contractors California Department of Community Services & Development (CSD) and its implementer Richard Heath & Associates (RHA). In 2022, this collaboration resulted in approximately 108 training sessions including 12 five-day Combustion Appliance Safety and 12 four-day Duct and Shell trainings reaching approximately 288 participants.
- Collaborating with California College of the Arts (CCA) on the development of fundamental and energy-efficient lighting content for a new curriculum on lighting in the Architecture Division at CCA. This collaboration will extend California-focused energy efficiency content by reaching new professionals-in-training.
- Delivering electrification related training in partnership with Revalue.io to support the Cypress Mandela TECH Quick Start Grant project that targeted local minority owned contractors and laborers.

Expanding Program Reach through Targeted Marketing

WE&T programs continued to refine and enhance marketing efforts with an increased emphasis on multiple marketing channels including email promotions, quarterly newsletters, partner organizations, and social media advertising. In 2022, PG&E also focused on marketing for disadvantaged workers and initiated targeted marketing efforts to reach these students. Examples of these initiatives included paid social media advertising, online radio advertising, and dedicated email campaigns to energy professionals living in high unemployment ZIP codes that are in the top 25 percent of the CalEnviroScreen Tool unemployment indicator. Each month, Welcome emails were sent to familiarize new users with available resources provided by WE&T.

Supporting the Energy Efficiency Portfolio

The WE&T organization leveraged training development and delivery expertise (Training-as-a-Service) in select projects benefiting the PG&E program workforce, contractors, implementers and customers. These projects are separate from Integrated Energy Education and Training (IEET) which is focused on PG&E customers that design, build, maintain, and operate buildings and building systems.

Looking Ahead

PG&E's WE&T programs support PG&E's goal to help customers reduce energy use, which will help PG&E optimize delivery of TSB and reduce GHG emissions to support carbon neutrality by 2045. PG&E plans to continue its WE&T work in 2024-2027 with three goals and strategies outlined in the PG&E Energy Efficiency 2024-2027 Portfolio Plan. The three goals for 2024-2027 include: continuing to provide energy efficiency, electrification, and decarbonization training that contributes to developing a highly skilled energy workforce, enabling PG&E and California to achieve their energy efficiency savings and decarbonization goals, and being a valued partner that is integrated into PG&E's Communities and energy workforce professions. To accomplish these goals, PG&E intends to use three strategies: aligning with the WE&T audience, training for the future, and building and maintaining collaborative relationships that prioritize and support Disadvantaged Workers. To successfully implement these strategies, PG&E will work closely with stakeholders to regularly update programs and strategies to address changing needs and emerging trends impacting California's energy workforce.

WE&T Programs

Integrated Energy Education & Training (IEET, PGE21071)

The Integrated Energy Education & Training (IEET) program serves the incumbent energy efficiency workforce—people who design, build, maintain, or operate buildings and building systems—across several market segments, including agriculture, foodservice, commercial, industrial, and residential. While in-person activities were restricted in 2021 due to COVID protocols, IEET typically provides in-person and web-based education and training programs, technical advice, outreach events, and energy measurement tool loans.

Statewide WE&T Programs

PG&E leads two statewide Third-Party WE&T programs—Career Connections (CC) and Career & Workforce Readiness (CWR)—both of which launched in June 2021.

Career Connections: Energy is Everything (PGE_SW_WET_CC)

Implementer: The Energy Coalition (TEC)

The statewide Career Connections third-party "Energy is Everything" (EisE) program helps to build the next generation of energy workers. EisE provides Kindergarten through Twelfth grade students the knowledge, skills, and abilities they need for college and career opportunities in the energy industry and motivates students to adopt pro-environmental behaviors. EisE incorporates career concepts for all learners, since early exposure to career options increases the chances of students pursuing and securing high-demand energy and STEM careers. Education providers targeted will primarily focus on those classified as "disadvantaged".

In 2022, 34,058 students were enrolled in the EisE Program and completed 153,203 hours of instruction and training. Thirty-two (32) partnerships were established and supported outreach to participants, including 459 educators, across 377 CA K-12 schools and, Out-of-School Time and after school programs.

Career and Workforce Readiness: Energize Careers (PGE_SW_WET_Work)

Implementer: Strategic Energy Innovations (SEI)

Energize Careers aims to create a diverse and representational energy workforce through the economic empowerment of people who experience personal or systemic barriers to entering and remaining in the energy workforce. Energize Careers assists program participants in accessing technical training and energy career opportunities. Energize Careers provides holistic services to support disadvantaged workers through technical training, job placement, and wrap-around service support. Energize Careers collaborates with pre-apprenticeship programs, apprenticeship programs, community-based training organizations, and community colleges to provide technical energy job training to disadvantaged workers. Energize Careers also collaborates with wrap-around service providers and industry partners to provide people with services and support to enter career pathways where they can leverage their energy efficiency knowledge and skills.

Through 2022, Energize Careers has established 14 collaborations with training partners and wraparound service providers, enrolled 461 participants in technical training programs, and placed 273 program participants in jobs. Additionally, seven program participants reached their final program milestone of remaining employed for 12 months in jobs where they are using the knowledge and skills they acquired.

Tables and Appendices

Section 1
Energy Savings

Table 1
2022 Net First Year Savings, Goal Attainment and Fuel Sub Load Reduction Adjustments

	GWh	MW	MMTherms	GWh	MW	MMTherms
	Portfolio - Non C&S			Codes & Standards		
2022 Total Installed Portfolio Savings [1]	349.0	57.8	20.4	1,433.0	237.4	23.0
Adopted Goals (D.21-09-037)	553.0	75.0	13.0	1,000.0	192.0	17.0
Percentage of goal attainment [4]	63%	77%	162%	143%	124%	135%
"Fuel Substitution Goal Reduction see Tab 2, Table 2B"	-		0.42			
Goals less FS Goal Reduction (7-9 not reflected in CEDARS unless requested)	553.0	75.0	12.6	1,000.0	192.0	17.0

Notes:
(1) All energy savings numbers are net with 5% market spillover. Energy savings are based on the actual accomplishments recorded in 2022.
(2) Installed savings for PG&E includes Bay Area Regional Energy Network (BayREN) as reported in their 2022 Annual Claims filed on April 4, 2023, Marin Clean Energy (MCE) as reported in their 2022 Annual Claims filed on April 20, 2023, Tri-County Regional Energy Network (3C-REN) as reported in their 2022 Annual Claims filed on May 8, 2023, Redwood Coast Energy Authority (RCEA) as reported in their 2022 Annual Claims filed on May 13, 2023, and San Jose Clean Energy (SJCE) as reported in their 2022 Annual Claims filed on April 20, 2023.

(3) CPUC Adopted Goals and installed savings excludes Energy Savings Assistance (ESA) Program.

(4) Percentage of goal attainment is calculated using adjusted goals for fuel substitution.
(5) Energy Savings may not exactly match with the results in CEDARS due to rounding.

Section 2
Fuel Substitution Savings

Table 2

All fuel substitution savings data can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-2 Fuel Sub". The spreadsheet can be accessed on the CPUC's California Energy Data and Reporting System (CEDARS) website at https://cedars.sound-data.com/documents/standalone/list/.

Section 3
Environmental Impacts

Table 3

All environmental impacts data, listed by measure use category, can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-3 EnvImpacts". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 4
Programs & Expenditures

Table 4

All EE programs and associated budget, expenditures, cost-effectiveness, and savings data can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-4 Program Data". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 5
Segment Summary

Table 5

All EE programs, organized by segment (Resource Acquisition, Market Support, and Equity), and associated budget, expenditures, cost-effectiveness, and savings data can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-5 Segment Summary". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 6
Cost-Effectiveness

Table 6

Cost Effectiveness (Net)

Annual Results	Total Cost ($) to Ratepayers (TRC) (3)	Total Savings ($) to Ratepayers (TRC/PAC)	Net Benefits ($) to Ratepayers (TRC) (3)
Total Resource Acquisition Segment	$136,634,978	$157,950,601	$21,315,623
Total Portfolio w/o C&S	$220,229,639	$172,200,481	$(47,939,794)
TOTAL Portfolio with C&S	$729,597,034	$2,034,265,542	$1,304,668,508

Annual Results	TRC Ratio (4)	Total PAC Cost (3)	Net PAC Benefits (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)
Total Resource Acquisition Segment	1.15	$107,900,864	$50,049,737	1.46			
Total Portfolio w/o C&S	0.78	$147,600,310	$24,689,535	1.17	n/a	0.36	1.35
TOTAL Portfolio with C&S	2.79	$183,077,341	$1,851,188,201	11.11	n/a	0.08	0.77

(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. PAC Cost is split between electric and gas based on the Total Portfolio (with C&S) electric and gas split respectively.
(3) The cost-effectiveness calculations are based on the actual accomplishments recorded in 2022.
Excludes: installed savings for Energy Savings Assistance (ESA) Program; BayREN, MCE, 3C-REN, RCEA, SJCE, and ESA 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 $33M for 2021 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.
(5) Cost Effectiveness results may not exactly match with the results in CEDARS due to rounding.

Section 7
Bill Impacts

Table 7

Average Billpayer Impacts from Net Savings

2022	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	$0.2803	$2.3661	$602,033,080	$6,242,927,989

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 12/1/22) with first year net kWh energy savings.
(2) Average first year gas bill savings is calculated by multiplying an average gas rate (as of 12/31/21) with first year net therm energy savings.
Gas rate reflects the annual average residential bundled rate for 2022.
(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 BayREN, MCE, 3C-REN, RCEA, and SJCE savings; excludes ESA Program.

Section 8
Savings by End Use

Table 8

Annual Savings By Use Category 2022 (1) (2) (3)

			Gross GWh		Gross MW	Gross MM Therms		Net GWh		Net MW	Net MM Therms	
Measure End Use Category	TRC	PAC	First Year	Life Cycle	First Year	First Year	Life Cycle	First Year	Life Cycle	First Year	First Year	Life Cycle
Appliance or Plug Load	1.98	32.17	130.23	989.01	22.33	(1.14)	1.61	130.05	988.06	22.33	(1.25)	1.06
Building Envelope	2.04	15.56	27.22	529.59	13.32	4.45	63.72	27.14	528.99	13.12	3.84	60.50
Compressed Air	2.58	18.29	3.52	50.28	0.13	0.00	0.00	3.12	45.09	0.08	0.00	0.00
Commercial Refrigeration	3.81	13.12	115.91	969.32	17.25	0.61	2.71	108.81	917.21	16.01	0.39	1.72
Codes & Standards	4.00	161.52	80.67	1,280.25	12.16	(0.00)	(0.02)	80.67	1,280.25	12.16	(0.00)	(0.02)
Food Service	1.14	1.37	4.65	53.89	0.92	1.23	14.02	3.06	35.54	0.61	0.80	9.11
HVAC	2.55	11.36	109.13	1,479.65	42.12	5.54	74.31	106.78	1,453.26	41.49	5.31	70.61
Irrigation	0.36	0.55	5.10	36.30	2.66	0.00	0.00	1.86	13.35	0.97	0.00	0.00
Lighting	6.38	89.57	904.90	10,562.06	89.82	(1.69)	(21.52)	902.31	10,537.62	89.59	(1.69)	(21.50)
Non-Savings Measure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Process Distribution	0.95	1.15	4.47	33.45	0.48	0.00	0.00	3.17	25.67	0.35	0.00	0.00
Process Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Process Heat	2.24	2.81	0.34	3.16	0.00	1.18	17.12	0.27	2.82	0.00	0.99	14.37
Process Refrigeration	0.65	1.09	0.45	1.94	0.05	0.00	0.00	0.29	1.26	0.03	0.00	0.00
Recreation	3.90	465.66	15.56	166.21	3.30	0.52	2.66	15.56	166.21	3.30	0.34	1.76
Service	0.48	0.55	10.74	32.22	1.47	0.16	0.49	6.97	20.91	0.96	0.10	0.31
Service and Domestic Hot Water	3.08	11.21	21.12	204.87	2.05	15.84	178.39	21.21	206.31	2.01	14.48	162.34
Whole Building	1.46	7.83	362.98	2,249.64	89.85	19.55	148.45	370.74	2,253.98	92.13	20.03	149.40

Notes:
(1) All net energy savings numbers include 5% market spillover.
(2) Installed savings for PG&E includes Bay Area Regional Energy Network (BayREN) as reported in their 2022 Annual Claims filed on April 4, 2023, Marin Clean Energy (MCE) as reported in their 2022 Annual Claims filed on April 20, 2023, Tri-County Regional Energy Network (3C-REN) as reported in their 2022 Annual Claims filed on May 8, 2023, Redwood Coast Energy Authority (RCEA) as reported in their 2022 Annual Claims filed on May 13, 2023, and San Jose Clean Energy (SJCE) as reported in their 2022 Annual Claims filed on April 20, 2023.
(3) Cost effectiveness results:
Excludes Energy Savings Assistance (ESA) Program, BayREN, MCE, 3C-REN, RCEA, and SJCE benefits and costs.
Excludes Statewide Emerging Technologies Program costs per D.12-11-015 (p.52)
(4) Codes and Standards savings are assigned to a more specific use category where possible.
(5) ESA Program savings are excluded.

Section 9
Commitments

Table 9
Commitments [(1)(3)]

Commitments Made in the Past Year with Expected Implementation after December 2022				
	Committed Funds (2)	**Expected Energy Savings**		
2022	$	GWH	MW	MMth
Resource	$11,700,157.00	29.63	3.78	5.46
Non-Resource	$ -	-	-	-
Codes & Standards	$ -	-	-	-
PG&E Total	**$11,700,157.00**	**29.63**	**3.78**	**5.46**

Notes:
(1) All energy savings numbers are on a net basis.
(2) Committed Funds for 2021 include incentives related to PG&E EE projects committed in prior year(s) but not yet completed as of December 2021.
(3) Additional tables covering commitments with expected implementation after program years 2010-2012, 2013-2015, 2016, 2017, 2018, 2019, 2020, and 2021 can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-9 Commitments". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 10
Cap and Target Expenditures

The 2022 Energy Efficiency Cap and Target Expenditure Report can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-10 Cap & Target". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 11
Metrics

All metrics data can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-11 BP Metrics". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 12
Third-Party and Statewide Calculations

Reporting on Local Program Third-Party Budgets, Statewide Programs Third-Party Budgets, Assembly Bill 841 Budget, Annual Budgets, Third-Party Outsourcing Compliance, and Statewide Budget Compliance can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-12 3P Calculation". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 13
Third-Party Contracts

Reporting on PG&E third-party contract details can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-13 3P Contract Info". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Section 14
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.

Marketplace metrics for 2022 are broken out between the original Marketplace program (PGE_Res_002b) and the new Marketplace program known as Energy Action Guide (PGE_Res_002e), which replaced the original marketplace in June 2022.

All Marketplace reporting data can be found in the "PGE.AnnualExcel.2022.1.xlsx" spreadsheet, under Tab "T-14 PG&E Marketplace Metrics". The spreadsheet can be accessed on the CPUC's CEDARS website at https://cedars.sound-data.com/documents/standalone/list/.

Appendix A

PG&E Program ID Numbers

Program ID	Program Name
PGE_Ag_001	Agriculture Energy Savings Action Plan (AESAP)
PGE_Com_001	Grocery Comprehensive Retrofit & Commissioning (GCRx)
PGE_Com_002	Smart Labs
PGE_Com_003	NetOne
PGE_Com_004	Advanced Energy Program for High Tech & Biotech
PGE_Com_005	Healthcare Energy Fitness Initiative
PGE_Com_SmallBiz	Micro and Small Business Equity Program
PGE_Ind_001a	Industrial Strategic Energy Management - Food Processing
PGE_Ind_001b	Industrial Strategic Energy Management - Manufacturing
PGE_Ind_002	Business Energy Performance (BEP) Program
PGE_Ind_003	Industrial Systems Optimization Program (ISOP)
PGE_Pub_001	Central Coast Leaders in Energy Action Program (CC-LEAP)
PGE_Pub_002	Marin Energy Watch Partnership
PGE_Pub_003	Redwood Coast Energy Watch
PGE_Pub_004	Central California Energy Watch (CCEW)
PGE_Pub_005	San Mateo County Energy Watch Program
PGE_Pub_006	Energy Access SF
PGE_Pub_007	Sierra Nevada Energy Watch (SNEW)
PGE_Pub_008	Sonoma Public Energy
PGE_Pub_009	Government & K-12 Comprehensive Program
PGE_Pub_010	RAPIDS Wastewater Treatment Optimization Program
PGE_Res_001a	Pay for Performance - Comfortable Home Rebates
PGE_Res_001b	Pay for Performance - Home Intel
PGE_Res_001d	Pay for Performance - Home Energy Optimization
PGE_Res_002a	Home Energy Check-up
PGE_Res_002b	Marketplace
PGE_Res_002d	Continuous Energy Feedback Program
PGE_Res_002e	Online Marketplace Program
PGE_Res_003	Multifamily Energy Savings Program (MESP)
PGE_SW_CSA_Appl	State Appliance Standards Advocacy
PGE_SW_CSA_Bldg	State Building Codes Advocacy
PGE_SW_CSA_Natl	National Codes & Standards Advocacy
PGE_SW_ETP_Gas	Emerging Technologies Program, Gas
PGE_SW_IP_Gov	Institutional Partnerships: DGS and DoC
PGE_SW_NC_NonRes_Com_electric	California Energy Design Assistance All-Electric (CEDAE) Program
PGE_SW_NC_NonRes_Com_mixed	California Energy Design Assistance Mixed Fuel (CEDAM) Program
PGE_SW_NC_Res_electric	California Energy-Smart Homes All Electric Residential Program
PGE_SW_NC_Res_mixed	California Energy-Smart Homes Mixed-Fuel Residential Program
PGE_SW_WET_CC	Career Connections ("Energy is Everything")

Program ID	Program Name
PGE_SW_WET_Work	Career & Workforce Readiness ("Energize Careers")
PGE21002	Residential Energy Efficiency (PLA)
PGE21005	Residential New Construction and Advanced Energy Rebuild
PGE21007	California New Homes Multifamily
PGE21011	Commercial Calculated Incentives
PGE21012	Commercial Deemed Incentives
PGE21014	Commercial Energy Advisor
PGE210143	Hospitality Program
PGE21021	Industrial Calculated Incentives
PGE210210	Industrial Recommissioning Program
PGE210212	Compressed Air and Vacuum Optimization Program
PGE21022	Industrial Deemed Incentives
PGE21024	Industrial Energy Advisor
PGE21031	Agricultural Calculated Incentives
PGE21032	Agricultural Deemed Incentives
PGE21034	Agricultural Energy Advisor
PGE21036	Industrial Refrigeration Performance Plus
PGE21053	Compliance Improvement
PGE21054	Reach Codes
PGE21055	Planning and Coordination
PGE21056	Code Readiness
PGE21062	Technology Assessments
PGE21063	Technology Introduction Support
PGE21071	Integrated Energy Education and Training
PGE21091	On-Bill Financing (excludes Loan Pool)
PGE210911	On-Bill Financing Alternative Pathway
PGE21091LP	Financing Loan Pool Addition
PGE21092	Third-Party Financing
PGE21093	New Financing Offerings
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)
PGE211025	Savings by Design (SBD)

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 several 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 issues 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.

D. 19-08-009: *Decision Modifying the Energy Efficiency Three-prong Test Related to Fuel Substitution,* was 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*, adopted 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,* granted PG&E petition for modification and allowed PG&E to expand its on-bill financing program. On November 11, 2020, the Commission issued D. 20-11-013: *Decision Imposing Moratorium on*

Efficiency Savings and Performance Incentive Program, which imposes a moratorium on award payments under the ESPI mechanism beginning with 2021 program year advice letter earnings claims to remain in effect pending subsequent Commission guidance.

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; approach for evaluations using normalized metered energy consumption (NMEC) and/or dynamic baselines; and Industry Standard Practice determinations.

On November 16, 2020, D. 20-11-013 was issued, which imposed a moratorium on the efficiency savings and performance incentive (ESPI) program, deferring consideration of possible reforms until certain proposed changes to energy efficiency portfolio management and administration are disposed of.

On January 20, 2021, D.21-01-004 was issued providing directions to the large investor-owned utilities (IOU) for funding the School Energy Efficiency Stimulus Program, established by Assembly Bill 841 (Stats. 2020, Chap. 372) and under administration of the California Energy Commission (CEC).

On February 11, 2021, the Commission issued Resolution E-5115, addressing issues related to evidence requirements for the determination of energy consumption baselines for energy efficiency programs pursuant to D.16-08-019 and Resolution E-4818, with the proposed outcome of adopting minimum evidence *requirements* guidance to support custom projects accelerated replacement measure type. This Resolution did not increase costs beyond the energy efficiency budgets adopted in D.18-05-041.

On February 11, 2021, the Commission issued Resolution E-5108 (Rev 1) approving, with adjustments, Efficiency Savings and Performance Incentive awards for three major California IOUs for program years 2018 and 2019 and delayed the recovery of the incentives until 2022. This Resolution approved $15,299,119 in incentives for PG&E.

D.21-01-004 provided directions to the large investor-owned utilities (IOU) for funding the School Energy Efficiency Stimulus Program, established by Assembly Bill 841 (Stats. 2020, Chap. 372) and under administration of the California Energy Commission (CEC).

D.21-05-031 adopted a new metric, total system benefit, for the identification of energy efficiency potential and setting goals; adopted a new approach to segmenting energy efficiency portfolios according to a program's primary purpose (resource acquisition, market support, or equity); and addressed changes to the rolling portfolio framework and regulatory processes proposed by stakeholders in the context of the California Energy Efficiency Coordinating Committee (CAEECC).

On June 24, 2021, Resolution E-5150: Adopted Updates to the Avoided Cost Calculator for Use in Demand-Side Distributed Energy Resource Cost-Effectiveness Analyses.

On August 5, 2021, Resolution E-5152: gave Approval of the Database for Energy-Efficiency Resources Updates for Program Year 2023 and Revised Version for Program Years 2022 and 2021.

D.21-09-037 adopted energy efficiency goals for 2022-2032.

D.21-12-011 authorized new programs to enhance Summer 2022 and 2023 electric reliability.

On December 23, 2021, the Assigned Commissioner and Administrative Law Judges issued an Amended Scoping Ruling, in which it outlined 2022 basic schedule for Energy Efficiency:

Topic/Event	Date
Resolution of OSC phases involving SoCalGas	1st and 2nd Quarters of 2022
Remaining lighting enforcement issues	Second Quarter of 2022
Issues associated with new portfolio applications	Second half of 2022
Rules associated with CCAs who elect to administer energy efficiency programs and RENs	Second half of 2022
Ongoing issues associated with implementation of market transformation policy, third-party solicitations, summer reliability programs, etc.	Throughout 2022 and 2023
Other issues	Ongoing/as needed

On July 15, 2022, ALJ Ruling issued seeking comments on third-party and other issues. The five topics: 1. Potential improvements to the third-party solicitation process; 2. Governance and reform of two of the Commission's energy efficiency database tools: a) the Cost Effectiveness Tool (CET); and b) the California Energy Data and Reporting System (CEDARS); 3. Strategic Energy Management (SEM) program issues; 4. The California Analysis Tool for Locational Energy Assessment (CATALENA) project; and 5. Data sharing for Commission-authorized energy efficiency programs.

2018-25 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. By the end of 2020, 40 percent of programs should be third-party administered, with the ultimate vision of reaching 60 percent third-party administration in the EE portfolio by the end of 2022.

PG&E confirmed this percentage goal was reached in its portfolio at the end of 2022 (see Section 12: Third-Party and Statewide Calculations, of this report).

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.

On August 9, 2019, the Commission issued D.19-08-006: *Decision Adopting Standard Contract for Energy Efficiency Local Government Partnerships*, which adopted a standard contract for energy efficiency local government implementers, and associated implementation details.

On December 20, 2019, PG&E's 2020 Annual Budget Advice Letter was rejected via nonstandard disposition and PG&E was instructed to file a revised Business Plan Application by September 1, 2020. On July 3, 2020, an *Amended Scoping Ruling Addressing the Impacts of COVID-19* was issued, postponing the deadline for PG&E's revised Business Plan Application to September 1, 2021. On December 21, 2020, PG&E's 2021 Annual Budget Advice Letter was rejected via nonstandard disposition. PG&E was required to hold a workshop to explain the portfolio's failure to meet cost-effectiveness requirements, how funding determinations were made for different programs, the methodology for establishing portfolio cost-effectiveness estimates, and why PG&E did not choose to provide additional funding to programs with high TRC. PG&E was also asked to provide updates on portfolio performance to date as impacted by COVID-19, and an update on the third-party solicitation process. The workshop was held on March 16, 2021. AL 4521-G-A/6385-E-Awas submitted on January 7, 2022, and was dispositioned on February 15, 2022.

On February 15, 2022, PG&E filed and served its 2024 Business-Portfolio Plan Application A.22-02-005. Its eight-year Business Plan covered the overall direction of Energy Efficiency work from 2024 through 2031, identifying major changes to strategies from prior strategic business plan strategies, plus the eight-year budget total. The four-year Portfolio Plan covered the specific programs, goals, portfolio- and sector-level performance metrics to be achieved, and budgets for Energy Efficiency from 2024 through 2027.

Advice Letters

PG&E filed the following advice letters related to EE in 2022:

1) Supplemental: PG&E's 2022-2023 Energy Efficiency Biennial Budget Advice Letter in Compliance with Decisions 15-10-028, 18-05-041, and 21-05-031, filed January 7, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_6385-E-A/4521-G-A.pdf
2) Advice Letter Submittal of Pacific Gas and Electric Company's Third-Party Statewide Codes and Standards Building Code Advocacy Contract Amendments executed between Frontier Energy and PG&E; TRC Solutions and PG&E; and Cohen Ventures and PG&E, filed January 20, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_6471-E/4554-G.pdf
3) Pacific Gas and Electric's 2021 Unspent and Uncommitted Energy Efficiency Funds Applicable to AB 841 Schools Energy Efficiency Stimulus Program, filed April 15, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4599-G/6565-E.pdf

4) Advice Letter Submittal of Pacific Gas and Electric Company's Third-Party Statewide Codes and Standards Federal Appliance Advocacy Contract Change Order executed between Cohen Ventures, Inc. and PG&E, filed April 19, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4555-G.pdf
5) Recovery of Pacific Gas and Electric's Costs as the Contracting and Fiscal Agent for the Statewide Market Transformation Program, filed June 24, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4623-G.pdf
6) PG&E's Annual Advanced Energy Rebuild Advice Letter in Compliance with Commission Disposition, filed June 30, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4624-G.pdf
7) Advice Letter Submittal of Pacific Gas and Electric Company's Third-Party Solicitations resulting from its Micro and Small Business Equity Program solicitation, executed between Resource Innovations and PG&E, filed October 12, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4664-G.pdf
8) Advice Letter Submittal of Contract Resulting from the Statewide Market Transformation Administrator Solicitation and Executed Between Resource Innovations, Inc. and PG&E, filed October 26, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4674-G.pdf
9) Notice of Statewide California Energy-Smart Homes Mixed-Fuel Residential New Construction Program Closure Request, filed November 14, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_4680-G.pdf
10) East Bay Community Energy, Pacific Gas and Electric Company, and Bay Area Regional Energy Network Joint Cooperation Memorandum for Program Year 2023 Energy Efficiency Programs, filed December 13, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6786-E%20et%20al.pdf
11) Advice Letter Submittal of Pacific Gas and Electric Company's Third-Party Contract resulting from its Summer Reliability Program solicitation, executed between Sunrun, Inc. and PG&E, filed December 30, 2022. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6807-E.pdf

Appendix C

Corrections to Previous Annual Reports

2020 Statewide Codes & Standards Claims

In December 2022, PG&E identified issues related to 2020 Statewide (SW) Codes & Standards (C&S) annual claims. After discussion with CPUC staff, it was determined that the CEDARS system cannot be reasonably reopened for 2020 program year (PY) claims to allow adjustments to be made inside the system. Due to this limitation, PG&E is reporting the impacts of the discrepancy here.

PG&E did not appropriately account for a contribution of $1 million that the Los Angeles Department of Water and Power (LADWP) made to the Codes & Standards programs in 2020, as well as some resulting changes to co-funding percentages by the IOUs. SDG&E and SCG requested to maintain their co-funding budget contribution levels ($1.8 million and $1.1 million, respectively), and SCE requested to maintain its budget contribution level on a percentage basis of 32.08%. PG&E covered any remaining expenditure gap remaining after taking this into account. The resulting final SW expenditures by IOU and new allocation percentages are noted in Table 1: 2020 C&S Updated Expenditure Allocations.

Table 1: 2020 C&S Updated Expenditure Allocations

IOU	PG&E	SDG&E	SCE	SCG	Total
Total 2020 Expenditures Filed in CEDARS					$14,088,967
LADWP Contribution to C&S					$(1,000,000.00)
New 2020 SW IOU Expenditures, less LADWP contribution	$5,953,829.55	$1,836,438.00	$4,198,941.19	$1,099,758.00	$13,088,966.74
New Allocation Percentages of Expenditures	45.49%	14.03%	32.08%	8.40%	100.00%

In order to calculate energy savings in MMTherms and GWh, it is necessary to determine the new appropriate allocation factors for each IOU. This is done by splitting the allocated expenditures according to each IOU's electric & gas split percentages from PY2020, and then determining the allocation weighting in both the electric and gas categories. This calculation is shown in Table 2: Electric and Gas Allocation Percentage Calculation.

Table 2: Electric and Gas Allocation Percentage Calculation

IOU	PG&E	SDG&E	SCE	SCG	Total
Electric PPP	80%	90%	100%	0%	
Gas PPP	20%	10%	0%	100%	
Expenditures for kWh	$4,763,063.64	$1,652,794.20	$4,198,941.19	-	$10,614,799.03
Expenditures for Therm	$1,190,765.91	$183,643.80	-	$1,099,758.00	$2,474,167.71
Electric Allocation Percentage	44.87%	15.57%	39.56%	0.00%	100.00%
Gas Allocation Percentage	48.13%	7.42%	0.00%	44.45%	100.00%

Each IOU then received re-allocated savings values. This calculation is done by taking the total electric or gas savings and multiplying it by the individual electric and gas allocation factors shown in Table 2. Table 3: New 2020 C&S Energy Savings Claims shows this calculation as well as the difference to what was filed in CEDARS for each IOU and energy source.

Table 3: New 2020 C&S Energy Savings Claims

IOU	CEDARS 2020 Claims			New 2020 Claim			Difference		
	GWh	MW	MMTherm	GWh	MW	MMTherm	GWh	MW	MMTherm
PG&E	1,413.61	236.81	19.82	1,419.22	237.75	19.87	5.61	0.94	0.05
SDG&E	492.28	82.47	3.07	492.47	82.50	3.06	0.19	0.03	(0.01)
SCE	1,256.94	210.57	-	1,251.13	209.60	-	(5.81)	(0.97)	-
SCG	-	-	18.37	-	-	18.35	-	-	(0.02)
Total	3,162.83	529.85	41.29	3,162.83	529.85	41.29	-	-	-

PG&E also calculates the effect this re-allocation had on each IOU making their C&S goals in Table 4: New 2020 C&S Goal Attainment Percentage. This re-allocation did not change any IOU's final result on meeting their C&S goal for 2020.

Table 4: New 2020 C&S Goal Attainment Percentage

IOU	2020 C&S Goal			New 2020 Claim			Goal Attainment		
	GWh	MW	MMTherm	GWh	MW	MMTherm	GWh	MW	MMTherm
PG&E	646.00	131.00	13.00	1,419.22	237.75	19.87	220%	181%	153%
SDG&E	151.00	31.00	1.50	492.47	82.50	3.06	326%	266%	204%
SCE	667.00	131.00	-	1,251.13	209.60	-	188%	160%	-
SCG	-	-	21.00	-	-	18.35	-	-	87%
Total	1,464.00	293.00	35.50	3,162.83	529.85	41.29	216%	181%	116%

2021 Statewide Upstream Lighting Claims

In February 2023, SCE identified changes required to their 2021 program year claims for the statewide upstream lighting program. SCE identified 85 projects that did not include the required Title 24 compliance documentation and zeroed these projects out. SCE reached out to CPUC staff, and it was determined unfeasible to reopen CEDARS to correct 2021 claims.

Instead, SCE provided itemized details for each individual claim in their amended 2021 annual report appendices in the CEDARS document library. PG&E notes below the impact of these 85 projects on PG&E's 2021 energy savings claims. The revisions do not impact PG&E's ability to meet energy savings goals in 2021. Table 5 demonstrates the impacts to PG&E's portion of the upstream lighting program, and Table 6 shows the impact on the complete portfolio, excluding codes & standards.

Table 5: 2021 Impacts to PG&E Program ID PGE_SW_UL

PRG ID: PGE_SW_UL	2021 CEDARS Claims	2021 Amended Claims	Difference
Expenditure	$386,527.00	-	$(386,527.00)
First Year Net kWh	209,693.0	0.0	-209,693.0
First Year Net kW	29.0	0.0	-29.0
Therms	-631.0	0.0	631.0
Benefits	$189,549.56	-	$(189,549.56)
TRC Costs	$492,831.14	-	$(492,831.14)
PAC Costs	$386,526.77	-	$(386,526.77)
TRC	0.38	-	-0.38
PAC	0.49	-	-0.49

Table 6: 2021 Impacts to PG&E Portfolio, Excluding Codes & Standards

PG&E 2021 Portfolio (w/o Codes & Standards)	2021 CEDARS Claims	2021 Amended Claims	Difference	% Diff
Expenditures	$165,423,277.00	$165,036,750.00	$(386,527.00)	-0.23%
First Year Net kWh	386,975,671	386,765,978	-209,693	-0.05%
First Year Net kW	66,786	66,757	-29	-0.04%
Therms	19,433,974	19,434,605	631	0.00%
Benefits	$204,390,683.29	$204,201,133.73	$(189,549.56)	-0.09%
TRC Costs	$277,501,357.88	$277,008,526.74	$(492,831.14)	-0.18%
PAC Costs	$137,450,589.29	$137,064,062.52	$(386,526.77)	-0.28%
TRC	0.737	0.737	0.001	0.09%
PAC	1.487	1.490	0.003	0.19%