BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues.	R.13-11-005

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) 2019 ANNUAL REPORT FOR ENERGY EFFICIENCY PROGRAMS

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Southern California Edison Company (SCE) hereby submits its 2019 Energy Efficiency Annual Report (Annual Report) for its energy efficiency programs and results for Program Year 2018, as Attachment A hereto.

The Annual Report is filed and served in this proceeding pursuant to the Administrative Law Judge's (ALJ) Ruling Adopting Annual Reporting Requirements for Energy Efficiency and Addressing Related Reporting Issues dated August 8, 2007. In addition, in compliance with Commission Decision Addressing Third Party Solicitation Process for Energy Efficiency Programs (D.18-01-004), SCE is including in this Annual Report, a listing of all third party contracts in place, along with the information listed in Ordering Paragraph 8 of that Decision. A public version of the list of third party contracts is attached to this Annual Report as Appendix F. A confidential version has been sent directly to the Commission's Energy Division via the CPUC Secure File Transfer Protocol site.

SCE is concurrently filing a Notice of Availability of the 2019 Annual Report and its appendices and related documents available for viewing and downloading for the parties on the CPUC's Energy Efficiency Statistics Application (EESTATS) website.

Respectfully submitted,

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Attachment A

SCE's 2019 Energy Efficiency Annual Report

SOUTHERN CALIFORNIA
EDISON®
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2018
Energy Efficiency
Annual Report

- Summary Report
  2018 Program Overview & Strategies
- Technical Appendix

May 1, 2019

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EXECUTIVE SUMMARY

Southern California Edison Company (SCE) continues to build upon its leadership role in the energy-efficiency (EE) industry through delivery of a diverse, innovative, and cost-effective EE portfolio designed to meet the needs of our customers, help ensure the reliability of the grid, and meet California's clean energy goals.

In 2018, SCE's EE programs collectively achieved 1.35 billion kilowatt-hours (kWh) of annualized energy savings and 286 megawatts of peak demand reduction. These savings equate to powering over 202,000 standard California residential homes annually. SCE's total 2018 EE portfolio was cost effective with a Total Resource Cost (TRC) of 1.10 (without Codes & Standards) and a TRC of 4.23 (with Codes & Standards).[1] Including Codes & Standards, SCE achieved 140% and 139% of its 2018 savings and demand reduction goals, respectively.

SCE continues to drive innovation by introducing pilots, such as the Clean Energy Optimization Pilot, focused on supporting the State's policy and environmental goals, as well as aligning EE to meet future grid reliability needs. In 2018, the Commission issued several decisions which provided a pathway for third-parties to propose, design, implement, and deliver EE programs, under contract, to a utility program administrator. In November 2018, SCE launched its first third-party Request for Abstract (RFA) solicitation for its local EE programs for the residential, commercial, and industrial sectors. SCE anticipates launching several more RFA and Request for Proposal (RFP) solicitations in 2019 to meet the statewide and third-party requirements pursuant to CPUC Decisions 18-05-041 and 16-08-019.

The Commission also adopted a stakeholder process to enable interested parties to collaborate with PAs, led by the California Energy Efficiency Coordinating Committee (CAEECC). One of the primary functions of this stakeholder process is to "provide input into development of business plans prior to and throughout the drafting process." CAEECC currently comprises approximately 20 members, representing a wide range of PAs (including SCE), program implementers, regulatory agencies, advocacy groups, and other important industry stakeholders across California, and serves as a venue for key stakeholders and the public to provide input into the EE programs. SCE participated in all CAEECC meetings (and associated sub-committee meetings) and presented its 2019 budget to CAEECC in advance of our 2019 annual budget advice letter (ABAL) filing. The valuable feedback obtained from stakeholders helped shape SCE's 2019 ABAL filed on September 4, 2018.

Looking forward, the EE landscape continues to experience rapid change and meaningful challenges in several sectors that warrant leadership discussion on how to transition the EE portfolio to meet modern needs. To date, the EE portfolio has navigated the impacts of reduced avoided cost benefits from decreased natural gas prices and a reduction in value in the middle of spring and fall days due to overgeneration. These changes reflect grid conditions which displace

[1] In 2018, the Impact Evaluation for the 2017 Upstream Lighting Program was issued, SCE expects similar results for 2018, thus SCE's Primary Lighting Program anticipates a reduction to its TRC on an ex-post basis.

significant value from increasing forecasts of greenhouse gas (GHG) prices that are developed in the Integrated Resource Plan and the Integrated Distributed Energy Resource proceedings. Current approaches to traditional EE have seen declines in customer participation rates in non-residential programs. In addition, the residential portfolio will experience further changes due to impending lighting code changes.

Modernizing the EE portfolio will require partnering with the Energy Division and other policy makers to enable the transition of EE programs to third parties and support innovative and cost-effective programs that unlock customer value which will result in a simplified EE experience for customers. SCE looks forward to administering and enabling the EE portfolio's ability to contribute to the legislative efforts such as Assembly Bill (AB) 802, AB 793, and especially, Senate Bill (SB) 350 (Doubling Targets for Electricity) which currently sees a gap between the SB 350 targets and projected electricity savings from utility and non-utility EE programs[2]. In contrast to developing generation resources, SCE believes that a modernized EE portfolio will be well positioned to support the State in meeting its GHG goals, just as the legacy EE portfolio has done in the past.

Below are some highlights of the accomplishments of SCE's active EE portfolio during 2018. For further detail, please see the summary program descriptions in each chapter of this report.

A. Residential Programs

In 2018, SCE continued to employ various strategies and tactics to overcome market barriers and to deliver programs and services aligned to support the Strategic Plan and Business Plan, by encouraging adoption of economically-viable EE technologies, practices, and services to address the needs of three different markets: (1) homeowners and renters, (2) multifamily property owners, and (3) new construction builders. Some highlights in 2018 include the introduction of Marketplace, a tool on SCE's public website SCE.com that allows customers to easily find information about EE products as well as enrolling nearly two million customers in the Home Energy Reports offering, which supported the EE portfolio by achieving savings of over 120 GWh and 35 MW.

The Multi-family Energy Efficiency Rebate (MFEER) Program offers deemed rebates for EE products (such as lighting, pool pumps, etc.) to motivate multifamily property owners and managers to install these products and achieve higher savings. SCE leveraged relationships with several trade organizations and associations supporting the multifamily market segment in order to reach property owners and managers. SCE actively participated in numerous meetings, workshops, and networking events, including various trade shows that provided key access to partnerships and resources. In 2018, SCE introduced Smart

[2] California Energy Commission Final Commission Report Senate Bill 350 Doubling Energy Efficiency Savings by 2030 *available* ***at*** http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-06/TN221631_20171026T102305_Senate_Bill_350_Doubling_Energy_Efficiency_Savings_by_2030.pdf

Communicating Thermostats to the program, successfully installing over 47,000 units. Approximately one-third of these installations were in the homes of disadvantaged customers.

B. Nonresidential Programs

SCE's Business Core (nonresidential and statewide) programs include the Commercial, Industrial, and Agricultural EE Programs, and the Commercial Midstream Point of Purchase (MPOP) Program. These programs provide nonresidential audits and related advisory services, incentives for deemed and calculated ("customized") measures, new construction support, direct installation, HVAC programs, and continuous energy improvement (CEI) offerings to customers.

In its Energy Advisor programs, SCE began implementation of system enhancements to comply with AB 802. These enhancements would eliminate the need for requesters to submit an ownership attestation document and provide historical aggregated usage data for two years instead of the previous 13 months. The programs also performed over 3,500 pump tests for its Commercial, Industrial, and Agricultural customers across the service territory. And the Enhanced Energy Advisor Tool (EEAT) for small-to-medium business customers resulted in 130 completed audits.

In 2018, the Continuous Energy Improvement Programs were replaced by the Strategic Energy Management (SEM) Program. The goal of the SEM program is to engage large industrial customers and drive persistent energy savings across the customer's entire facility. The program offers a full suite of services to identify and claim low-cost Operational and Maintenance (O&M) and Behavioral, Retrocommissioning and Operational (BRO) measures that are measured at the meter.

Deemed and customized programs in the commercial, industrial, and agricultural sectors continued to face challenges in achieving savings cost effectively in 2018. To mitigate these challenges, SCE's Deemed programs:

- Collaborated with SoCalGas to offer commercial conveyor broiler incentives to food service customers
- Streamlined the application process for combo (deemed and customized) projects
- Introduced a high-efficiency pump measure
- Shortened the time for applications after a project has been installed.

SCE's Calculated programs:

- Continued the mandatory project application pre-screening QA process
- Implemented mandatory requirements for minimum Effective Useful Life (EUL)
- Conducted an annual EE program training event for Trade Professionals.

The Commercial Direct Install Program continued to deliver no-cost and low-cost EE retrofits through installation contractors to small- and medium-sized commercial customers. In 2018, the program offered LED troffer and retrofit kits with co-payments, commercial variable speed drive pool pumps, and LED T8 lamps. Collaboration with SCE's Energy Leader Partnership programs facilitated projects in municipally-owned facilities.

The Midstream Point of Purchase program continued to offer point-of-purchase incentives on qualified LEDs to nonresidential customers. An enhancement to the program was the availability of On-Bill Financing (OBF) for the measures offered by the program and the inclusion of food service measures.

All three Nonresidential HVAC subprograms continued in 2018. The Upstream HVAC Equipment Incentive Program reinstated offerings for air-cooled and water-cooled chiller technologies and conducted market analysis to identify new opportunities. The HVAC Quality Installation (QI) Program concluded its foray into Normalized Metered Energy Consumption (NMEC) as vendor payment uncertainty outweighed the potential for larger incentives. The HVAC Commercial Quality Maintenance (QM) Program continued its emphasis on skilled and trained workforce program requirements and training, and discontinued incentives for measures with a TRC below 1.0. It also aligned with industry standard practice by allowing customers to enroll in a one-year maintenance agreement as opposed to a 3-year contract.

The On-Bill Financing (OBF) program funded 150 loans, which represented over $12 million in loans to businesses, local governments, and institutional customers' energy efficiency projects. SCE continued to expand its OBF potential by inclusion of the Midstream Point of Purchase program.

C. Partnership Programs

In 2018, 137 cities and ten (10) counties, including Los Angeles, Riverside, and San Bernardino, participated in SCE's Local Government Partnerships, including one (1) new partner. Twenty-four (24) partners also moved up a tier in SCE's Energy Leadership Partnership (ELP) model through demonstrated EE achievements and commitment to the partnerships, including participation in EE retrofits and enrollment in demand response (DR). These advancements include ten (10) partners advancing to Platinum Level, eight (8) to Gold Level, and six (6) to Silver Level.

Additionally, SCE continued working to further Strategic Plan goals by helping local governments develop a long-term EE vision and identifying specific EE projects for implementation. Overall, partner cities have developed energy action plans, which establish a baseline of energy usage, set energy savings goals, and determine near-term measures to accomplish the goals. Partner cities continue to use Strategic Plan funds to install utility

energy management systems, develop benchmarking plans, complete greenhouse gas (GHG) inventories, and leverage a revolving EE fund to further promote energy efficiency.

SCE also continued the successful Statewide Energy Efficiency Collaborative (SEEC) with the International Council for Local Environmental Initiatives (ICLEI), the Institute for Local Government (ILG), the Local Government Commission (LGC), PG&E, SDG&E, SoCalGas, and the Statewide Best Practices Coordinator. SEEC provided a coordinated statewide program including a SEEC Forum, a Beacon recognition program, a ClearPath GHG Inventory Tool, workshops, technical assistance, and other means to allow local governments to share best practices associated with energy management. SCE successfully administered the Institutional Partnership programs in 2018, which included the following:

- The Proposition 39 Program continues to be very successful with over 937 energy projects funded (approximately 566 of which were installed and closed out by the end of 2018). These projects will result in annual energy savings of 109 million kWh and 1.8 million therms, saving the California Community Colleges (CCCs) $20.7 million per year in reduced energy costs system-wide.
- With the assistance of and input from the University of California, the IOUs continued implementation and development of various program offerings and High Opportunity Project or Programs (HOPPs), including a Whole Building program consistent with SB 350, AB 802, and AB 1150 to demonstrate measured savings against existing conditions, pay for performance, and a comprehensive whole-building approach to building efficiency.
- The Partnership continues to attend the meetings of the State of California's Sustainable Building Working Group (SBWG) of agency sustainability managers, and to assist the SBWG with its task of planning and implementing all aspects of the Governor's Executive Order B-18-12 and the Green Building Action Plan. The Partnership continues its regional level approach to identifying EE opportunities as a parallel effort alongside the Department of General Services (DGS) Statewide Energy Retrofit Program for project sourcing. This approach targets facility-level project contracting and implementation.

D. Third Party Programs

SCE continued to enhance its outreach efforts to all the communities in its service territory and extend its program offerings to a wide variety of customer segments through third-party implementers. In 2018, the programs continued to improve the quality of projects being submitted for review and successfully transitioned to net savings for the pay-for-performance service contracts. In preparation for solicitations to third-parties and the transition to programs that third-parties design and deliver, SCE began its ramp down of existing third-party programs. With the approval of SCE's 2019 Annual Budget Advice

Letter (ABAL), SCE will continue to accept applications, through 2019, for third-party programs with a forecasted TRC at or above 0.85.

E. Cross Cutting Programs

In 2018, SCE's cross-cutting programs provided substantial resource and non-resource contributions to the overall portfolio. The Codes and Standards (C&S) Programs actively participated in updates to sections of the California's Building Energy Efficiency Standards and related American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) and International Code Council (ICC) activities, advocacy for new Title 20 and Department of Energy (DOE) appliance standards, development of new cost-effectiveness studies to support local government reach codes, and coordination of code preparedness activities. Support began for the California Energy Commission (CEC) initiative to move towards a GHG-based metric to promote efficient building electrification.

The Emerging Technologies Program (ETP) continued to implement its three subprogram and engagement strategies of supporting development of new technologies, increasing market supply, and supporting program measure readiness. In pursuit of these initiatives, the ETP programs collaborated with various industry stakeholders, conducted residential zero net energy (ZNE) demonstrations, and performed research to gain market insights on technologies.

F. Lighting Programs

The Statewide Lighting Program supported both the commercial and residential market sectors through its upstream offerings. SCE's Primary Lighting program completed its transition away from compact fluorescent lamps (CFLs) and transition to offer incentives exclusively for light emitting diode (LED) technologies. SCE continued its pursuit of hard-to-reach (HTR) and disadvantaged communities by targeting retailers in these areas. In Lighting Innovation, the Sustainable Office Lighting Trial Program continued and completed thirty-one projects that provide valuable insight from the contractor workforce and provide insight into program design.

G. Statewide Workforce Education & Training (WE&T) Program

The Statewide Workforce Education & Training Programs continued to implement enhancements to align program evaluation and study recommendations. The IOUs collaborated with stakeholders to expand the programs' reach and address the needs of the industry. Through the programs, over 450 seminars, with attendance of over 11,000 participants were delivered throughout the year.

H. Water-Energy Activities

SCE continued its efforts in the Water Energy Nexus proceeding outlined as a part of R.13-12-011. Over the past two years, SCE has supported the creation of a Water-Energy

measure Work Paper, an action plan outlining coordination needs to integrate the Water-Energy Nexus calculator with the Energy Efficiency proceeding's Cost-Effectiveness tool, and reporting requirements pertaining to the impacts of water from the EE portfolio. Across the portfolio, SCE saw water savings of 3,295,581 gallons, resulting in savings of approximately 8,538 average annual embedded kWh.

I. Integrated Demand Side Management (IDSM) Activities

SCE's 2018 IDSM activities were centered on the limited integration of Energy Efficiency and Demand Response efforts outlined by the Commission in D.18-05-041while ramping down historical activities. To support the limited integration, the IDSM team worked with the EE solicitation team to communicate the purpose of the approved funding for EE and DR integration activities and how to apply them to EE and DR activities to provide value to customers. SCE anticipates that the successful bidders in SCE's Third Party Solicitations will support the integration of EE and DR in their proposed programs or support other IDSM activities depending upon the design of the program.

Before IDSM activities were repurposed in D.18-05-041, SCE offerings pursued an integrated approach to its portfolio and customer engagement, portfolio management, and statewide collaboration to improve the integration of EE with other DSM offerings such as DR. SCE continued to emphasize its policy vision for IDSM throughout the EE portfolio by taking an integrated approach to its online residential and small business audit tool, EEAT, while scaling back marketing collateral and campaigns, including outreach events. SCE looks forward to the continuous improvement and transition of IDSM activities to the newly defined EE and DR integration outlined in D.18-05-041 through SCE's solicitation process. Finally, SCE has maintained communication with Commission staff to manage reporting requirements for activities undertaken both before and after the issuance of D.18-05-041.

2018 Energy Efficiency Program Overview – Statewide Programs

I. Residential Energy Efficiency Programs

California's Energy Efficiency Strategic Plan (CEESP or "Strategic Plan") goals — which includes encouraging cost-effective Zero Net Energy (ZNE) new construction activities, achievement of deep energy reduction results by retrofitting single-family homes and multifamily buildings and reversing the growth of plug load by 2020 — require integrated and targeted program interventions. In 2018, SCE continued to work with other California program administrators, water purveyors, and various governmental, educational, and housing organizations to advance these important objectives. Some highlights in 2018 include the introduction of Marketplace, a tool on SCE's public website SCE.com that allows customers to easily find information about energy efficiency (EE) products; enrolling one million customers in the Home Energy Reports program, which helped to achieve a significant amount of the portfolio savings; and continuing to increase involvement with local government partnerships. Further details of each individual program are provided below.

SCE's residential portfolio employs various strategies and tactics to overcome market barriers and to deliver programs and services aligned to support the Strategic Plan by encouraging adoption of economically-viable EE technologies, practices, and services to address the needs of three different markets: (1) homeowners and renters, (2) multifamily property owners, and (3) new construction builders. The primary objectives of these residential programs are to:

- Facilitate, sustain, and transform the long-term delivery and adoption of EE products and services by residential customers and builders,
- Cultivate, promote, and sustain lasting EE behaviors by residential customers through a collaborative statewide education and outreach mechanism, and
- Meet consumers' EE adoption preferences through a range of offerings including single-measure incentives, behavior intervention strategies, and more comprehensive approaches.

The Statewide Residential Programs implemented include a set of downstream, midstream, and upstream delivery channels that build on customer education and marketing efforts in order to:

- Leverage important relationships with market actors and industry participants, and
- Transform the residential consumer markets.

Direct energy savings and demand reductions are achieved through seven (7) programs that make up the comprehensive residential program approach:

1) Home Energy Advisor Program
2) Plug Load and Appliances Program
3) Multifamily Energy Efficiency Rebate Program
4) Energy Upgrade California® Home Upgrade Program
5) Residential HVAC Program
6) Residential New Construction Program, and
7) Residential Direct Install Program.

A. Home Energy Advisor (HEA) Program

1. Program Description

The Home Energy Advisor (HEA) Program focuses on implementing behavior intervention strategies through programs and pilots that help customers understand and manage their energy use. The HEA Program also employs an interactive online tool designed to engage customers and encourage them to reduce energy, water, and gas consumption by providing energy-related actions and recommendations.

2. Strategies Implemented in 2018

a. Home Energy Reports (HERs)

In 2018, SCE continued mailing Home Energy Reports (Waves 2, 3, 4, and 5), as well as started two (2) new waves (Waves 6 and 7). More than 1.9 million customers received HERs, which supported the EE portfolio by achieving savings of over 120 GWh and 35 MW. All the HER waves were designed using a Randomized Control Trial (RCT) methodology, and continued to use a social norming behavior strategy, which helps influence recipients by comparing their electricity consumption to that of similar neighbors. HERs were mailed to more than 45 percent of SCE's eligible residential customers, nine times more than the CPUC target of 5 percent, and contained promotional marketing modules to support SCE initiatives and energy saving tips, including:

- Paperless Billing
- SCE Clean Fuel Rewards Electric Vehicle Rebate
- SCE My Account
- Enhanced Energy Advisor Tool (EEAT)
- Time of Use (TOU) Rates
- Variable-Speed Pool Pump Rebates, and
- Rate Plans.

b. Home Energy Efficiency Surveys (HEES)

SCE did not implement HEES in 2018.

c. Home Energy Advisor EE Online Audit Tool (aka Enhanced Energy Advisor Tool (EEAT), or Universal Audit Tool (UAT), or Energy Survey)

The EEAT website (**www.sce.com/energysurvey)** tool offers customers an interactive online survey of their home's energy usage based on structure, heating and cooling, and appliances, and provides customized EE tips and actions the customer may take. Customers can now directly link to the EEAT survey with one click after they log into their SCE.com account (the "My Account" page) to research a bill or other information.

In addition, SCE improved the customer's EEAT web experience in 2018 by including interactive graphs with historical electricity usage, weather temperatures, costs, credits, and more that can be viewed either by Year, Month, Day or Hour. Customers can now:

- Access this new EEAT web information on a mobile device;
- Compare their annual electricity usage to "up to 100 similar homes" or "up to 100 efficient similar homes;" and
- View "Rate Banners" designed to simplify the details of each rate and help them understand the best times to use electricity.

d. Online Buyer's Guide

The Online Buyer's Guide remained available on SCE.com for customers who were researching any of the following topics: Building Materials, Heating and Cooling, Lighting, Kitchens, Laundry, and/or Plug Loads. Helpful tools and tips were available to guide customers in selecting the most energy-efficient products.

e. HEA Program CPUC-Approved Pilots

10-10-10+ Multifamily Behavior Pilot (Aka Communities for Conservation)

The pilot concluded in April 2018. The team spent the remainder of the year analyzing the pilot results for electricity, gas, and water. A report of the results will be provided in 2019.

B. Plug Load and Appliances (PLA) Program

1. Program Description

The Plug Load and Appliances (PLA) Program develops and builds upon existing Point-of-Sale (POS) retailer relationships. The program offers rebates and incentives to customers for purchasing and installing high-efficiency appliances, such as those with ENERGY STAR® or California Energy Commission (CEC) approval. SCE continues to transform the PLA Program to focus on offering rebates through more cost-effective delivery methods, which may include the integration of Midstream and POS delivery models. The

Program is also striving to be an informational platform that can help teach customers about energy efficiency and make well-informed decisions about the types of products that exist in the market, especially today's "smart" products that can help customers adjust their electricity usage, save money, and reduce demand on the grid.

In 2018, the PLA Program continued to work with local POS retailers that offer instant discounts to residential customers in SCE's service territory. Concurrently, the program continued to solicit new retail store outlets and local distributors to increase the volume of rebates provided via POS channels. This included adding rebates for whole house fans, a measure that helps cool down residential floor space without using the central HVAC system, thus decreasing grid energy load.

Engaging the distributor market has worked to greatly increase energy savings from the program while reducing administrative and overhead costs. Integrating Midstream and POS delivery channels has made the program more cost-effective and allows customers to obtain rebates instantly with minimal challenge.

3. Strategies Implemented in 2018

SCE implemented the following strategies for the statewide PLA Program in 2018:

- Contacted distributors to encourage them to offer more energy-saving products such as whole house fans and heat pump water heaters.
- Worked closely with SCE's Smart Energy Program demand response program to begin offering an EE rebate for smart thermostats.
- Launched SCE's Marketplace web page[3] as the new EE rebate and information platform to engage customers in learning more about SCE's programs and promote the available rebates.
- Launched the Energy Management Center (EMC) website[4] to teach customers about smart products and programs (such as Smart Thermostats, In-Home Displays, Smart Strips, and Smart Tools) that can help manage their electricity usage.
- For pool pumps, SCE:
    - Continued offering POS rebates for variable-speed drive (VSD) pool pumps;
    - Continued working with the Foundation for Pool and Spa Industry Education (FPSIE) to provide specialized training classes for pool pump contractors and installers, focusing on the appropriate installation of VSD pool pumps, on energy savings, and on commissioning pumps to operate

[3] SCE's Marketplace website *is available* at https://marketplace.sce.com/.
[4] SCE's Energy Management Center website *is available* at https://pages.email.sce.com/EMC.

off-peak;

- Continued to engage the contractor workforce to offer the VSD pool pump measure and to commission pool pumps to operate during off-peak hours. Replacing single-speed pool pumps and commissioning pool pumps allowed SCE to claim higher energy savings for pool pumps set to operate outside the 12:00 noon – 6:00 p.m. period; and
- Developed partnerships with pool pump manufacturers such as Pentair and Hayward to conduct authorized training sessions for pool pump professionals.

C. Multifamily Energy Efficiency Rebate (MFEER) Program

1. Program Description

The MFEER Program offers deemed rebates for EE products (such as lighting, pool pumps, etc.) to motivate multifamily property owners and managers to install these products and achieve higher savings. The EE products can be installed in dwelling and common areas of apartment buildings and/or complexes, senior living facilities, single-room occupancy (SRO) facilities, common areas of condominium complexes, mobile home parks, and single-family homeowner association (HOA) communities. An additional objective of the program is to heighten the EE awareness of property owners, property managers, and tenants.

The MFEER Program continues to address the ongoing concern for "split incentives," where residents lack motivation to install sometimes costly EE measures to reduce their energy usage because they do not own the property. Similarly, property owners often lack incentive to upgrade because they do not live on-site and thus do not pay the higher utility bills that result from inefficient appliances. MFEER was designed to drive this customer segment toward participation by offering property owners a variety of EE measures and services.

To overcome the up-front cost barriers to EE adoption, the MFEER Program utilizes a direct-install approach that offers select EE measures at no cost in order to facilitate onsite assessments and encourage property owners to undertake more extensive improvements over time. The program targets all levels of multifamily buildings (low-income, affordable-to-moderate income, and market-rate), including those located in Disadvantaged Communities.

4. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Multifamily Energy Efficiency Rebate Program:

- SCE leveraged relationships with several trade organizations and associations supporting the multifamily market segment in order to reach property owners and managers. SCE actively participated in numerous meetings, workshops, and

networking events, including various trade shows that provided key access to partnerships and resources.

- SCE continued to strategically advertise in association websites, trade journals, and magazines. As a result, the program has continued to engage and foster relationships with energy specialists, property owners, and management firms.
- SCE introduced Smart Communicating Thermostats to the program, successfully installing over 47,000 units. Approximately one-third of these installations were in the homes of disadvantaged customers.

D. Energy Upgrade California® (EUC) Home Upgrade Program

1. Program Description

The Energy Upgrade California® Home Upgrade Program provides incentives for comprehensive home upgrades to single-family and multi-unit (two-to-four) residential customers. The program guides customers and contractors to install energy-efficient retrofits using a one-stop, whole-house approach to EE improvements that views a building as a set of interdependent systems that must be considered holistically, thus achieving deeper and more comprehensive energy savings in keeping with the EE loading order. The program's objectives are:

- To introduce contractors and residential customers to the concept of home performance;
- To help transform the home retrofit market; and
- To drive participation that will reduce customers' energy use, on average, at least 10 percent and up to 45 percent annually.

To participate in the Home Upgrade Program, customers must work with a participating contractor to install eligible EE measures. Incentives of up to $5,500 per home are available. The Home Upgrade Program provides two (2) paths, allowing customers to choose from a variety of measures that best suit their homes and needs:

- A Basic Home Upgrade path that uses a menu-based selection of home EE improvements, and
- An Advanced Home Upgrade path that offers tailored home EE solutions using comprehensive energy modeling.

5. Strategies Implemented in 2018

In 2018, SCE did not implement any new strategies for the EUC Home Upgrade Program. Owing to a lack of cost-effectiveness, SCE closed the program in August 2018.

E. Residential Heating, Ventilation, and Air Conditioning (HVAC) Program

The Residential Heating, Ventilation, and Air Conditioning (HVAC) Program has the primary objective of promoting high quality levels in California's HVAC market for technology, equipment, installation, and maintenance. An additional objective is to increase customer awareness of the value of HVAC installation and maintenance practices that will improve energy efficiency and peak load reduction.

1. Program Description

The Residential HVAC Program has two subprograms:

- The Residential HVAC Quality Installation (RQI) subprogram addresses installation practices to ensure that equipment is installed and commissioned per industry standards.
- The Residential HVAC Quality Maintenance (RQM) subprogram addresses maintenance practices to ensure that:
  - Heating and cooling equipment is serviced per industry standards, and
  - The maintenance effort supports the long-term strategic goal of transforming the HVAC maintenance trade from commodity-based to quality-based.

6. Residential HVAC QI Subprogram Strategies Implemented in 2018

SCE Program Administration prepared to ramp down RQI subprogram activities in 2018, as follows:

- Suspended RQI due to the lack of cost-effective measures.
- Finalized processing of remaining applications and completed a closeout study.
- Coordinated with the Lead Program Administrator, SDG&E, to plan a Statewide Downstream Residential HVAC Quality Installation/Quality Maintenance Pilot.

7. Residential HVAC QM Subprogram Strategies Implemented in 2018

SCE Program Administration did not implement RQM subprogram activities in 2018 for the following reasons:

- Continued to suspend RQM (suspended in 2017) due to SCE's Residential HVAC contractors consistently confirming that the RQM subprogram incentive was too low relative to the lengthy assessment testing the program required.
- Coordinated with the Lead Program Administrator, SDG&E, to plan a Statewide Downstream Residential HVAC Quality Installation/Quality Maintenance Pilot

F. Residential New Construction (RNC) Program

The Residential New Construction (RNC) Program is a continuing statewide program that includes the California Advanced Homes Program and the Sustainable Communities Program. The RNC Program is designed to guide builders to produce the most efficient homes in the most cost-effective manner, and to examine methodologies for supporting the Strategic Plan target of Zero Net Energy (ZNE) by 2020.

1. California Advanced Homes Program (CAHP)

i. Program Description

CAHP 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, energy efficiency (EE), and emerging technologies. Through a combination of education, design assistance, and financial support, CAHP works to encourage building and related industries to exceed California's Title 24 EE standards, and to prepare builders for future changes to these standards.

ii. Strategies Implemented in 2018

CAHP continued to collaborate with Southern California Gas Company (SoCalGas or The Gas Company) to bring awareness of the program to, and increase uptake from, the builder market. In 2018, SCE continued participating in various conferences such as Residential Energy Services Network and Pacific Coast Builders Conference. The objective was to increase awareness of the program and share details of the types of incentives available for measures installed in newly constructed homes.

SCE continued to work with builders such as LINC Housing, an organization that creates communities for thousands of families and seniors living throughout California. As development continues in California, the CAHP Program is well-positioned to continue helping builders understand the necessities of building energy efficient homes that will exceed California's Title 24 EE Standards.

2. Sustainable Communities Program

i. Program Description

Sustainable Communities activities focus on developing strategies for the uptake and broad adoption of Zero Net Energy (ZNE) projects, primarily focused on residential new construction. Working closely with the Codes & Standards Program, the Emerging Technologies Program, and EM&V, Sustainable Communities focuses on a variety of intervention and support strategies such as a multi-family ZNE demonstration, builder outreach, industry training on high performance building practices, the role of the real

estate and mortgage industries, behavioral aspects of ZNE, as well as working with our Service Planning organization on ZNE infrastructure impacts.

G. Residential Direct Install Program

1. Program Description

The Residential Direct Install (Res DI) Program provides direct installation of comprehensive EE measures to residential customers at no- to low-cost, targeting specific geographic areas to alleviate energy hardship and electric system constraints, and to assist low income customers who are not eligible for income assistance programs. The program is designed to enhance the EE knowledge and program participation of the targeted residential market segment to drive them to undertake deeper EE activities and retrofits.

The program collaborates with gas utilities and water agencies to promote both energy efficiency and water conservation. This approach provides customers with a set of EE measures, as well as water conservation measures, such as toilets, low-flow shower heads, and faucet aerators, resulting in thorough water-energy nexus program delivery.

f. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Res DI Program:

- Successfully integrated the smart programmable thermostat measure into the program's design and implementation. For many customers, this measure provided a first-time experience in using energy management technology. Upon completion of the installation, customers were provided with an overview of the thermostat and how to use it, as well as contact information for any additional questions they might have.
- Partnered with Irvine Ranch Water District (IRWD) and SoCalGas to develop and implement a targeted water-energy nexus residential program known as the Get Smart Program. The Program provided customers of both IRWD and the utilities with Rachio 3 Smart Sprinkler Controllers and Nest smart thermostats. Criteria such as size of the customer's yard, age of the home, and water usage history were used to identify customers having the highest savings potential. Based upon these criteria, approximately 9,100 customers were identified and targeted through an email marketing campaign. Of the customers targeted, the Program received 1,186 submittals, a response rate of 13%. As a result of this effort, 950 smart sprinkler controllers and Nest thermostats were distributed to customers, leveraging the services of the Res DI Program implementer, which provided the program's offerings through a single-point-of-contact during one in-home visit. The Get Smart Program allowed SCE to expand its program offerings in an efficient, bundled effort.

II. Commercial Energy Efficiency Programs

The Statewide Commercial Energy Efficiency (EE) Program offers strategic energy planning support, technical support (such as facility audits, calculations, and design assistance), and rebates and incentives to provide DSM solutions that help commercial customers save energy and money. Targeted segments include distribution warehouses, office buildings, hotels, motels, restaurants, schools, universities, colleges, hospitals, high-tech facilities, biotechnology facilities, retail facilities, and smaller customers that have similar buying characteristics. This program includes the following programs:

- Commercial Energy Advisor Program
- Commercial Calculated Incentives Program (includes the Savings By Design Program)
- Workforce Education & Training (WE&T) Energy Design Resources Project
- Midstream Point of Purchase (MPOP)
- Commercial Deemed Incentives Program
- Commercial Direct Install Program, and
- Nonresidential HVAC Program.

A. Commercial Energy Advisor Program

1. Program Description

The Commercial Energy Advisor Program provides a wide and comprehensive offering of audit services, including energy assessments, benchmarking, basic integrated retrocommissioning, continuous energy improvement audits, and online "do-it-yourself" audits through an Enhanced Energy Advisor Tool (EEAT). This program also offers pump test services through its Pump Efficiency Services (PES) component to SCE commercial customers, such as water agencies. Pump tests are designed to help customers make informed decisions about improving inefficient pumping systems. The PES program component also provides targeted education, training, technical support, and renovation and/or replacement incentives.

1. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Commercial Energy Advisor program:

- Began implementation of system enhancements, which are anticipated to launch in Q2 of 2019, which were implemented to comply with AB 802:

1. Elimination of the requirement for requesters to submit an ownership attestation document. Customers now only need to agree to the program's terms and conditions, which include the attestation language.
2. Revision of the requirement to provide historical aggregated usage data, which is now for a period going back two years (the previous requirement was for 13 months of this data).

- Performed 2,326 pump tests for commercial customers.
- The EEAT tool offers small-to-medium business customers, per CPUC Decisions D.10-04-029 and D.12-11-015, an interactive online survey of their facilities' energy usage based on structure, heating & cooling, and appliances, and provides customized EE tips and actions customers may take to improve efficiency in their facilities. In 2018, customers made 3,467 website visits which resulted in 130 completed online audits.

B. Commercial Calculated Incentives Program

1. Program Description

The Commercial Calculated Incentives Program (aka the Customized Retrofit Offering Program) offers incentives for customized retrofit and BRO (Behavioral, Retrocommissioning and Operational[5]) EE projects. It also provides comprehensive technical and design assistance through its Savings By Design subprogram. Customized incentives are paid based on a project's energy savings and permanent peak demand reduction above baseline energy performance (that is, above the requirements of state-mandated codes, federal-mandated codes, industry-accepted performance standards, or existing energy performance, as applicable). New offerings provide a framework to encourage emerging technologies and deeper, more comprehensive retrofits.

1. Strategies Implemented in 2018

In 2018, SCE implemented strategies to improve the quality of applications and projects for the Commercial Calculated Incentives program, through communications, training, and program policy updates, including:

- Maintained a mandatory project application pre-screening QA process to examine all Calculated (Customized and BRO) project applications for complete and accurate documentation, engineering audits (including calculations), and influence requirements. Typical issues include:
  - Poorly-defined baselines
  - Poorly defined project scopes
  - Non-DEER hours

[5] Formerly known as Retrocommissioning (RCx).

- Incorrect measure types
- Insufficient or missing program influence information, and
- Inaccurate calculation methodologies.

- Implemented mandatory requirements for minimum Effective Useful Life (EUL) on all calculated projects. This tool is offered online as a separate Excel document and is built into our Online Application Tool (OLT) which ensures that the payback period for all projects will be less than the Estimated Useful Life. Any project whose payback period exceeds the EUL is declined and flagged for follow-up by the customer's BCD Account Representative, who will work with the customer and/or implementer to correct any inaccurate information and, if possible, modify and resubmit the project application. This also helps to ensure a higher Total Resource Cost (TRC) by project and by measure.
- Produced new and updated internal- and external-facing policy and guidance documents that support project requirements and project quality, including:
  - *Statewide Customized Calculated Savings Guidelines*
  - *Calculated Incentives EUL Simple Payback Tool*
  - *Project Feasibility Study Template (for all project submissions)*
  - *Energy Efficiency Influence Job Aid*
  - *Standards for Custom Project Development*
  - *Early Screening Document Training Video*
  - *Early Screening Document*
  - *Early Retirement Guidance Document*, and
  - *Pump Overhaul Guidance Document.*
- Conducted an annual EE program training event for Trade Professionals (Trade Pros, contractors and/or other energy service providers, who act on behalf of customers to submit EE program applications). This helps to ensure that Trade Pros are knowledgeable about the program's technical and policy requirements in order to improve the quality of the project applications they submit and to enhance customers' experience with SCE's Calculated EE programs.

C. Savings By Design Program[6]

1. Program Description

Savings By Design (SBD) serves the nonresidential new construction market segment. The program promotes integrated design by providing owner incentives, design

[6] As filed, Savings By Design is part of the Commercial Calculated Incentives Program. Per Energy Division's request, however, SCE reports Savings By Design as a separate subprogram.

team incentives, and design assistance to participants who design and build nonresidential new construction buildings that perform at least 10% better than Title 24 requirements.

In addition to delivering a high-quality, efficient program offering, SBD has been focused on strengthening the statewide shared leadership approach. This has played a major role in the program's ability to offer coordinated incentives and services to customers throughout the state.

SBD has also partnered for many years with the Sacramento Municipal Utility District (SMUD) and the Los Angeles Department of Water and Power (through The Gas Company's management of the third-party implementer). Both utilities adhere to the program's policies and are active participants in enhancing the effectiveness of the program's offerings.

2. Strategies Implemented in 2018

2018 was a unique year for the statewide Savings By Design Program. Although the statewide SBD Program team continued to identify and implement changes to policies, procedures, and tools to improve the efficacy and cost-effectiveness of the program, and continued to focus on aligning the new construction industry towards Zero Net Energy targets, some of the program's resources were allocated to ensuring that modifications to the Energy Pro tool and other building modeling and energy savings calculating tools were in compliance with changes stipulated by Commission Staff.

In 2018, SCE implemented the following strategies:

- SCE's new construction engineering (NCE) team led statewide SBD team resources and the program's software consultant to integrate required modifications into the Energy Pro tool.
- SCE's NCE team also developed a Guidance Document for users of other software modeling tools which indicates issues and values that need to be addressed in those tools, in order to ensure that their results comply with Commission Staff disposition requirements.
- SCE's SBD supported the CPUC Statewide Lead PA model decision[7] by contributing significant assistance toward developing the Statewide New Construction Request for Abstracts (RFA), which is anticipated to be issued by PG&E in 2019.
- SCE's SBD continued to increase the program's innovation and cost-effectiveness. SCE initiated redesigns to modify its technical review process to better align with the Calculated Incentives Program's technical review process, enabling a more

[7] Decision (D).18-05-041.

efficient use of SCE and third-party technical review resources and potentially reducing project review time.

- SCE's SBD began development of an Indoor Horticulture Process Lighting measure. This measure will enable SBD to influence the energy efficiency of indoor agricultural facilities, which is a growing field in SCE's service territory.

In 2019, SCE will continue to support the transition the Advocacy programs to the statewide lead model, provide services that will support customers' goals to achieve ZNE standards for their facilities, look for ways to increase the cost-effectiveness of the program, and ensure compliance with Codes and Standards changes which will take place in 2020.

D. WE&T Energy Design Resources

1. Project Description

The WE&T Energy Design Resources (EDR) project was dissolved in early Q3 of 2018.

The decision to dissolve the project was due primarily to the development and redesign of the Savings By Design website. The EDR website had many similar features of the Savings by Design website, so after discussion and a determination by the utilities statewide, the EDR project was closed.

E. Commercial Deemed Incentives Program

1. Program Description

The Commercial Deemed Incentives Program (advertised to customers as "Energy Efficiency Express Solutions") offers eligible business customers incentives that encourage common, standardized EE equipment retrofits. Deemed retrofit measures have fixed incentive amounts per measure unit and are intended for projects that have well-defined energy and demand savings. Projects are typically identified through utility EE audits, customer communications with local SCE representatives, SCE contractors, and/or partnerships with equipment vendors, distributors, and trade allies.

The top measures installed in 2018 were anti-sweat heater (ASH) controls, variable speed drives for HVAC fans, and variable speed drives for pumps. LED street lighting was also a popular measure in 2018.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Commercial Deemed Incentives Program:

- Collaborated with SoCalGas to offer commercial conveyor broiler incentives to national restaurant chains and independent food service facilities. These broilers save large amounts of energy while providing similar production capacity and reduce the heat load in kitchens. The Commercial Deemed Incentives Program

also streamlined the application process for conveyor broilers by centralizing application processing with SoCalGas so customers have one single point of contact to submit application information.

- Improved the Commercial Deemed Incentive Program application process by streamlining combination (combo) applications. Combo applications include both deemed and custom measures in the same application. The customer submits one application to SCE. Since custom measures follow a different process than deemed measures, SCE separated the applications to enhance data tracking, reduce processing time, and expedite payment for deemed measures.
- Implemented the Policy Product Change Checklist (PPCC) to enhance program communications to internal and external stakeholders. The PPCC is an internal checklist used to communicate key program changes around policy, products, incentives, and measures. The PPCC ensures that all required changes and updates are made to systems and that all parties, internal and external, receive updates about the program changes in a timely manner. Implementation of the PPCC resulted in improved communications to all parties and helped ensure that all system and program rules were followed when a program change occurred.
- Introduced high-efficiency pumps into the Program as new measures to provide incentives to customers for upgrading their pumps to more efficient models.
- Due to CPUC dispositions, market studies, and industry standard practice (ISP) studies, SCE established a policy requiring Commercial Deemed Incentives Program project applications to be submitted within 60 days of project installation or final invoice date. This policy is intended to mitigate risks associated with expiring or retired Work Papers and measures.
- Other key changes included updating re-inspection guidelines for projects, by permitting only one re-inspection per project, and changing invoice requirements by prohibiting updates to equipment costs.

F. Midstream Point of Purchase (MPOP)

1. Program Description

In 2018, SCE continued to offer the Midstream Point of Purchase (MPOP) Program as a key deemed offering. The MPOP Program offered point-of-purchase (POP) incentives on qualified light-emitting diode (LED) lighting and food service technologies to nonresidential customers through a distributor delivery channel. SCE reimburses the participating distributor a pre-authorized incentive amount for each qualifying product sold to an eligible business customer. The distributor collects the customer information at the point of purchase and provides product data to SCE through an online tool for invoice

processing. SCE validates the customer and product data and issues payment to the distributor.

The top measures by savings installed in the 2018 MPOP Program were LED T8 Type A tubes and LED high/low bay fixtures of various wattages.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the MPOP Program:

- Enhanced MPOP Program sales data file and tracking systems to improve the data submission process and to automate key reporting functions:
  - Streamlined the distributor sales data file to improve data accuracy by adding validations and calculations to product incentive amounts to reduce distributor errors.
  - Automated reporting functions on key MPOP data through system enhancements to reduce manual data processing.
  - Improved data integrity by adding key customer data to systems to validate nonresidential customer accounts.
- Offered On-Bill Financing (OBF) for MPOP lighting measures to customers for the first time in program history. Updated internal systems to allow customers to submit OBF MPOP applications and integrated the OBF process with the MPOP lighting data submission process. This allowed customers to take advantage of the OBF program to receive no-interest financing for products purchased through an approved MPOP distributor.
- Launched deemed food service measures in the MPOP Program in Q4 of 2018. Actively engaged with food service distributors to enroll and train them on the MPOP process and incentives. Leveraged SCE's MPOP Lighting processing system, the Online Application Tool, to process MPOP food service submissions. By leveraging the existing MPOP lighting system, SCE was able to develop and implement the MPOP food service program at minimal cost.
- Successfully launched LED high/low bay lighting and LED exterior lighting in the MPOP Lighting program in June of 2018 after receiving Work Paper approval.

G. Commercial Direct Install Program

1. Program Description

The Commercial Direct Install Program delivers no-cost and low-cost EE hardware retrofits through installation contractors to reduce peak demand and energy consumption for small- and medium-sized commercial customers. The program targets these businesses in a

staged delivery approach that provides its services in specific geographic areas at different times, allowing for a more concentrated and directed program.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Commercial Direct Install Program:

- Continued the customer participation demand threshold up to 199 kW.
- Allowed national chains that met program eligibility requirements to participate in the program.
- Continued implementation of a marketing plan that emphasizes a collaborative outreach effort to stimulate greater participation.
- Served customers using a district approach, which allows broad coverage by audit and construction teams in a larger area, thus increasing program efficiency.
- Offered LED troffer and LED retrofit kits with co-payments, in addition to LED T8 lamps, for eligible customers throughout SCE's service territory.
- Continued offering the commercial variable speed drive (VSD) pool pump measure for hotel and motel building types.
- Collaborated with SCE's Energy Leader Partnership Program to leverage the Commercial Direct Install Program for projects funded by the partnerships in municipally-owned facilities.

H. Non-Residential HVAC Program

1. Upstream HVAC Equipment Incentive Program

1. Program Description

The Upstream HVAC Equipment Incentive Program offers incentives to distributors who sell qualifying high-efficiency HVAC equipment, in order to increase the regional stocking and promotion of such equipment. Upstream HVAC includes an Early Retirement subprogram (currently suspended) that offers incentives to contractors to work with customers and influence them to replace old, inefficient operating equipment with new, high-efficiency equipment.

g. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Upstream HVAC Equipment Incentive program:

- Continued to actively promote the program to build on distributor and manufacturer participation.
- Reinstated offering for air-cooled chiller and water-cooled chiller technologies upon guidance of Resolution E-4867[8] issued August 24, 2017, which revised this equipment's DEER measure definition. DEER Work Papers were approved to reestablish the technology for the 2018 offering.
- Conducted a market analysis on air-cooled chillers and water-cooled chillers to identify market opportunities in support of developing Work Paper plans for new performance tiers.
- Suspended Early Retirement due to the lack of cost-effective measures.
- Coordinated with the Lead Program Administrator, SDG&E, for the planning of a Statewide HVAC Upstream Program.

3. HVAC Commercial Quality Installation (QI) Program

1. Program Description

The HVAC Commercial Quality Installation (QI) Program is a subprogram of the nonresidential Statewide HVAC Program and is intended to continue the transformation of California's HVAC market. The QI Program is based on the assumption that energy and demand savings are achievable through installation practices that are in accordance with the highest appropriate industry standards applied to commercial HVAC equipment, such as those of the Air Conditioning Contractors of America (ACCA), Sheet Metal & Air Conditioning Contractors' National Association (SMACNA), and the American Society of Heating, Refrigerating, & Air-Conditioning Engineers (ASHRAE).

h. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the HVAC Commercial QI program:

- Continued to coordinate with the Workforce Education & Training (WE&T) Program to provide classroom and hands-on training to HVAC students and technicians.
- Concluded the Comprehensive Value Chain HVAC High Opportunity Projects or Programs (CVC-HOPPs) activities that had leveraged previous QI Work Paper development efforts. The CVC-HOPPs program was designed to use an innovative approach in combining HVAC EE measures and utilizing existing

[8] CPUC Resolution E-4867, *available at* http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K747/194747856.PDF

baselines to claim energy savings using Normalized Metered Energy Consumption (NMEC) analysis. However, the CVC-HOPPs program did not meet minimum TRC requirements based on ex ante energy savings and implementation budgets.

Additionally, several implementers who reviewed the program design explained that they felt that there was too much uncertainty around the incentive amount that contractors would receive. The incentive amount would only be determined after compiling one year of meter data following completion of repairs and upgrades to the HVAC system; in other words, the contractor would have to wait a whole year to see if the actual incentive amount would cover the portion of their project cost that they had forecasted to be paid by the incentive. The potential incentive amount was higher than what other programs currently offer, but the implementers felt that this chance would not be worth the risk to any potential contractor partners.

4. HVAC Commercial Quality Maintenance (QM) Program

1. Program Description

The HVAC Commercial Quality Maintenance (QM) Program addresses cooling and heating equipment maintenance practices to ensure that equipment is serviced per industry standards and that the maintenance efforts support the long-term strategic goal of transforming the trade from commodity-based to quality-based.

i. Strategies Implemented in 2018

The program's focus in 2018 was to continue to bolster performance by:

- Reviewing barriers described by participating contractors, customers, and the CPUC, and
- Evaluating opportunities to improve the cost-effectiveness of the program.

Specific strategies implemented in 2018 included:

- Continued to emphasis skilled and trained workforce program requirements by coordinating with WE&T to continuously improve the efficacy and cost-effectiveness of ASHRAE/ACCA/ANSI Standard 180 and economizer diagnostics trainings for technicians.
- Continued to offer cost-effective measures with high energy savings and discontinued incentives for measures with a TRC of 1.0 or lower.
- Aligned with industry standard practice by allowing customers to enroll in a one-year maintenance agreement as opposed to a 3-year requirement. Aligned customer maintenance plan requirements with objectives described in Section 4 of ASHRAE Standard 180.

- Streamlined contractor online application and data collection processes, expediting incentive payments and reducing participation barriers.
- Reduced inspection, incentive processing, and account management implementation vendor costs by using lower-cost SCE resources. This contributed to annual implementation cost savings of over $3.5 million dollars.
- Continued a feedback loop between the program inspection team and WE&T trainers to identify skill gaps and inform trainings for areas of increased focus.
- Provided early messaging of program design changes to enrolled contractors via program communications and provided guidance for contractors' approaches to promoting the changes.

III. Industrial Energy Efficiency Programs

The Statewide Industrial Energy Efficiency Program works with industry stakeholders to promote integrated energy management solutions to industrial end-use customers, such as printing plants, petroleum refineries, chemical industries, and water and wastewater treatment plants. The program is designed to overcome the traditional market barriers to EE, while also advancing distributed generation and DR opportunities. The four (4) programs that comprises of the core EE products and services offered to industrial customers include:[9]

- Industrial Energy Advisor Program
- Industrial Calculated Program
- Industrial Deemed Incentives Program, and
- Strategic Energy Management Program.

A. Industrial Energy Advisor Program

1. Program Description

The Industrial Energy Advisor Program provides a wide and comprehensive offering of audit services, including energy assessments, basic integrated retrocommissioning, and continuous energy improvement audits. This program also offers SCE industrial customers pump test services through its Pump Efficiency Services (PES) Program component. Pump tests are designed to help customers make informed decisions about improving inefficient pumping systems. The PES Program also provides targeted education, training, technical support, and renovation and/or replacement incentives.

2. Strategies Implemented in 2018

In 2018 SCE implemented the following strategies for the Industrial Energy Advisor Program:

- Continued making the pump overhaul measure available and assessing pump useful life (after approval from CPUC staff) under the guidance of Resolution E-4818[10].
- Performed 147 pump tests for Industrial customers.

B. Industrial Calculated Energy Efficiency Program

1. Program Description

The Industrial Calculated Energy Efficiency Program offers incentives for customized retrofit and BRO (Behavioral, Retrocommissioning and Operational[11]) EE

[9] The Industrial Continuous Energy Improvement (CEI) Program was closed as of 12/31/2017.
[10] CPUC Resolution E-4818, *available at* http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M179/K264/179264220.PDF
[11] Formerly known as Retrocommissioning (RCx).

projects, and provides comprehensive technical and design assistance. Incentives are paid based on a project's energy savings and permanent peak demand reduction above baseline energy performance (that is, above the requirements of state-mandated codes, federal-mandated codes, industry-accepted performance standards, or existing energy performance, as applicable).

2. Strategies Implemented in 2018

In 2018, SCE implemented strategies to improve the quality of applications and projects for the Industrial Calculated Incentives program, through communications, training, and program policy updates. This work was undertaken in coordination with the Commercial and Agricultural Calculated Incentives Programs, since these quality issues impact all three programs similarly. For the specific strategies, please see the Commercial Calculated Incentives Program in Section II.B., above.

C. Industrial Deemed Energy Efficiency Program

1. Program Description

The Industrial Deemed Energy Efficiency Program (advertised to customers as "Energy Efficiency Express Solutions") offers eligible business customers incentives that encourage common, standardized EE equipment retrofits. Deemed retrofit measures have fixed incentive amounts per measure unit and are intended for projects that have well-defined energy and demand savings. Projects are typically identified through utility EE audits, customer communications with local SCE representatives, SCE contractors, and/or partnerships with equipment vendors and trade allies.

The top measures installed in 2018 were variable speed drives (VSDs) on pump controls and exterior LED lighting.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Industrial Deemed Incentive program:

- Introduced high-efficiency pumps into the Industrial Deemed Incentives Program as new measures to provide incentives to customers for upgrading their pumps to more efficient models.
- Improved the Industrial Deemed Incentive Program application process by streamlining combination (combo) applications. Combo applications include both deemed and custom measures in the same application. The customer submits one application to SCE. Since custom measures follow a different process than deemed measures, SCE separated the applications to enhance data tracking, reduce processing time, and expedite payment for deemed measures.
- Due to CPUC dispositions, market studies, and industry standard practice (ISP) studies, SCE established a policy requiring project applications to be submitted

within 60 days of project installation or final invoice date to help mitigate risks associated with expiring or retired Work Papers and/or measures.

- Other key changes included updating re-inspection guidelines for projects by permitting only one re-inspection per project and changing invoice requirements by prohibiting updates to equipment costs.

D. Strategic Energy Management (SEM) Program

1. Program Description

The SEM Program engages large industrial customers during a two-year period to drive persistent electric and natural gas savings across their entire facilities. The program includes a full spectrum of services:

- Customer workshops with clearly defined learning objectives and well-facilitated peer-to-peer learning.
- Annual (that is, once in each of the two years) on-site "Energy Treasure Hunts" to identify, track, and prioritize energy-saving opportunities.
- On-site and remote support for goal development, employee engagement, energy map development, energy data collection and data logging, and project savings persistence strategies.
- Support for designing and implementing an Energy Management Information System.
- Implementation of an "Energy Management System Assessment" to assess progress on each participant's management approach and to plan future improvements.

Energy savings opportunities in the SEM Program include low-cost Operational and Maintenance (O&M) and Behavioral, Retrocommissioning and Operational[12] (BRO) measures, as well as capital projects. The program measures savings at the meter level, using a normalized regression model that accounts for factors that affect energy consumption, such as production volume and weather. Customers receive incentives for BRO measures, for capital projects, and for achieving key milestones.

This program complies with the *California Industrial SEM Design Guide* and the *California Industrial SEM Measurement and Verification (M&V) Guide*, which have been approved by the CPUC.

2. Strategies Implemented in 2018

The program requires ongoing commitment and active participation from customers, who are expected to strive to change both individual and corporate behavior as well as

[12] Formerly known as Retrocommissioning (RCx).

simply pay for EE improvements. Within the first five months after its launch in August 2018, the program team successfully recruited eight large industrial customers in the Inland Empire region of California.

- These customers participated enthusiastically in an intensive series of activities, including a kick-off meeting, two workshops, Energy Treasure Hunts, using an energy map (a tool to record estimated energy consumption of major systems or processes), and gathering data for the regression model. Each customer also built up an Energy Team, led by an Energy Champion.
- The Treasure Hunts generated more than 370 energy savings projects, or more than 45 projects per customer. Forty of these projects were completed in 2018.[13]
- One customer used the Treasure Hunt to engage their corporate continuous improvement team, thus gaining additional support for energy savings activities.
- Customers added production and finance staff to their Energy Teams to ensure support for projects that had not been progressing satisfactorily.
- Customers used the program's online project management website to prioritize their "Top 5" projects.

In addition, the program implemented the following:

- Created draft energy regression models for electricity and natural gas for each participating customer, which were then reviewed by utility staff and a third-party reviewer. The electricity models were finalized in January 2019.
- Delivered the first milestone incentives to eligible participants.
- Created an online registry of all savings opportunities for each customer.
- Facilitated improved relationships between customers and their SCE account representatives.

[13] According to the program rules in the *SEM Design Guide*, savings will be calculated at the end of each Program Year (July 31, not December 31).

IV. Agriculture Energy Efficiency Programs

The statewide Agriculture Energy Efficiency Program, aimed at providing DSM solutions to help agricultural customers save money and energy, offers strategic energy planning support, technical support (for example, facility audits and calculation and design assistance), and financial support through rebates and incentives. Targeted segments in the agriculture sector include growers of crops, fruits, vegetables, and nuts, greenhouses, post-harvest processors (ginners, nut hullers, and associated refrigerated warehouses), dairies, water and irrigation districts and/or agencies, and food processors.

The statewide Agricultural Energy Efficiency Program includes the following subprograms:

- Agriculture Energy Advisor Program
- Agriculture Calculated Program, and
- Agriculture Deemed Incentives Program.

A. Agriculture Energy Advisor Program

1. Program Description

The Agriculture Energy Advisor Program provides wide and comprehensive audit services, including energy assessments, basic integrated retrocommissioning, and continuous energy improvement audits. This program also offers SCE agricultural customers pump test services through its Pump Efficiency Services (PES) program component. Pump tests are designed to help customers make informed decisions about improving inefficient pumping systems. The PES Program also provides targeted education, training, and technical support, and renovation and/or replacement incentives.

2. Strategies Implemented in 2018

In 2018 SCE implemented the following strategies for the Agriculture Energy Advisor Program:

- Performed 1,107 pump tests for agricultural customers.
- Implemented fee-based pump testing in May 2018, based on previous CPUC comments and guidance.
- Continued making the pump overhaul measure available in the core business program and assessing pump useful life after approval from CPUC staff per CPUC Resolution E-4818.

B. Agriculture Calculated Energy Efficiency Program

1. Program Description

The Agriculture Calculated Energy Efficiency Program offers incentives for customized retrofit and BRO (Behavioral, Retrocommissioning and Operational, formerly known as Retrocommissioning) EE projects for agricultural customers. The program also provides comprehensive technical and design assistance. Incentives are paid based on energy savings and permanent peak demand reduction above baseline energy performance (that is, above the requirements of state-mandated codes, federal-mandated codes, industry-accepted performance standards, or existing energy performance, as applicable). New offerings provide a framework to encourage emerging technologies and deeper, more comprehensive retrofits.

2. Strategies Implemented in 2018

In 2018, SCE implemented strategies to improve the quality of applications and projects for the Agricultural Calculated Incentives program, through communications, training, and program policy updates. This work was undertaken in coordination with the Commercial and Industrial Calculated Incentives Programs, since these quality issues impact all three programs similarly. For the specific strategies, please see the Commercial Calculated Incentives Program in the Commercial Energy Efficiency Program in Section II.B., above.

C. Agriculture Deemed Energy Efficiency Program

1. Program Description

The Agriculture Deemed Incentive Program (advertised to customers as "Energy Efficiency Express Solutions") offers eligible agricultural customers incentives that encourage common, standardized EE equipment retrofits. Deemed retrofit measures have fixed incentive amounts per measure unit and are intended for projects that have well-defined energy and demand savings. Projects are typically identified through utility EE audits, customer communications with local SCE representatives, SCE contractors, and/or partnerships with equipment vendors and Trade Professionals (formerly known as Customers' Authorized Agents).

The top measures installed in 2018 were variable frequency drives (VFDs) on well pumps.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Agriculture Deemed Energy Efficiency Program:

- Introduced high efficiency pumps into the Agricultural Deemed Incentives Program as new measures to provide incentives to customers for upgrading their pumps to more efficient models.
- Improved the Agricultural Deemed Incentive Program application process by streamlining combination (combo) applications. Combo applications include both deemed and custom measures in the same application. The customer submits one application to SCE. Since custom measures follow a different process than deemed measures, SCE separated the applications to enhance data tracking, reduce processing time, and expedite payment for deemed measures.
- Due to CPUC dispositions, market studies, and industry standard practice (ISP) studies, SCE established a policy requiring project applications to be submitted within 60 days of project installation or final invoice date, to help mitigate risks associated with expiring or retired Work Papers and/or measures.
- Other key changes included updating re-inspection guidelines for projects (permitting only one re-inspection per project) and changing invoice requirements prohibiting updates to equipment costs).

V. Lighting Programs

The 2018 Statewide Lighting Program includes three (3) subprograms:

- Primary Lighting
- Lighting Innovation, and
- Lighting Market Transformation.

The Statewide Lighting Program facilitates market adoption and transformation for advanced lighting products through a number of activities, including:

- Assessment of pre-commercialized lighting technologies,
- Pilot programs for advanced lighting technologies in the early stages of commercialization, and
- Incentives for lighting measures that have reached a suitable level of commercialization.

The following are descriptions of the lighting subprograms and their strategies employed in 2018.

A. Primary Lighting Program

1. Program Description

This subprogram offers upstream rebates to reduce the cost of EE lighting products. The program strives to influence the future purchasing and installation behaviors of residential customers. An array of light-emitting diode (LED) screw-in product types and models were offered which met California and federal code requirements.

2. Strategies Implemented in 2018

In 2018 the program continued to expand the variety of retailers involved to include Hard-to-Reach (HTR) and Disadvantaged Communities. The program optimized savings and cost-effectiveness by adjusting the measure mix, quantities, and incentive amounts to adhere to Work Paper values. For example, Compact Fluorescent Lamps (CFLs) were removed from the program because their savings and cost-effectiveness yielded no value according to the Work Papers and other analyses.

B. Lighting Innovation Program

1. Program Description

The Lighting Innovation subprogram evaluates products and/or program approaches that are new to the market and that have the potential of eventually entering the Primary Lighting Program or the Commercial, Industrial, and Agricultural EE Programs. Lighting Innovation trials, pilots, small-scale projects, and studies are administered to collect data on

sales, installations, marketing, influence on future program designs, and other business aspects of the lighting industry to assist in program design and Work Paper development.

2. Strategies Implemented in 2018

In 2018, SCE continued the Sustainable Office Lighting Trial Program, also referred to as the Advanced Lighting & Controls System (ALCS) Pilot Program. Contractors participating in the program completed thirty-one projects, bringing the program valuable knowledge about ALCS installation work from the contractor workforce.

Cadmus Group, an EM&V consultant, continued to update the ALCS Pilot Program Evaluation Report with survey data that was sent to a number of contractors, facility managers, and lighting control manufacturers to gain a better understanding of challenges and barriers that are inherited when installing Advanced Lighting Control Systems. The data provides valuable insight that has allowed the IOUs to understand the complexities of lighting systems and how to better design a program that will benefit both the IOUs and the customer. The final evaluation report for the ALCS Pilot will be published in Q2 2019.

C. Lighting Market Transformation (LMT) Program

1. Program Description

The Lighting Market Transformation (LMT) Program was designed to implement a statewide program strategy that coordinated IOU efforts to promote efficient lighting technologies and best practices in California and adapted utility lighting programs to the ever-changing energy and lighting markets in support of the Strategic Plan.

The LMT Program was particularly instrumental in developing Lighting Innovation Program concepts, trials, and demonstrations. However, thanks to the influx of LED technology to the market and LMT's success in helping to ensure the efficient progression of lighting solutions into customer EE programs, the program ramped down. It remains as a placeholder and may be revived in the future when more research in the lighting market is needed.

VI. Finance Programs

The Statewide Finance Program is designed to provide customers additional options for financing EE projects. It includes three (3) subprograms:

- On-Bill Financing (OBF)
- American Reinvestment and Recovery Act (ARRA)-Originated Financing, and
- New Finance Offerings (Pilots).

The programs are offered in conjunction with other Core SCE programs to stimulate and enable higher levels of customer participation.

A. On-Bill Financing (OBF) Program

1. Program Description

SCE's OBF Program offers zero-interest financing for the installation of qualifying energy-efficient measures. Loans are available to qualifying nonresidential customers, including commercial, industrial, government, and institutional customers, and customers repay their loan as a line item on their electric bill. This program supports the Strategic Plan's commercial sector goals and strategies. OBF is offered in conjunction with other SCE programs, including the Calculated Incentives Energy Efficiency (EE) Program, Deemed (Express Solutions) EE Program, Retrocommissioning Program, Midstream Point-of-Purchase Program, Multifamily EE Rebate (MFEER) Program, Third Party-Implemented Programs, and Local Government Partnership offerings.

In 2018 OBF funded a total of 150 loans covering a total of 1,427 Service Accounts, representing $12,396,854 in funded loans and $9,136,571 in loan repayments.[14]

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies in order to reduce program constraints and expand the potential for OBF financing to better meet customers' needs:

- Added the Midstream Point of Purchase (MPOP) Program to the list of EE programs eligible for OBF financing, with the same loan limits as those for customers of other statewide programs, which helped incentivize customer participation in the MPOP program. The process for issuing loans to MPOP customers was developed and finalized by mid-year.[15] All OBF collateral materials, including website information, a fact sheet, and the application form were modified to include this added program.
- Implemented the offering of a small Site-Specific Savings pilot for Commercial, Industrial, and Agricultural Deemed (Express Solutions) and MPOP customers.

[14] Figures represent projects installed in 2018, which include projects initiated or committed in previous program years.
[15] This process was different from the process used for two MPOP projects financed in 2017 as program pilots.

This pilot was offered in October 2018, to satisfy the financing needs of our customers and promoted and facilitated the installation of more EE measures in 2018 by providing customers access to capital and improving participation in the MPOP program. This pilot provided enough data to offer site-specific savings as a permanent program option in 2019.

- Discussed and reviewed plans to make use of electronic signature software for OBF loan agreements. This will expedite the loan signing process and will bring efficiencies to the internal loan funding process, as well as aligning SCE with most of the rest of the Statewide Finance Team.
- The Commission approved SCE to shift funds remaining from previous OBF Program Cycle budgets and loan repayments to cover OBF loan pool funding requirements for Program Years 2018 and 2019.[16] This solved the budget issue created by the lack of funds allocated to the OBF loan pool in our approved Business Plans. The Advice Letter was approved on December 31, 2018. As a result, SCE's 2018 OBF commitments, totaled $13,915,000, which was only $85,000 less than our forecast of $14,000,000 for the year.

B. The ARRA-Originated Financing Program

1. Program Description

The ARRA-Originated Financing Program provides ratepayer funding to programs that were previously funded by the American Recovery and Reinvestment Act of 2009 (ARRA), which is now no longer active. The Program was designed to encourage the implementation of comprehensive EE retrofits by providing access to affordable financing options within Santa Barbara, Ventura, and San Luis Obispo Counties.

The "emPower Program" (formerly "emPower Santa Barbara County" or "emPower SBC") is SCE's only ARRA-originated financing program. It provides unsecured loans for single-family homeowners implementing home energy upgrades. The Program:

- Leverages IOU ratepayer funding to create a partnership with Santa Barbara County, San Luis Obispo County, Ventura County, the Energy Upgrade California® Home Upgrade ("Home Upgrade") Program, and two (2) competitively-selected local credit unions.
- Is jointly co-funded by SCE, Pacific Gas and Electric Company (PG&E), and SoCalGas.
- Is administered by the County of Santa Barbara.

[16] SCE submitted Advice Letter 3880-E on October 19, 2018 requesting Commission approval to retain prior OBF Loan Pool funding for 2018 and 2019. Commission approved SCE AL 3880-E on December 31, 2018 with an effective date of January 1, 2018.

- Receives funding for various activities, such as marketing and workforce training.
- Provides credit enhancement funds through a loan loss reserve (LLR).[17]

2. Strategies Implemented in 2018

In 2018, the ARRA-Originated Financing Loan Pool (Loan Loss Reserve), continued to successfully cover the ARRA-Originated Financing Program needs, with current strategies.

SCE implemented the following strategies in 2018 for the emPower Program:

- SCE continued to recommend working with certified contractors to perform "coach visits," rather than hiring additional contractors and energy coaches.[18]
- SCE continued to recommend aligning marketing and advertising efforts with the Home Upgrade Program and reducing both advertising in newspapers and program website activities.
- Though marketing, education and outreach are not within the program's core scope, it continued to perform well in those areas. While the program significantly ramped down outreach activities in the last quarter, it engaged with a total of 2,172 interested individuals in 2018. Of those interested individuals, 1,909 attended 44 marketing and outreach events that were either hosted or participated in by emPower staff.
- emPower also partnered with the Community Home Energy Retrofit Program (CHERP) to conduct a grass-roots effort to engage an entire community in the benefits and opportunities of energy efficiency, called the 50 Home Challenge. The focused efforts over nine months led to 50 Energy Coach visits, nine completed projects, and four closed loans.

During 2018, emPower funded no loans in SCE's service territory, and at the Statewide level, emPower only funded 13 loans. As of December 2018, total emPower program expenditures for 2018 were $867,558, and SCE's share of these costs was $446,185. These minimal loan placements, coupled with expense levels, continued to demonstrate the program's lack of cost-effectiveness.

Based on this and the program's very similar track record during previous years, the lead utility (SoCalGas) notified emPower in July that all three participating utilities would cease funding emPower and that the program would not be continued in 2019. As a result, emPower staff submitted a program ramp-down plan to the utilities in August 2018, and carried the plan out through the end of the calendar year.

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[17] An LLR provides reimbursement to a financial institution in the event of a default on a qualifying loan, up to a given percentage on a portfolio of loans. IOUs provide LLR funds and designate eligible EE measures. Financial institutions provide capital for EE loans.

[18] Energy coaches instruct customers about EE opportunities and how to take advantage of EE programs and financing.

C. New Finance Offerings (Pilots)

1. Program Description

In accordance with Decision D.13-09-044[19] implementing 2013-2014 Energy Efficiency Financing Pilot Programs, the IOUs, along with the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA, a subdivision of the California Treasurer's office serving as the pilots' Program Administrator), have developed and are continuing to develop statewide financing pilot programs that:

- Offer scalable and leveraged financing products
- Test market incentives for attracting private capital through investment of ratepayer funds, and
- Test whether payment via the utility bill ("on-bill repayment" or OBR) increases debt service performance across market sectors.

The New Finance Offerings include the following pilot programs:

- Single Family Loan Program With Credit Enhancements, commercially known as Residential Energy Efficiency Loan (REEL) Assistance Program. REEL, the first of these California Hub for EE Financing (CHEEF) Pilot Programs to launch (in Q2 of 2016), offers a loan loss reserve to mitigate lender risk in providing access to financing for residential EE projects in IOU service territories.
- Small Business OBR Loan/Lease With Credit Enhancements Program, and
- Master-Metered Multifamily OBR Program.

The new Finance Offerings will include various forms of credit enhancements for residential properties and small businesses. The credit enhancements are expected to provide additional security to third-party lenders so they can extend or improve credit terms for EE projects.

The most recent CPUC Decision (D.17-03-026)[20] provided needed clarification and encouraged the continued development of the financing pilot programs. The Decision also:

- Approved an additional $10 million for the IOUs, of which $2 million was allocated to SCE, to be used as needed to further develop and implement the pilots,
- Provided a path for SCE and the other IOUs to request additional monies if needed, and
- Established a December 31, 2019 deadline for launching all financing pilot programs. Pilot programs not launched as of that date will be cancelled.

[19] "Decision Implementing 2013-2014 Energy Efficiency Financing Pilot Programs," D.13-09-044.
[20] "Decision Addressing Energy Efficiency Financing Pilot Programs Originally Ordered in Decision 13-09-044," D.17-03-026, dated March 23, 2017.

2. Strategies Implemented in 2018

In 2018, SCE worked with CAEATFA and other IOUs to implement the following strategies for the New Finance Offerings:

a. General Marketing for the New Finance Offerings

The SCE program team developed a comprehensive marketing strategy for deployment in 2019. Specific marketing strategies included website landing pages, banner ads, translation services, printing, direct mail, e-mail "blasts," social media, and ongoing partnerships with targeted DSM Programs.

In coordination with the Center for Sustainable Energy (CSE), SCE's program team transitioned the consumer website from **thecheef.com** to **gogreenfinancing.com** to improve the user experience and content delivery platform.

b. Residential Energy Efficiency Loan (REEL) Assistance Program

The REEL Assistance Program, launched in Q2 of 2016, includes success metrics through 2018 as follows:

- 2016: 5 loans totaling $57,737
- 2017: 38 loans totaling $662,128
- 2018: 85 loans totaling $2,147,024

The grand total of REEL loans made by SCE since launch through 2018 is 128 loans totaling $2,866,889, which represents 37.8% of the total number of loans made by all Statewide IOUs (339) and 49.6% of the total dollars loaned ($5,780,206) in the same period.

- Seven credit unions (lenders) have enrolled and are participating in the REEL program to date. All seven lenders service SCE's service territory.
- Because D.17-03-026 gave CAEATFA authorization to finance "To Code" measures which may not align with IOU Work Papers moving forward, the list of Eligible Energy Efficiency Measures (EEEMs) was further refined for the REEL Program, and SCE began developing meter-based savings protocols using *ex post* energy measurement methodologies to estimate energy savings for non-rebated projects, including Normalized Meter Energy Consumption (NMEC) Protocols and Investor Confidence Protocols (ICP). During 2018 (and continuing at present), the SCE program team worked to coordinate SCE engineering support with CAEATFA to ensure alignment with IOU requirements for these protocols.
- SCE conducted outreach and attended community events to market the REEL program and to maintain awareness of the changing landscape of EE financing.
- The REEL Program team worked with the Mobile Energy Unit (MEU) Program team to begin promoting the REEL program to residential customers. The MEU appeared at 115 events in 2018, promoting the REEL Program with One-Page

Fact Sheets and Program-Branded Giveaways. The success metrics for the REEL/MEU alignment were tracked by CSE and demonstrate SCE's commitment to the success of the pilot.

- SCE's marketing team also worked with CSE, CAEATFA, and the IOU Statewide team to design marketing materials promoting the REEL program, including flyers and printed ads as well as social media, e-mail, and direct mailing campaigns.

c. Small Business OBR Loan/Lease Pilot

The Customer Service Replatform (CSRP) is a company-wide project to replace SCE's current billing system, the Customer Service System (CSS), with an SAP Billing system. During 2018, the program team worked with the CSRP team on a weekly basis to develop functional specifications, business requirements, and training documentation for the Finance Pilots.

The OBR infrastructure in CSS is to be migrated to the new SAP processing system and software in 2020. In preparation for this, milestones and deadlines were documented in 2018 for the OBR Statewide Team and CAEATFA.

SCE's marketing team worked closely with CAEATFA and the statewide team in the development of a marketing plan for the Small Business Pilot in preparation of the program launch in 2019.

d. Master-Metered Multifamily OBR Program

This program closely trails the development of the Small Business Pilot. SCE program staff worked with CAEATFA to prepare for the pilot launch which is scheduled for 2019.

SCE continued supporting the development of this pilot by extending our co-funding agreement with other IOUs providing financial support for the assistance of Harcourt Brown & Carey (HB&C). HB&C continued to conduct research, outreach, and program design, and to follow up on feedback received from the Q4 2017 Affordable Multifamily workshop in 2018.

VII. Codes and Standards Program

A. Program Description

The Statewide Codes and Standards (C&S) Program saves energy on behalf of ratepayers by influencing regulatory bodies such as the California Energy Commission (CEC) and the U.S. Department of Energy (DOE) to strengthen energy efficiency (EE) regulations. The Program conducts efforts to increase compliance with existing C&S regulations, to ensure that the State realizes the energy savings from new codes and standards and supports local governments that include reach codes as a climate strategy. The Program also works with IOUs statewide to optimize collaboration and zero net energy (ZNE) planning & coordination activities in preparation for future codes.

Program advocacy and compliance improvement activities extend to virtually all buildings and appliances sold in California, in order to support the State's ambitious climate and energy goals. Having achieved, through adoption of 2019 building energy efficiency codes, the EE Strategic Plan goal that "New construction will reach 'zero net energy' (ZNE) performance (including clean, onsite distributed generation) for all new single and low-rise multi-family homes by 2020,"[21] the Program continues to move California towards nonresidential new construction ZNE buildings by 2030, and three other major objectives:

- Carbon reduction targets in 2020 equivalent to 1990 emissions levels (AB 32)[22] and 40 percent below 1990 levels by 2030 (AB 398[23] and SB 32[24])
- A cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end-uses by January 1, 2030 (SB 350)[25] to reduce existing building energy usage by 50 percent; and
- Near-zero-emission building technologies to significantly reduce the emissions of greenhouse gases from buildings (SB 1477).[26]

B. Key Initiatives

Key initiatives of the C&S Program in 2018 included advocacy for new or updated sections of California's Building Energy Efficiency Standards and related ASHRAE and ICC[27] activities; advocacy for new Title 20 and DOE appliance standards, and related ENERGY STAR® activities; training, tools, and resources to support compliance with existing codes and standards; development of new cost-effectiveness studies to support local government reach codes; long-term planning and coordination activities to optimize work

21 California Long Term Energy Efficiency Strategic Plan: http://www.cpuc.ca.gov/WorkArea/DownloadAsset. aspx?id=5303
22 AB 32, available at http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf
23 AB 398, available at http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB398
24 SB 32, available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB32
25 SB 350, available at http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB350
26 SB 1477, available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1477
27 ASHRAE: American Society of Heating, Refrigerating & Air-Conditioning Engineers. ICC: International Code Council.

across California's utilities; and coordination of code preparedness activities aimed at specific industries and technologies for future code cycles. In addition, support began for the CEC's initiative to "move to a more GHG□based metric that promotes electrification."

C. Appliance Standards Advocacy Subprogram

1. Program Description

The Appliance Standards Advocacy (ASA) subprogram targets both state and federal standards and test methods, including improvements to Title 20 Appliance Efficiency Regulations by the Energy Commission, and improvements to federal appliance regulations and specifications by the DOE, Environmental Protection Agency (EPA) ENERGY STAR® Program, ASHRAE, and the Federal Trade Commission (FTC). Advocacy activities include developing Title 20 code enhancement proposals, participating in the Energy Commission public rulemaking process and ASHRAE committees, collecting data to support IOU positions, submitting comment letters in federal standards proceedings, and participating in direct negotiations with industry. Additionally, the subprogram monitors state and federal legislation and intervenes as appropriate.

2. 2018 Strategies and Successes

The ASA subprogram has been actively engaged in negotiating with industry regarding the Variable Refrigerant Flow (VRF) test procedure and EE standard, in order to make the test procedure stronger and ensure that VRF equipment is as efficient in the field as its marketing claims it is. Industry actors were unwilling to make significant modifications to the test procedure until the IOUs presented laboratory and field data that demonstrated that the equipment rating can be up to 50% higher than what consumers see in their facilities. This data provided the basis for DOE to collaborate with the IOUs on a data collection plan on which to base test procedure changes. As a result of the IOUs' efforts, there will be significant savings and equipment ratings will accurately reflect equipment performance.

Several other ASA subprogram efforts have been pursued at the state level. The IOUs provided technical support for the CEC's adoption of standards for portable electric spas, compressors, and portable air conditioners. ASA subprogram staff participated in several Energy Commission webinars and workshops and developed Codes & Standards Enhancement (CASE) studies for the CEC on products including spray sprinkler bodies, commercial & industrial (C&I) fans and blowers, portable air conditioners, hearth products (such as electric fireplaces), compressors, and tub spout diverters, as well as an expanded General Service Lamp (GSL) definition, a solar inverter roadmap, a low power mode and power factor roadmap, and portable spa and pool pump rulemakings. The ASA subprogram also completed laboratory testing for residential and commercial clothes dryers and for VRF where the results are being used to create or improve test procedures.

The ASA subprogram advocated for changes to federal appliance standards through multiple efforts. Program staff researched and responded to specific issues related to federal rulemaking and specification processes conducted by the DOE and EPA ENERGY STAR® and

participated in stakeholder meetings during these rulemakings and specifications processes, resulting in eighteen rulemaking advocacy letters issued in 2018.

3. Implementation Challenges

The current federal administration is working at a slower pace than in previous years, which reduces our opportunity to update federal standards. While the DOE has routinely requested information from stakeholders on significant measures, they released two significant requests for comment at the same time, which made it difficult to provide substantial comments and data to support the IOUs' position, although the IOUs were nonetheless successful at providing substantial comments. The DOE is focused on process improvements and changes to the overall appliance standards subprogram rather than individual equipment rulemakings or test procedures. Federal preemption, which has been a significant barrier to meeting California ZNE goals, has since become a larger problem as more cost-effective, higher-efficiency technologies enter the market while the pace of federal regulation updates is slowing compared to previous years.

DOE has proposed to roll-back the definition of GSL, one of the most far reaching and cost-effective appliance standards in recent times. This rulemaking would require a minimum of 45 lumens per watt efficacy standard for all general service lamps regardless of technology. This is expected to be effective on January 1, 2020. The ASA subprogram developed a strategy to oppose the DOE's proposed roll-back of the decision which includes web crawling, retailer surveys, outreach to manufacturers and other advocates and support from subject matter experts. DOE's likely roll-back decision is expected to result in a lawsuit.

4. Opportunities Moving Forward

Due to the lab testing in 2018, the IOUs have the opportunity to significantly impact current test procedures at the federal level. California IOUs will continue working on important rulemakings which will include the work on test procedures for low power mode and power factor. Since California is the national appliance standards leader, the IOUs will play a significant role in supporting the CEC and DOE.

D. Building Codes Advocacy Subprogram

1. Program Description

The Building Codes Advocacy subprogram primarily supports the CEC's efforts to update California's Building Energy Efficiency Standards (Title 24, Part 6) to include new requirements or to upgrade existing requirements for various technologies. Title 24, Part 6 is updated on a triennial cycle. Advocacy activities include the development of Codes and Standards Enhancement (CASE) proposals, research to provide data needed to advance energy efficiency codes and standards, and participation in public rulemaking processes. In addition to supporting Part 6, the subprogram also supports the CEC in making recommendations to the Building Standards Commission for updates to Title 24, Part 11

California Green Buildings Standards Code (CALGreen). The energy measures in CALGreen provide foundational elements for local energy ordinances or reach codes.

In 2018, the subprogram also pursued changes to national building codes that impact California through ASHRAE and other national and international code-setting bodies. In 2019, it is expected that some of the national model codes activities will transition to the recently approved National Codes and Standards subprogram.

2. Subprogram Highlights

On May 9, 2018, the CEC adopted a triennial update to California's Building Energy Efficiency Standards. The 2019 Building Code will apply to all new construction and major retrofit projects permitted on or after January 1, 2020. The energy efficient building standards were first developed in the 1970s, and SCE has been a longtime participant in the process. SCE is part of the statewide utility team that supports the development of the building energy efficiency standards.

1. Significant Updates

- Indoor air quality requirements were strengthened as building and home envelopes are more tightly sealed.

In the nonresidential sector:

- New construction and significant retrofit projects should be designed to include high-efficacy lighting, such as LED lighting. The lighting energy use "budget" is now significantly lower as LEDs have become more commonplace.
- Alignments, where appropriate, with national codes such as ASHRAE 90.1, will make it easier to design buildings that will meet local requirements across multiple states.
- Newly constructed healthcare facilities will need to meet certain sections of the energy efficiency standards. In the past, they were not required to meet any energy efficiency standards in the same way other building types were.
- Factory and Laboratory exhaust requirements based on ANSI Z9.4 and laboratory fume hood automatic sash closure for new construction and significant retrofit projects.

In the residential sector:

- The updated standards represent progress on a roadmap the state has been following since 2008, when California adopted a goal that all residential new homes should be zero net energy by 2020.
- For the first time, the Standards require new residential construction to achieve a near zero-net energy threshold, which may require onsite generation such as private rooftop solar panels. While this does not make solar mandatory for all new residential construction, most new homes will include a combination of

efficiency and onsite solar generation as the most straightforward way to meet the standards.

- High performance attics, walls, and windows will provide long-lasting efficiency and comfort benefits.
- Batteries and heat pump water heaters are not required, but if they meet certain requirements, they may be beneficial in the package of technologies included in designs that achieve a passing compliance score. (now known as the Energy Design Rating).

The IOUs supported the CEC's 2019 Title 24 rulemaking by developing 40 building code proposals contained in 23 Codes and Standards Enhancement (CASE) reports (some reports contained multiple proposals). A few of the CASE reports supported updates to CALGreen instead of Part 6. The 2019 final CASE reports and Results Reports, which compare what was proposed to what was adopted, are available online.[28]

Expected savings from the following 2019 Title 24 CASE reports are approximately 603 GWh/year, 3.2 million therms and 30 million gallons of water for each year's construction following the expected effective date of January 1, 2020:

In the residential sector:

1. High Performance Walls
2. High Performance Attic (HPA)
3. Quality Insulation Installation (QII)
4. High Performance Windows and Doors
5. Residential Adoption of ASHRAE Standard 62.2-2016 Measures
6. Residential Quality HVAC Measures
7. Compact Hot Water Distribution
8. Drain Water Heat Recovery
9. Demand Response Cleanup

In the nonresidential sector:

10. Indoor Lighting Power Densities
11. Nonresidential Indoor Lighting Controls (Alignment with ASHRAE 90.1)
12. Advanced Daylighting Design
13. Indoor Lighting Alterations
14. Outdoor Lighting Power Allowances
15. Outdoor Lighting Controls
16. Nonresidential Indoor Air Quality Measures (Proposal Based on ASHRAE 62.1-2016)

[28] Reports, *available at* http://title24stakeholders.com/2019casetopics/.

17. Proposals Based on ASHRAE 90.1
    - Fan System Power
    - Exhaust Air Heat Recovery
    - Equipment Efficiency
    - Water-side Economizers
    - Transfer Air for Exhaust Air Makeup
    - Demand Controlled Ventilation for Classrooms
    - Occupant Sensor Ventilation Requirements
18. Prescriptive Efficiency Requirements for Cooling Towers
19. Economizer Fault Detection and Diagnostics capabilities (FDD) for Built-Up Systems
20. Demand Response Cleanup
21. High-efficiency Fume Hoods in Laboratory Spaces
22. Variable Exhaust Flow Control
23. Adiabatic Condensers
24. Loading Dock Seals (moved to Part 11)

2. <u>Other Subprogram Activities</u>

Participation in the development of Model Energy Codes such as ASHRAE 90.1 and the ICC International Energy Conservation Code (IECC), and support for ASHRAE 189.1, included the following:

- The C&S Program supports the development of national and international building model energy codes that include ASHRAE 90.1 and the ICC IECC. Federal law requires all states to either adopt these model codes or certify that their state codes are equally (or more) stringent. Most of the states have opted to adopt the model codes. However, since California certifies Title 24, Part 6 as its building energy efficiency code, and because it is more stringent than the model energy codes, aligning the model energy codes with Title 24 lowers resistance to transformative technologies and construction processes. ASHRAE and ICC code alignment (when appropriate) with Title 24 also helps to reduce barriers to compliance by harmonizing Title 24 requirements with the model codes. Organizations that design and construct buildings in other states as well as in California can establish business practices that require less customization for the California market. Therefore, the C&S Program's participation in the model code update development process is essential to close the gap between Title 24 and the model codes that other states adopt.
- In the California Title 24, Part 6 2019 rulemaking, the shift from a mixed technology baseline to a light-emitting diode (LED) baseline for indoor and outdoor lighting energy budgets, measured by lighting power density (W/ft^2 or

LPD), resulted in the most significant energy efficiency advancement for the code cycle by lowering the maximum allowed LPD level. The C&S Program's participation in the ASHRAE 90.1 Lighting Subcommittee meetings to share findings from CASE research provided evidence from market research indicating that 90.1 LPDs were also ready to reduce the maximum LPD level. At the time the CASE report was written, the addendum proposing lower LPDs represented a 10% reduction from that of the previous standard. Program resources also contributed to proposals to expand commercial outdoor lighting (i.e., lighting in parking lots) to include fixtures that are not connected to the building electrical service. Work on additional measures is in progress.

- The C&S Program's Building Codes Advocacy subprogram also invested in support of updates to the 2018 International Green Construction Code.[29] This resulted in updated energy savings requirements including zero energy performance index (zEPI, originally developed as an SCE CASE Study in 2009) based on source energy, and Fault Detection and Diagnostics (FDD) requirements for buildings larger than 25,000 square feet. Advocacy activities also resulted in water savings requirements including hot water system distribution design and updated cooling tower water treatment requirements based on absolute basin water concentrations rather than cycles of concentration.

Note: Starting in 2019, the support for the advancement of national model building energy efficiency codes will be reported through the C&S Program's National Codes and Standards subprogram.

3. Implementation Challenges

There is still significant room for improvement in the Building Energy Efficiency Standards and supporting compliance tools. Multifamily buildings have not been adequately addressed in past cycles and represent a significant percentage of new housing being constructed to address California's affordable housing issue. With an increase in construction is the opportunity to build energy-efficient dwellings that can contribute to state energy goals. In the 2022 code cycle the requirements for multifamily buildings may be extracted from the various sections in which they are found and consolidated into a new section that will better serve the needs of this segment of our built environment. Revisions and additions to the prototypes used for multifamily energy models should reflect current building practices.

As the focus on grid harmonization increases, it is necessary for the Standards to encourage commercial buildings' electrical systems to be ready for integration with renewables and storage and to respond to signals from the electrical grid. It is likely that integration of on-site generation, storage, and efficiency measures will continue into the next several code cycles as statewide commercial building 2030 ZNE goals and GHG reduction

[29] IgCC, which is powered by ANSI/ASHRAE/USGBC/IES Standard 189.1, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings.

goals draw closer. As all building types approach ZNE and state zero carbon emissions goals evolve, a greater percentage of C&S Program efforts will be focused on integrating EE measures with distributed energy resources (photovoltaics [PVs], batteries, inverters, etc.) that are generally funded in separate non-EE proceedings. This area of work will be critical to pursue in the next three code cycles.

In the 2022 code cycle, the State Building Codes Advocacy subprogram will continue to pursue a reduction in complexity in the use of the Title 24 Standards, when possible, without reducing stringency. Concerns about the complexity of the Title 24 Standards, including the process for compliance, remain a factor.

4. Opportunities Moving Forward

In the last quarter of 2018 contracts resulting from the Request For Proposals (RFP) process put forth by the Building Codes Advocacy team were finalized and work commenced for the 2022 code cycle. A coordination lead contractor was selected to oversee all organizational processes and tie the diverse and complex work together into a cohesive package. Technical leads for residential, multifamily, and nonresidential topics were also selected. The Energy Commission signaled that in the next cycle the emphasis will be on multifamily and nonresidential topics. At the close of 2018, the renewed Statewide CASE Team began prioritizing measures.

Nonresidential advocacy work in 2019 may include developing proposals to revise the sections that describe HVAC system types and how they address ventilation, heat recovery, and simultaneous cooling and reheating, to provide options for future savings. Process energy and plug load measures have not been significantly addressed over the past three code cycles. This will become increasingly important as HVAC and water heating energy use is reduced, and as new process loads represent a more significant portion of California energy use. The nonresidential compliance software has not been updated to reflect upcoming ZNE requirements and advanced building design practices. The building codes subprogram will continue to develop compliance software updates as required to facilitate the implementation of CASE proposals.

The development of the CASE proposals to support the 2022 code cycle will be documented on the statewide building codes advocacy website.[30]

E. Compliance Improvement Subprogram

1. Program Description

The Compliance Improvement (CI) subprogram supports increased compliance with the adopted Building Energy Efficiency Standards and the Appliance Standards. Compliance improvement activities complement advocacy work by maximizing verified, persistent savings from C&S activities. The CI subprogram targets market actors throughout the entire

[30] *Available at* https://title24stakeholders.com/measures/cycle-2022/.

compliance chain, providing education, outreach, and technical support and resources to improve compliance with both building and appliance energy standards.

2. 2018 Strategies and Successes

Throughout 2018, the CI subprogram continued to employ a systematic approach to enacting behavior change throughout the building and appliance efficiency supply chains. The three-pronged performance improvement approach addresses the essential elements of behavior change:

- **Training** to provide the knowledge and skills needed to comply
- **Outreach** to increase awareness and motivation, and
- **Tools and Resources** to empower people to take the desired action.

The work accomplished in each area reflects specifically what key market actors told the CI subprogram they want and need in order to improve compliance and was completed in close collaboration with the Energy Commission.

3. Subprogram Highlights

In 2018, the training team delivered more than 136 classes, across eight modalities, and dozens of roles. The team reached more than 3,955 students and achieved a 95% satisfaction rate and 20% knowledge swings on average. Also, new virtual courses were launched:

- A course in support of the new Advanced Energy Rebuild Program
- A course designed to teach the building industry the benefits of applying the performance compliance path over the prescriptive, and
- "Roll-Up-Your-Sleeves" interactive three-hour sessions during which design professionals received one-on-one coaching from experts on specific case scenarios.
- An assessment of architects and designers was also completed to help develop supportive tools and training focused on their needs.
- The tools team continued to automate the Title 24 compliance process by launching a suite of nonresidential 2016 dynamic forms, developing drafts of the 2019 dynamic forms, and finalizing a user interface that industry may use to complete lighting forms in "turbo tax" fashion. This forms work responded to industry's frustration with the difficulty of completing the paperwork by significantly reducing the number of forms through consolidation, auto-populating fields to reduce work, and providing error checking to improve accuracy, as well as preparing for the Energy Commission's upcoming

requirement to use dynamic forms instead of paper (taking effect on January 1, 2020).

- The tools team launched a comprehensive electronic library that industry may access to answer over 500 questions and a dynamic timeline tool that indicates which building and appliance efficiency code activities are on the horizon. Along with these new tools, the resource team launched an extensive series of noteblocks — forms that list mandatory measures — which aid designers and plans examiners in determining which measures are mandatory for a project. The team also worked with subject matter experts to edit the vast library of existing 2016 resources in preparation for implementation of the 2019 code cycle.
- In addition to continually sending targeted messages, placing advertisements and articles, and maintaining the Energy Code Ace (ECA) website, the outreach team refreshed the CI subprogram's "Comply with Me" theme and hosted the first annual ECA conference. The conference hosted more than 180 people representing all segments of the Title 24 compliance supply chain and provided opportunities for attendees to learn how to access and apply ECA tools, training, and resources to their common work scenarios. The outreach team also:
    - Created a comprehensive binder of ECA resources that was sent or hand-delivered to each building department in IOU service territory throughout the state to provide quick code compliance guidance to permit technicians and customers. and
    - Facilitated ECA participation in more than 50 Title 24 and Title 20 industry events while maintaining the ECA website, which currently has more than 7,000 registered users. In recent surveys conducted to determine the training needs of permit technicians and design professionals, more than 86% of the permit technicians surveyed indicated that they use ECA resources while more than 78% of design professionals surveyed said they visit the ECA site.
- The CI subprogram also continued transitioning the administration of the Certified Energy Analyst (CEA) exam to the California Association of Building Energy Consultants (CABEC) while supporting exam proctoring and revisions as needed, as well as continuing to assess the differences in the quality of the compliance documents submitted for permits by CEAs and energy consultants who are not certified. The CEC reviewed the study parameters before the Program launched the analysis, so that findings may be used to support future adoption of CEA requirements. A new training course was developed to help

prepare consultants for the CEA Exam by increasing their familiarity with the code requirements and energy modeling that the exam evaluates.

- The CI subprogram also continued to support Title 20 compliance in 2018 by targeting key measures.31 The subprogram conducted needs assessments and developed work plans for lighting, residential pool pump replacement motors, computers, and small battery charger systems (SBCS). Our key measure-specific work has revealed program-wide compliance challenges indicating that:
    - Retailers are not engaged in the compliance process
    - The Energy Commission's appliance database could be a more effective tool for compliance verification
    - Large buyers are not tuned into compliance and energy savings, and
    - Title 20 regulations are not written with compliance in mind.

The CI subprogram has begun addressing these barriers through measure-specific factsheets, contractor training, and conversations with major retailers.

4. Implementation Challenges

The primary focus of CI work in 2018 was finalizing open resources for the 2016 energy code and preparing to support 2019 energy code adoptions. Throughout 2019 the CI subprogram team will continue to update existing Title 24 training, tools, and resources and preparing industry for implementation of the 2019 Standards, while supporting industry in completing projects permitted under the 2016 code cycle. For Title 20 compliance, it has been determined that the CI team needs to focus on industry partners, so we will continue identifying the key market actors who are the most influential in transforming the market and reaching out to those with whom we may build relationships and pilot new performance solutions.

5. Opportunities Moving Forward

The CI subprogram will continue to simplify and automate the compliance process through development of dynamic, digital tools that automate and verify compliance for market actors. The CI subprogram will also explore opportunities to improve the appliance efficiency certification process and develop relationships throughout key measure industries.

F. Reach Codes Subprogram

1. Program Description

The C&S Reach Codes (RC) subprogram provides technical support to local governments that wish to adopt energy ordinances ("reach codes") in their jurisdictions that

31 Key measures are those defined as having high savings paired with low compliance, and those that are newly regulated.

exceed statewide Title 24 minimum requirements for new buildings, additions, or alterations. Reach code support for local governments includes:

- Conducting research and analysis to establish performance levels and cost-effectiveness relative to Title 24 requirements by climate zone
- Drafting model ordinance templates to encourage regional consistency
- Assisting with the completion and expedition of the application process required for approval by the Energy Commission, and
- Supporting implementation of the ordinances when they take effect.

2. 2018 Strategies and Successes

Many local jurisdictions have established goals within their Climate Action Plans to reduce energy use and GHG emissions from buildings through adopting and implementing local energy ordinances. Given changing policy and funding priorities at the federal level, cities and counties are experiencing an increased sense of urgency for local action to meet statewide goals, which has led to a greater interest in reach codes as a path to achieve the goals. Since the statewide goals make GHG reduction the highest priority, local governments are changing their focus from reducing energy use in general to specifically reducing the energy use that is tied to GHG emissions. This shift has resulted in an increased level of interest in all-electric designs, at both the local and state levels. One of the state-level changes, adoption of the 2019 Standards which created an all-electric baseline, allows all-electric designs to comply with and exceed the code more readily.

In 2018, RC subprogram work included analysis and report development, technical support for local jurisdictions, reach code resource accessibility improvements, and other activities. The subprogram completed the following cost-effectiveness studies:

- Residential New Construction (RNC): PV Plus Battery Storage
- RNC PV Plus Heat Pump Water Heating
- Residential Retrofits, and Nonresidential PV for new construction and major alterations.

In addition, a memo summarizing the impact of the federal tariff on PV panels on the overall cost-effectiveness of the results in the RNC Tiers 1 and 2 study was completed and publicly posted on LocalEnergyCodes.com.

For technical support of local jurisdictions, including Arcata, Berkeley, Chico, Davis, Fremont, Silicon Valley Clean Energy, Menlo Park, and the Counties of Marin and San Mateo, the RC subprogram:

- Presented cost-effectiveness studies
- Consulted on options and opportunities

- Created a checklist for permit applicants, and
- Reviewed and made recommendations on proposed ordinance structure, triggers and language.[32]

The RC subprogram continued updating and adding content to the LocalEnergyCodes.com website, which contains all subprogram studies, as well as model ordinance and resolution language that jurisdiction staff may use to facilitate drafting an ordinance. Beginning from a common core helps to support consistency across jurisdictions.

- The team added an interactive map feature to the site which allows people to see which jurisdictions have passed reach codes, and to obtain information on the ordinances. This map feature is accompanied by a companion matrix that allows users to view the information in a different format, accessing all ordinances at once, and comparing similar ordinances.
- The web site also contains links to other providers, state agencies, and other resources.
- From its launch in July 2017, the site has gained 243 registered users and has registered more than 16,000 unique sessions. The Performance-Based Ordinances page is the most popular with 1,924 views, followed by the Resources page with 1,682 views in 2018.
- The table below shows the five most popular studies available on the site and the numbers of times each was downloaded in 2018:

Table: Top Five Study Downloads from LocalEnergyCodes.com in 2018

File Name	2018 Downloads
2016 RNC Cost-Effectiveness Report – All-Electric Design, CALGreen Tiers 1-2	**464**
2016 RNC Cost-Effectiveness Report – CALGreen Tiers 1-2	**414**
Addendum to All-Electric Design Report (CZ 2, 3, 13)	**320**
2016 NRNC Reach Code Cost-Effectiveness Report	**281**
California Reach Codes – 2016 Standards (matrix of adopted ordinances)	**278**

The RC subprogram staff attended the Statewide Energy Efficiency Collaborative (SEEC) Forum, and coordinated and hosted a reach codes session titled "Reaching Up and Out: Advancing Reach Codes Together," partnering with the Energy Commission and the Cities of Carlsbad and Santa Monica.

- Following the adoption of the 2019 Standards, local interest in reach codes accelerated rapidly, primarily fueled by the desire to decarbonize the building

[32] Analysis results were also shared with Bay Area Regional Energy Network (BayREN) members.

sector. In response, the RC subprogram planned and hosted three Reach Codes Best Practices workshops in October 2018:

- The workshops were held in Oakland, Irwindale, and San Diego, and had 102 attendees from 77 organizations, including 43 city or county staff members.
- Presentations from the workshops were downloaded 292 times by the end of the year. In addition, an overview of the reach codes process and a summary of options and opportunities shared after the workshop were downloaded 198 times in 2018. These materials continue to remain popular on the site, with an additional 163 downloads of the presentation and 126 downloads of the other materials in the first two months of 2019.

- In 2018, several reach codes were adopted by local jurisdictions and approved by the Energy Commission, based on IOU cost-effectiveness studies. Approved local ordinances may be found on the Energy Commission website: [33]
  - County of Marin, June 13, 2018
  - County of Alameda, July 11, 2018
  - City of Chula Vista, July 11, 2018
  - City of Del Mar, September 21, 2018, and
  - City of Arcata, December 10, 2018.

3. Implementation Challenges

In general, reach codes have a relatively short "shelf life." Following adoption of new building codes, compliance software must be updated to reflect new building codes before cost-effectiveness studies can be completed and local jurisdictions can adopt reach codes based on those studies, followed by Energy Commission approval. If the work isn't completed early in the code cycle, there may be only year or two before the next code becomes effective. Outreach and other related activities need to be in progress by mid-year to allow enough time to implement the code and justify the effort required.

While reach codes support Climate Action Plan goals, building departments have the additional burden of verifying compliance with the reach codes and reporting those results to their jurisdiction's planning department. This often-unfunded mandate for building departments has challenged the pursuit of reach codes by local governments.

The RC subprogram has historically faced challenges obtaining data from jurisdictions about the impacts of adopted reach codes. In 2018, we recognized that because all residential new construction (RNC) projects must complete at least one Home Energy Rating System (HERS)-verified measure, the HERS Providers could be a source of data for RNC ordinances, so the subprogram worked with CalCERTS, Inc., to collect and process

[33] Approved local ordinances, *available at* http://www.energy.ca.gov/title24/2016standards/ordinances/.

data on RNC ordinances. Data collection was complete at the end of 2018; the subprogram will process the data in 2019 and provide periodic reports to jurisdictions.

4. Opportunities Moving Forward

Most cost-effectiveness studies are conducted in response to requests from local governments, leading to a variety of reach codes which support the implementation of upcoming codes. For example, reach codes based on Title 24, Part 6 2016 prepare the building industry for Title 24, Part 6 2019. In 2018, the RC subprogram received a request from a group of 30 local jurisdictions for new construction studies covering both energy efficiency and renewable energy options for mixed-fuel and all-electric designs. The subprogram continues to work closely with the requesters, obtaining input along the way to ensure the studies meet the jurisdictions' needs. Opportunities exist to develop tools that increase the value of reach codes to cities and better prepare the market for new codes.

G. Planning and Coordination Subprogram

1. Program Description

The planning element of this subprogram includes:

- Long-term planning and scenario analyses
- Modeling of impacts from potential C&S program activities relative to California policy goals and incentive programs
- Development of CPUC-required Business Plans and Implementation Plans
- Responses to data requests from the CPUC and/or other regulatory agencies and intervenors
- Updating the incremental measure costs for C&S CASE proposal measures, and
- Maintenance of a C&S savings database consistent with evaluation protocols.

The coordination element of this subprogram includes internal and external harmonization of activities with other groups. Internal activities have traditionally included collaboration with several internal departments:

- Incentive, training, and demand response programs
- Policy, regulatory, and corporate affairs departments, and
- Emerging technologies and products teams.

More recently, as building codes have begun to incorporate distributed generation and battery storage, coordination has expanded to strategy integration, distributed generation programs, and others involved in grid management.

Since codes and standards impact the entire state and almost all building types, occupancy categories, and related technologies, harmonization activities with external parties encompass:

- The CPUC, the CEC, and the California Air Resources Board (CARB)
- Other California IOUs and municipal utilities, and utilities in other states
- National advocates such as Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), Northwest Energy Efficiency Alliance (NEEA), Sierra Club, American Council for and Energy-Efficient Economy (ACEEE), Earthjustice, National Consumer Law Center, Consumer Federation of America, etc.
- Representatives of various manufacturing companies and industry groups, such as Association of Home Appliance Manufacturers (AHAM), Consumer Technology Association (CTA), National Electrical Manufacturers Association (NEMA), Air Conditioning, Heating and Refrigeration Institute (AHRI), American Gas Association (AGA), etc.
- Water utilities and local governments, and
- Other parts of the compliance improvement supply chain, such as building inspectors, Title 24 consultants, Contractor State Licensing Board (CSLB), etc.

2. 2018 Strategies and Successes

With the current absence of a formal Zero Net Energy subprogram, the C&S Planning and Coordination subprogram has taken a lead role in coordinating the various EE and non-EE efforts necessary to effectively support customers and the building industry in meeting the state's ZNE goals. The ZNE effort is not limited only to Title 24, but also supports the California Department of General Services' ZNE goals, schools using Prop 39 funds, and the design and construction industry's efforts to meet the various ZNE goals.

In an effort to coordinate between the EE incentive programs and Codes and Standards, a study was performed to determine how data contained in a CASE study could be leveraged to develop a Work Paper, enabling the capture of savings from measures not currently offered in the EE programs before the measures go into code. The study also looks forward to the proposed 2022 CASE measures and identifies gaps in the CASE study data collection process needed to create a successful Work Paper. This could reduce the effort and cost of developing a Work Paper and increase consistency in data collection.

On November 5-6, 2018, the third Software Symposium was held to facilitate a collaborative environment with industry leaders for long-term planning and coordination on the subject of building energy modeling (BEM) in California. The symposium was aimed at supporting California's long-term climate action goals by educating industry on the use of BEM tools, accelerating the introduction of new simulation capabilities, and developing a

statewide framework that allows a single energy model to be used for informing energy design decisions, code compliance, and applying for incentive programs.

3. Implementation Challenges

Because the C&S program impacts so many different matters — EE, PV, and storage technologies, utility grids, building and manufacturing industries, the compliance improvement supply chain, EE and DR programs, local governments, state and national code setting bodies, ratings organizations, etc. — planning and coordination are challenging.

Since ZNE cannot be achieved by EE alone, ZNE also requires the coordination of Distributed Energy Resources (DERs, including PV, batteries, inverters, DR, etc.), Net Energy Metering (NEM)-successor tariffs, interconnections tariffs (Rule 21), line extension tariffs (Rules 15 and 16), and appropriate rate tariffs, which are all under the auspices of different proceedings and rulemakings. This creates funding silos that, in turn, create challenges for offering integrated support to customers and the design and construction industry. These challenges are made more complicated when trying to align ZNE goals with GHG mitigation goals such as those adopted by AB 32 / SB 32.

4. Opportunities Moving Forward

A greater emphasis on long-term planning and specific technologies will help the program operate more proactively. A modest increase in risk will increase the likelihood that California achieves its 2030 goals.

VIII. Emerging Technologies Program

The statewide Emerging Technologies Program (ETP) supports the California Investor-Owned Utility (IOU) energy efficiency (EE) programs in their achievement of aggressive objectives through three (3) subprograms:

- The **Technology Assessment** subprogram identifies and assesses the performance of emerging EE technologies and solutions that may be offered to customers with an incentive.
- The **Technology Development Support** subprogram promotes efforts to increase technology supply by educating technology developers about technical and programmatic requirements for rebated (incentivized) measures.
- The **Technology Introduction** subprogram supports efforts to introduce technologies to the market by exposing end users to applications of emerging technologies in real-world settings, and by using third-party projects to deploy technologies, on a limited scale, in the market.

ETP uses several tactics to achieve the objectives of these subprograms. Some of the key tactics are described below, but each tactic may achieve the subprogram objectives, and this list is not comprehensive.

A. Technology Assessment Subprogram

1. Subprogram Description

Through its Technology Assessment (TA) element, a historical core function providing critical support to EE programs, the ETP evaluates the performance claims of EE measures that are new to the market, or underutilized for a given application, for overall effectiveness in reducing energy consumption and peak demand. A key objective of these assessments is the adoption of new measures into SCE's portfolio. Data from different sources may be used to support assessment findings, including *in situ* testing (conducted at customer or other field sites), laboratory testing, or paper studies. In addition to other findings, assessments typically generate some of the data that EE incentive programs can use to construct a Work Paper for each measure, estimating energy and demand savings over the life of the measure.

2. Strategies Implemented in 2018

In 2018, the SCE Technology Assessment subprogram implemented the following strategies:

- Collaborated with IOU and non-IOU partners in scanning a wide variety of sources for assessment candidates.
- Identified, screened, and prioritized technologies or strategies for TA.
- Produced reports describing TA results, conclusions, and recommendations.

- Engaged the various EE Programs and other program stakeholders.
- Transferred TA results to EE program stakeholders, with technology study results successfully transferring to deemed rebated measures and customized incentive measures.
- Coordinated intake ideas and assessments and shared technology information through two (2) ET Summits and a California Energy Commission (CEC)-coordinated webinar of the Emerging Technologies Coordinating Council (ETCC)34 on various topics for the commercial building, industrial, agricultural, and residential sectors.
- Organized an in-person meeting of the ETCC Advisory Council to gain insight from national experts on SW ETP Technology Priority Maps (TPMs).
- Conducted a CEC coordination meeting with technical staff to discuss research priorities of the SW ETP.

B. Technology Development Support Subprogram

1. Subprogram Description

The Technology Development Support (TDS) subprogram provides assistance to private industry in developing or improving technologies. Although product development — the process of taking an early-stage technology or concept and transforming it into a saleable or marketable product — is the domain of private industry, there are opportunities where IOUs are well-qualified, or in a strong position, to undertake targeted, cost-effective activities supporting private industry product development efforts. This support decreases innovators' uncertainties and allows SCE opportunities to influence the new technologies as they are developed.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the TDS Subprogram:

- Collaborated with industry directly and through partners such as the Western Cooling Efficiency Center (WCEC), the California Lighting Technology Center (CLTC), the California Plug-Load Center (CalPlug), and the Electric Power Research Institute (EPRI) to provide targeted support for technology development.
- Collaborated with innovators from universities and other research institutions by:
  - Participating in Caltech's Clean Tech competition as judges, and
  - Further supporting early-stage companies through SW ETP membership in Caltech's RocketFund program (**http://www.flow.caltech.edu/rocket-**

[34] More information on ETCC is *available at* https://www.etcc-ca.com/about-etcc.

fund).

- Collaborated with the ETCC and IOUs on various program-related activities.
- Continued ongoing business relationships with investors interested in funding cost-effective EE technologies.
- Coordinated a webinar with the CEC's Electric Program Investment Charge (EPIC) and Public Interest Energy Research (PIER) building technologies team.

C. Technology Introduction Support Subprogram

1. Subprogram Description

The Technology Introduction Support (TIS) subprogram supports the introduction of new technologies to the market, on a limited scale, through several activities:

- Scaled Field Placement (SFP) projects place measures at a number of customer sites as a key step toward gaining market traction and feedback. Typically, these measures have already undergone an assessment or similar evaluation to reduce risk of failure. Monitoring activities on each scaled field placement are determined as appropriate.
- Demonstration and Showcase (D&S) projects are designed to provide key stakeholders the opportunity to "kick the tires" on proven combinations of measures that advance Zero Net Energy (ZNE) goals. D&S projects introduce measures at a systems level to stakeholders, whether the general public or a targeted audience, in real-world settings, thus creating broad public and technical community exposure and increased market knowledge.
- Market and behavioral studies are designed to perform targeted research on customer behavior, customer decision-making, and market behavior to gain a qualitative and quantitative understanding of customer perceptions, customer acceptance of new measures, and market readiness and potential for new measures.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the TIS subprogram:

- Conducted several single-family and multifamily residential ZNE demonstrations in partnership with home builders, multifamily low income building- owners and/or operators, the Electric Program Investment Charge (EPIC) Program, the Electric Power Research Institute (EPRI), and other partners in support of advancing state goals and understanding of grid interaction.
- With the other IOUs, continued implementing a Prop 3935 ZNE pilot program that started in 2015, working closely with the CPUC, the CEC, the California

[35] California Proposition 39, the California "Clean Energy Jobs Act" of 2012, funds eligible energy efficiency efforts in schools.

Community Colleges (CCCs), and other stakeholders. The TIS subprogram is the lead on the field demonstrations portion of two pilot projects, one at a community college site and one at a K-12 school district site.

- Scanned and screened a wide variety of sources for measures, coordinating closely with EE Programs, and prioritized measures suitable for TIS projects.
- Conducted TIS projects in support of measure development.
- Implemented SFP and D&S projects in actual field conditions.
- Performed primary or secondary research, as necessary, to gain market insights on technologies.
- Coordinated with statewide ETCC stakeholders.

3. <u>Other Notable ET Program Activities in 2018</u>

- The CPUC approved SCE's EE Programs Business Plan, which included the Cross-Cutting – Emerging Technologies chapter.
- In collaboration with ETCC leadership and partners, the Statewide ETP program successfully conducted two ET Summits, which attracted over 300 attendees.[36]
- Leveraged the annual ETCC Advisory Council meeting to seek input on the SW ETP's draft of Technology Priority Maps (TPMs). Part of the input from this engagement was used to develop ETP's initial TPMs draft in 2018. Additional input gathered from this engagement will be used to guide the SW ETP as it conducts updates to the draft TPMs in 2019.
- Enhanced the ETCC outreach meetings by upgrading the remote participation experience through Live Stream and continued to attract robust participation from a diverse stakeholder group.
- Initiated development of Scope of Work subject matter for Requests for Abstracts (RFAs) in collaboration with the SW ETP Program Administrator for SoCalGas, non-lead IOUs, and the SCE and SoCalGas Independent Evaluators (IEs).

[36] More information on the 2018 Emerging Technologies Summit is *available at* https://www.etcc-ca.com/event/.

IX. Workforce Education & Training Programs

The Statewide Workforce Education and Training (WE&T) Program represents a portfolio of education, training, and workforce development planning and implementation activities, funded by or coordinated with the IOUs. The Program includes two (2) subprograms:

- WE&T Integrated Energy Education and Training (IEET), and
- WE&T Connections.

In 2018, the WE&T Program continued to consider and implement enhancements to align with program evaluation and study recommendations. SCE and the other IOUs — PG&E, SDG&E, and SoCalGas — collaborated with a diverse set of stakeholders, professional and trade organizations, government agencies, and other education and training providers, focusing on three (3) primary areas:

- Expanding the WE&T Program's reach
- Evolving the WE&T Program to address customer, market, and industry needs, and
- Collaborating with industry and stakeholders to build upon each other's strengths.

Following is an overview of the 2018 program highlights, by subprogram.

A. WE&T Integrated Energy Education and Training (IEET) Subprogram

1. Program Description

Offerings in the IEET subprogram are organized and delivered around market sectors, including cross-cutting sectors, to facilitate demand-side management (DSM) workforce knowledge and skills. Energy Education Centers (EECs or "Energy Centers") in Irwindale and Tulare represent the largest component of this subprogram. The subprogram delivers educational workshops and seminars, tool loans, equipment demonstrations, consultations, and community outreach events. These activities allow incumbents and potential energy efficiency (EE) workforce candidates to explore EE opportunities, acquire awareness of DSM technologies and resource management techniques, and enhance the skills needed to act on those opportunities.

In 2018, the Irwindale and Tulare Energy Centers continued to align activities with the goals identified in the California Energy Efficiency Strategic Plan (CEESP). The Energy Centers continued to evaluate and implement programs and projects, where applicable and appropriate, to better align them with industry and market characterization evaluations, recommendations from the 2014 Don Vial Center-produced Guidance Plan document,[37] and Statewide initiatives. This effort included significant internal collaboration with SCE's DSM Programs, and engagement with externa

[37] Full name of the Guidance Plan document is *Workforce Issues and Energy Efficiency Programs, A Plan for California's Utilities*, *available at* http://laborcenter.berkeley.edu/pdf/2014/WET-Plan14.pdf.

l EE program and service educators as well as with key stakeholders in many trades who encourage participation in SCE's resource programs.

2. WE&T IEET Strategies Implemented in 2018

In 2018, WE&T IEET continued to build upon previous efforts by:

- Enhancing existing cross-cutting industry stakeholder teams to address specific EE and DSM workforce intervention opportunities
- Evaluating applicable career pathways to help upgrade the knowledge, skills, and abilities of incumbent and potential workers in relevant trades, and
- Exploring new ways to engage stakeholders through strategic partnerships.

Some highlighted efforts included continued collaboration with:

- Relevant industry stakeholders and training organizations to expand the access and reach of IOU WE&T offerings, including:
    - The California Community College System
    - The Heating, Ventilating and Air Conditioning (HVAC) Collaborative
    - Local and regional labor unions, and
    - Contractors' associations.

Some highlighted collaborations included the following:

- Launch of statewide training for The High Performance Building Operations Professionals (HPBOP) program. HPBOP's target audience is professional building technicians who manage buildings in the public and private sectors. It provides them information, tools, and skills to improve building performance and reduce energy consumption. The training topics include:
    - Information Technology
    - Energy Literacy
    - Building Systems
    - Whole Systems Analytics
    - Systems Manuals
    - Building Automation Control Systems (BAS)
    - Energy Conservation
    - Commissioning (Cx), and
    - Continuous Quality Improvement.
- As part of the Statewide IOU WE&T program team, hosted the 2018 WE&T Stakeholder Engagement Forum. The Forum provided a forward-looking discussion with a panel of WE&T stakeholders on the topic of "Collaborations and Partnerships to Train Today's and Tomorrow's California Energy Workforce."

3. Energy Education Centers Strategies Implemented in 2018

The Irwindale and Tulare Energy Centers:

- Continued to provide core skills training and job-site mentoring for contractors and technicians who participate in SCE's HVAC Optimization programs, through an industry partnership with HVACedu (Air Conditioning Technician Training), CLEAResult, and the National Comfort Institute (NCI). Efforts with NCI focused on hands-on and certification training on:
  - Commercial and Residential Air Balancing and System Performance through comprehensive test-in / test-out procedures
  - Advanced digital economizers (Economizer Optimization Training)
  - Residential renovation and retrofit (Duct System Optimization)
  - Combustion Performance and CO Safety training
  - Refrigerant-Side Performance
  - Airflow Testing and Diagnostics
  - National Balancing Council (NBC), and
  - Performance-Based Selling of Energy Efficiency Systems.
- The NCI Training certified a total of 581 participants, as follows:
  - 66 participants - Economizer Optimization
  - 96 participants - Commercial Air Balancing
  - 76 participants - Commercial System Performance
  - 68 participants - Duct System Optimization
  - 58 participants - Combustion Performance & CO Safety
  - 41 participants - Refrigerant-Side Performance
  - 22 participants - National Balancing Council (NBC)
  - 92 participants - Residential Air Balancing, and
  - 62 participants - Residential System Performance.
- 140 participants were also recertified.
- Continuing Education Units (CEUs) by NCI totaled as follows:
  - NATE: 2,116 CEUs
  - BPI: 248 CEUs
- Continued to support the HVAC Residential and Commercial Quality Installation (QI), Quality Maintenance (QM), and Quality Service (QS) by providing targeted training through our industry partnership with the Institute of Heating and Air Conditioning Industries (IHACI). This professional training teaches contractors to install and service HVAC systems that meet all installation requirements to operate with EE at the highest possible capacity. Seventy-two (72) evening seminars were delivered.

- Trained close to five thousand contractors and technicians in 2018, through both IHACI QI, QM, and QS and North American Technician Excellence (NATE) preparation curricula. Most participants in these offerings have one to five years of industry experience, and the majority demonstrated increase in knowledge as measured by pre- and post-training tests.
- Continued to promote and expand HVAC Commercial QM training through multiple training vendors, using enhanced hands-on training units designed to allow fully-functional rooftop package units to be operated, tested, and evaluated in a safe, controlled, and comfortable environment.
- Continued partnership with HVACRedu (an online, on-demand HVAC and refrigeration contractor and technician installation and maintenance training organization), delivering the "It's About Q" program throughout SCE's service territory. This program focuses on a blend of online and hands-on, standards-based skills training for quality installation and maintenance of commercial and residential HVAC systems. One hundred and forty (140) NATE Core exams were delivered with a pass rate of 99%. Thirty (30) technicians trained in Commercial Quality Maintenance, with an average post-test score increase of 25%:
  - 10 Level 2 (credentialed technicians), and
  - 20 Level 1 (technicians working towards credentials).
- Continued delivery of "Automation Academy" classes, where attendees learn about IDSM applications and receive hands-on training on programmable logic controllers (PLCs) for building and industrial controls automation. The SCE Automation Academy has helped establish PLC / Automation controls training with a local community college (College of the Sequoias) as a path to certification for our customers and students. The Automation Academy has updated its curriculum to include Internet of Things (IOT) and smart devices. In 2018 the Automation Academy began conducting webinar simulcasts as well as collaborating with PG&E to achieve greater attendance and further reach at a lower cost.

- Continued the California Advanced Lighting Controls Training Program (CALCTP), resulting in 127 certifications for workshops in the following areas:
  - 41 Systems Certifications, and
  - 86 Acceptance Technician Certifications.
- Continued partnership with the Codes & Standards Program, delivering over 80 workshops and seminars on the following topics to over 2,500 customers throughout SCE's service territory:
  - Title 24 (T24) CALGreen codes
  - T24 building energy codes
  - T24 lighting

  - Residential and nonresidential standards, and
  - Energy code software (EnergyPro, CBECC and IES-VE).

- End-use customers targeted for these offerings represented the following industry sectors:
  - Plans examiners and building inspectors
  - Energy code compliance building modelers
  - Architects, engineers, and building envelope and lighting designers, and
  - HVAC technicians and other trade professionals.
- In partnership with the Codes & Standards Program, delivered five (5) new Zero Net Energy (ZNE) and High Performance Buildings seminars.
- Continued to deliver the Mobile Integrated Building Energy Science Training Program (MI-BEST) in 2018 by offering two (2) week-long sessions at the Irwindale Energy Center. The MI-BEST curriculum focuses on developing the skill sets that are essential to Home Energy Rating System (HERS) raters, energy auditors, Building Performance Institute (BPI) contractors, mechanical engineers, architects, builders, and HVAC professionals. SCE collaborated with the statewide IOU WE&T teams to expand the number and frequency of MI-BEST sessions across California and will continue to collaborate and expand on these hands-on, high-impact offerings where appropriate.
- In partnership with GRID Alternatives, a non-profit organization that provides resources to low-income families related to solar implementation and energy efficiency, the Tulare Energy Education Center expanded GRID workshops to twice a month to expand the program in Tulare County. The GRID Program gives income-qualified participants free solar energy systems. A requirement for the program is for participants to attend an EE seminar to learn more about energy efficiency in the home and other details on the program.
- In 2018, EEC Tulare created a new partnership with the South Valley Industrial Collaborative, which consists of educational institutions, a workforce investment board, and large industrial businesses in the South San Joaquin Valley. The Collaborative sought an annual summit to discuss workforce issues, training gaps, energy needs, and address other issues. EEC Tulare hosted the summit for the Collaborative as well as offered pre-summit workshops (with 85 attendees) on automation, robotics, and other technologies. Attendance at the summit was at capacity (250+). The Collaborative seeks SCE's continued support as the host of this annual event.
- SCE's Foodservice Technology Center (FTC), at EEC Irwindale, implemented a major remodeling project during 2018 to add more testing capacity and demonstration areas. Collaborating with the statewide IOU WE&T programs, the FTC continued to educate professionals at all levels of the commercial food service industry. Each IOU operates a food service-focused technology and

demonstration center that includes a "library" of high-tech food service equipment, which is used to train food service operators on the advantages of high-efficiency, high-performance appliances, and which fundamentally changes the way that these operators make purchasing decisions. The FTC hosted 25 equipment demonstrations with a total of 127 attendees.

- The EECs continued to train culinary students and their teachers in high school, community college, and university programs. Through coordinated efforts between SCE's FTC and Emerging Technologies teams, commercial food service equipment tests and demonstrations have resulted in projects yielding energy savings potential for customers including retail chains, local governments, and educational institutions.[38]
- In 2018, SCE's Tool Lending Library loaned nearly 115 unique energy measurement and building performance evaluation tools, through over 112 individual transactions, to homeowners, business owners, and contractors throughout SCE's service territory.
- In 2018, EEC Irwindale designed and implemented a display wall and attic assembly that demonstrate best practices for the construction of high-performance walls and attics in order to meet new energy code requirements.

Table: 2018 Energy Education Centers Performance

Deliverable	Tulare	Irwindale	Total
Seminars	223	228	**451**
Total Energy Efficiency attendance	4777	6467	**11,244**
Total on-location seminars	97	47	**144**
Tool Loan Transactions		115	**115**
Energy Efficiency consultations or Energy Efficiency equipment demonstrations	77	72	**149**

B. WE&T Career Connections Subprogram

1. Program Description

The WE&T Career Connections Subprogram promotes energy efficiency and other DSM concepts, as well as energy awareness and green career pathways, through age-appropriate education and teacher training at all grade levels from K-12 to post-secondary, as well as through community outreach. WE&T Career Connections achieves its educational goals and promotes green career pathways by working with community-based organizations (CBOs), state education agencies, and educational stakeholders to help promote DSM concepts and green career awareness. WE&T Career Connections also imparts EE, demand

[38] For more information, see "Students Get a Slice of Education with their Pizzas," *available at* https://energized.edison.com/stories/students-get-a-slice-of-education-with-their-pizzas.

response (DR), and relevant green career messages through educational materials, student assemblies, teacher workshops, and outreach events.

SCE's WE&T Career Connections subprogram is comprised of five (5) elements:

1. K-8
2. 9-12
3. Post-Secondary
4. Community Language Efficiency Outreach (CLEO), and
5. Mobile Education Unit (MEU).

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the WE&T Career Connections Subprogram:

- Continued program implementation through the cultivation of existing relationships with teachers and partners on sustainable, project-based learning opportunities.
- Developed new relationships with teachers, schools, and partners to provide training and learning opportunities to new teachers and students for the upcoming school year.
- Promoted program offerings at numerous events, workshops and conferences serving existing participants as well as reaching new participants within targeted areas, particularly those working with disadvantaged community populations. Some of these events include:
  - The Los Angeles Environmental Education Fair
  - Educating for Careers Conference
  - The California Regional Environmental Education Community (CREEC) Network Region 10 World Environment Day
  - Expand Your Horizons Conference, and
  - Riverside County Habitat Conservation Agency's Endangered Species Event.

3. Career Connections Subprogram Highlights

The K-8 Program succeeded in reaching its targets for the year. Students learned to value energy and promote sustainable energy use in their homes, schools, and communities through four core principles:

- Shifting use to off-peak hours (demand response)
- Shrinking use through conservation and energy efficiency

- Exploring renewable energy (renewable resources and distributed generation), and
- Plugging into new and efficient technologies (energy efficiency).

A total of 7,441 students were reached throughout SCE's service territory. Of the 46 schools that participated in the K-8 Program, 36 were Title 1 schools. Some of the K-8 Program's highlights include:

- In the spring of 2018, a workforce development program, known as the Field Educator Program, was launched in partnership with the University of California, Irvine. The program provided undergraduate students with training and the opportunity to complete university required fieldwork hours with K-8 program curricula. Trained Field Educators were placed in K-8 enrolled school sites which helped increase educator engagement and provided the Field Educators with valuable fieldwork experience. The program expanded to multiple colleges including UC Merced and UC Riverside, as well as several education organizations, such as Lindsay Wildlife Museum and Chabot Space and Science Center.
- A partnership with the YMCA of Orange County was expanded by hosting a training seminar at the YMCA of Orange County's Staff Development Day. This training equipped YMCA after-school educators with tools to integrate environmental STEM based activities into their current curriculum, ultimately reaching over 3,000 students.

The 9-12 Program continued to grow and develop strong relationships through project-based curriculum, teacher training, and student-led action projects while also reaching its targets for the year. A total of 12,256 students were reached throughout SCE's service territory. Of the 47 schools that participated in the 9-12 Program, 39 were Title-1 schools. Some of the 9-12 Program's highlights include:

- A Green Careers Conference was hosted by the 9-12 Program in Los Angeles, drawing in 137 attendees and 32 professionals. The conference included full days of networking, career exploration, and presentations on topics such as renewable energy, resource management, clean transportation, energy engineering, and more. Students also led their own sessions, presenting their work in green building design, civil engineering, school energy conservation, and water conservation.
- Launch of the fall 2018 Energy Conservation Competition, in which schools competed in a three-week challenge to reduce energy usage and campaigned across campuses to encourage students and staff to save energy. Twenty-seven high schools across California participated in the competition, resulting in over 100,000 kWh of energy savings.

The Post-Secondary Program supported a network of California colleges and universities in developing students' knowledge, skills, and experience to prepare for a career in energy. Support was provided through the development of project-based courses, certificates, and degrees in one or more energy career pathways, as well as on-campus paid student internships. Some of the Post-Secondary Program's highlights include:

- Hired a total of 43 new student interns throughout the following campuses: College of the Desert, Claremont McKenna/Harvey Mudd College, University of California at Irvine, Orange Coast College, and Mt. San Antonio College.
- Supported Mt. San Antonio College in the development and submittal of a Solar Energy Certificate, with the goal of preparing incumbent workers in the solar industry to pass the North American Board of Certified Energy Practitioners (NABCEP) exam. The certificate was submitted for approval and is targeted to launch in the fall of 2019.
- Collaborated with the University of California at Irvine to establish a temporary 6-month Sustainability Program Coordinator position in order to support on-campus internships and ongoing academic energy projects. The goal of the University is to make this a permanent position in the near future.
- Supported faculty at Orange Coast College in the development and submittal of an Energy Auditing course to be offered by the Technology Department. This course is targeted to be offered in the fall of 2019 as a complement to existing courses on Green Building Codes and Energy Codes.

The Community Language Efficiency Outreach (CLEO) Program reached out to SCE's non-English speaking customers (in Chinese, Vietnamese, Korean, and Spanish) through EE seminars at local venues and by hosting booths at community events. Eight seminars were conducted, and 123 booths were hosted, reaching over 17,000 customers.

The Mobile Energy Unit (MEU) Program continued its presence throughout SCE's service territory, attending 142 events while educating customers on residential EE tips, programs, rebates, and services. Throughout the year, the MEU Program reached over 27,000 people, and collected 46 completed CARE Program applications.

X. Statewide Marketing, Education & Outreach Program

A. Program Description

The Marketing, Education & Outreach (ME&O) Program has been implemented statewide for several years by a third-party implementer, CSE. As required in D.16-03-029 (dated March 17, 2016), the California Public Utilities Commission (CPUC) authorized issuance of a Request for Proposal (RFP) to select a statewide administrator for the ME&O Program for a three-year term beginning in 2017, with an option to extend the contract for an additional two (2) years based on performance.

On September 19, 2016, the CPUC issued D.16-09-020 which approved the selection of a new statewide implementer, DDB San Francisco ("DDB"), for the 2017-2019 SW ME&O Program, and which set the annual budget allocations. The Decision also:

- Clarified that the budget authorized for Q4 2016 was in addition to the budget authorized in D.15-08-033 to facilitate a transition period between implementers, and
- Established a collaborative process to develop a five-year Strategic Roadmap and Annual Joint Consumer Action Plan for Statewide ME&O.

In compliance with D.16-09-020, the statewide Program Administrator, PG&E, filed Advice Letter 3770-G/4939-E notifying the CPUC that a contract with DDB San Francisco as the new statewide ME&O implementer had been signed. The contract term is from October 1, 2016 until September 30, 2019.

On April 5, 2017, DDB San Francisco filed a Five-Year ME&O Strategic Roadmap and 2017-2018 Joint Consumer Action Plan (JCAP), which the CPUC approved on August 10, 2017:

- The Strategic Roadmap guides the next five years of the statewide customer engagement campaign, including the Energy Upgrade California® brand, in its marketing efforts, and
- The Action Plan states what the customer engagement campaign plans to accomplish.

On June 20, 2017, the Commission issued an amended scoping memo and ruling that expanded the scope of the ME&O proceeding to allow the Commission flexibility to monitor the EUC Program. The memo and ruling opened Phase 4 of this proceeding which will encompass any actions necessary for continued and effective coordination.

On March 30, 2018, DDB San Francisco filed a subsequent 2018-2019 JCAP that described what the customer engagement campaign would accomplish in Year 2. DDB's second annual JCAP will remain in effect until March 30, 2019.

B. Strategies Implemented in 2018

DDB's 2018-2019 JCAP outlined how DDB would execute toward the objectives of increasing customers' awareness of and intentions to engage with energy efficiency as previously detailed in the Strategic Roadmap. It included a review of lessons learned in Year 1 (2017) and provided recommendations on how the customer engagement initiative could optimize and build upon that learning in Year 2 (2018). It also established the following "high-level priority" topics to be incorporated into customer engagement messaging:

- Energy-Efficient Appliances
- Lighting
- Residential Rate Reform – Time of Use (RRR/TOU)
- Home Energy Reports (Home Energy Advisor Program)
- Energy Savings Assistance (ESA) Program
- Home Upgrade Program (formerly called Energy Upgrade California® (EUC) Program – Whole House)
- Energy Management Behaviors, and
- A/C Cycling (Summer Discount Plan) demand response program.

The IOUs and Regional Energy Networks (RENs) worked collaboratively with DDB to provide input on how to integrate the Small Business segment into the JCAP, including suggestions for areas of focus, customer targeting, key program offerings, prioritization of industries, and energy-efficient actions and behaviors.

As requested by the Energy Division, the IOUs also supplied their respective website analytics to DDB's website developer, Tribal, to validate the offsite traffic generated by the EUC website. DDB used this information to improve the website's overall performance and to optimize efforts to generate leads.

C. Integrated Demand Side Management Program

1. Program Description

The California Energy Efficiency Strategic Plan ("Strategic Plan") recognizes the integration of demand-side management (DSM) options, including energy efficiency, demand response, and distributed generation, as fundamental to achieving California's strategic energy goals. To support this initiative, the IOUs identified integrated demand-side management (IDSM) as an important strategic DSM policy priority, and proposed a series of activities, pilots, and other programs in response to the Strategic Plan's DSM Coordination and Integration Strategy.

An IOU and Energy Division Statewide IDSM Task Force was formed in 2010 and has continued coordinating statewide activities that promote the strategies identified in the Strategic Plan and the eight integration directives in CPUC Decision 09-09-047, as follows:

1) "Development of a proposed method to measure cost-effectiveness for integrated projects and programs including quantification and attribution methods that includes GHG and water reductions benefits and the potential long-term economic and electric/gas hedging benefits."
2) "Development of proposed measurement and evaluation protocols for IDSM programs and projects."
3) "Review IDSM enabling emerging technologies for potential inclusion in integrated programs."
4) "Development of cross-utility standardized integrated audit tools using PG&E's developed audits as a starting point."
5) "Track integration pilot programs to estimate energy savings, develop best practices and lessons learned and develop standard integration best practices that can be applied to all IOU programs based on pilot program evaluations and the results of additional integration promoting activities (i.e., EM&V and cost-benefit results)."
6) "Develop regular reports on IDSM progress and recommendations to the CPUC."
7) "Organize and oversee internal utility IDSM strategies by establishing internal Integration Teams with staff from EE, DR, DG, marketing, and delivery channels."
8) "Provide feedback and recommendations for the utilities' integrated marketing campaigns including how the working group will ensure that demand response marketing programs approved as Category 9 programs are coordinated with EE integrated marketing efforts."

2. Strategies Implemented in 2018

a. Directives 1 and 2

The Task Force is exploring a phased approach to developing an appropriate methodology to calculate integrated cost-effectiveness and an integrated EM&V approach for IDSM programs and projects. Integrated Cost Effectiveness Research will establish data needs to inform the understanding of integrated cost-effectiveness for IDSM programs and projects. An integrated EM&V White Paper is expected to show how the IOUs and the CPUC's Energy Division will document and attribute energy savings and demand reduction to IDSM project implementation, using methodologies established from evaluation. In 2018, no additional reports were completed. Further efforts on integrating cost-effectiveness and EM&V methodologies are being addressed in the Integrated Distributed Energy Resources (IDER) proceeding. Notable developments in 2018 are as follows:

- New projects initiated in 2018 by PG&E are: David Baker Architects, Acre Designs, APM Homes, G Family Construction, and Campus Properties-Acacia Village.
- A new project initiated in 2018 by SCG and SCE is: Deep Retrofit to Near ZNE for a Low Income MFR Demonstration.
- New projects initiated in 2018 by SDG&E are: Connected Home Energy Management System and Dynamic Air Balancing for Commercial HVAC Systems.

b. Directives 3 and 5

The statewide IDSM Task Force tracked multiple integrated emerging technologies and reviewed various programs, projects, IDSM Pilots, and activities to identify integration efforts and opportunities, and to develop best practices. Several IDSM Pilots continued in 2018, as follows:

- Demand Response and Energy Efficiency: RYU Thermostat - Technology Deployment (TD)
- Commercial Technology Deployment (TD)
- Behavioral Programs
- Assistance to Playa Vista with the design of the Playa Vista Community Center, which includes the latest co-generation technology to produce both hot water and electricity, as well as multiple EE measures, such as advanced LED lighting, and
- IDSM Summit and Webinars.

c. Directive 4

The SW Online Integrated Audits team continued to coordinate delivery of a consistent online integrated audit tool that:

- Works with each IOU interface

- Educates customers on managing their energy usage costs, and
- Provides customized audit recommendations for residential and small-to-medium-size business customers, based on customer profiles, operating characteristics, market sector potential, and cost-effectiveness.

The IOUs also:

- Enhanced the existing online integrated audit tool to include solar-related functionality, and
- Continued to offer on-site integrated audits to small, medium, and large business customers.

d. Directive 6

The IOUs submitted four joint quarterly reports for 2018, including an Executive Summary section, to provide Energy Division staff with updates on the eight IDSM directives. All quarterly reports were uploaded and available for viewing on the California Energy Efficiency Statistics Data Portal (EE Stats).

e. Directive 7

The statewide IDSM Task Force held regular coordination phone calls to continue to ensure alignment across the state and discuss lessons learned.

f. Directive 8

Delivery of IDSM marketing in 2018 continued to be more than just promotion of multiple programs through specific tactics like production of collateral or maintenance of websites. It was (and is) a key component in the planning phases of integrated ME&O to help provide the right solutions to the right customer at the right time. The IDSM Task Force tracked, reported, and shared best practices related to local integrated marketing campaigns for residential and business customers. Notable marketing campaigns are as follows:

- CARE Acquisition Campaign
- SMB Peak Day Pricing Welcome Kit DM and EM
- LC&I Demand Response Industry Engagement
- A digital, social media, and direct mail campaign to promote the smart thermostat rebate during the Black Friday and Christmas holiday promotional period, and
- Participation in residential and business events to promote IDSM offerings, including energy efficiency, solar thermal, and advanced metering.

XI. 2018 Energy Efficiency Program Overview – Local Programs

A. Energy Leader Partnership Program

The Energy Leader Partnership (ELP) Program provides support to local governments in SCE's service territory to identify and address energy efficiency (EE) opportunities in municipal facilities, take actions supporting the California EE Strategic Plan (CEESP or "Strategic Plan"), and increase community awareness of and participation in demand-side management opportunities. A key goal of SCE's Local Government Partnerships (LGPs) is helping cities and counties to lead by example by addressing EE first in their own municipal facilities. In addition, the program strives to expand the energy management policies and capacities of local governments in order to maintain a focus on long-term sustainability.

In 2018, 137 cities and 10 counties, including Los Angeles, Riverside, and San Bernardino, participated in SCE's Local Government Partnerships, including one (1) new partner. Twenty-four (24) partners also moved up a tier in SCE's ELP model through demonstrated EE achievements and commitment to the partnerships, including participation in EE retrofits and enrollment in demand response (DR). These advancements include ten (10) partners advancing to Platinum Level, eight (8) to Gold Level, and six (6) to Silver Level.

Additionally, SCE continued working to further Strategic Plan goals by helping local governments develop a long-term EE vision and identifying specific EE projects for implementation. Overall, partner cities have developed energy action plans, which establish a baseline of energy usage, set energy savings goals, and determined near-term measures to accomplish the goal. Partner cities continue to use Strategic Plan funds to install utility energy management systems, develop benchmarking plans, complete greenhouse gas (GHG) inventories, and leverage a revolving EE fund to further promote energy efficiency.

1. Partnership Strategic Support Subprogram

1. Program Description

The four IOUs — SCE, PG&E, SoCalGas, and SDG&E — contracted with the International Council for Local Environmental Initiatives (ICLEI), the Institute for Local Government (ILG), and the Local Government Commission (LGC) to implement the Statewide Energy Efficiency Collaborative (SEEC). SEEC provides a coordinated statewide program of workshops, technical assistance, a recognition program, and other means to allow local governments to share best practices associated with energy management. The statewide Local Government EE Best Practices Coordinator, also funded by the four IOUs, coordinates this work.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Partnership Strategic Support Subprogram:

- The annual SEEC Forum had 352 participants, from cities, counties, and regional agencies across California.
- Twelve (12) new participants joined the Beacon Program, totaling 142 cities and counties. The Beacon Program recognized several cities and counties with awards, including 29 Electric Savings Spotlight Awards and 7 full Beacon Awards.
- Overall usage of the SEEC ClearPath tool remains very strong, with 201 new ClearPath GHG Inventories being completed and 446 ClearPath active users. ICLEI staff provided technical support to the second SEEC GHG emissions inventory cohort, which allowed 29 cities to create new emissions inventories. Additionally, ICLEI conducted a Climate Action Plan Cohort training on how to complete a Climate Action Plan, with 24 participants.
- The Best Practices Coordinator's EE Coordinator Weekly Newsletter listserv (electronic mailing list) shared weekly update stories, resources, and/or events with 875 subscribers. The Best Practices Coordinator also hosted a monthly local government roundtable focused on climate action plan implementation and a quarterly roundtable focused on street lighting energy efficiency and provided direct technical assistance in the areas of building energy codes, revolving loan funds, and energy action plan development.
- SEEC also developed the following resources in 2018:
  - 2018 Climate and Energy Legislative Updates
  - SEEC Calendar
  - Currents Quarterly Newsletter, and
  - Energy Efficiency Funding Webpage.

2. City of Long Beach Energy Leader Partnership

1. Program Description

The City of Long Beach Partnership Program is a local government partnership between the City of Long Beach and Southern California Edison (SCE). The partnership works to raise energy efficiency awareness, promote long-term energy reduction goals within municipal building stock, and coordinate with the city to cross-promote residential and business utility EE programs.

Partnership activities focus on addressing energy usage in municipal facilities and in the community. Analysis of municipal facilities is conducted to identify demand reduction projects with energy conservation measures (ECM) alternatives to optimize the energy and environmental performance of a new building design or an extensive retrofit project.

In addition, the Partnership places great emphasis on serving as a resource for energy savings to the community by working closely with the city to identify and participate in community events that are best suited to provide resources to residents about relevant residential and business programs.

The primary objectives of the city of Long Beach Partnership include:

- Providing specialized EE offerings to participating local governments and residential and business communities
- Leveraging their communication infrastructure to inform local communities about the wide variety of EE and DR offerings available to them and to encourage participation as much as possible
- Identifying opportunities for municipal building retrofits, new construction, commissioning, and retrocommissioning, as well as directing partnership participants to existing EE programs, and
- Accessing valuable EE expertise through technical assistance to help identify ECMs, define project scopes, estimate project costs, and determine eligible incentives and rebates.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the City of Long Beach Energy Leader Partnership:

- The Partnership hosts regular monthly update meetings to discuss potential EE projects.
- Continued coordination with departments such as Public Works, the Port of Long Beach, the Water District, the Parks & Recreation Department, and the Airport.
- Departmental participation in SCE's incentive programs such as direct install contributed to energy savings in 2018 for the city and to the success of the Partnership.
- The program achieved over 300,000 kWh net in energy savings for the City of Long Beach in 2018. In particular, the city actively participated in a major street light replacement project that installed efficient LED technology to replace existing lamps.

3. City of Redlands Energy Leader Partnership

Effective as of February 3, 2017, Advice Letter 3543-E approved moving certain single-city partnerships into regional partnerships, including the City of Redlands, which joined the San Bernardino Regional Energy Leader Partnership (SANBAG). Doing so enables a city to leverage best practices from other partnership members, focus its resources on targeted regional energy efficiency projects, and improve the cost-effectiveness of the partnerships.

4. City of Santa Ana Energy Leader Partnership

1. Program Description

Effective as of February 3, 2017, Advice Letter 3543-E approved that certain single city partnerships be moved into regional partnerships, including the City of Santa Ana which joined the Orange County Cities Energy Leader Partnership (see ***Pages 85-86*****,** below).

5. Gateway Cities Energy Leader Partnership

1. Program Description

The Gateway Cities Energy Partnership Program (GCELP) is a local government partnership including the Cities of South Gate, Norwalk, Downey, Lakewood, and Lynwood (the "Cities" or "Partners"), along with Southern California Edison (SCE) and Southern California Gas (SCG). The Partnership works to raise EE awareness, promotes long-term energy reduction goals within municipal building stock, and coordinates with partner cities to cross-promote utility residential and business EE programs. In addition, the Partnership completes targeted retrofit and retrocommissioning projects in municipal facilities.

Partnership activities focus on addressing energy usage in municipal facilities and in the communities. The Partnership places great emphasis on having partners lead their communities by example, that is, by concentrating first on their own municipal facilities. The Partnership provides EE education, technical assistance, and retrocommissioning (RCx) services, as well as design consultation and energy analysis of new construction and renovation project plans. Analysis of municipal facilities is conducted to identify demand reduction projects, with energy conservation measures (ECM) alternatives to optimize the energy and environmental performance of a new building design or extensive retrofit project in each of the targeted cities.

In addition, the Partnership places great emphasis on serving as a resource for energy savings to the community by working closely with Partners to identify and participate in community events that are best suited to provide resources to residents about relevant residential and business programs.

The primary objectives of the Gateway Cities Energy Partnership include:

- Providing specialized EE offerings to participating local governments and residential and business communities
- Leveraging their communication infrastructure to inform local communities about the wide variety of SCE program offerings available to them and to encourage participation as much as possible
- Identifying opportunities for municipal building retrofits, new construction, commissioning, and retrocommissioning, as well as directing partnership participants to existing EE programs

- Accessing valuable EE expertise through technical assistance to help identify ECMs, define project scopes, estimate project costs, and determine eligible incentives and rebates, and
- Offering training and education for municipal staff to increase in-house expertise about HVAC systems, electrical systems, lighting, data collection, environmental regulations, and code compliance.

2. Strategies Implemented in 2018:

The Gateway Cities Partnership completed the following administrative activities:

- Continuing development of the program infrastructure, and
- Holding Regular monthly update meetings were held with partners and program administrators every 3rd Wednesday of the month throughout 2018 (except for the months of November and December, due to the holidays).

The Partnership also participated in five significant and well-attended community outreach events in 2018:

- Partners Lakewood and Norwalk each hosted their own Community Connect events, offering distinct opportunities for community residents to engage with utility partners.
- Norwalk's Community Connect event was held December 2018, with 4,000 residents and visitors in attendance.
- Lakewood's Community Connect Event was held in August 2018. Services such as on-site evaluation of and enrollment in participating residential EE programs such as the Energy Savings Assistance (ESA) Program, the CARE and FERA Programs (providing discount rates to income-qualified customers), and the SCE Energy Assistance Fund were available to community residents in attendance.

6. Community Energy Leader Partnership

Effective on February 3, 2017, Advice Letter 3543-E approved SCE's request to discontinue the Community Energy Leadership Partnership (CEP) in July of 2017, and to move the City of Santa Monica and the City of Santa Clarita to the West Side Community Energy Partnership (see ***Pages 95-96,*** below).

7. Eastern Sierra Energy Leader Partnership

1. Program Description

The Eastern Sierra Energy Leader Partnership ("Partnership") is a partnership between SCE and jurisdictions in the Eastern Sierra region, including the Town of Mammoth Lakes, the City of Bishop, and Inyo and Mono Counties. The partnership identifies opportunities for improving EE in Eastern Sierra jurisdictions, offers customized incentives

for municipal projects, and conducts EE training and outreach events to drive participation in core EE programs.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Eastern Sierra Energy Leader Partnership:

- The Partnership continued hosting monthly calls and individual meetings and calls as necessary with local government staff, IOU program managers, and IOU account managers to help identify opportunities for IDSM projects and outreach.
- The Partnership received funding from the CA Green Business Network to start the Eastern Sierra Green Business Program, a voluntary certification program in which a business must demonstrate that it takes action to conserve resources and prevent pollution in its facilities and operations to become certified.
- The Partnership met with local organizations, including the Mammoth Lakes Chamber of Commerce, Bishop Chamber of Commerce, the Mammoth Lakes Contractors Association, and Inyo Associates, to further promote EE opportunities in the region.
- The Partnership performed marketing and outreach coordination and participated in Title 24, Part 6 Residential Standards training for Plan Examiners and Building Inspectors.
- The Partnership performed marketing and outreach for SCE's Multifamily Energy Efficiency Rebate (MFEER) Program, which resulted in energy savings of 124,917.51 kWh and demand reduction of 1.8 kW.
- The Partnership schools participated in the School EE Program (SEEP) program which yielded 72,901.90 kWh in energy savings and 0.68 kW in demand reduction.
- The Partnership, partnering with the Mammoth Community Water District and the Mammoth Unified School District, completed the eleventh year of the LivingWise® water conservation and energy efficiency course for 100 sixth-grade earth science students at Mammoth Middle School.
- The Partnership presented updates to all jurisdictions' councils or board of supervisors.
- Pam Bold, Executive Director of the High Sierra Energy Foundation and Eastern Sierra Energy Initiative, is also the co-chair of the Rural and Hard-To-Reach (RHTR) working group. The Partnership participated in monthly RHTR calls with Pam and attended three in-person meetings to share best practices and inform policy to ensure rural ratepayers receive effective EE programs and services. As part of the RHTR working group, the Partnership participated in the development of a presentation for the Statewide Energy Efficiency Forum in Sacramento.

- The Partnership participated in SCE's Peer-to-Peer Best Practices monthly calls.
- The Partnership participated in SCE's Central California (CenCal) Meeting Planning Team and attended the CenCal Meeting in San Luis Obispo and the All Partners Meeting in Irwindale.
- The Partnership participated in seven (7) web-based workshops and webinars. These workshops were designed to educate participants on EE and/or climate-related topics and were open to all local governments.
- The Partnership entered an outreach float in the Town of Mammoth Lakes' community Independence Day parade and set up an information booth at the Banff Film Festival World Tour in Bishop.
- The Partnership made a presentation on the Savings By Design (SBD) Program for consideration by Mono County for its new administrative building project. However, at that time, the SBD Program was updating its calculation methodology under CPUC review and was not accepting new projects, so the County did not proceed with the program.

8. Desert Cities Energy Leader Partnership

1. Program Description

The Desert Cities Energy Partnership (DCEP) Program is a local government partnership comprised of the cities of Blythe, Cathedral City, Desert Hot Springs, Indian Wells, Palm Springs, Rancho Mirage, La Quinta, Coachella, and Indio, the Agua Caliente tribe, the Southern California Gas Company (SCG), the Imperial Irrigation District (IID), and Southern California Edison (SCE). The program is designed to assist local governments to effectively lead their communities to increase energy efficiency (EE), reduce greenhouse gas (GHG) emissions, increase renewable energy usage, protect air quality, and ensure that their communities are more livable and sustainable.

This Partnership focuses on installing measurable and persistent EE and conservation devices for the benefit of the partners, their residents and businesses, the State of California, and California IOU ratepayers. Partnership activities focus specifically on implementing EE measures in municipal facilities. The Partnership establishes energy savings goals through partner-identified projects that are partly funded by incentives and provides technical assistance and supports city and community EE efforts through marketing and outreach.

2. Strategies Implemented in 2018:

DCEP team members were able to attend events throughout the year to promote the work of the Partnership and the programs offered, and to increase awareness about energy efficiency.

The team met monthly to discuss program goals, milestones, and marketing, training, and EE projects. This meeting was rotated to different locations to encourage participation from its partners because they are significantly spread out over a wide area. The Partnership

also held semi-annual working group meetings with the partners to discuss their ongoing projects. The annual Energy Summit was held at the Agua Caliente Casino and was well attended.

Because of unforeseen factors such as recession and cutbacks, many of our city champions are either no longer employed by their city or organization, or have had their duties shifted to other responsibilities, making DCEP less of a priority. Participation in meetings heavily suffered because of this.

9. Kern County Energy Leader Partnership

1. Program Description

The Kern County Energy Leader Partnership (aka Kern Energy Watch Partnership) brings together three utilities — PG&E, SCE, and SoCalGas — with eleven local governments to improve EE throughout Kern County. The Partnership now coordinates the EE efforts of the Cities of Arvin, Bakersfield, California City, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco. The Kern Economic Development Corporation (KEDC), Staples Energy, and the San Joaquin Valley Clean Energy Organization also participate with the Partnership in joint project, outreach, and training efforts.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Kern County Energy Leader Partnership:

- Held individual meetings with the Cities of McFarland and California City and with Kern County to identify potential energy projects and the resources needed to help remove barriers that prevent the projects from moving forward.
- Continued to explore and develop new ways to reach out and educate rural hard-to-reach (RHTR) communities on energy efficiency.
- Participated in the Statewide Energy Efficiency Collaborative (SEEC) forum in Sacramento, California.
- Met monthly to discuss program goals, milestones, and marketing, training, and EE projects.

10. Orange County Cities Energy Leader Partnership

1. Program Description

The Orange County Cities Energy Leader Partnership includes the Cities of Irvine, Costa Mesa, Fountain Valley, Huntington Beach, Newport Beach, Santa Ana, and Westminster, as well as SCE and SoCalGas. In addition to identifying and implementing EE retrofits for municipal facilities, the partnership also funds community marketing, education, and outreach efforts to create awareness and connect residents and businesses with

information and opportunities to take energy actions, and includes Strategic Plan activities, such as climate action planning, code compliance, and reach codes.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Orange County Cities Energy Leader Partnership:

- Continued to hold monthly team meetings with city Team Leaders, facility-related city staff, and IOU account representatives, for the purpose of further cementing working relationships among partner cities and the IOUs. These relationships were essential in promoting and reinforcing all program goals in 2018 and maintaining a focus on EE and sustainability.
- Completed several EE projects, with energy savings totaling more than 150,000 kWh net and demand reduction of 8 kW net.
- Continued to promote IDSM audits and DR enrollment programs to partner cities during team meetings to elevate their current tier level (if applicable).
- Sent regular communications to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Conducted multiple Community Outreach events to promote EE through partnership information booths and brochures.

11. San Gabriel Valley Energy Leader Partnership

1. Program Description

The San Gabriel Valley Energy Leader Partnership is a partnership between SCE and the San Gabriel Valley Council of Governments. The Partnership identifies opportunities for improving EE in the 29 cities of the San Gabriel Valley, offers customized incentives for municipal projects, conducts EE training and outreach events to drive participation in SCE's core programs, and provides support for long-term Strategic Plan goals such as climate action planning, code compliance, reach codes, and other Strategic Plan initiatives.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the San Gabriel Valley Energy Leader Partnership, which:

- Held regular monthly meetings to discuss program administration, marketing, and implementation efforts.
- Continued to promote IDSM audits and DR enrollment programs to partner cities during team meetings to elevate their current tier level (if applicable).
- Continued promotion of the EASY Program (Energy Assessment Screening for Your Home), a free energy assessment for homeowners in the cities.
- Promoted and reinforced all program goals in 2018 while maintaining a focus on EE and sustainability.
- Conducted multiple Community Outreach events to promote EE, which included partnership information booths, distribution of flyers, and outreach to local businesses; also participated in a lamp exchange event.
- Hosted its annual regional kick-off event, focusing on the utilities' EE incentive application process.
- Hosted six (6) One-on-One City Energy Wise Partnership Update meetings with city staff members responsible for managing municipal and community-wide energy programs.

12. San Joaquin Valley Energy Leader Partnership

1. Program Description

The San Joaquin Valley Energy Leader Partnership, aka the Valley Innovative Energy Watch (VIEW) Partnership, is a Local Government Partnership between Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), Southern California Gas Company (SCG), and local governments in Kings and Tulare Counties:

- In Kings County, the Cities of Avenal, Corcoran, Hanford, and Lemoore.
- In Tulare County, the Cities of Dinuba, Farmersville, Lindsay, Porterville, Tulare, Visalia, and Woodlake.

The VIEW Partnership is implemented by the San Joaquin Valley Clean Energy Organization (SJVCEO).

The VIEW Partnership identifies opportunities for improved energy efficiency (EE) in municipal infrastructure, offers customized incentives for municipal projects, conducts EE trainings, hosts and participates in outreach events to drive participation in core utility programs, and supports the California Energy Efficiency Strategic Plan (CEESP). The Partnership supports peer best-practice sharing through:

- The Peer to Peer Working Group (P2P)
- The Rural Hard to Reach (RHTR) Local Government Partnerships' Working Group
- The San Joaquin Valley Energy Watch Collaborative (SJVEWC)
- The California Energy Efficiency Coordinating Council (CAEECC) — as a general member, and as a member of the Public Sector and Cross Cutting subcommittees.

2. Strategies Implemented in 2018

The implementer, SJVCEO, continued participation in the CAEECC as a general member and Public Sector subcommittee co-chair (as the non-Program Administrator (PA) representative), and SCE implemented the following strategies for the Partnership:

- Held four quarterly VIEW Partnership meetings.
- Held one "Lunch & Learn" session with VIEW Partner cities.
- Performed continued maintenance on the roughly 4,000 Energy Star® Portfolio Manager accounts of customers in the partner cities.
- Assisted the City of Woodlake in completing its Energy Action Plan, which the Woodlake City Council accepted in April 2018.
- Obtained $140,000 in supplemental funding to support Partnership interests and efforts:
  - A $130,000 grant award from Energy Upgrade California to bring Time Of Use rate change education and information to the Partnership territory starting in December 2018, and
  - A $10,000 grant award from SCG Environmental Champions to organize and host Gas Camp assemblies in VIEW Partnership territory schools.
- Participated in six Peer to Peer Working Group monthly member calls and/or in-person meetings.
- Hosted four SJVEWC meetings and calls.
- Participated in twelve RHTR monthly member calls and three quarterly in-person meetings.
- Participated in CPUC Energy Division Statewide Advisory Group (StAG) calls.
- Hosted seven monthly Fund It Fast Chats on various EE project funding mechanisms for local governments.

13. South Bay Energy Leader Partnership

1. Program Description

The South Bay Energy Leader Partnership Program[39] provides integrated technical and financial assistance to help the South Bay Cities effectively lead their communities to increase energy efficiency, reduce greenhouse gas emissions, increase renewable energy usage, protect air quality, and ensure that their communities are more livable and sustainable. The Partnership provides performance-based opportunities and incentives from SCE core programs for fifteen (15) member cities to increase energy efficiency in local government facilities and their communities through energy-saving actions.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the South Bay Energy Leader Partnership:

- Conducted monthly meetings with all the partners and weekly conference calls which focused on EE projects.
- Completed several EE projects totaling more than 800,000 kWh net and demand reduction of 24 kW net.
- Continued to have the South Bay Energy Savings Center (SBESC) promote community EE and/or DR for the South Bay region.
- Conducted 94 educational activities throughout the 15 partner cities, including workshops and community events.
- Held an Annual Holiday Light Exchange serving several hundred households with ENERGY STAR®-rated holiday LED strands in exchange for old incandescent strands.
- Continued to promote the benefits of participating in Beacon Award activities.

14. South Santa Barbara County Energy Leader Partnership

1. Program Description

The South Santa Barbara County Energy Efficiency Partnership (SCEEP) includes SCE, Santa Barbara County, and the Cities of Santa Barbara, Goleta, and Carpinteria. The program generates energy savings by identifying municipal EE projects and provides education, training, and marketing and outreach. Cities complete retrofits of their own facilities and conduct community sweeps and outreach to their residential and business communities to increase participation in core programs. The Partnership:

- Funnels customers to existing SCE core EE programs, and acts as a portal for other demand-side management offerings, including the Income Qualified Energy

[39] AKA the South Bay Cities Council of Governments (SBCCOG) Energy Efficiency Partnership Program.

Savings Assistance (ESA) and CARE Programs, demand response programs, and the Self-Generation and California Solar Initiative Programs

- Provides energy information to all market segments
- Identifies projects for municipal retrofits, and
- Includes Strategic Plan activities, such as climate action planning, code compliance, reach codes development, and other Strategic Plan initiatives.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the South Santa Barbara County Energy Efficiency Partnership:

- Promoted On-Bill Financing for municipal partners and their local communities to increase participation in SCE's core EE programs.
- Participated in several community exhibits and outreach events, including:
  - The Santa Barbara Earth Day Festival in April, with approximately 32,000 attendees
  - The Central Coast Sustainability Summit at UCSB in November
  - The Local Government Commission Statewide Energy Efficiency Collaborative (SEEC) meeting in June, and
  - A SCEEP Awards Luncheon, held in April, to honor SCEEP partners for their contributions toward increasing energy efficiency in Santa Barbara County's southern region.
- The City of Santa Barbara launched their Zero Net Energy Roadmap for municipal facilities with strategic planning funds, and within the year created draft strategies for stakeholder review, as well as benchmarking their facilities in this process.
- The County of Santa Barbara launched their Strategic Energy Plan to identify both utility scale and distributed renewable energy project locations, and the County Board of Supervisors voted to increase the Energy and Climate Action Plan (ECAP) goal of GHG reductions from 15 to 50%.
- Continued to partner with the countywide Green Business Program,[40] a voluntary certification program that SCEEP supports. More than 84 businesses have been certified through the program. Using modeling tools from the statewide Green Business Network, the Partnership compiled data from current certified

[40] To be certified as a Green Business, the business must demonstrate that it takes action to conserve resources and prevent pollution in both its facility or facilities (that is, fixtures and maintenance) and its operations (purchasing and other practices).

businesses and calculated total on-bill energy savings of 1.15 million kWh per year.

- The City of Carpinteria achieved the Platinum Tier (level) during the year.

15. Ventura County Energy Leader Partnership

1. Program Description

The Ventura County Energy Leader Partnerships, also known as the Ventura County Regional Energy Alliance (VCREA), in partnership with SoCalGas and SCE, builds on progress towards implementing a targeted program of energy savings for public agencies[41] throughout the Ventura County region. VCREA supports efforts for the County of Ventura and ten cities, including Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and Ventura, to engage in the Energy Leader Model program, and applies the strengths of the VCREA and its utility partners to help public agencies lead their communities to greater participation in EE programs.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Ventura County Energy Leader Partnership:

- Continued to meet monthly to discuss Energy Leader program goals, marketing milestones, training, and EE projects.
- Completed three (3) projects leveraged with utility incentives to public agencies, with energy savings totaling more than 400,000 kWh net and demand reduction totaling 111 KW net.
- Offered over 40 community events and presentations, and four trainings on the topics of benchmarking, HVAC, solar energy, and Title 24.
- Collaborated on efforts with multifamily and income-qualified utility EE programs and with Community Action of Ventura County, Ventura County Public Health, The Energy Coalition (TEC), the Community Environmental Council, the Local Government Commission, and the South Santa Barbara County Energy Leader Partnership.
- Continued making efforts with Climate on the Move, a regional inventory of greenhouse gas emissions, and supporting the CiviSpark fellowship program.
- Continued Strategic Planning work to support efforts such as regional benchmarking, Energy Action Plans (EAPs), and a revolving EE loan fund:
- Benchmarking successes included:
    - Training VCREA staff and contract workers in utilizing Energy Star®

[41] That is, city or county governments and any other Public Sector organizations.

Portfolio Manager

- Developing AB 802 outreach materials and a list of commercial facilities within the Ventura County Region that are required to report their energy usage to the Energy Commission
- Setting up municipal accounts for all ten cities and the County of Ventura in ENERGY STAR® Portfolio Manager, and syncing or working on syncing all AB 802-targeted accounts to SCE and SoCalGas's benchmarking portal so that data is automatically downloaded each year for AB 802 reporting compliance; and
- Developing a draft benchmarking report template to provide to municipal facility managers describing benchmarking, their facilities' energy use intensity (EUI) scores, and recommendations for energy efficiency within those facilities.

- EAP successes included:
  - Completing City of Ventura and Thousand Oaks greenhouse gas inventories, receiving approval on the methodology from ICLEI, and developing a methodology report to share with other Ventura County jurisdictions
  - Developing draft EAP strategies for six energy-related sectors
  - Completing round 1 community engagement and developing round 2 engagement plan; and
  - Developing an EAP report template.
- Revolving EE Loan Fund successes included researching jurisdictions that have implemented revolving EE loan funds.
- Co-hosted a partnership meeting with the South Santa Barbara County EE Partnership (SCEEP).

16. Western Riverside Energy Leader Partnership

1. Program Description

The Western Riverside Energy Leader Partnership (WRELP) delivers energy savings by implementing EE measures in municipal facilities. The partnership offers marketing, education, and outreach to local governments and their communities, coordinates with core utility EE and DR programs, and provides strategic planning assistance to fourteen participating cities.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Western Riverside Energy Leader Partnership:

- Conducted three quarterly meetings which provided the member agencies with energy efficiency support and updates on both SCE's and SoCalGas's operations.
- Conducted one-on-one meetings with member cities to help them move up the tier levels of the Energy Leader model:
- Assisted the Cities of Lake Elsinore and Menifee with their participation in the SCE and SoCalGas Direct Install programs.
- Provided technical assistance to the City of Lake Elsinore with an audit of their facilities to help identify future energy (electric and gas) projects.
- Assisted both cities in identifying and installing various electric- and gas-related measures in their municipal facilities, including LED lighting, showerheads, and tank insulation.
- Continued to promote SCE's DR programs and encourage partner cities to participate.
- Promoted the Energy Savings Assistance (ESA) Program and the Middle-Income Direct Install (MIDI) Program in the region.

3. Building Operator Certification (BOC) Training:

Partnership staff was successful in working with the Northwest Energy Efficiency Council (NEEC) in which both parties provided a four-month (September through December 2018) Level 1 BOC Training course for interested agencies within Western Riverside County. The Partnership utilities, SCE and SoCalGas, were both instrumental in this training opportunity as they contributed to its budget to encourage increasing the number of EE projects in the region. The Partnership enrolled 25 participants in this opportunity, including 15 from WREP agencies.

4. Community Outreach / Presentations:

The Partnership participated in ten community themed events that supported the marketing and outreach of electric and gas programs that the utilities offer and provided energy efficiency program outreach to both residents and commercial businesses. Because five of the ten events occurred during the holiday season, the Partnership team distributed a total of 109 SoCal Gas Energy Efficiency Kits, as well as over 500 SCE-provided LED Holiday Lights. The EE Kits and Holiday Lights were distributed in the Cities of Calimesa, Eastvale, Perris, and Temecula; the City of Canyon Lake also received the Holiday Lights but did not receive the EE Kits because their residents are on propane.

Additionally, the Partnership provided presentations covering achievements and third-party programs for both residents and businesses at several City Council and Chamber of Commerce meetings.

17. High Desert Regional (HDR) Partnership

1. Program Description

The High Desert Regional (HDR) Partnership (formerly the Adelanto Energy Leader Partnership) is a Local Government Partnership (LGP) between SCE and five local governments within San Bernardino County: The Cities of Adelanto, Barstow, Hesperia, and Victorville, and the Town of Apple Valley. The Partnership is implemented by the San Joaquin Valley Clean Energy Organization (SJVCEO).

The HDR Partnership identifies opportunities for improved EE in municipal infrastructure, offers customized incentives for municipal projects, conducts EE trainings, hosts and participates in outreach events to drive participation in core utility programs, and supports the California Energy Efficiency Strategic Plan. The Partnership supports peer best practice sharing through the Peer to Peer Working Group (P2P), the Rural Hard to Reach Local Government Partnerships' Working Group (RHTR Working Group), and, through its implementer, the California Energy Efficiency Coordinating Council (CAEECC), both as a general member and on the Public Sector and Cross Cutting subcommittees.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the High Desert Regional Partnership:

- Held five bi-monthly HDR Partnership meetings and the annual HDR Partnership awards luncheon.
- Performed continued maintenance on 200 Energy Star® Portfolio Manager accounts, benchmarked 50 municipal building accounts through new AB 802 portals, and collected data characteristics for an additional 200 municipal energy accounts.
- Participated in six Peer to Peer Working Group monthly member calls and in-person meetings.
- Co-chaired 12 RHTR Working Group monthly member calls and participated in three quarterly in-person meetings.
- The Partnership implementer continued participating in the CAEECC as a general member and Public Sector subcommittee cochair (as the non-PA representative).
- Participated in five CAEECC membership and working group meetings.
- Participated in CPUC Energy Division Statewide Advisory Group (StAG) calls.

- Hosted seven Fund It Fast Chats on various EE project funding mechanisms for local governments.

18. West Side Energy Leader Partnership

1. Program Description

The West Side Energy Leader Partnership (WSELP) is a local government partnership including SCE and the Cities of Beverly Hills, Culver City, Malibu, Santa Monica, Santa Clarita, and West Hollywood, with The Energy Coalition (TEC) as the implementing vendor. Partnership activities focus on:

- Implementing EE in municipal facilities
- Promoting EE in the community
- Establishing energy savings goals for EE retrofits of city-owned facilities
- Identifying, scoping, and implementing EE projects, and
- Funding community education, marketing, and outreach efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the West Side Energy Leader Partnership:

- Continued to hold bi-monthly Efficiency Now! Team meetings with city Energy Champions and facility-related city staff, IOU Account Representatives, and TEC staff for the purpose of further cementing working relationships that were essential in successfully reaching all program goals in 2018 and maintaining a focus on EE and sustainability.
- Completed several EE projects with energy savings totaling more than 400,000 kWh net and demand reduction totaling 15 kW net.
- Continued to promote IDSM audits and DR programs to the cities during team meetings.
- Sent Partnership E-blasts to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Promoted SCE Partnership resources and programs at educational Lunch & Learn meetings.
- Regularly produced "City Accomplishments" documents, customized for each partner city, to showcase their achievements, and distributed them to city managers, council members, and city decision-makers.

- Initiated a Strategic Plan energy benchmarking project for all six cities.
- Provided materials for a greenhouse gas inventory report being prepared for Culver City (to be completed in 2019).
- Applied for the Beacon Award on behalf of Culver City, Malibu, Santa Clarita, and West Hollywood to recognize their efforts towards energy efficiency.
- Applied for the Cool Planet Award on behalf of Santa Monica for recognition of its efforts toward energy efficiency.

19. North Orange County Cities Energy Leader Partnership

1. Program Description

The North Orange County Cities Energy Leader Partnership is a local government partnership comprising the Cities of Brea, Buena Park, Fullerton, La Habra, La Palma, Orange, Placentia, and Yorba Linda, along with SCE and SoCalGas, with The Energy Coalition (TEC) as the implementing vendor. Partnership activities focus on implementing EE in municipal facilities and promoting EE in the community. The Partnership:

- Establishes energy savings goals for EE retrofit of city-owned facilities
- Identifies, scopes and implements EE projects
- Funds community education, marketing, and outreach efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions, and
- Includes Strategic Plan activities, such as climate action planning, benchmarking policies, and greenhouse gas inventories.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the North Orange County Cities Energy Leader Partnership:

- Continued to hold monthly Efficiency Now! Team meetings with city team leaders and facility-related city staff, IOU Account Representatives, and TEC staff for the purpose of further cementing working relationships that were essential in successfully promoting all program goals in 2018 and maintaining a focus on EE and sustainability.
- Completed energy efficiency projects with energy savings totaling more than 29,000 kWh net and demand reductions of 4 kW net.
- Continued to promote IDSM audits and DR programs to partner cities during team meetings.
- Sent several Partnership e-blasts to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.

- Began implementation of a Strategic Planning energy benchmarking project.
- Conducted multiple Community Outreach events.
- Produced annual "city accomplishments" documents, customized for each partner city, to showcase their achievements, and distributed them to city managers, council members, and city decision-makers.
- Applied for the Beacon Award on behalf of the City of La Habra to recognize its efforts towards energy efficiency
- Applied for the Cool Planet Award on behalf of the City of Orange for recognition of its efforts towards energy efficiency

20. San Bernardino Regional Energy Partnership

1. Program Description

The San Bernardino Regional Energy Partnership (SBREP) is a joint energy efficiency (EE) partnership between the San Bernardino Council of Governments (SBCOG), SCE, and SoCalGas. The Partnership extends to 12 cities within the San Bernardino Valley and Morongo Valley portions of the SBCOG region, including Chino, Chino Hills, Fontana, Highland, Montclair, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Twentynine Palms, Upland, and Yucca Valley.

The primary objectives for SBREP include:

- Promoting integrated EE through identifying and assisting in the coordination of opportunities for cost-effective implementation of natural gas and electric energy-savings technologies
- Coordinating community outreach and training efforts to educate consumers and promote programs, and
- Identifying and offering financial packages that bundle practical utility incentives, with various monetary incentives aimed at improving the participation of residents, businesses, and local government agencies.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the San Bernardino Regional Energy Partnership:

- Coordinated with the participating cities on a monthly basis via conference call, and on a quarterly basis via in-person meetings. These meetings provide a venue for discussing EE goals and opportunities, project milestones, and training opportunities, in addition to providing a roundtable forum to discuss best practices and lessons learned.
- On an as-needed basis, facilitated one-on-one meetings with member cities to focus on their individual needs.

- Worked with all partner cities to complete the requirements of the Energy Leader Partnership Model in order to help them move up the tiers. There were five tier level advancements in the SCE Energy Leadership Partnership in 2018.
- Provided EE educational outreach support at community events and hosted holiday LED light exchange and EE starter kit events in the participating SBREP cities.
- Coordinated with SCE's Direct Install Program to promote T-LED measures.
- Continued to identify potential projects by providing technical assistance for energy audits.
- Developed an SBREP informational brochure for general outreach purposes.
- Offered Building Operator Certification (BOC) training to all participating cities during 2018; four cities participated and completed BOC training.
- Continued to promote SCE's DR programs and encourage partner cities to participate.

21. Local Government Strategic Planning Program

1. Program Description

The Local Government Strategic Planning Program is designed to provide increased funding and support for city, county, and regional governments to pilot activities that directly support the LGP Strategic Plan goals and strategies. The pilots result from a solicitation process whereby local governments propose activities, above and beyond normal partnership work, that directly align with the California Energy Efficiency Strategic Plan ("Strategic Plan").

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Partnership Strategic Planning Subprogram:

- Received five applications in 2018 for Strategic Plan-related funds. The applications contained various deliverables including benchmarking policies, energy action plans, and GHG inventory.
- Sent out Notices to proceed on four applications received in 2016, eight received in 2017, and five applications received in 2018.
- Worked in collaboration with Commission staff, the IOUs, and Local Government partners to develop a streamlined Statewide Strategic Plan Semi-Annual Report.

This revised report provides a concise understanding of the status, scope, and accomplishments of projects, as well as of best practices for projects.

B. Local Government Partnerships – County Partnerships

The County partnerships described in this section were originally authorized as part of the Institutional Partnership Program but have been moved to the Local Government Partnership for reporting purposes.

1. County of Los Angeles Energy Efficiency Partnership

1. Program Description

The County of Los Angeles ("LA County") Partnership supports the energy reduction and environmental initiatives described in the Los Angeles County Energy and Environmental Plan, adopted in 2008, and the objectives of the California Energy Efficiency Strategic Plan (CEESP). EE projects focus on County-owned municipal buildings, and include lighting, HVAC, retrocommissioning, and Savings By Design (SBD) new construction projects at each of the 38 County departments served by the Energy Management division of the County Internal Services Department. Additional efforts with the County Office of Sustainability include:

- Support and coordination for the Energy Upgrade California® (EUC) Program, and
- Strategic Plan solicitation activities that expand the County's Enterprise Energy Management Information System (EEMIS). This allows LA County to receive and analyze participating city data in order to help the cities manage energy usage better and to support identification of EE opportunities.

2. Strategies Implemented in 2018

i. Administrative Successes:

The Partnership collaborated with the LA County Internal Services Department (ISD) to capitalize on EE opportunities by working with representatives from the 38 LA County Departments for which ISD provides energy management services.

The Partnership also worked with ISD, Public Works, Parks and Recreation, and the Metropolitan Department of Transportation on strategies to develop energy savings opportunities and strategic implementation forecasts.

ii. Retrofits:

The Partnership completed audit and eQuest models for eight retrocommissioning projects.

The Partnership was active in building a project pipeline, including the LA County Pitchess Complex that is estimated to generate over 6,000,000 kWh in energy savings.

iii. Strategic Planning Support:

The Partnership worked with the County to continue efforts started in 2011 for the Strategic Plan 5.6 Solicitation, by:

- Continuing to work on expansion of the EEMIS System to over 50 local governments, and
- Continuing to support the Southern California Regional Energy Center (SoCalREC) in developing guidebooks and case studies to disseminate information to local governments. These materials provide reference materials in support of EE activities, such as financing and program management.

iv. Core Program Coordination:

The Partnership migrated local government data into EEMIS, with the support of SCE's IT department, for training and use by the local governments in developing EE activities.

v. Education and Outreach:

The Partnership made presentations to representatives from LA County departments to encourage them to participate more in partnership activities and to identify EE projects with deeper savings opportunities.

The Partnership also:

- Participated in Local Government workshops to create awareness of the EEMIS System, and
- Continued holding regional workshops and hosting webinars to explain the capabilities of EEMIS to local government users and LA County department staff members.

2. County of Riverside Energy Efficiency Partnership

1. Program Description

In 2010, the County of Riverside formed a Partnership with SCE and SoCalGas, intended to help the County achieve its green policy initiatives and formulate an integrated approach to EE. This collaborative effort seeks to build an infrastructure that efficiently delivers cost-effective EE projects that will reduce the carbon footprint created by County facilities.

The Partnership improves EE in Riverside County municipal facilities by leveraging utility resources, customized to the County's unique needs. The Partnership also supports Riverside County in meeting, first, the CO_2 reduction requirements of AB 32 and second,

CPUC energy savings goals and objectives. However, due to budget constraints, the County has not participated in an EE program with the IOUs since 2015.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the County of Riverside Energy Efficiency Partnership:

- Continued hosting monthly meetings that include County staff and utility Account Managers and Program Managers to help identify opportunities for IDSM projects, marketing, outreach, and other related activities.
- Engaged with County staff to identify facilities for energy audits (for example, with Parks and Recreation for ball field lighting and bollard lighting; however, many of the lighting measures identified are no longer part of the EE program offering).
- Engaged with the Southwest Detention Center[42] in the City of Murrieta to identify energy efficiency opportunities; specifically, for exterior lighting measures throughout the site, and for Heating, Ventilation and Air Conditioning (HVAC) measures in the facility's central plant.

3. County of San Bernardino Energy Efficiency Partnership

1. Program Description

The County of San Bernardino Partnership Program is a local government partnership comprised of the County of San Bernardino, Southern California Edison (SCE), and Southern California Gas (SCG). The program is designed to assist the County in identifying energy efficiency (EE) opportunities. The County can then increase energy efficiency in more facilities, reduce greenhouse gas emissions, increase renewable energy usage, protect air quality, and ensure that their communities are more livable and sustainable.

The Partnership focuses on installing measurable and persistent EE and conservation measures for the benefit of the County, its residents and businesses, the State of California, and California IOU ratepayers. Partnership activities focus specifically on implementing EE measures in municipal facilities. The Partnership establishes energy savings goals through county-identified projects, funded by incentives and technical assistance.

[42] AKA the Cois M. Byrd Detention Center.

2. Strategies Implemented in 2018

In 2018, the Partnership team:

- Met on a monthly basis to identify EE opportunities within the County, with participation from multiple County departments. This led to potential lighting projects for three detention centers.
- Continued to help the County identify projects that have paybacks of less than three years.
- The program achieved over 20,000 kWh net in EE savings in 2018.

C. Southern California Regional Energy Network

1. Southern California Regional Energy Network Fiscal Oversight Partnership

1. Program Description

The Southern California Regional Energy Network (SoCalREN) Fiscal Oversight Partnership was approved as a pilot in the 2013-2015 Program Cycle, with Los Angeles (LA) County as the lead administrator and was authorized in 2015 to continue operating as a REN through 2016-2017. Subsequently, on June 6, 2018, the Commission approved SoCalREN's 2018-2025 Energy Efficiency Rolling Portfolio Business Plan.[43] A joint agreement between SCE, SoCalGas, and SoCalREN, with SoCalGas as the lead administrator, defines the SoCalREN Partnership, through which the IOUs provide fiscal oversight for the program but do not directly manage it.

In 2018, SCE worked cooperatively and collaboratively with SoCalGas and SoCalREN to coordinate complementary services — technical assistance audits, project development, incentive applications, OBF, and financial impact analysis — and create a positive, successful experience for customers and ratepayers.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the SoCalREN Partnership:

- SCE, SoCalGas, and SoCalREN worked together to develop a Joint Cooperation Memo (JCM), as required by D.18-05-041, which details SoCalREN's 2019 programs, SCG and SCE's comparable 2019 programs, and the coordination among the Program Administrators (PAs) in overlapping service territories. The JCM was approved on August 31, 2018.
- Partnership committees continued meeting, which facilitated discussion and resolution of issues:
    - The IOU-SoCalREN Coordinating Committee met quarterly to discuss

[43] Decision Addressing Energy Efficiency Business Plans, D.18-05-041.

overarching and strategic issues

- The IOU-Southern California Public Agency Program[44] Technical Committee met monthly to discuss coordination of core program activities to minimize customer and ratepayer confusion, and
- Additional working meetings were conducted as needed to coordinate and support implementation of Southern California Regional Energy Networks Residential, Finance, and Public Agency Programs.

The Partnership also:

- On a monthly basis, reviewed and processed for payment all program implementer invoices forwarded through SoCalREN for work performed in 2017-2018, and participated in working meetings with LA County's financial team to resolve invoice issues within 15 days of receipt of any monthly invoice package.
- Maintained a database that confirms customer account validation, past participation, and contractor performance, and stores project data for reporting purposes.
- Revised the SoCalREN Public Agency Coordination Plan to streamline coordination of SCE's individual core program activities and third-party offerings to minimize customer and ratepayer confusion when working with SoCalREN.
- Amended the contract between SCE, SoCalGas, and SoCalREN to extend the funding period through 2018.
- Continued to have monthly statewide Multifamily Working Group meetings to ensure IOU alignment with SoCalREN.
- Actively participated in technical meetings and coordinated monthly subprogram meetings.

[44] Formerly known as Southern California Regional Energy Center or SoCalREC. SoCalREC should not be confused with SoCalREN.

D. Institutional and Government Core Energy Efficiency Partnerships

The Institutional and Government Energy Efficiency Partnership Program (IGPP) is an umbrella program comprising four (4) Statewide subprograms, including partnerships with:

- California Community Colleges (CCC)
- California University Systems (UC and CSU)
- California Department of Corrections and Rehabilitation (CDCR), and
- State of California Government.

The program's objective is to reduce energy usage through facility and equipment improvements, shared best practices, education, and training. The IGPP model raises awareness of energy consumption and efficiency, builds resources and skills, and delivers energy services for deep energy savings. To reduce peak demand and create energy savings in existing facilities, the Partnership team provides core program coordination to integrate SCE programs and services and works with our Partners' staff to develop a pool of retrofit, new construction, and retrocommissioning projects for implementation.

1. California Community Colleges Energy Efficiency Partnership

1. Program Description

The California Community Colleges / Investor Owned Utility (CCC/IOU) Energy Efficiency Partnership is a unique, statewide program to achieve immediate and long-term energy savings and peak demand reduction within California's higher education system. The statewide incentive funding was used to maintain the processes and framework established in previous program cycles for sustainable, comprehensive energy management at campuses served by California's four IOUs.

The program has a hierarchical management structure to ensure successful implementation. The Management Team meets quarterly to conduct business at the management level, and the Executive Team meets quarterly to discuss overall program status and policy issues. The Partnership also focuses heavily on outreach efforts in several areas, including:

1. Development of a comprehensive list of technologies, project types, and offerings to be used by team members during campus visits to help generate project ideas.
2. Evaluation of new project technologies for suitability in the Community College market.
3. Planning and participation in CCC conferences and regional Campus Forums.

2. Strategies Implemented in 2018

i. Administrative Successes:

- The Partnership held quarterly Management Team and Executive Team meetings to discuss overall program status, initiatives, and policy issues. In addition, a joint Executive / Management Team meeting was held in December, with plans to hold future joint meetings twice a year in 2019.
- In early 2018, then program restructured the Management Team to streamline meetings by adding IOU Account Representatives in attendance to provide "boots on the ground" perspective to the meetings
- The Proposition 39 Program continues to be very successful with over 937 energy projects funded (approximately 566 of which were installed and closed out by the end of 2018). These projects result in annual energy and therm savings, saving the CCCs $20.7 million per year in reduced energy costs system-wide.
- The team actively tracked project savings data in a database tracking tool and continued to create regular reports showing the overall status of the program and providing forecasts relative to goals. These reports were reviewed by both Executive and Management Team members on an ongoing basis.

ii. Retrofit Projects Implemented:

- Worked closely with the CCC Chancellor's Office to develop a process to integrate the resources and infrastructure of the Partnership into the CCC, and to successfully implement and monitor hundreds of Prop 39 projects across the State. Implemented a revised monitoring-based commissioning (MBCx) process based on CPUC-requested changes to the program. These projects were implemented using FY 2016-2017 and 2017-2018 Prop 39 funding and built a project pipeline for FY 2018-2019 funding.
- Committed year 5 Proposition 39 (Prop 39).[45]
- Continued SCE's support of the CCC Prop 39 Program, which included hands-on services from Business Customer Division (BCD) Account Reps and the Partnership team:
  - Providing funds for enhanced outreach
  - Developing projects, and
  - Providing technical support for the 28 districts containing 46 campuses in SCE's service territory.

[45] *See* the California Clean Energy Jobs Act of 2012 (Proposition 39) which funds eligible energy efficiency efforts in schools, *available at* https://www.cde.ca.gov/ls/fa/ce/.

iii. Education and Outreach:

- The Management Team participated in five CCC conferences, such as the California Higher Education Sustainability Conference and the Community College Facilities Coalition Conference, to reach a diverse audience of facilities, business officers, administration, and board members.
- The team participated in Northern and Southern California quarterly Campus Forums to provide regional informational workshops targeted towards campus facilities and energy managers.
- Outreach members conducted campus meetings with Facilities and O&M staff to review project opportunities and manage project development efforts, both on site at the colleges and while participating in the CCC Association of Chief Business Officials (ACBO) Facilities Task Force quarterly meetings.

2. California Dept. of Corrections and Rehabilitation (CDCR) EE Partnership

1. Program Description

The CDCR Partnership is a statewide program designed to achieve immediate and long-term peak energy demand savings and establish a permanent framework for sustainable, comprehensive energy management programs at CDCR institutions served by the IOUs. Through statewide coordination, the four IOUs work with the Energy, Sustainability and Infrastructure Section (ESIS, under the Facility Planning, Construction and Management [FPCM] Division of CDCR) and with their contracted Energy Service Companies (ESCOs) to ensure implementation of projects that maximize energy savings opportunities in a cost-effective manner. Complementing this are education and outreach efforts for prison facilities operations and maintenance staff to adopt best EE and DR practices and support CDCR's pursuit of all types of financing to fund a robust pipeline of projects with deep energy savings.

2. Strategies Implemented in 2018

i. Administrative Successes:

- Regular management team meetings (every 4 weeks) and executive team meetings (quarterly) have been key to identifying and managing projects, and to proactively addressing any challenges the program may face.
- The CDCR and the IOUs created a master schedule and prioritization list of projects based on EE audits performed by the IOUs in prior program years.
- The Partnership Program Administration Manager (PAM) continues to coordinate between the IOUs and CDCR through regular meetings to ensure that:
  - Project documentation is shared as needed
  - Projects are tracked

- Project momentum is maintained
- New project approaches are identified, and
- Customer concerns and support issues are addressed in a coherent and sympathetic fashion.

ii. Retrofit Projects:

- The CDCR issued a Notice-to-Proceed on two projects slated to be completed in 2019: Ventura Youth Correctional Facility and the California Institute for Women.
- While the CDCR did not complete projects in SCE's service territory in 2018, several projects are in the pipeline for 2019 and beyond based on the master schedule and prioritization of EE projects.
- SCE created a single-measure solution code approach to ensure that the CDCR will be able to retrofit all exterior lighting based on their operational priorities rather than on Title 24 (T24) code compliance.

iii. Education and Outreach:

- To assist CDCR in rebidding its current Energy Services Company (ESCO) pool; the IOUs provided ongoing training around changes to IOU financing options, enhanced incentives, rebates, and the on-bill financing processes.

3. State of California Energy Efficiency Partnership

1. Program Description

The State of California Energy Efficiency Partnership is a statewide program designed to achieve immediate and long-term peak energy demand savings and establish a permanent framework for sustainable, comprehensive energy management programs at state-owned facilities served by California's four large IOUs. This is accomplished by collaborating with the Department of General Services (DGS) in establishing an Energy Services Company (ESCO) pool to help facilitate implementation of EE projects that will achieve both immediate EE savings and long-term sustainability. The California Department of Finance Energy$Mart Program provides financing for EE projects.

2. Strategies Implemented in 2018

i. Administrative Successes:

- The Partnership continues to attend the meetings of the State of California's Sustainable Building Working Group (SBWG) of agency sustainability managers, and to assist the SBWG with its task of planning and implementing all aspects of the Governor's Executive Order B-18-12 and the Green Building Action Plan.

- The Partnership continues to support the DGS Statewide Energy Retrofit program by providing:
    - Technical assistance to influence projects in development and maximize energy savings, and
    - Incentive funds to help offset the projects' cost.
- The Partnership Program Administration Manager (PAM) continues to coordinate between the IOUs and the DGS through regular meetings to ensure that:
    - Project documentation is shared as needed
    - Projects are tracked
    - Project momentum is maintained
    - New project approaches are identified, and
    - Customer concerns and support issues are addressed in a coherent and sympathetic fashion.
- The Partnership continues its regional level approach to identifying EE opportunities as a parallel effort alongside the DGS Statewide Energy Retrofit Program for project sourcing. This approach targets facility-level project contracting and implementation.

ii. Retrofit Projects:

- In 2018, the IOUs and DGS successfully spearheaded a working group to address Savings by Design participation barriers for DGS buildings. This resulted in the DGS updating its new construction contract language to better align the DGS project funding process with the IOU incentive structure.
- The Partnership has provided extensive outreach and technical support to agencies including the California Highway Patrol (CHP), the Department of Motor Vehicles (DMV), and the Department of Parks and Recreation (DPR).
- SCE continued to offer the Direct Install Program in hard-to-reach areas for the Department of Fish and Game and the Department of Water Resources.

iii. Education and Outreach:

In 2018, the Partnership:

- Supported the DGS by training their Energy Services Company (ESCO) pool on IOU program requirements and processes, ensuring that Investment Grade Audits (IGAs) and project scopes include EE elements that qualify for funding assistance — through enhanced OBF, enhanced incentives, or both — and that the calculations quantifying energy savings are accurate and defensible.
- As mentioned above, attended Sustainable Building Working Group (SBWG) meetings in a supporting role to ensure that agency needs regarding energy data for

benchmarking are met. The program also uses these meetings as a platform for agency outreach.

4. University of California / California State Universities (UC / CSU) EE Partnership

1. Program Description

The UC / CSU Energy Efficiency Partnership is a unique, statewide program which includes California's four Investor Owned Utilities, PG&E, SCE, SoCalGas, and SDG&E, as well as the recent addition of the Los Angeles Department of Water and Power (LADWP), in partnership with the University of California (UC) and the California State University (CSU) systems. The program generates energy savings by identifying and implementing EE projects and supporting the projects through training and education. The Partnership offers three main project types: retrofit, monitoring-based commissioning (MBCx), and new construction. Since its establishment in 2004, the Partnership has provided approximately 65 MW in demand reduction and delivers approximately 470 million kWh/year and 25 million therms/year in energy savings.

2. Strategies Implemented in 2018

i. Administrative Successes:

- With the assistance of and input from the University of California, the IOUs continued implementation and development of various program offerings and High Opportunity Project or Programs (HOPPs), including a Whole Building program consistent with SB 350, AB 802, and AB 1150 to demonstrate measured savings against existing conditions, pay for performance, and a comprehensive whole-building approach to building efficiency.
- Partnership Teams worked together to gather input from UC and CSU regarding the statewide approach to be implemented in 2020.
- The Partnership planned several administrative changes, such as offering Training and Education Programs directly through the IOU Energy Education Centers, rather than through consultants hired by the Partnership.
- A new UC System-wide energy policy was implemented with the help of the Partnership, requiring 2% annual energy reductions per campus. Additionally, an Energy Use Intensity (EUI) Dashboard was created to track UC campuses' progress towards meeting this requirement.
- The Program Administration Manager (PAM) began developing a new, more cost-effective and efficient project tracking database for the Partnership to replace the existing database.
- The integration of LADWP into the Partnership and the resulting collaboration between Investor Owned and Publicly Owned Utilities provided a working model for

the Public Sector in California to deliver truly comprehensive energy efficiency programs.

ii. Retrofit Projects:

- The Partnership focused widely on efforts surrounding normalized metered energy consumption (NMEC) in compliance with AB 802.
- In addition to NMEC projects, UC and CSU focused on addressing barriers to energy efficiency, continuing a second phase of UC's Million Lamps Challenge, and beginning work on a California Energy Commission (CEC) Grant to develop a Master Enabling Agreement for energy efficiency at UC and CSU campuses.
- In 2018, a significant volume of EE projects were delivered (completed): 52 Retrofit, MBCx, and New Construction projects at 16 different UC and CSU campuses, including UC Med Centers, across the state. More projects are underway to be completed in future years.

iii. Education and Outreach:

- An Energy Managers' Meeting, hosted by the Partnership as a post-conference workshop of the California Higher Education Sustainability Conference, provided an interactive session for UC and CSU energy managers to share best practices, lessons learned, and other practical advice.
- The Training and Education scholarship program continued, granting over $50,000 in funding to UC and CSU campuses to attend the EE-related training(s) of their choice, as approved by the Partnership.
- A highlight video and web-based case studies were developed for the 2018 Best Practice Awards.
- The Training and Education Team held a workshop at UC Santa Cruz, focusing on how to use whole-building energy performance targets throughout a building's design, construction, and operation.
- Two workshops were held at Cal Poly San Luis Obispo and UCSF, introducing energy managers to the basic fundamentals of SkySpark, a building analytics software widely used across both UC and CSU systems.
- Two workshops were held at UC Irvine and UCSF, comparing and exploring new developments in the California Green Building Standards Code (CALGreen) and the US Green Building Council (GBC) Leadership in Energy and Environmental Design (LEED) v4.
- The Partnership hosted two webinars for Energy Managers to present current projects and initiatives taking place on their campuses.

5. Public Sector Performance Based Retrofit Program (HOPPs)

1. Program Description

The Public Sector Performance Based Retrofit Program has been designed to leverage smart meter investments while bringing the benefits of Normalized Metered Energy Consumption (NMEC) to Public Sector buildings. NMEC represents the next progression in energy efficiency by measuring, tracking, and incentivizing savings delivered at the meter. SCE will target buildings in the Public Sector that are most challenged in addressing meaningful energy savings because of being susceptible to delayed improvements and postponement of repairs to equipment. This program complements the additional goals of the targeted entities by allowing participants to track savings and to ensure the performance of their long-term energy efficiency investments and supports their economic goals and climate action plans. The shift to NMEC has the potential to yield greater and more permanent savings, making energy efficiency a resource. By aligning with climate and cost-reduction goals, the Program can be a valued strategy for helping Public Sector entities meet their sustainability goals. SCE has developed this Program to eliminate barriers, improve transparency, ensure persistence, and increase overall energy savings in the Public Sector.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies:

- Coordinated with Southern California Gas to develop a comprehensive offering to Public Sector customers and develop shared project documentation for Commission Staff review.
    - University of California Santa Barbara engaged as the first participant and will complete the project in 2019.
- Engaged numerous external stakeholders to present the benefits of NMEC and educate interested participants regarding the difference between NMEC and the traditional deemed and/or calculated program approaches.
- Provided a detailed overview of the technical aspects of the program to interested participants, including the necessity of creating a measurement and verification (M&V) plan to demonstrate the rationale for an aggregation and metering strategy.
- Provided potential participants with screening criteria to assist in identifying program-appropriate buildings.
- Partnered with the Southern California Regional Energy Network (SoCalREN) to provide up-front project screening for Public Sector customers.
    - SoCalREN also provided audit support for participants who met initial program eligibility requirements.

- Through SCE's outreach and technical support, and in collaboration with SoCalREN, SCE received more than 40 applications for the program.
- Continued to evaluate program applicants' projects to determine if each project utilized a comprehensive approach, including retrofit, retrocommissioning, and optimization, to reach the minimum 10% energy reduction threshold.
- Developed process for reviewing historical meter data for identified sites to validate that energy consumption has basic correlation with weather data.

XII. 2018 Energy Efficiency Program Overview – Third-Party Programs

Third Party programs deliver electric savings and demand reduction through consultants (**implementers**) in a wide variety of customer segments defined by North American Industry Classification System (NAICS) codes within SCE's service territory. Integral to the programs are site assessments and reports to identify energy efficiency (EE) savings opportunities and provide recommendations to program participants, together with technical assistance and incentives and rebates to support the installation of the recommended equipment. Consultants oversee all program activities from marketing and recruitment through installation and verification of EE and/or demand response (DR) measures and incentive payment documentation. As part of the verification process, consultants also perform post-installation on-site inspections to confirm proper measure installation and refine energy savings calculations.

The incentive rates, incentive limits, and statewide program requirements are similar to those of Pacific Gas & Electric (PG&E) and San Diego Gas & Electric (SDG&E) within their service territories. Program packaging and individual offerings may vary slightly between the utilities.

A. Comprehensive Manufactured Homes Program (CMHP)

1. Program Description

The Comprehensive Manufactured Homes (CMHP) Program is a direct install program designed to provide comprehensive EE services to mobile home customers, in collaboration with local communities seeking to maximize service to their residents. The program, implemented in coordination with the Southern California Gas Company (SoCalGas), installs energy-efficient products at no charge in mobile home dwellings and the common areas of mobile home parks.

The target customers for this program are mobile homes and mobile home parks, which are difficult to reach through other EE programs. These mobile home customers are typically moderate- or fixed-income, elderly, retired, and/or disabled individuals. The program is designed to enhance EE knowledge and program participation in this market segment.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the CMHP program:

- Successfully integrated the smart programmable thermostat measure into the program's design and implementation. For many customers, this measure provided a first-time experience in using energy management technology. Upon completion of the installation, customers were provided with an overview of the thermostat and how to use it, as well as contact information for any additional questions they might have.

- Collaborated with SCE's Meter Conversion pilot to provide CMHP services to customers who were impacted by construction work required for meter conversion.
- Continued collaboration with SCE's and SoCalGas' Energy Savings Assistance (ESA) Program. CMHP technicians are certified to qualify and enroll customers into the ESA program for both IOUs. Leveraging this certification has allowed the program to provide both CMHP and ESA Program services to customers in a single visit, leading to increased customer satisfaction and reduced carbon emissions.

B. Cool Planet Program

1. Program Description

The Cool Planet program is a marketing, education, and outreach (ME&O) program geared toward SCE business customers, implemented by SCE and The Climate Registry (TCR). The program's main objective is to promote EE as the most immediate and cost-effective means to reduce greenhouse gas (GHG) emissions, and to help SCE and the State of California meet their EE goals by adding climate change mitigation to the program's marketing tool kit, which has traditionally focused on saving energy and money.

The program incentivizes business customers who have participated in SCE's IDSM programs with an energy and carbon-management benefits package, which includes TCR membership to help measure and manage GHG emissions, a publicity campaign to communicate environmental leadership and share successes with the public, and a "Climate Efficient" certificate. The help provided to customers to complete a high-quality GHG inventory captures any energy and carbon reductions already made, and identifies new inefficiencies within customers' complete, operational GHG profiles.

TCR is a non-profit organization which represents California's (and most of North America's) official voluntary GHG registry. TCR assists its member organizations with making an accurate, comprehensive GHG inventory, offering technical help, GHG accounting software, a "best practices" database, and a recognition program for members who set and achieve carbon reduction goals.

2. Strategies Implemented in 2018

In 2018, SCE implemented the following strategies for the Cool Planet Program:

- Organized an awards ceremony to acknowledge organizations' efforts to manage GHG reduction. The event, held at Sony Pictures Studios, was well-received by all the attendees, including the award recipients and local officials. Dr. J.R. DeShazo, director of the Luskin Center for Innovation and Chair of the Department of Public Policy at the Luskin Center at UCLA, provided keynote remarks, and awardees were welcomed by representatives from the City of Culver City. The 2018 Cool Planet Award winners were:

  - City of Hawthorne (Los Angeles County)
  - City of Orange (Orange County)
  - City of Murrieta (Riverside County)
  - City of Rancho Cucamonga (San Bernardino County)
  - City of Corona (Riverside County)
  - City of Santa Monica (Los Angeles County)
  - University of California at Santa Barbara
  - Inland Empire Utilities Agency
  - Niagara Bottling, LLC, and
  - TowerJazz Semiconductor.

- Continued to educate SCE staff and customers about climate policies, mitigation strategies, and best practices through presentations and distributed collateral.
- Awarded Cool Planet benefits to 11 Local Governments that attained Partnership Gold, Silver, or Platinum Tier status:
  - City of Manhattan Beach – Platinum
  - City of La Habra – Gold
  - City of Santa Monica – Silver
  - City of Rancho Mirage – Silver
  - City of Simi Valley – Silver
  - County of Riverside – Silver
  - City of South El Monte – Silver
  - City of Palm Springs – Silver
  - County of Ventura – Silver
  - City of Long Beach – Silver, and
  - City of Huntington Beach – Silver.
- Continued to see increased participation in demand response (DR) programs and TCR membership. TCR added DR program participation to its eligibility requirements to encourage TCR enrollment of customers who do not qualify under EE eligibility requirements.
- 14 members either joined or renewed their membership in TCR through marketing and outreach efforts:
  - Albertsons Companies
  - City of Manhattan Beach
  - City of La Habra
  - City of Santa Monica
  - City of Rancho Mirage
  - City of Simi Valley
  - County of Riverside
  - City of South El Monte
  - City of Palm Springs
  - County of Ventura

- City of Long Beach
- City of Huntington Beach
- Inland Empire Utilities Agency, and
- Orange County Transportation Authority.

- Piloted the Water-Energy GHG Guidance resource for the following SCE business customers, in response to their requests for a resource to help them accurately determine the GHGs associated with energy embedded in water:
  - California American Water
  - City of Brea
  - City of Huntington Beach
  - City of Pomona
  - City of Santa Barbara
  - City of Santa Monica
  - City of Ventura
  - Cucamonga Valley Water District
  - Eastern Municipal Water District
  - Golden State Water Company
  - Inland Empire Utilities Agency
  - Irvine Ranch Water District
  - Metropolitan Water District
  - Suburban Water
  - Walnut Valley Water District
  - West Basin Municipal Water District, and
  - Western Municipal Water District.

C. Healthcare Energy Efficiency Program

1. Program Description

The Healthcare Energy Efficiency Program (HEEP) addresses the complex issue of this industry's hesitancy in adopting EE behaviors, initiating facility upgrades, and achieving significant, cost-effective energy savings. HEEP is a retrofit program that provides comprehensive EE services and establishes a framework for sustainable, long-term, comprehensive energy management programs at healthcare facilities served by SCE. A third-party consultant, Willdan Energy Solutions, provides audit and consulting services.

The Healthcare Innovative Technology EE Program (HITEEP), a retrofit subprogram described in SCE's 2013-2014 Healthcare Program Implementation Plan filing, serves small and mid-size healthcare customers. This subprogram primarily targets medical office buildings and acute care facilities that experience low levels of support from the Office of Statewide Health Planning and Development (OSHPD), and offers customized measure solutions, deemed measure solutions, and DR solutions for these facilities' energy management needs. HITEEP provides complete audit and project identification services, in

addition to incentives and fixed-unit-price measures (with or without a customer copayment) to qualified customers.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer, Willdan, to increase the likelihood that large EE projects employing newer technology will produce viable savings opportunities.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

D. Data Center Energy Efficiency Program

1. Program Description

The Data Center Energy Efficiency Program (DCEEP) addresses the complex issues of this industry's hesitancy in adopting EE behaviors, initiating facility upgrades, and achieving significant, cost-effective energy savings. DCEEP is a comprehensive retrofit program targeting small, medium, and large data centers as well as other information technology (IT)-related facilities. The Program provides an integrated approach by delivering EE upgrades to IT equipment and optimizing cooling-related systems. A third-party consultant, Willdan Energy Solutions, provides audit and consulting services.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer, Willdan, to increase the likelihood that large EE projects employing newer technology will produce viable savings opportunities.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

E. Lodging Energy Efficiency Program

1. Program Description

The Lodging Energy Efficiency Program (LEEP) is a comprehensive EE retrofit program that delivers multi-measure retrofits and retrocommissioning to small, medium, and large lodging facilities. The Program provides a comprehensive approach to EE specifically tailored to the hotel and motel market segment, including spas and resorts, within SCE's service territory. The Program also promotes DR opportunities to customers in this market segment. A third-party consultant, Willdan Energy Solutions, provides audit and consulting services.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.

- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer, Willdan, to increase the likelihood that large EE projects employing newer technology will produce viable savings opportunities.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

F. Cool Schools Program

1. Program Description

The Cool Schools Program is designed to overcome cost constraints and trade-offs that would otherwise impede or halt EE upgrades at public schools. In general, public schools considering EE measures face the dilemma of choosing between consuming a higher proportion of capital budgets on energy-efficient but more expensive equipment, and using more energy to power less efficient, but also less expensive, equipment. Cool Schools targets schools that present the greatest potential for energy savings resulting from the purchase and installation of highly efficient cooling equipment. A key value of the program is the penetration of a difficult, hard-to-reach market sector to encourage the installation of EE measures.

2. Strategies Implemented in 2018

SCE shifted its focus in this program from project development to bringing existing projects to completion.

G. Commercial Utility Building Efficiency Program

1. Program Description

The Commercial Utility Building Efficiency (CUBE) Program targets privately-owned commercial office and retail buildings with an equipment incentive-centered plan in order to introduce both EE and DR measures that have traditionally had low penetration in

the commercial office market. The program implementer's engineering staff provides comprehensive energy audits and financial projections and draws upon the internal and external funding sources of the Energy Services Company (ESCO) model,[46] in a market where lack of capital has traditionally been a significant barrier to the upgrading of capital equipment. This allows for extended repayment periods, positive cash flows, and low-to-zero net up-front cost. The program also provides:

- Comprehensive EE services to commercial multi- and single-story office buildings (on a first-come, first-served basis), and
- A complete turnkey program, overseeing all program activities, including marketing, recruitment, installation and verification of EE and DR measures, and incentive or rebate payment.

2. Strategies Implemented in 2018

SCE shifted its focus in this program from project development to bringing existing projects to completion.

H. Schools Energy Efficiency Program

1. Program Description

The Schools Energy Efficiency Program (SEEP) brings EE retrofits to public school districts, private schools, and universities. The program performs energy audits to identify all EE and DR opportunities and delivers subsidized implementation of no-cost lighting retrofit measures. The program also offers EE education to school staff and student leadership.

2. Strategies Implemented in 2018

- Continued outreach to schools and universities through SCE account representatives.
- Continued to build relationships with school districts and university staffs to create interest in program participation.
- Consulted with potential customers on ways to maximize their participation in the program while receiving the full benefit of funding provided by Proposition 39,[47]
- Leveraged the use of referrals to reach and educate customers not previously contacted.
- Contacted customers who had been audited in previous program cycles to identify unrealized opportunities and to advise them of new funds becoming available.

[46] The ESCO model guarantees savings for a set period of time in exchange for payment from the energy cost savings.
[47] The California Clean Energy Jobs Act of 2012, which funds eligible energy efficiency efforts in schools.

- Provided information to schools interested in the Title 24 Exemption offered by the Division of the State Architect (DSA).
- Introduced newer lighting technology measures, using a cost-share incentive delivery strategy to leverage Prop 39 funds and positively impact the savings-to-investment ratio (SIR) of the schools participating in Prop 39.

I. Food & Kindred Products Program

1. Program Description

The Food & Kindred Products Program delivers energy savings and reduces energy demand through program offerings including but not limited to EE facility audits, project design and engineering support, project implementation support, vendor review, measurement and verification, and payment of incentives for the installation of EE measures. The program targets qualifying customers in small to large food industry-related companies, such as producers of bread, breakfast cereals, and sugar, as well as providers of cold storage.

2. Strategies Implemented in 2018

- Continued outreach through SCE account executives to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Provided SCE account executives with guidance on program policy that may affect their assigned customers to help them engage customers in the program.
- Participated in the California Technical Forum on Energy Efficiency, supporting statewide measure consolidation and eTRM development.
- Participated in the Track 2 Working Groups (Custom Process and Industry Standard Practice).
- Provided technical resources to involved stakeholders and participated in weekly and monthly stakeholder meetings with the California Efficiency + Demand Management Council (CEDMC). This input from stakeholders informed California Energy Efficiency Coordinating Committee (CAEECC) engagement with the CPUC and its Energy Division.
- In SCE's service territory, engaged with many local vendors and contracted with other consultants to assist with project implementation in the Central Valley and adjoining areas.
- Exhibited program displays in a variety of industry trade shows and association events, such as World Ag Expo, Southern California Green Facilities Expo, the Association of Energy Engineers (AEE) Annual Conference, and SCE Water Conferences hosted at the Irwindale and Tulare Energy Education Centers.

- The program implementer, Lockheed Martin Corporation, continued to expand its offerings in refrigeration and RCx by engaging subcontractors with subject matter expertise to assist the industry in achieving deep energy savings, and by facilitating ongoing education and training.
- Used the Project Influence Job Aid to improve the quality of influence evidence for all submitted projects
- Implemented an early screening process for project development to increase the likelihood that large EE projects will produce viable savings opportunities.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

J. Primary and Fabricated Metals Program

1. Program Description

The Primary and Fabricated Metals Program delivers energy savings and reduces energy demand through program offerings including, but not limited to, EE facility audits, project design and engineering support, project implementation support, vendor review, measurement and verification, and incentives for the installation of EE measures. The program targets qualifying customer businesses and facilities in the primary and fabricated metals and industrial gas[48] manufacturing industries within SCE's service territory.

2. Strategies Implemented in 2018

- Engaged industry subject matter experts to review opportunities for EE projects, including review of baselines, variable speed drives, pumping soft starts, etc.
- Continued outreach through SCE account executives to help customers identify eligible EE measures and provide support services through site assessments and on-site performance measurement.
- Provided SCE account executives with guidance on program policy that may affect their assigned customers to help them engage customers in the program.
- Attended and engaged in the California Technical Forum on Energy Efficiency, representing SCE for the Track 1 (Preponderance of Evidence and Baselines) and Track 2 (Custom Process and Industry Standard Practice) Working Groups.
- Provided technical resources to impacted stakeholders and participated in weekly and monthly stakeholder meetings with the California Efficiency + Demand Management Council (CEDMC). This input from stakeholders informed California Energy Efficiency Coordinating Committee (CAEECC) engagement with the CPUC and its Energy Division.

[48] Industrial gases are a group of commercially manufactured gases sold for uses mainly in industrial processes such as steelmaking, oil refining, medical applications, fertilizer, and semiconductors.

- Engaged in the California Technical Forum by providing support to Statewide Working Groups with respect to:
  - Continued development of the Electronic Technical Reference Manual (eTRM) Workplan, and
  - Development of technical position paper(s) related to eTRM to support measure consolidation for inclusion.
- In SCE's service territory, engaged with many local vendors and contracted with new consultants to assist with project implementation in the Central Valley and adjoining areas.
- Attended and engaged in a variety of industry trade shows and association events, such as the California Metals Conference, Southern California Green Facilities Expo, and Association of Energy Engineers (AEE) Annual Conference.
- The program implementer, Lockheed Martin Corporation, continued to expand expertise in process cooling and retrocommissioning (RCx) as it relates to metal process operations, by engaging subcontractors with subject matter expertise to assist the industry in achieving deep energy savings, and facilitating ongoing education and training.
- Used the Project Influence Job Aid to improve the quality of influence evidence for all submitted projects
- Implemented an early screening process for project development to increase the likelihood that large EE projects will produce viable savings opportunities.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

K. Nonmetallic Minerals and Products Program

1. Program Description

The Nonmetallic Minerals and Products Program provides a cost-effective process for improving the energy efficiency of large industrial customers, among which are cement production plants and other non-metallic mineral miners or processors, aerospace and other transportation vehicle manufacturing, and wood and paper manufacturing. The program provides comprehensive assistance in identifying and implementing EE improvements at individual sites.

2. Strategies Implemented in 2018

- Continued outreach through presentations to trade groups, industry functions, and conferences serving local manufacturers.

- Continued outreach through SCE account executives to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Expanded collaborative efforts with existing customers to leverage experience with successful EE project implementation.
- Working from Strategic Energy Management (SEM) strategies previously created for customers, developed additional, innovative new EE projects for those customers to match their wants and needs as they arise.
- The Program implementer worked with customers to accelerate the project development process to meet the December 31, 2018 deadline for new Project Feasibility Studies (PFS) in order to provide as much support as possible for customers to implement projects in 2019 and 2020.
- Continued the use of the Project Influence Job Aid to improve the quality of influence evidence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer to increase the likelihood that large EE projects using newer technology will produce viable savings opportunities.
- Implemented an Effective Useful Life Simple Payback Tool to screen out projects and measures with payback periods that would exceed their useful life.

L. Comprehensive Chemical Products Program

1. Program Description

The Comprehensive Chemical Products Program delivers reliable electric energy savings and demand reduction for the chemical and allied products, transportation equipment manufacturing, and beverage industries throughout SCE's service territory. The program:

- Oversees activities including marketing, recruitment, installation and verification of EE measures, and incentive or rebate payment
- Coordinates efforts of industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings
- Performs on-site audits to identify and prioritize potential energy-efficiency projects, and
- Performs financial analyses to assist customers in understanding and justifying project expenditures, help them understand available incentives, assist them in completing the necessary paperwork, and refine energy savings calculations.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

M. Comprehensive Petroleum Refining Program

1. Program Description

The Comprehensive Petroleum Refining program targets all the major petroleum refineries and petroleum product manufacturers in SCE's service territory to produce long-term, cost-effective electrical energy savings. The program achieves this goal by implementing a comprehensive set of calculated and deemed approaches to address every major electrical operation within the oil refining and petroleum refining industry. The program:

- Performs on-site audits to identify and prioritize potential energy efficiency projects.
- Performs financial analyses to help customers understand and justify project expenditures, understand available incentives, complete the necessary paperwork, and refine energy savings calculations.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.

- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

N. Oil Production Program

1. Program Description

The Oil Production program targets oil production facilities in SCE's service territory with the goal of producing long-term, cost-effective electrical energy savings by replacing or retrofitting existing motor and pumping systems with more efficient systems. The target market consists of independent oil producers and their production wells. The program:

- Performs on-site audits to identify and prioritize potential energy-efficiency projects, and
- Performs financial analyses to help customers understand and justify project expenditures, understand available incentives, complete the necessary paperwork, and refine energy savings calculations.

2. Strategies Implemented in 2018

- Continued outreach through SCE's Business Customer Division (BCD) team to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Coordinated efforts of EE project stakeholders including industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.

- Acted as a trusted advisor and resource for industrial end-use customers to ensure excellent customer service, continued engagement, ongoing program participation, and implementation success.
- Applied a comprehensive approach that optimizes energy savings and peak demand reduction, while helping customers identify opportunities for demand response, reduced air pollutant and greenhouse gas emissions, efficient water use, and distributed renewable generation.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence of influence for all submitted projects.
- Implemented an early screening process for project development between SCE and the implementer.
- Implemented an Effective Useful Life (EUL) Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

O. IDEEA 365 Program[49]

1. Program Description

The intent of the statewide IDEEA 365 Program is to find, fund, and foster the best energy efficiency (EE) or integrated demand side management (IDSM) delivery approaches available in the marketplace and discovered through outreach events. The IDEEA 365 Program is designed to:

- Encourage innovative concepts
- Reduce and eliminate market barriers
- Achieve energy savings and demand reduction for both the short term — the years in which projects are funded — and the long term, and
- Help SCE's Customer Programs & Services (CP&S) Division achieve its energy savings targets, both annual and cumulative, as set forth by the CPUC.

2. 2018 Highlights

- Continued outreach efforts through announcements on the CPUC's PEPMA[50] website.
- Kept the program open year-round to encourage new applications.
- Received seven inquiries and three abstract submittals. After careful review by SCE subject matter experts (SMEs), none of the three abstracts were selected for a pilot for various reasons, including high-cost implementation, low energy savings forecasts, or lack of innovative technology.

[49] IDEEA = Innovative Design for Energy Efficiency Activities.
[50] Proposal Evaluation and Proposal Management Application.

- The "Pump Up Program" selected in 2016 began its pilot program in mid-2017. To date, the pilot is delivering excellent results in terms of energy savings to SCE agricultural customers and water agencies. The program continues as a pilot but is expected to transition into SCE's core third-party offerings in the future.

P. Mid-Sized Industrial Customer Energy Efficiency (MICE) Program

1. Program Description

The Mid-Sized Industrial Customer Energy Efficiency (MICE) Program provides in-depth energy assessment services to medium-size industrial customers in order to identify measures and projects that the customer might not otherwise implement. Due to their size, many customers are not adequately served by the Energy Services Company (ESCO) market, and their internal resources lack the time and expertise to identify potential measures and projects. When internal resources can identify potential measures and projects, they are often confronted with the problem of developing a plan that the customer's management is willing to spend capital on.

The MICE Program closes the gap by providing customers with detailed, in-depth energy assessments which identify EE opportunities, accurately estimate potential savings and costs, and provide a path to implementation. The program has successfully enrolled and completed numerous projects and has transitioned into SCE`s core third party offering in 2018.

Q. Enhanced Retrocommissioning Program

1. Program Description

The primary objective of the Enhanced Retrocommissioning Program is to provide comprehensive IDSM solutions for customers by using advanced analytic tools to identify retrocommissioning opportunities in complex buildings, including large commercial offices, hospitals, and resorts. These solutions ensure that energy savings and demand reduction will persist over time. The technical services provided in the program assist customers in identifying energy optimization opportunities in their qualifying facilities and, along with program incentives, encourage the implementation of qualifying energy-saving and demand reduction measures.

2. Strategies Implemented in 2018

- Engaged industry professionals, contractors, and other local industry trade groups to identify new potential customers
- Continued working with the implementer to focus on project development and completion.
- Continued the use of the Project Influence Job Aid to improve the quality of evidence for influence upon all submitted projects.

- Implemented an early screening process project development process between SCE and the implementer to increase the likelihood that large EE projects utilizing newer technology will produce viable savings opportunities.
- Implemented an Effective Useful Life Simple Payback Tool to screen out projects and/or measures with payback periods that would exceed their useful life.

R. Water Infrastructure System Efficiency (WISE) Program

1. Program Description

The Water Infrastructure System Efficiency Program (WISE or "the Program") is a demand-side management (DSM) program designed to provide energy efficiency (EE) solutions to water production, distribution and treatment systems. WISE focuses on mid- to large-sized facilities and systems within SCE's service territory, targeting customers that include water agencies, special districts, and local government (LG) agencies that oversee water and wastewater treatment and pumping facilities and systems.

2. Strategies Implemented in 2018

i. Administrative Successes:

The Program team:

- Participated in bi-weekly progress meetings with SCE's Program Managers and Business Customer Division (BCD) Account Representatives
- On a monthly basis, reviewed and approved invoices and reported on activities, and
- Maintained the Subcontractor Management and Reporting Tool (SMART).

ii. Retrofit Projects:

- Performed preliminary program services for 36 customers
- Conducted Site Walks with seven (7) customers.
- Completed 12 energy assessments for five (5) customers with savings estimates of 3,253,707.25 kWh, 345.03 kW, and 3.08 Million Gallons per Year [MGY].
- Presented Project Feasibility Studies (PFS) to four (4) customers with savings estimates of 2,986,498.51 kWh, 296.65 kW, and 2.83 MGY.
- Submitted seven (7) projects for Project Approval with savings estimates of 4,982,637.20 kWh, 535.14 kW, and 4.72 MGY.

iii. Education and Outreach:

Implemented a marketing campaign as follows:

- 39 Customers and 91 Cities identified for the Program.
- Program Kick-Off Meetings with ten (10) Customers.

S. Third-Party Programs as Defined by D.16-08-019

In October 2016, the Commission issued Decision (D.) 16-08-019, *Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings*. In D.16-08-019, the Commission provided definitions for "statewide" and "third-party" as it pertains to future EE portfolio.

- For energy efficiency program purposes, "statewide" shall be defined as: A program or subprogram that is designed to be delivered uniformly throughout the four large Investor-Owned Utility service territories. Each statewide program and/or subprogram shall be consistent across territories and overseen by a single lead program administrator. One or more statewide implementers, under contract to the lead administrator, should design and deliver the program or subprogram.[51]
- For energy efficiency program purposes, the definition of a third-party program shall be as follows: To be designated as "third party," the program must be proposed, designed, implemented, and delivered by non-utility personnel under contract to a utility program administrator. Statewide programs may also be considered to be "third party" to the extent they meet this definition.[52]

In D.16-08-019, the Commission also established that *each utility program administrator shall still be required to outsource at least 20 percent of its program activity to third parties*.[53]

Then, in D.18-05-041, the Commission directs utilities to, at minimum, make third parties' use of utility account representatives optional and to track the number and proportion of third parties that forego this option. The utilities should include this information in their annual reports.[54]

In 2018, SCE started its third-party solicitation process but had not made any contractual commitments as of December 31, 2018. After SCE contracts with third-parties as part of the EE solicitation process, SCE will report on the number and proportion of third-parties that plan to use SCE's account representatives and those that forego the option and include that information in its Annual Report.

[51] D.16-08-019, Ordering Paragraph (OP) 5, page 109-110.
[52] *Id*., OP 10, p. 111.
[53] *Id*. OP 11, p. 111.
[54] D.18-05-041, OP 17, p. 185.

Appendix A – List of Acronyms or Abbreviations

Acronym or Abbreviation	Explanation
9-12	A WE&T program for high schools
AB	Assembly Bill
ABS	Automated Benchmarking System
A/C	Air conditioning
ACBO	Association of Chief Business Officials, California Community Colleges
ACCA	Air Conditioning Contractors of America
ACEEE	American Council for an Energy-Efficient Economy
AEE	Association of Energy Engineers
AGA	American Gas Association
AGs	Associations of Governments
AHAM	Association of Home Appliance Manufacturers
AHRI	Air Conditioning, Heating and Refrigeration Institute
AIACC	American Institute of Architects, California Council
aka	also known as
ALCS	Advanced Lighting Control System(s)
AMI	Automated (or Advanced) Metering Infrastructure
ARRA	American Recovery and Reinvestment Act [of 2009]
ASA	Appliance Standards Advocacy
ASAP	Appliance Standards Awareness Project
ASHRAE	American Society of Heating, Refrigerating, & Air-Conditioning Engineers
BAS	Building Automation Control Systems
BCA	Building Codes Advocacy
BCD	(1) Business Customer Division; (2) Business Customer Development
BEA	Business Energy Advisor
BES	Building Energy Simulation
BP	Business Plan
BPI	Building Performance Institute
BRO	Behavioral, Retrocommissioning and Operational
C&S	Codes and Standards
CAA	Customer's Authorized Agent (see **Trade Pro,** below)
CABEC	California Association of Building Energy Consultants

Acronym or Abbreviation	Explanation
CAEATFA	California Alternative Energy and Advanced Transportation Financing Authority
CAEECC	California Energy Efficiency Coordinating Committee
CAHP	California Advanced Home Program
CALBO	California Association of Building Officials
CALCTP	California Advanced Lighting Controls Training Program
CALGreen	California Green Building Standards Code
CalPlug	California Plug-Load Center
CalSPREE	California Statewide Programs for Residential Energy Efficiency
CalTF	California Technical Forum
CAP	Climate Action Plan
CARE	California Alternate Rates for Energy Program
CASE	Codes & Standards Enhancement Study
CBECC	California Building Energy Code Compliance
CBIA	California Building Industry Association
CCC	California Community Colleges [System]
cCR	Carbon Climate Registry
CCSE	California Center for Sustainable Energy
CDCR	California Department of Corrections & Rehabilitation
CEA	Certified Energy Analyst
CEC	(1) California Energy Commission; (2) Community Environmental Council
CEDMC	California Efficiency + Demand Management Council
CEESP	California Energy Efficiency Strategic Plan [*preferred acronym*]
CEI	Continuous Energy Improvement [Program]
CEP	Community Energy Partnership
CET	Cost-Effectiveness Tool
CEU	Continuing Education Unit
CF-1R	Form number, State of California Residential Compliance forms (2013 T24)
CFL	Compact Fluorescent Lamp
CHEEF	California Hub for Energy Efficiency Financing
CHERP	Community Home Energy Retrofit Project
CHPS	Collaborative for High Performance Schools
CIAG	Compliance Improvement Advisory Group
CLEO	Community Language Efficiency Outreach [Program]

Acronym or Abbreviation	Explanation
CLTC	California Lighting Technology Center
CMHP	Comprehensive Manufactured Homes Program
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COGs	Councils of Governments
CP&S	[SCE] Customer Programs & Services [Division]
CPUC	California Public Utilities Commission
CQM	Commercial Quality Maintenance
CQR	Commercial Quality Renovation
CRRC	Cool Roof Rating Council
CSE	Center for Sustainable Energy
CSI	California Solar Initiative
CSLB	Contractor State Licensing Board
CSS	Customer Service System
CSU	California State University [System]
CTA	Consumer Technology Association
CUBE	Commercial Utility Building Efficiency [Program]
CVAG	Coachella Valley Association of Governments
Cx	Commissioning (see also **RCx,** below)
CZ	Climate Zone
D&S	Demonstration and Showcase
DCEEP	Data Center Energy Efficiency Program
DCV	Demand Control Ventilation
DDB	DDB (Doyle Dane Bernbach) San Francisco
DEER	Database for Energy Efficient Resources
DER	Distributed Energy Resource
DG	Distributed Generation
DGS	[California] Department of General Services
DI	(a) Direct Install [Program] (b) Direct implementation
DLC	Design Lights Consortium
DOE	U.S. Department of Energy
DR	Demand Response
DS	See **D&S,** above

Acronym or Abbreviation	Explanation
DSA	[California] Division of the State Architect (part of **DGS**; see above)
DSM	Demand-Side Management
DWP	See **LADWP,** below
EA	Energy Advisor
EAP	(1) Energy Action Plan; (2) Energy Assistance Program
EASY	Energy Assessment Screening for Your Home [Program]
ECAP	Energy and Climate Action Plan
ECM	Energy Conservation Measures
ED	[CPUC] Energy Division
EDR	(1) Energy Design Resources; (2) Energy Design Rating
EE	Energy Efficiency
EE+	Energy Efficiency Plus
EEAT	Energy Efficiency Online Audit Tool (aka Enhanced Energy Audit Tool)
EEC	Energy Education Center
EEMIS	[L.A. County] Enterprise Energy Management Information System
EEEMs	Eligible Energy Efficiency Measures
EEP	Energy Expenditure Plan
EE Stats	California Energy Efficiency Statistics Data Portal
e.g.	*Exempli gratia*: for example; such as
ELP	Energy Leader Partnership
EM&V	Evaluation, Measurement & Verification
EMC	Energy Management Center
EMT	(1) Emerging Markets & Technologies; (2) Energy Management Technologies
EPA	U.S. Environmental Protection Agency
EPM	Engineering Project Management
EPIC	Electric Program Investment Charge
EPRI	Electric Power Research Institute
ER	Early Retirement
ESA	Energy Savings Assistance [Program]
ESCO	Energy Services Company
ESIS	Energy, Sustainability and Infrastructure Section (see **CDCR,** above)
ETCC	Emerging Technologies Coordinating Council

Acronym or Abbreviation	Explanation
ETP	Emerging Technologies [Program]
eTRM	Electronic Technical Reference Manual
EUC	Energy Upgrade California® [Program]
EUI	Energy Use Intensity
EUL	Effective (or Estimated or Expected) Useful Life
FAQ	Frequently Asked Questions
FDD	Fault Detection and Diagnostics
FERC	Federal Energy Regulatory Commission
FPCM	Facility Planning, Construction and Management [Division] (see **CDCR,** above)
FPSIE	Foundation for Pool and Spa Industry Education
FTC	(1) Federal Trade Commission; (2) Foodservice Technology Center
FY	Fiscal Year
GBC	Green Building Council
GHG	Greenhouse Gas
GSL	General service lamp
GWh	Gigawatt-hours
HDR	High Desert Regional [Partnership]
HEA	Home Energy Advisor [Program]
HEEP	Healthcare Energy Efficiency Program
HEER	Home Energy Efficiency Rebate [Program]
HEES	Home Energy Efficiency Survey
HERS	(1) Home Energy Rating System; (2) Home Energy Reports
HITEEP	Healthcare Innovative Technology EE Program
HOA	Home Owners' Association
HOPPS	High Opportunity Projects or Programs
HPA	High Performance Attic
HPBOP	High Performance Building Operations Professionals [Program]
HTR	Hard-to-Reach
HVAC	Heating, Ventilation and Air Conditioning
ICC	International Code Council
ICLEI	International Council for Local Environmental Initiatives
ICP	Investor Confidence Protocols
IDEEA	Innovative Design for Energy Efficiency Activities

Acronym or Abbreviation	Explanation
IDER	Integrated Distributed Energy Resources
IDSM	integrated demand-side management
i.e.	*Id est*: that is; that is to say; namely; in other words
IES	Illuminating Engineering Society
IGPP	Institutional and Government Energy Efficiency Partnership Program
IHACI	Institute of Heating and Air Conditioning Industries
ILG	Institute for Local Governments
IOU	Investor-Owned Utility
IRWD	Irvine Ranch Water District
ISD	Internal Services Department
ISP	Industry Standard Practice
IT	Information Technology
JA8	2016 Building Energy Efficiency Standards Joint Appendix No. 8
JCC	Judicial Council of California
K-8, K-12	Kindergarten through 8th / 12th grade schools
KEDC	Kern Economic Development Corporation
KPI	Key Performance Indicator
kW	Kilowatts
kWh	Kilowatt-hours
LADWP	Los Angeles Department of Water & Power
LCR	(a) Local Capacity Requirements; (b) Local Capacity Reliability
LED	Light-emitting diode
LEED	Leadership in Energy and Environmental Design
LEEP	Lodging EE Program
LG	Local Government
LGC	Local Government Commission
LGP	Local Government Partnership
LGSEC	Local Government Sustainable Energy Coalition
LLR	Loan Loss Reserve
LMS	Learning Management System
LMT	Lighting Market Transformation [Program]
LPAs	Lighting Power Allowances
LPD	Lighting Power Density

Acronym or Abbreviation	Explanation
LTO	Locational Targeted Offering
MAEDBS	Modernized Appliance Efficiency Database System
MBCx	Monitoring-Based Commissioning
ME&O	Marketing, Education and Outreach
MEU	Mobile Education Unit
MF	Multifamily
MFC	Midsize Footprint Customers
MFEER	Multifamily EE Rebate [Program]
MFNC	Multifamily New Construction
MI-BEST	Mobile Integrated Building Energy Science Training Program
MICE	Mid-Sized Industrial Customer Energy Efficiency [Program]
MIDI	Middle-Income Direct Install [Program]
MOU	Memorandum of Understanding
MPOP	Midstream Point-of-Purchase [Program]
MW	Megawatts
MWD	Metropolitan Water District
NABCEP	North American Board of Certified Energy Practitioners
NAICS	North American Industry Classification System
NATE	North American Technician Excellence
NBI	New Buildings Institute
NCI	National Comfort Institute
NEEA	Northwest Energy Efficiency Alliance
NEM	Net Energy Metering
NEMA	National Electrical Manufacturers Association
NFRC	National Fenestration Rating Council
NMEC	Net Meter Energy Consumption
NRDC	Natural Resources Defense Council
O&M	Operations & Maintenance
OBF	On-Bill Financing
OBR	On-Bill Repayment
OPR	Office of Planning and Research [State of California]
OSHPD	[California] Office of Statewide Health Planning and Development
P2P	Peer to Peer

Acronym or Abbreviation	Explanation
PA	Program Administrator
PAM	Program Administration Management
PES	Pump Efficiency Services
PFS	Project Feasibility Study
PG&E	Pacific Gas & Electric Company
PIER	Public Interest Energy Research
PLA	Plug Load and Appliances [Program]
PLC	Programmable Logic Controller
PNNL	Pacific Northwest National Laboratory
POP	Point of Purchase
POS	Point of Sale
Prop 39	California Proposition 39, the California Clean Energy Jobs Act
PRP	Preferred Resources Pilot
PUC	(1) See **CPUC,** above; (2) Public Utilities Code
PV	PhotoVoltaic
QA	Quality Assurance
QC	Quality Control
QI	Quality Installation
QII	Quality Insulation Installation
QM	Quality Maintenance
QR	Quality Renovation
RAD	Responsible Appliance Disposal
RCT	Randomized Control Trial
RCx	Retrocommissioning
READI	Remote Ex-Ante Database Interface
REC	Regional Energy Center
REEL	Residential Energy Efficiency Loan [Program]
REN	Regional Energy Network
RESNET	Residential Energy Services Network
RFP	Request for Proposal
RHTR	Rural Hard-to-Reach
RNC	Residential New Construction
RP	Recommended Practice

Acronym or Abbreviation	Explanation
RR	Restaurant Refresh [Program]
RRR	Residential Rate Reform
RTU	Remote Terminal Unit
SB	Senate Bill
SBC	Small Battery Charger
SBCOG	San Bernardino Council of Governments
SBCS	Small Battery Charger Systems
SBD	Savings By Design [Program]
SBESC	South Bay Energy Savings Center
SBREP	San Bernardino Regional Energy Partnership
SBWG	Sustainable Building Working Group
SCE	Southern California Edison Company
SCEEP	South Santa Barbara County Energy Efficiency [Leader] Partnership
SCG	Southern California Gas Company (aka SoCalGas or The Gas Company)
SCP	Sustainable Communities Program
SDDL	Small Diameter Directional Lamp
SDG&E	San Diego Gas & Electric Company
SEEC	Statewide Energy Efficiency Collaborative
SEEP	Schools Energy Efficiency Program
SEMP	Strategic Energy Management Plan
SFP	Scaled Field Placement
SIR	Savings-to-Investment Ratio
SJVCEO	San Joaquin Valley Clean Energy Organization
SJVEWC	San Joaquin Valley Energy Watch Collaborative
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SME	Subject Matter Expert
SMUD	Sacramento Municipal Utility District
SoCalGas	Southern California Gas Company (aka SCG or The Gas Company)
SoCalREC	Southern California Regional Energy Center
SoCalREN	Southern California Regional Energy Network
SPOC	Single Point Of Contact
SRO	Single-room occupancy
SSO	Single Sign On

Acronym or Abbreviation	Explanation
STEAM	Science, Technology, Engineering, Art, Math
Strategic Plan	See **CEESP,** above
SW or S/W	Statewide
T20, T24	Title 20, Title 24
T&D	Transmission and Distribution
TA	Technology Assessment
TDS	Technology Development Support
TDV	Time-Dependent Valuation
TEC	The Energy Coalition
TIS	Technology Introduction Support
TOU	Time-of-Use
Trade Pro	Trade Professional (formerly Customer's Authorized Agent)
TRC	Total Resource Cost
TRIO	Technology Resource Incubator (or "Innovation") Outreach
TRIP	Technology Resource Innovation Program
UAT	(1) Universal Audit Tool; (2) User Acceptance Testing
UC	University of California
UCSB	University of California at Santa Barbara
USGBC	U.S. Green Building Council
VCREA	Ventura County Regional Energy Alliance
VFD	Variable Frequency Drive
VIEW	Valley Innovative Energy Watch
VSD	Variable Speed Drive
WBA	Whole Building Approach
WCEC	Western Cooling Efficiency Center
WE&T	Workforce Education & Training
WEN	Water-Energy Nexus
WHPA	Western HVAC Performance Alliance
WISE	Water Infrastructure Systems Efficiency Program
WRELP	Western Riverside Energy Leader Partnership
ZNE	Zero Net Energy

Appendix B – 2018 EE Annual Report Technical Appendices

1. Section 1: Energy Savings

Table 1 – Electricity and Natural Gas Savings and Demand Reduction (Net) [55]

Table 1.
Electricity and Natural Gas Savings and Demand Reduction (Net)

Annual Results	2018 Installed Savings	CPUC 2018 Adopted Goals (D.17-09-025)	% of Goals (2018)
2018 Energy Savings (GWh) – Annual	*1,348*	*961*	*140%*
2018 Energy Savings (GWh) – Lifecycle	*16,718*	*N/A*	*N/A*
2018 Natural Gas Savings (MMth) – Annual	*N/A*	*N/A*	*N/A*
2018 Natural Gas Savings (MMth) – Lifecycle	*N/A*	*N/A*	*N/A*
2018 Peak Demand savings (MW)	*286*	*206*	*139%*

In 2018, the following five programs and program strategies accounted for approximately 29%[56] of SCE's portfolio energy savings results (w/ Codes & Standards):

Top Five EE Programs by Percentage of Savings to Portfolio (excluding C&S)	2018 Energy Savings (1st Year Net GWh)	2018 Peak Demand Savings (1st Year Net MW)
1. Primary Lighting Program (16.6%)	224.2	33.7
2. Home Energy Advisor Program (9.4%)	126.4	37.4
3. Grandfathered Streetlights (1.2%)	16.7	0.0
4. Multifamily Energy Efficiency Rebate Program (1.1%)	14.3	0.7
5. Commercial Deemed Incentives Program (0.9%)	12.4	1.3

In 2018, Codes & Standards program savings accounted for 61% of SCE's portfolio energy savings results.

[55] The data shown in this Annual Report is based on SCE's ex ante savings, adjusted for actual installations, consistent with the ex ante values and processes adopted by the CPUC in D.11-07-030. Values in table include market effects (ME) of 5% as consistent with CEDARS.

[56] This percentage was calculated using 1st Year net kWh for the five listed programs divided by total portfolio (including C&S).

2. Section 2: Emission Reductions

Table 2 – Environmental Impacts (Net) [57]

Table 2 *Environmental Impacts (Net)*						
Annual Results	**Annual tons of CO2 avoided**	**Lifecycle tons of CO2 avoided**	**Annual tons of NOx avoided**	**Lifecycle tons of NOx avoided**	**Annual tons of PM10 avoided**	**Lifecycle tons of PM10 avoided**
2018Portfolio Targets	**158,590**	**1,729,776**	**82**	**903**	**43**	**475**
2018 SCE Energy Efficiency Portfolio	147,904	1,734,502	83	1,032	44	543
[1] Environmental impacts do not include any results associated with Energy Savings Assistance or SoCalREN.						
[2] SCE's budget approved on CEDARS on August 3, 2018 in response to D.18-05-041 authorized budget.						

SCE embraces the fact that EE is the utility sector's first and most cost-effective response to global climate change, and SCE is firmly committed to making major contributions to California's climate change goals. To further SCE's commitment, its programs are designed to maximize energy savings results, and therefore are maximized to reduce greenhouse gas (GHG) emissions as well. SCE's most successful programs and program strategies are described in detail in Section 1 above.

The Commission has mandated that the utilities report their results using the Cost Effectiveness Tool (CET). This tool includes many embedded calculations, such as avoided costs and emission factors, that have been approved by the Commission. Pursuant to the Commission's authorization, SCE entered its results into the CET and determined the amount of emission reductions attributed to the successful implementation of the 2018 portfolio of EE programs. These results are shown in Table 2 above.

The following paragraphs provide a brief explanation of the assumptions used in the calculations, including the emission rate used, gas combustion type, and net-to-gross ratio:

1. The environmental benefits (annual and lifecycle CO_2, NOx, and PM10 reductions) described in this document are pursuant to the values adopted in D.05-04-024, as developed by Energy and Environmental Economics, Inc. (E3) and produced in their 2004 Report. In April 2010, the Commission issued D.10-04-029 which updated the price of CO_2 to $30 per ton.
2. E3 calculated the avoided environmental cost, or emissions costs, as the sum of NOx, PM10, and carbon emission (CO_2) costs, increased by marginal energy losses for each time of use (TOU) period. E3 estimated the emissions avoided-cost streams by multiplying the costs per pollutant (on a yearly basis) by the emission rate (per hour of the year). The emissions costs vary by voltage level, hour, and year.
3. The NOx costs ($/MWh) are based on California offset prices generators must pay for NOx emissions, and the estimated emission rate of NOx at the implied heat rate of the market price. The NOx cost per MWh of energy saved at the customer site is

[57] The data shown in this Annual Report is based on SCE's ex ante savings, adjusted for actual installations, consistent with the ex ante values and processes adopted by the CPUC in D.11-07-030.

increased by the incremental energy losses in each TOU period between the end use and the bulk system. In Period 1, when the forward market prices of electricity are based on NYMEX forward market prices, the assumption is that these prices already include the cost of NOx emissions, so this value is equal to zero in Period 1.

4. The PM10 costs ($/MWh) are computed similarly to the NOx costs, with the emission cost based on the California PM10 market prices and the estimated rates of emissions by the implied heat rate. The PM10 costs are also assumed to be included in the NYMEX forward market prices.

5. The CO_2 costs ($/MWh) are valued at $30 per ton, as prescribed in D.10-04-029.

The environmental benefits utilized in the cost-effectiveness analysis of the programs included in this document are only applicable to EE program reporting. The factors utilized in the development of these environmental benefits were agreed upon specifically to reflect an appropriate and approximate value for the reduced energy savings due to EE programs. As such, these environmental benefits should not be used in any other context and should also be reviewed for future use in EE program planning and evaluation.

The emission reduction values for NOx are not included in the environmental benefits (annual or lifecycle) in this document, since such values were not included in D.05-04-024 as developed by E3 and produced in their 2004 Report.

These numbers are consistent with the current developments in the greenhouse gas proceeding currently pending before the Commission, R.06-04-009[58] (or its successor proceeding).

[58] R.06-04-009, Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emission Standards into Procurement Policies.

3. Section 3: Expenditures

Table 3 - 2018 Expenditures, Including Expenditures From Past Cycle Commitments, Paid in 2018[59]

Table 3 is available at **http://eestats.cpuc.ca.gov/Views/Documents.aspx**. Click the **Report Categories: Annual** link on the upper left of the page. Under **Report Options**, click **Utility** and select **SCE**. When the page repopulates, click **SCE.AnnualExcel.2018.xlsx**

For the description of SCE's Partnership programs that were included in the portfolio in the past year, see the Partnerships Section XI.

For descriptions of programs that were selected as part of the competitive bidding process, see the Third-Party Programs Section XII.

[59] The data shown in this Annual Report is based on SCE's *ex ante* savings, adjusted for actual installations, consistent with the *ex ante* values and processes adopted by the CPUC in D.11-07-030.

4. Section 4: Cost-Effectiveness

Table 4 – Cost-Effectiveness (Net) [60]

Table 4

Cost Effectiveness (Net)

Annual Results	Total Cost to Billpayers (TRC)	Total Savings to Billpayers (TRC/PAC)	Net Benefits to Billpayers (TRC)	TRC Ratio	Total PAC Cost	PAC Ratio	PAC Cost per kW Saved ($/kW)[1]	PAC Cost per kWh Saved ($/kWh)	PAC Cost per therm Saved ($/therm)
2018 SCE [2]	318,699,446	1,349,238,344	1,030,538,898	4.23	205,125,377	6.58	N/A	0.01	N/A

[1] The adopted avoided cost methodology does not provide information to provide a meaningful value for PAC Cost per kW saved. The adopted avoided cost methodology created kWh costs values that vary for each hour of the year that includes kW generation capacity costs. The current PAC Cost per kWh saved includes all ratepayer financial costs incurred in producing electric savings. The same costs would have to be reallocated if a PAC Cost per kW saved were presented. Additionally, the current approved CET Calculator does not have the capability to calculate discounted kW, nor is it clear whether an annualized cost per kW saved or total cost per kW saved is more useful.

[2] Does not include costs and benefits associated with the Energy Savings Assistance Program or Grandfathered Street Lights per December 6, 2018 memo from E. Randolph .

[3] Includes Codes & Standards Program savings and expenditures, as well as expenditures for Statewide ME&O, ESPI, and Pension & Benefits.

This section provides a description of what each metric means in terms of the overall portfolio's progress in producing net resource benefits for ratepayers.

The Total Resource Cost Test (TRC) measures the net benefits of a program as a resource versus the participants' costs and program administration costs. The TRC Net Benefits (Net RBn) amount is the result of subtracting Total TRC costs from Total Resource Benefits. The Total Resource Net Benefit is a measure of the total resource benefits from a measure or program, as derived by multiplying the energy savings by the appropriate avoided costs and reduced by the net-to-gross ratio. Total TRC Costs shown in the tables include the sum of the total administrative costs and the incremental measure or participant cost. The TRC costs also represent the changes to the TRC test made in Decision 07-09-043.

The Program Administrator Cost (PAC) Test measures the net benefits of a program as a resource versus the total program costs, including both the program incentive and program administration costs. The PAC Net Benefits amount is the result of subtracting the Total PAC costs from the Total Resource Benefits, Net (RBn). The Total Resource Net Benefit is a measure of the total resource benefits from a measure or program, as derived by multiplying the energy savings by the appropriate avoided costs and reduced by the net-to-gross ratio. Total PAC Costs shown in the tables include the sum of the total program administrative and incentive costs.

The following provides a brief explanation of the assumptions used in the calculation; that is, incremental measure costs used and how rebates (transfers) were applied:

[60] *Id.*

1. The cost-effectiveness tables provided in this report reflect a summary of the cost-effectiveness calculations developed for SCE's 2018 programs. These tables provide energy savings and program costs associated with activity in 2018.
2. Pursuant to Policy Rule IV.11, to the extent possible, the assumptions that are used to estimate load impacts (for example, kWh and kW savings per unit, program net-to-gross ratios, incremental measure costs, and useful lives) in the calculation of the TRC and PAC tests are taken from the Remote Ex-Ante Database Interface (READI) v.2.4.7, which houses the Databases for Energy Efficient Resources (DEER). For measures where the required load impacts for cost-effectiveness test inputs were not available in READI v.2.4.7, SCE has developed Work Papers that were approved in the process outlined in D.11-07-030.

A. Units (Number and Definition)

Unit counts of each measure are displayed in the program tracking databases during 2018. The definition of a unit is tailored to the specifications of each individual measure offered by a program.

B. Energy and Capacity Savings (Per Unit and Total)

Annual program energy and capacity reductions are derived from *ex ante* estimates of energy and capacity savings. Annual program energy and capacity reduction estimates for the programs are the result of a summation of measure-level savings from the measures installed as a result of the 2018 programs. The measure-level savings information used to calculate the 2018 program results is based upon estimates contained in READI v2.4.7. If READI v2.4.7 does not contain an estimate, SCE's energy and capacity savings are documented in SCE's Work Papers that are approved in the process outlined in D.11-07-030.

The gross amounts of the annual energy and capacity savings are reduced by appropriate net-to-gross ratios for the particular measure or end use and extended through their useful lives by the appropriate Effective Useful Life (EUL) estimates (see C. Net-to-Gross Ratio and D. Effective Useful Life, below).

For all of the tables presented in this report, SCE has presented the capacity savings based upon the estimated summer on-peak savings. Thus, the capacity savings of each measure has been reduced to show only the applicable percentage of savings that fall in the defined summer on-peak period for the particular measure, as defined in D.06-06-063. All energy savings results are a total of the savings across all time periods.

C. Net-to-Gross (NTG) Ratio

Gross energy savings are considered to be the savings in energy and demand seen by the participant at the meter level. Net savings are assumed to be the savings that are attributable to the program; that is, net savings are gross savings minus those changes in energy use and demand that would have happened even in the absence of the program ("free riders"). The net-

to- gross (NTG) ratio is a factor applied to gross program load impacts to convert them into net program load impacts. This factor is also used to convert gross measure costs into net measure costs.

Each NTG ratio utilized in the report is taken from READI v.2.4.7, as required by the Commission.

D. Effective Useful Life (EUL)

The EUL is the length of time (in years) for which the load impacts of an EE measure are expected to persist. Each of the EUL periods utilized in the report are taken from READI v.2.4.7, as required by the Commission.

E. Incremental Measure Cost (Per Unit and Total)

These costs generally represent the incremental costs of EE measures over standard replacement measures. The gross amounts of these costs are reduced by appropriate net-to-gross ratios for the particular measure or end use. SCE relies upon READI v.2.4.7 for ex ante incremental measure cost values, as required by the Commission. If READI v.2.4.7 does not contain an estimate, SCE's incremental measure costs are typically derived from a recent measure cost study and documented in SCE's Work Papers that are approved in the process outlined in D.11-07-030.

F. Program Incentive Cost (Per Unit and Total)

Incentive costs are the amount of incentives paid to customers during 2018. The incentive cost totals are based on per-unit incentive costs paid to the customer, multiplied by the total number of units.

G. Program Administrative Cost

Program administrative costs include all expenditures directly charged to the program except incentive costs. The administrative costs consist of allocated administrative, labor, nonlabor, and contract labor costs.

Labor costs consist of SCE labor charges directly charged to the program. These costs include salaries and expenses of SCE employees engaged in:

- Developing energy-efficient marketing strategies, plans, and programs
- Developing program implementation procedures
- Reporting
- Monitoring, and
- Evaluating systems.

Labor costs reflected in this report are actual costs incurred in 2018 in support of the programs.

Non-labor costs include materials and other miscellaneous costs charged directly to the program. These costs include items such as booklets, brochures, promotions, training,

membership dues, postage, telephone, supplies, printing and photocopying services, and computer support services.

Contract labor costs consist of contract employees and consultant labor charges directly charged to the program. These costs include salaries and expenses of contract employees and consultants engaged in:

- Developing energy-efficient marketing strategies, plans, and programs
- Developing program implementation procedures
- Reporting
- Monitoring, and
- Evaluating systems.

Allocated administrative costs represent building lease and maintenance costs and management oversight expenditures.

The figures in the tables provided in this report, which include modifications to the cost-effectiveness calculations, follow instructions provided by the Commission and/or pursuant to the direction of the Energy Efficiency Policy Manual; the avoided costs Rulemaking (R.04-04-025); the December 21, 2006 ALJ Ruling; and recent Decisions related to EE cost-effectiveness, including D.06-06-063, D.07-09-043, D.09-09-047, D.14-04-046, and D.15-10-028.

5. Section 5: Bill Payer Impacts

Table 5 – Ratepayer Impacts [61]

Table 5
Ratepayer Impacts

2018	Electric Average Rate (Res and Non-Res) $/kwh [1]	Gas Average Rate (Core and Non-Core) $/therm	Average First Year Bill Savings ($)	Average Lifecycle Bill Savings ($)
SCE	$0.163	$0.000	$ 88,978,547	$ 849,857,795

[1] SCE's average rate electric rate for bundled-service customers
[2] Average first year electric bill savings is calculated by multiplying an average electric rate with first year gross kWh energy savings.
[3] Average lifecycle electric bill savings is calculated by multiplying an average electric rate with lifecycle gross kWh energy savings.
[4] 2018 first year and lifecycle net KWh savings excluded Codes & Standards and Energy Savings Assistance.

This section provides an explanation of the impact of EE activities on customer bills relative to their bills without the EE programs.

In 2018, SCE was authorized to collect $233 million[62] in rates to implement approved EE programs. Customer bills included the authorized collection on January 1, 2018, the date the program year began. Therefore, EE programs increase customer bills "up front," as funds are collected to fund the EE programs. However, upon implementation, the programs result in lower customer energy usage due to improvements in EE and subsequent reductions to participants' bills. In the long term, all users will benefit through reductions in the avoided costs of energy. The tables provided above show the bill impacts on participating customers in 2018.

The following provides a brief explanation of the assumptions used in the calculation:

1. The customer bill impacts included in this report reflect the net impact on bills, accounting for the benefits of the programs. The overall impact of SCE's programs is that customer bills will decrease relative to the level of billing without the EE programs.

The following methodology was utilized for the calculation of bill impacts resulting from the 2018 EE portfolio:

- The calculation methodology for determining average first-year bill savings utilizes the total gross energy savings per year multiplied by the average rate denominated in kWh. The product of these numbers results in a total bill savings for all program participants.
- Similarly, the calculation methodology for determining average lifecycle bill savings utilizes the total lifecycle gross energy savings multiplied by the average rate denominated in kWh. The product of these numbers results in a total lifecycle bill savings for all program participants.

[61] The data shown in this Annual Report is based on SCE's ex ante savings, adjusted for actual installations, consistent with the ex ante values and processes adopted by the CPUC in D.11-07-030.
[62] D.18-05-041, OP 12.

6. Section 6: Savings by End-Use

Table 6 – Annual Savings By End-Use[63]

Table 6
Annual Savings By End Use

Use Category	GWH	% of Total	MW	% of Total	MMTh	% of Total
Appliance or Plug Load	2.6	0%	0.2	0%		
Building Envelope	0.1	0%	0.1	0%		
Codes & Standards	814.8	61%	182.3	64%		
Compressed Air	0.3	0%	0.1	0%		
Commercial Refrigeration	10.2	1%	0.9	0%		
Food Service	1.7	0%	0.3	0%		
HVAC	40.9	3%	12.9	4%		
Irrigation	1.3	0%	0.6	0%		
Lighting	279.6	21%	41.2	14%		
Process Distribution	8.1	1%	0.9	0%		
Process Heat	1.1	0%	0.0	0%		
Process Refrigeration	0.1	0%	0.0	0%		
Recreation	5.3	0%	0.7	0%		
Service	126.4	9%	37.4	13%		
Service and Domestic Hot Water	-	0%	-	0%		
Whole Building	54.2	4%	8.5	3%		
Grand Total	**1,346.6**	**100%**	**286.1**	**100%**		

[1] Table does not account for savings from SoCalREN as the data is reported separately.

The Commission's EE reporting requirements mandate that SCE submit regular reports to the Commission quantifying the accomplishments of the portfolio. One such requirement, reporting portfolio performance of energy savings and demand reduction by end use, as shown in the table above, is reported on a regular basis as part of SCE's monthly report. The table above illustrates the 2018 results, by end use, of SCE's portfolio of EE programs.

[63] The data shown in this Annual Report is based on SCE's *ex ante* savings, adjusted for actual installations, consistent with the ex ante values and processes adopted by the CPUC in D.11-07-030.

7. Section 7: Commitments

Table 7 – Commitments [64]

Table 7
Commitments

Commitments Made in 2010-2012 with Expected Implementation after December 2012

2010-2012[1]	Committed Funds[1] $	Expected Net Energy Savings GWH	MW	MMth
- Resource	$ -	-	-	
- Non-Resource	$ -	-	-	
- Codes & Standards	$ -	-	-	
- EM&V (SCE & CPUC)	$ -	-	-	
- OBF/ARRA/NFO Loan	$ -	-	-	
SCE Total	$ -	-	-	

Commitments Made in 2013-2015 with Expected Implementation after December 2015, excludes REN

2013-2015[2]	Committed Funds[2] $	Expected Net Energy Savings GWH	MW	MMth
- Resource	$ 5,355,070	6.88	1.08	
- Non-Resource	$ 8,741,448	-	-	
- Codes & Standards	$ -	-	-	
- EM&V (SCE & CPUC)	$ 3,521,178	-	-	
- OBF/ARRA/NFO Loan	$ 12,656,157	-	-	
SCE Total	$ 30,273,853	6.88	1.08	

Commitments Made in 2016 with Expected Implementation after December 2016, excludes REN

2016[3]	Committed Funds[3] $	Expected Net Energy Savings GWH	MW	MMth
- Resource	$ 9,856,882	23.39	5.10	
- Non-Resource	$ 335,072	-	-	
- Codes & Standards	$ -	-	-	
- EM&V (SCE & CPUC)	$ 12,554,829	-	-	
- OBF/ARRA/NFO Loan	$ 4,829,643	-	-	
SCE Total	$ 27,576,427	23.39	5.10	

Commitments Made in 2017 with Expected Implementation after December 2017, excludes REN

2017[3]	Committed Funds[3] $	Expected Net Energy Savings GWH	MW	MMth
- Resource	$ 12,046,332	22.70	3.86	
- Non-Resource	$ 4,314,928	-	-	
- Codes & Standards	$ -	-	-	
- EM&V (SCE & CPUC)	$ 12,174,993	-	-	
- OBF/ARRA/NFO Loan	$ 2,642,638	-	-	
SCE Total	$ 31,178,891	22.70	3.86	

Commitments Made in 2018 with Expected Implementation after December 2018, excludes REN

2018[3]	Committed Funds[3] $	Expected Net Energy Savings GWH	MW	MMth
- Resource	$ 16,115,469	33.40	3.42	
- Non-Resource	$ 4,512,901	-	-	
- Codes & Standards	$ -	-	-	
- EM&V (SCE & CPUC)	$ 9,054,497	-	-	
- OBF/ARRA/NFO Loan	$ 13,003,141	-	-	
SCE Total	$ 42,686,007	33.40	3.42	

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

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

[3] Committed funds are associated with the 2016, 2017 & 2018 program years, respectively. These funds are reserved or encumbered for future work permitted per the EESTATS CPUC Guidance Document and EE decision (D.15-10-025).

64 The data shown in this Annual Report is based on SCE's *ex ante* savings, adjusted for actual installations, consistent with the ex ante values and processes adopted by the CPUC in D.11-07-030.

A. List of Resource Programs with Commitments

The following resource programs had commitments[65] that will be installed in 2018 and beyond:

Program ID	Program Name
SCE-13-SW-004B	Agriculture Calculated Energy Efficiency Program
SCE-13-SW-004C	Agriculture Deemed Energy Efficiency Program
SCE-13-L-003A	California Community Colleges Energy Efficiency Partnership
SCE-13-L-003B	California Dept. of Corrections and Rehabilitation EE Partnership
SCE-13-L-002S	City of Adelanto Energy Leader Partnership
SCE-13-L-002B	City of Long Beach Energy Leader Partnership
SCE-13-SW-002B	Commercial Calculated Program
SCE-13-SW-002C	Commercial Deemed Incentives Program
SCE-13-SW-002D	Commercial Direct Install Program
SCE-13-TP-009	Comprehensive Chemical Products
SCE-13-TP-001	Comprehensive Manufactured Homes
SCE-13-TP-010	Comprehensive Petroleum Refining
SCE-13-TP-013	Cool Schools
SCE-13-L-003C	County of Los Angeles Energy Efficiency Partnership
SCE-13-TP-004	Data Center Energy Efficiency
SCE-13-L-002H	Eastern Sierra Energy Leader Partnership
SCE-13-SW-001D	Energy Upgrade California
SCE-13-TP-021	Enhanced Retrocommissioning
SCE-13-TP-006	Food & Kindred Products
SCE-13-L-002F	Gateway Cities Energy Leader Partnership
SCE-13-TP-003	Healthcare EE Program
SCE-13-TP-020	IDEEA365 Program
SCE-13-SW-003B	Industrial Calculated Energy Efficiency Program
SCE-13-TP-005	Lodging EE Program
SCE-13-TP-023	Midsize Industrial Customer Program (MICE)
SCE-13-SW-002H	Midstream Point of Purchase
SCE-13-TP-008	Nonmetallic Minerals and Products
SCE-13-SW-002F	Nonresidential HVAC Program
SCE-13-L-002V	North Orange County Cities
SCE-13-TP-011	Oil Production
SCE-13-L-002L	Orange County Cities Energy Leader Partnership
SCE-13-TP-007	Primary and Fabricated Metals

[65] List only includes commitments for EE resource programs and are commitments related to specific projects. The list does not commitments for Codes and Standards, Emerging Technology Program, or EM&V.

Program ID	Program Name
SCE-13-SW-001G	Residential Direct Install
SCE-13-SW-001F	Residential New Construction Program
SCE-13-L-002W	San Bernardino Association of Governments
SCE-13-L-002M	San Gabriel Valley Energy Leader Partnership
SCE-13-L-002N	San Joaquin Valley Energy Leader Partnership
SCE-13-SW-002G	Savings By Design
SCE-13-TP-018	School Energy Efficiency Program
SCE-13-L-002O	South Bay Energy Leader Partnership
SCE-13-L-002P	South Santa Barbara County Energy Leader Partnership
SCE-13-L-003F	State of California Energy Efficiency Partnership
SCE-13-L-003G	UC/CSU Energy Efficiency Partnership
SCE-13-L-002Q	Ventura County Energy Leader Partnership
SCE-13-TP-022	Water Infrastructure Systems EE Program (WISE)
SCE-13-L-002T	West Side Energy Leader Partnership

In 2018, these programs secured commitments of $42.6M, 33.4 gigawatt-hours of energy savings, and 3.4 megawatts in demand reduction.

B. Explanation of How Commitments Are Calculated[66]

In 2018, SCE actively enrolled customers into EE programs, which encourage customers to implement energy-efficient choices. When a customer has firmly committed to the program, an incentive payment is reserved on his or her behalf, to be paid when the customer implements the energy-efficient measure. It is only when that firm commitment is received (in the form of a contract, reservation, etc.) that it is counted as a program commitment and is reported to the Commission. The tables above summarize the energy savings and demand reductions committed to be installed by SCE customers.

[66] Committed funds represent incentive amounts only.

8. Section 8: Shareholder Performance Incentives

Table 8 – Shareholder Incentives (ESPI)

Table 8						
Shareholder Incentives (ESPI)						
Program Year	**2013** [1,5]	**2014** [2,3,5]	**2015** [3,4,6]	**2016** [4,7,10,11]	**2017** [8,11]	**2018** [9]
Forecast*	$ -	$ -	$ 27,575,796	$ 27,575,796	$ 22,500,000	$ 17,600,000
Actual**	$ 19,288,229	$ 20,989,733	$ 16,700,769	$ 15,054,741	$ 6,577,872	*Pending*
* forecasted ESPI payments for PY X as submitted in the forecasted budget AL for PY X (this number has to be forecasted ESPI						
** actual ESPI payments authorized for PY X in PY X+1 and PY X+2 Resolutions						
[1] Resolution E-4700 authorized $10,777,652 for PY2013 on December 18, 2014.						
[2] Resolution G-3510 authorized $10,452,799 for PY2013 and $12,093,196 for PY2014 on December 3, 2015.						
[3] Resolution E-4807 authorized $10,838,759 for PY2014 and $6,416,556 for PY2015 on December 15, 2016.						
[4] Resolution E-4897 authorized $10,284,213 for PY2015 and $10,594,348 for PY2016 on December 14, 2017. E-4897 also						
[5] No ESPI earnings were forecasted in SCE AL 2836-E-D.						
[6] ESPI earnings were forecasted in SCE's AL 3149-E-B and included in TRC calculations.						
[7] Based on D.15-10-028, OP#5, SCE's 2016 budget was a carryover of its 2015 and used the same ESPI assumptions.						
[8] ESPI earnings were forecasted in SCE's AL 3465-E-B and included in TRC calculations.						
[9] ESPI earnings were forecasted in SCE's AL 3654-E-A and included in TRC calculations.						
[10] PY+2 for 2016 from Final 2018 ESPI Performance Statement Report, published by CPUC on October 26, 2018.						
[11] Values from SCE AL 3901-E as resolution is currently pending.						

In 2018, SCE would typically receive ESPI payments associated with program year 2016 ex-post and program year 2017 ex-ante results. However, the Commission did not issue the ESPI Resolution until early 2019, which is still awaiting CPUC approval at the time of this EE Annual Report submission. SCE included its ESPI amount ($11,038,265) from Draft Resolution E-4979[67] in SCE's TRC calculations. It should be noted at the time SCE submitted its PY2018 Annual Report on May 1, 2019, Draft Resolution E-4979 was removed from the Commission's calendar. SCE expects its ESPI award to decrease but the reduced amount is unknown at the time of this filing. Thus, SCE used its ESPI amount in Draft Resolution E-4979 in its TRC calculations. Any decrease to SCE's ESPI award will only increase SCE's TRC value.

[67] SCE ESPI amount in Draft Resolution E-4979 is consistent with the amount included in SCE Advice 3901-E.

Appendix C – Southern California Edison Programs for 2018

Appendix C contains the list of programs included in SCE's 2018 EE Portfolio, and the date the programs were added or removed, where applicable.

Table: Programs Included in SCE's 2018 EE Portfolio

CPUC ID	Program Name	Date Added	Date Removed
SCE-13-SW-001	California Statewide Program for Residential Energy Efficiency	1/1/2013	N/A
SCE-13-SW-001A	Energy Advisor Program	1/1/2013	N/A
SCE-13-SW-001B	Plug Load and Appliances Program	1/1/2013	N/A
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	1/1/2013	N/A
SCE-13-SW-001D	Energy Upgrade California	1/1/2013	8/31/2018
SCE-13-SW-001E	Residential HVAC Program	1/1/2013	N/A
SCE-13-SW-001F	Residential New Construction Program	1/1/2013	N/A
SCE-13-SW-001G	Residential Direct Install Program	1/1/2017	N/A
SCE-13-SW-002	Statewide Commercial Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-002A	Commercial Energy Advisor Program	1/1/2013	N/A
SCE-13-SW-002B	Commercial Calculated Program	1/1/2013	N/A
SCE-13-SW-002C	Commercial Deemed Incentives Program	1/1/2013	N/A
SCE-13-SW-002D	Commercial Direct Install Program	1/1/2013	N/A
SCE-13-SW-002E	Commercial Continuous Energy Improvement Program	1/1/2013	12/31/2017
SCE-13-SW-002F	Nonresidential HVAC Program	1/1/2013	N/A
SCE-13-SW-002G	Savings By Design	1/1/2013	N/A
SCE-13-SW-002H	Midstream Point Of Purchase	1/1/2017	N/A
SCE-13-SW-003	Statewide Industrial Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-003A	Industrial Energy Advisor Program	1/1/2013	N/A
SCE-13-SW-003B	Industrial Calculated Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-003C	Industrial Deemed Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-003D	Industrial Continuous Energy Improvement Program	1/1/2013	12/31/2017
SCE-13-SW-003D	Strategic Energy Management Program	8/1/2018	N/A
SCE-13-SW-004	Statewide Agriculture Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-004A	Agriculture Energy Advisor Program	1/1/2013	N/A
SCE-13-SW-004B	Agriculture Calculated Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-004C	Agriculture Deemed Energy Efficiency Program	1/1/2013	N/A
SCE-13-SW-004D	Agriculture Continuous Energy Improvement Program	1/1/2013	12/31/2017
SCE-13-SW-005	Statewide Lighting Program	1/1/2013	N/A
SCE-13-SW-005A	Lighting Market Transformation Subprogram of Statewide Lighting Program	1/1/2013	N/A

CPUC ID	Program Name	Date Added	Date Removed
SCE-13-SW-005B	Lighting Innovation Program Subprogram of Statewide Lighting Program	1/1/2013	N/A
SCE-13-SW-005C	Primary Lighting Program Subprogram of Statewide Lighting Program	1/1/2013	N/A
SCE-13-SW-006	Integrated Demand Side Management Program	1/1/2013	N/A
SCE-13-SW-007	Statewide Finance Program	1/1/2013	N/A
SCE-13-SW-007A	On-Bill Financing	1/1/2013	N/A
SCE-13-SW-007B	ARRA-Originated Financing	1/1/2013	N/A
SCE-13-SW-007C	New Finance Offerings	1/1/2013	N/A
SCE-13-SW-008	Codes and Standards Program	1/1/2013	N/A
SCE-13-SW-008A	Building Codes and Compliance Advocacy	1/1/2013	N/A
SCE-13-SW-008B	Appliance Standards Advocacy	1/1/2013	N/A
SCE-13-SW-008C	Compliance Improvement	1/1/2013	N/A
SCE-13-SW-008D	Reach Codes	1/1/2013	N/A
SCE-13-SW-008E	Planning and Coordination	1/1/2013	N/A
SCE-13-SW-009	Emerging Technologies Program	1/1/2013	N/A
SCE-13-SW-009A	Technology Development Support	1/1/2013	N/A
SCE-13-SW-009B	Technology Assessments	1/1/2013	N/A
SCE-13-SW-009C	Technology Introduction Support	1/1/2013	N/A
SCE-13-SW-010	Workforce Education & Training	1/1/2013	N/A
SCE-13-SW-010A	WE&T Centergies	1/1/2013	N/A
SCE-13-SW-010B	WE&T Connections	1/1/2013	N/A
SCE-13-SW-010C	WE&T Planning	1/1/2013	12/31/2016
SCE-13-L-001	Integrated Demand Side Management Pilot for Food Processing	1/1/2013	12/31/2016
`	Energy Leader Partnership Program	1/1/2013	N/A
SCE-13-L-002 Rollup	Energy Leader Partnership Program	1/1/2013	N/A
SCE-13-L-002A	City of Beaumont Energy Leader Partnership	1/1/2013	12/31/2015
SCE-13-L-002B	City of Long Beach Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002C	City of Redlands Energy Leader Partnership	1/1/2013	12/31/2016 Merged with SBREP
SCE-13-L-002D	City of Santa Ana Energy Leader Partnership	1/1/2013	12/31/2016 Merged with OCC
SCE-13-L-002E	City of Simi Valley Energy Leader Partnership	1/1/2013	12/31/2015 Merged with Ventura
SCE-13-L-002F	Gateway Cities Energy Leader Partnership	1/1/2013	N/A

CPUC ID	Program Name	Date Added	Date Removed
SCE-13-L-002G	Community Energy Leader Partnership	1/1/2013	6/30/2017 Merged with various partnerships
SCE-13-L-002H	Eastern Sierra Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002I	Energy Leader Partnership Strategic Support	1/1/2013	N/A
SCE-13-L-002J	Desert Cities Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002K	Kern County Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002L	Orange County Cities Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002M	San Gabriel Valley Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002N	San Joaquin Valley Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002O	South Bay Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002P	South Santa Barbara County Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002Q	Ventura County Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002R	Western Riverside Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002S	High Desert Regional Partnership (formerly City of Adelanto Energy Leader Partnership)	1/1/2013	N/A
SCE-13-L-002T	West Side Energy Leader Partnership	1/1/2013	N/A
SCE-13-L-002U	Local Government Strategic Planning Pilot Program	1/1/2013	N/A
SCE-13-L-002V	North Orange County Cities Energy Leader Partnership	4/3/2015	N/A
SCE-13-L-002W	San Bernardino Regional Energy Leader Partnership	4/3/2015	N/A
SCE-13-L-003	Institutional and Government Core Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003A	California Community Colleges Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003B	California Dept. of Corrections and Rehabilitation EE Partnership	1/1/2013	N/A
SCE-13-L-003C	County of Los Angeles Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003D	County of Riverside Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003E	County of San Bernardino Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003F	State of California Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003G	UC/CSU Energy Efficiency Partnership	1/1/2013	N/A
SCE-13-L-003I	Public Sector Performance-Based Retrofit High Opportunity Program	1/1/2017	N/A
SCE-13-TP-001	Comprehensive Manufactured Homes	1/1/2013	N/A
SCE-13-TP-002	Cool Planet	1/1/2013	N/A
SCE-13-TP-003	Healthcare EE Program	1/1/2013	N/A
SCE-13-TP-004	Data Center Energy Efficiency	1/1/2013	N/A
SCE-13-TP-005	Lodging EE Program	1/1/2013	N/A

CPUC ID	Program Name	Date Added	Date Removed
SCE-13-TP-006	Food & Kindred Products	1/1/2013	N/A
SCE-13-TP-007	Primary and Fabricated Metals	1/1/2013	N/A
SCE-13-TP-008	Nonmetallic Minerals and Products	1/1/2013	N/A
SCE-13-TP-009	Comprehensive Chemical Products	1/1/2013	N/A
SCE-13-TP-010	Comprehensive Petroleum Refining	1/1/2013	N/A
SCE-13-TP-011	Oil Production Program	1/1/2013	N/A
SCE-13-TP-012	Refinery Energy Efficiency Program	1/1/2013	01/01/2015
SCE-13-TP-013	Cool Schools	1/1/2013	N/A
SCE-13-TP-014	Commercial Utility Building Efficiency	1/1/2013	N/A
SCE-13-TP-017	Energy Efficiency for Entertainment Centers	1/1/2013	01/01/2015
SCE-13-TP-018	Schools Energy Efficiency Program	1/1/2013	N/A
SCE-13-TP-019	Sustainable Communities	1/1/2013	N/A
SCE-13-TP-020	IDEEA365 Program	1/1/2013	N/A
SCE-13-TP-021	Enhanced Retrocommissioning	1/1/2013	N/A
SCE-13-TP-022	Water Infrastructure Systems EE Program (WISE)	1/1/2017	N/A
SCE-13-TP-023	Midsize Industrial Customer Program (MICE)	1/1/2017	N/A
SCE-13-TP-024	AB793 Residential Pay for Performance	1/1/2017	N/A
SCE-13-L-002Y	Grandfathered Street Lights	12/6/2018	N/A
SCE-13-SWMEO	Statewide Marketing, Education & Outreach	1/1/2013	N/A

Appendix D – SCE's Final December Monthly Report for 2018

To obtain a copy of SCE's December 2018 EE Monthly Report, please visit the California Public Utilities Commission – California Energy Data and Reporting System (CEDARS, available at **https://cedars.sounddata.com/monthly-reports/confirmed-dashboard/SCE/**.

Appendix E – Water-Energy Nexus Activity

A. Activity Description

The California Long Term Energy Efficiency Strategic Plan ("Strategic Plan") predates the Water-Energy Nexus (WEN) Proceeding (R.13-12-011) and does not include reference to water-energy savings strategies or market transformational approaches for water. However, in response to California's historic drought, then-Governor Brown issued Executive Order B-29-15 mandating statewide urban water reductions of 25%. The California Public Utilities Commission (CPUC) supports the Governor's Order through the Water-Energy Nexus, which aims to enable further coordination of energy efficiency (EE) and water use efficiency.

As these initiatives continue to be developed, it is important to recognize that a significant amount of data and understanding is still needed in order to define best practices for joint programming efforts. Equally important, as noted in CPUC Decision D.12-05-015 (p. 287), it is "not prudent to spend significant amounts of [energy] ratepayer funds on expanded water-energy nexus programs until the cost-effectiveness of these programs, and particularly the net benefits that accrue to energy utility ratepayers, are better understood." SCE's WEN activities, seeking reductions both in water and electricity use, work to support these efforts.

B. Strategies Implemented in 2018

SCE's strategies included holding face-to-face meetings, conducting association interactions, managing pilot programs, and conducting outreach and educational activities to promote and recommend EE solutions that meet customer needs to save water, save energy, and save money. Provided below are descriptions of such activities.

SCE participated in a series of meetings with the Metropolitan Water District (MWD) in 2018 to discuss how to collaborate on programs that realize both water and energy savings. Although SCE has worked with individual water agencies in the past, there was an anticipated benefit to creating a working relationship with the MWD regarding the co-delivery of programs when and where it may advantageous to do so. To that end, the MWD and SCE entered into a Memorandum of Understanding that set the basic contractual framework for co-delivering programs. As individual opportunities are identified, Program Orders (preliminary program plans) will be developed to detail the working arrangement of how the programs will be implemented. The first identified opportunity was discussed in Q4 of 2018, where SCE would deliver a rebate to customers through the Midstream Point-of-Purchase Program for food service measures that save both water and energy.

C. Outreach and Education

1. SCE's Annual Water Conference

SCE's 25th Annual Water Conference was held for two days during the week of September 10, 2018 in Irwindale, California at SCE's Energy Education Center (EEC).

Day One: This year's General Session key topics included overviews of SCE's Big Creek Hydroelectric Plant, Metropolitan Water District's WaterFix, and the goal of achieving GHG reduction in California, with an emphasis on SCE's Clean Electric Pathway. The highlight of the General Session was a panel discussion which included the following participants:

- Megan Poage, Senior Market Design Policy, CAISO
- Paul Weghorst, Executive Director of Water Policy, Irvine Ranch Water District
- Katie Sloan, Director of Transportation Electrification, SCE, and
- Charley Wilson, Energy Committee Chair, ACWA.

Discussion was centered on statewide GHG reduction goals and how each of the entities are attempting to meet those requirements. The overall need is to determine how our water customers, key associations, and state agencies can work together and develop strategies that both meet statewide goals and make sense for our customers.

Day Two: Classes and workshops provided customers with information on SCE Time of Use (TOU) Rates for 2019, an overview of SCE's Hydraulic Services Pump Test program, and a workshop on cooling tower efficiency. Following are summaries of the various workshops:

Time-Of-Use Rates: What is Changing? What is New?

Energy costs impact customer businesses, so the more customers who know about Time of Use peak period time changes, the more control they will have over their energy costs. This course was designed to explain new rate structures and options, cost-saving techniques and tools, energy efficiency and demand response solutions, and how customers can integrate Time of Use into a business energy plan.

Cooling Towers: Water- Energy Savings Opportunities

As one of the largest water consumption technologies, cooling towers are of particular interest. This class focused on water-and-energy savings technologies, measures, and strategies for cooling towers, along with market trends and industry standard practices (ISP) versus best practices.

Pump Testing and Improving Your Pumping Plant Efficiency

Presented by State Water Resources Control Board (Drinking Water Division: Water Distribution Operators)

Discussions covered practical issues and choices available for efficient pumping systems, and effective management practices that ensure pumping efficiency as well as understanding of pump efficiency results.

Basic Pumping Control Strategies Using PLCs and SCADA Systems for Energy Efficiency Level I

Presented by State Water Resources Control Board (Drinking Water Division: Water Distribution Operators)

This one-day workshop covered the basic strategies for energy efficiency in customer pumping systems through automated controls and equipment, including device operations and system interfaces for Supervisory Control and Data Acquisition (SCADA) systems and Programmable Logic Controllers (PLC). Designed for managers, supervisors, operators, and technicians who operate water pumps.

2. Advanced Metering Infrastructure (AMI) Pilot

The AMI infrastructure pilot continued in 2018 to test the effects of leveraging electric usage data from SCE's advanced metering infrastructure with water usage data. Three projects were initiated around the same time and continued during the year. Because the City of Beverly Hills had this infrastructure first in 2017, this project was slated to be a Pilot project intended to produce observable data and was to conclude in 2018. However, the Beverly Hills Pilot was identified as duplicating the efforts of the two other projects utilizing AMI Data; therefore, SCE terminated its observation of the Beverly Hills Pilot project.

The following projects incorporated water energy use data:

1. A single-family residential project incorporating water, electric, and gas data to deploy customer efficiency measures as a joint approach by three utilities, IRWD-Water, SoCalGas, and SCE.
2. An agriculture water and energy pumping project that used SCE AMI meter data in conjunction with a software application that identified pumping and irrigation efficiency opportunities while providing customers with real -time reporting via computer and mobile apps.

Both projects (which are expected to be concluded shortly) demonstrated the capabilities of utility AMI data to provide customers with visibility of their water and energy usage, thus potentially influencing their decision-making on EE measures and/or behavioral changes to manage and reduce usage.

3. The Get Smart Program

SCE's Residential Direct Install (Res DI) program partnered with the Irvine Ranch Water District (IRWD) and SoCalGas to implement a targeted water-energy nexus program for residential customers. The partnership effort, known as the Get Smart Program, provided targeted customers of both IRWD and the utilities with Rachio 3 Smart Sprinkler Controllers

and Nest thermostats. Customers were targeted using criteria such as size of the customer's yard, age of the home, and water usage history. Based upon these criteria, approximately 9,100 customers were identified as having the highest savings potential, and from these the Get Smart Program received 1,186 submittals, a response rate of 13%. As a result of this effort, 950 smart sprinkler controllers and Nest thermostats were distributed to customers, leveraging the services of Res DI's program implementer, which provided the program's offerings through a single point-of-contact during one in-home visit.

Funding for the Get Smart Program was shared between IRWD and the utilities: IRWD provided funding for the sprinkler controllers and the utilities provided funding for the thermostats. The Get Smart Program allowed SCE to expand its program offerings in an efficient, consolidated effort.

4. Water Savings and the EE Portfolio

CPUC Decision D.16-12-047, issued on December 15, 2016, ordered the integration of the WEN calculator and the CPUC's current Cost Effectiveness Tool (CET). When the tools are integrated, current EE projects that result in water savings will be able to include "gallon savings" to claim the embedded energy savings. As these tools are refined, they will provide better visibility to coordinated program offerings. At present, offerings resulting in water savings are limited to areas of natural synergies. Less than 5% of SCE's service territory has electric water heating, so areas of overlap between electrical and water energy savings are smaller than their gas counterparts in offerings like food service products or water heaters.

The process of identifying 2018 program activities that might impact water energy savings began by pinpointing what information about water-saving measures and projects was tracked and available, as follows:

- For deemed measures, a review was conducted to identify measures that were likely to save water, and then the associated Workpapers were reviewed for water savings. Deemed measures saw some changes from previous years as some were no longer found to be cost-effective.
    - Thus, measures such as faucets, faucet aerators, and low-flow showerheads were no longer offered by the Multifamily EE Rebate program, and
    - Workpaper updates made ice machines ineligible for water savings, so we deferred to the Workpaper for this analysis.
- These changes noted, in 2018 projects saw water savings of 1,170,870 gallons, resulting in energy savings of approximately 3,025 average annual embedded kWh. Most of the water savings came from electric commercial combination oven/steamers and electric commercial steam cookers, which saved a total of 1,046,274 gallons of

potable water, equivalent to 2,715 average annual embedded IOU kWh[68] according to the WEN calculator, within the South Coast hydrologic zone.[69] These measures were included in SCE's Plug Load and Appliances Program, Multifamily EE Rebate Program, Commercial Deemed Incentives Program, and the Workforce Education & Training (WE&T) Program.

- A similar process that was completed for customized projects required deeper scrutiny of projects that were thought to have impacted water use and a comparative assessment of completed 2018 projects. While many of the customized projects involved use of more efficient pumps, and the systems' water demand was met, no material water savings were observed, and water consumption stayed constant.
- Programs and measures in customized projects in 2018 saw water savings of 2,124,711 gallons, resulting in savings of approximately 5,513 average annual embedded kWh. These savings came from Energy Leader Partnership programs which included above-code comprehensive designs for new construction to improve overall building performance.

[68] Embedded energy is not claimed in SCE's annual report as savings contributing towards SCE's energy savings goals. Claiming would be more likely to occur, if cost-effective, once the WEN and CET tools are combined as directed by D.16-12-047, OP 2-4.

[69] The Water Energy Nexus calculator uses the South Coast hydrologic zones and indoor water consumption. The WEN tool is available at **http://www.cpuc.ca.gov/nexus_calculator/.**

Appendix F – 2018 List of EE Program Third-Party Implementers

Program ID	Program Name	Primary Sector	Sector	Delivery Channel	Vendor	Length	Dollar Value
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	Residential	Residential	Downstream	American Power Solutions	8years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	Residential	Residential	Downstream	Coast to Coast Lighting Inc.	8years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	Residential	Residential	Downstream	Monterey Energy Inc.	8years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	Residential	Residential	Downstream	Optima Energy Inc.	8years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate Program	Residential	Residential	Downstream	Utility Incentive Corp.	8years, 9months	
SCE-13-SW-001G	Residential Direct Install	Residential	Residential	Downstream	Synergy Companies	3years, 5months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial	Downstream	California Retrofit, Inc.	7years, 2months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial	Downstream	FCI Management Consultants	7years, 2months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial	Downstream	FESS Energy Inc.	7years, 2months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial	Downstream	Power TakeOff, Inc.	3years, 1months	
SCE-13-SW-002F	Nonresidential HVAC Program	Commercial	Commercial	Upstream	Cohen Ventures, Inc.	3years, 11months	
SCE-13-SW-002G	Savings By Design	Commercial	Commercial	Downstream	VCCT Inc.	8years, 11months	
SCE-13-SW-003D	Strategic Energy Management	Industrial	Industrial	N/A	Cascade Energy	3years, 2months	
SCE-13-SW-010B	WE&T Career Connections	Residential	Residential	Downstream	Strategic Energy Innovations	3years, 6months	
SCE-13-SW-010B	WE&T Career Connections	Residential	Residential	Downstream	The Energy Coalition	3years, 9months	
SCE-13-TP-001	Comprehensive Manufactured Homes	Residential	Residential	Downstream	Synergy Companies	8years, 11months	
SCE-13-TP-004	Data Center Energy Efficiency	Commercial	Commercial	Downstream	Willdan Energy Solutions	9years, 2months	
SCE-13-TP-005	Lodging EE Program	Commercial	Commercial	Downstream	Willdan Energy Solutions	9years, 2months	
SCE-13-TP-005	Lodging EE Program	Commercial	Commercial	Downstream	Willdan Energy Solutions	9years, 2months	
SCE-13-TP-006	Food & Kindred Products	Industrial	Industrial	Downstream	Lockheed Martin Corporation	4years, 11months	
SCE-13-TP-006	Food & Kindred Products	Industrial	Industrial	Downstream	Lockheed Martin Corporation	4years, 11months	
SCE-13-TP-008	Nonmetallic Minerals and Products	Industrial	Industrial	Downstream	Onsite Energy Corporation	8years, 11months	
SCE-13-TP-010	Comprehensive Petroleum Refining	Industrial	Industrial	Downstream	CLEAResult Consulting, Inc.	5years, 2months	
SCE-13-TP-010	Comprehensive Petroleum Refining	Industrial	Industrial	Downstream	CLEAResult Consulting, Inc.	5years, 2months	
SCE-13-TP-010	Comprehensive Petroleum Refining	Industrial	Industrial	Downstream	CLEAResult Consulting, Inc.	5years, 2months	
SCE-13-TP-018	School Energy Efficiency Program	Commercial	Commercial	Downstream	WILLDAN ENERGY SOLUTIONS	6years, 5months	
SCE-13-TP-021	Enhanced Retrocommissioning	Commercial	Commercial	Downstream	Nexant, Inc.	9years, 11months	
SCE-13-TP-022	Water Infrastructure Systems EE Program	Cross-Cutting	Commercial	Downstream	Lincus, Inc.	8years, 10months	
SCE-13-TP-023	Midsize Industrial Customer Program	Industrial	Industrial	Downstream	Onsite Energy Corporation	8years, 0months	
SCE-13-TP-024	AB793 Residential Pay for Performance	Residential	Residential	Downstream	Home Energy Analytics, Inc.	5years, 10months	
	Total						**$ 378,351,934**

Appendix G – Statewide Third-Party Program Budgets

On November 15, 2018, San Diego Gas & Electric Company, Southern California Gas Company, Pacific Gas & Electric Company, and SCE filed a joint supplemental advice letter of the IOUs' proposed mechanism for shared funding of statewide programs pursuant to Ordering Paragraph 24 of D.18-05-041.[70] The IOUs proposed to submit annual true-up reports with the IOU's annual EE reports submitted on May 1 of the following calendar year.[71] Below is a template of the Statewide EE Shared Funding Report Table which will be reported in IOU's 2020 EE Annual Reports.

Statewide EE Report by Program
[Program Name]
Program Year 20XX
Lead IOU: [IOU]

	SDG&E	SoCalGas	SCE	PG&E	Total
Contributions					$ -
Interest					
Expenses					
Remaining Balance	$ -	$ -	$ -	$ -	$ -

In D.18-05-041, the Commission also directed the IOUs to include a summary of key findings from the annual report in their respective annual energy efficiency portfolio reports to the Commission. Specifically, the summary of key findings should detail proportional funding amounts for each statewide program area, and highlight any IOU cost-sharing discrepancies, with particular attention to the requirement for proportional budget contributions described above.[72]

Contracted statewide third-party EE programs are not expected to be implemented until 2020. Thus, reporting of statewide third-party budgets will be included in SCE's 2020 EE Annual Report, filed on May 1, 2021.

[70] SDG&E AL 3268-E-A/2701-G-A; SoCalGas AL 5346-G-A; SCE AL 3861-E-A; and PG&E AL 5373-E-A/4009-G-A("Joint Supplemental AL")
[71] Joint Supplemental AL, p.3.
[72] D.18-05-041, pp. 86-87.

Appendix H – Metrics

A copy of SCE's Metrics is available at **http://eestats.cpuc.ca.gov/Views/Documents.aspx**:

1. Click the **Report Categories: Annual** link on the upper left of the page.
2. Under **Report Options**, click **Utility** and select **SCE**.
3. When the page repopulates, click **SCE.AnnualExcel.2018.xlsx**

In D.18-05-041, the Commission directed Program Administrators to *report progress toward all metrics and indicators*[73] and report metrics and targets, using the updated definition of disadvantaged communities and hard-to-reach customers in the Decision, and to *assess the relative success of implementers' strategies, for purposes of identifying lessons learned and best practices for maximizing the contribution of energy efficiency in disadvantaged communities,* and include this as part of their metrics in their EE Annual Report.[74] After SCE contracts with third-parties as part of the EE solicitation process, SCE will assess and report on the relative success of third-party implementers' strategies in disadvantaged communities.

In compliance with D.18-05-041, the metrics and indicators included in SCE's 2018 EE Annual Report utilizes the definitions for disadvantaged communities (DAC) and hard-to-reach (HTR). As defined in Resolution G-3497, and reaffirmed in D.18-05-041, if a HTR customer does not meet the geographic criterion, they must meet a total of three criteria to be considered hard-to-reach; and if a customer meets the geographic criterion, they must meet one other criterion to be considered hard-to-reach. Applying this definition, the 2018 reported metrics for HTR falls short of its 2018 targets. SCE will continue to monitor and its progress toward its 2019 HTR targets.

SCE also noticed significant differences between 2018 reported amounts and 2018 targets for its GHG metric. The short-term target for the GHG metric is over 225,000. For 2017 and 2018, SCE reported metric CO2 equivalent of net annual kWh savings of over 252,000 and 61,000, respectively. The difference between SCE's 2017 reported and 2018 reported amounts is due to the updates of the avoided cost calculator (ACC). SCE is considering changes to GHG metric targets in its 2020 Annual Budget Advice Letter to reflect the ACC changes.

[73] D.18-05-041, OP 9 (p.183-184).
[74] *Id.*, OP 11 (p.184).

Attachment B

Notice of Availability of Southern California Edison Company's Posting of 2019 Energy Efficiency Programs Annual Report And Supporting Documents

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues.	R.13-11-005

NOTICE OF AVAILABILITY OF SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) POSTING OF 2019 ENERGY EFFICIENCY PROGRAMS ANNUAL REPORT AND SUPPORTING DOCUMENTS

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Dated: **May 1, 2019**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues.	R.13-11-005

NOTICE OF AVAILABILITY OF SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) POSTING OF 2019 ENERGY EFFICIENCY PROGRAMS ANNUAL REPORT AND SUPPORTING DOCUMENTS

Pursuant to the Administrative Law Judge's Ruling Adopting Annual Reporting Requirements for Energy Efficiency and Addressing Related Reporting Issues dated August 8, 2007, Southern California Edison Company (SCE) hereby provides notice to the service lists in proceedings R.09-11-014, R.13-12-011, and R.13-11-005 that the following documents are available for viewing and downloading on the CPUC's Energy Efficiency Statistics Application (EESTATS) website:[1]

SCE's 2019 Energy Efficiency Annual Report and supporting documents, including the following appendices, as shown in the table of contents:

- Appendix A – List of Acronyms or Abbreviations,
- Appendix B – 2018 EE Annual Report Technical Appendices,
- Appendix C – Southern California Edison Programs for 2018,
- Appendix D – SCE's Final December Monthly Report for 2018,
- Appendix E – Water-Energy Nexus Activity,

[1] Energy Efficiency Statistic Application is *available at* http://eestats.cpuc.ca.gov

- Appendix F – 2018 List of EE Program Third-Party Implementers,
- Appendix G – Statewide Third-Party Program Budgets, and
- Appendix H – Metrics.

Additionally, SCE hereby provides notice to the above-referenced service list that SCE's information regarding its Workforce, Education and Training (WE&T) Program for 2018 is included in SCE's 2019 EE Annual Report.

Respectfully submitted,

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