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 (Filed November 14, 2013)

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) 2018 ANNUAL REPORT FOR ENERGY EFFICIENCY PROGRAMS

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Southern California Edison Company (SCE) hereby submits its 2018 Energy Efficiency Annual Report ("Annual Report Revised) for its 2017 energy efficiency programs and results, 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 G. 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 2018 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 2018 Energy Efficiency Annual Report

2018 Energy Efficiency Annual Report

- **Summary Report**

  2017 Program Overview & Strategies

- **Technical Appendix**

  2017 Results

May 1, 2018

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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 2017, SCE programs collectively achieved over 1.55 billion kilowatt-hours (kWh) of annualized energy savings and 292 megawatts of peak demand reduction. These savings equal the power required annually for over 236,000 standard California residential homes, or the removal of over 247,000 cars from the road.

SCE continues to drive innovation by introducing new programs and pilots focused on supporting the State's policy and environmental goals, as well as aligning EE to meet future grid reliability needs. In 2017, SCE's activities to support State policies included:

- In support of Senate Bill (SB) 350 and Assembly Bill (AB) 802, SCE explored three High Opportunity Program proposals and received California Public Utilities Commission (CPUC or Commission) approval of Advice Letters for two of the programs. SCE is currently in the process of implementing both programs.
- In support of AB 793, SCE began working with the CPUC and stakeholders to develop implementation strategies.
- SCE acted as a vital contributor in the development of policies specific to implementation of SB 1414 requirements, where Program Administrators (PAs) must provide proof of permit closure before incentives are released.

Other areas of SCE support included the following:

- Supported efforts to address grid reliability needs and requirements by integrating energy efficiency into the Distributed Deferral and Integrated Distributed Resources Request for Proposal (RFP), and engaged with the Goleta resiliency planning activities such as SCE's recent Request for Offers (RFO) seeking distributed energy resources including energy storage, demand response and renewable distributed generation.

- Supported efforts for Aliso Canyon by continuing to monitor and report on distribution, through the Direct Install program, of LED Tubes in impacted areas.
- Launched the new Trade Professional (TradePro) Program with a successful kickoff to more than 200 attending Trade Professionals, concurrent with a deep refresh of customer-facing business core EE program resources, including the Solutions Directory, Online Application Tool, SCE.com landing pages and links, a TradePro Agreement with Code of Conduct, and a TradePro Vendor Directory. The TradePro Program significantly enhances, and rebrands, the Customer Authorized Agent (CAA) Program, creating consistency with the other California Investor Owned Utilities (IOUs). Collectively, the TradePro Program and the coordinated refresh of core business resources have set a strong foundation from which to drive improvements in both project quality and customers' experience and satisfaction with SCE's business core and finance programs.
- Initiated a Normalized Metered Energy Consumption (NMEC) blueprint (ex-post only), in alignment with Energy Measurement and Verification (EM&V) Study 2.0 and to support reducing complexity and uncertainty in calculated programs.
- With the active cooperation and commitment of all EE program staff members, completed and filed SCE's Comprehensive Solicitation Process Proposal on August 4, 2017, thus initiating the process of increasing the number of programs that will be implemented by third parties within SCE's EE portfolio.
- Launched EE Locational Resource Contracts to support customer choice with clean energy resource options. Completed all system development efforts, training modules, and other pre-launch activities required to start administration of CPUC-approved contracts.
- Supported the return of more than 200 Behavioral, Retrocommissioning and Operational (BRO) measures as ordered by Resolution E-4818. Coordinated the effort of ensuring system updates and CPUC's Energy Division (ED) measure acceptance through a quality control review process.

- Worked with the other IOUs and the ED to establish a consistent statewide list of customized measures to improve and streamline the customer experience in applying for the EE incentives.
- SCE has continued to support the overarching policy goals of the California Energy Efficiency Strategic Plan (CEESP) and Existing Buildings Energy Efficiency Action Plan (AB 758).

SCE has also continued to align with the CPUC and industry stakeholders in adopting and implementing a more flexible EE program framework. In 2015, the CPUC formally established a ten-year EE "Rolling Portfolio" process to replace the existing system of three-year funding cycles. The Rolling Portfolio approach is an innovative planning concept for funding that will moderate the inconsistencies caused by the shorter funding cycle. This new structure will increase flexibility and promote continuity of the EE portfolios. In Decision 15-10-028, the CPUC directed EE Program Administrators (PAs) to develop business plans providing strategic direction, as well as an estimated budget and savings forecast, for the years 2018-2025.

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 of 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) during the development of its business plan. The valuable feedback obtained from stakeholders via discussions, presentations, and written comments on an early draft of the plan significantly helped shape *Southern California Edison Company's Energy Efficiency Rolling Portfolio Business Plan for 2018-2025* (and associated Application) filed on

January 17, 2017.[1] SCE also led the selection effort for a new CAEECC facilitator on behalf of the IOUs and completed the contracting process on January 15, 2017.

Looking forward, the EE landscape is changing significantly in 2018 and beyond, with updated, reduced avoided costs that reflect decreased natural gas prices, increasing daytime over-generation from solar production and shifting peak hours, wide-ranging CPUC proceedings such as Integrated Resources Plan (IRP) and Integrated Distributed Energy Resources (IDER) affecting the future value of EE within a portfolio of both customer-side and supply-side resources, and rising code baselines and policy decisions on program eligibility reducing the remaining program savings opportunities for customers. In this fast-changing environment, it will be increasingly more important to reinforce the value of EE stakeholder coordination, program simplification, and alignment of cost-effective goals with achievable performance. SCE looks forward to continuously strengthening the EE portfolio as all stakeholders work together to navigate this future.

Below are some highlights of the accomplishments of SCE's active EE portfolio during 2017. For further detail, please see the summary program descriptions in each chapter of this report.

A. Residential Programs

In 2017, the Statewide Program for Residential Energy Efficiency effectively reached both single-family and multifamily customers by providing audits, incentives and rebates, new construction assistance, and comprehensive whole home upgrades (including building envelope, HVAC,[2] and plug load measures) to over 180,000 residential customers. SCE worked directly with program participants to make all the residential programs and the customer experience simpler, faster, and more efficient.

The Energy Upgrade California® (EUC) Home Upgrade Program continued to encourage comprehensive residential upgrades in 2017, completing over 1,300 projects and partnering with Home Performance with ENERGY STAR®, thus extending ENERGY STAR®'s brand recognition of

[1] Additionally, SCE submitted an Amended Business Plan on February 10, 2017, in A.17-01-013.
[2] Heating, ventilation, & air conditioning.

quality to the EUC Home Upgrade Program and its contractors. EUC Home Upgrade also continues to partner with the Residential HVAC Quality Installation Program to increase retrofits and educate customers about right-sizing and quality installation of their HVAC equipment.

The Home Energy Advisor (HEA) program continued to offer and refine the Enhanced Energy Audit Tool (EEAT), designed to help customers complete online audits of their homes and receive customized EE recommendations to help them reduce their energy usage and engage in utility incentive programs. HEA also continued the behavioral program pilot called "10-10-10 + Multifamily Behavior," designed to explore ways to test behavioral effectiveness and impacts for renters and multifamily property owners.

In 2017, SCE continued to serve multifamily customers through the Multifamily EE Rebate Program (MFEER), focusing on close coordination with the Energy Savings Assistance Program (ESAP). This created an integrated approach, providing customers (including income-qualified customers) with EE measures in a way that continues to simplify processes, eliminate duplicate functions, and deliver an improved customer experience. SCE provided single-point-of-contact (SPOC) account representative services to help streamline property owners' engagement. SPOCs work directly with property owners to guide them through available services, focusing on eligibility, need, and ability to make EE investments.

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. These programs delivered EE measures to over 20,000 nonresidential customer service accounts in 2017.

Through the Energy Advisor Program, SCE relaunched pump overhaul measures for the Business Core programs in June of 2017, and performed nearly 2,800 pump tests targeting commercial and agricultural customers in the Central Valley. SCE is in the process of developing a Pump Test co-pay pilot to offer services for a fee. In compliance with AB 802, SCE completed

building the Automated Benchmarking System (ABS) via its public website, www.SCE.com, to streamline the transfer of energy data to customer accounts in the ENERGY STAR® Portfolio Manager System. SCE is currently working on enhancements to align with the California Energy Commission's (CEC) proposed revisions to AB 802 for required documentation and data expansion.

The Continuous Energy Improvement (CEI) Program had success with two school districts that implemented program recommendations with Proposition 39[3] funding. Two industrial customers achieved double-digit energy savings, with one deciding to join the U.S. Department of Energy (DOE) Better Plants Challenge. The CEI Program enhanced the customer and utility relationship through increased communication, resulting in improved awareness of EE programs. The program was closed at the end of 2017, but will be succeeded in 2018 by a Strategic Energy Management resource program for the Industrial sector.

Deemed and customized programs faced challenges to achieve savings and cost-effectiveness goals in 2017. These challenges reduced claimable energy savings due to any or all of the following:

- Higher baselines required by Title 24, Industry Standard Practice (ISP), and/or higher marketplace penetration of energy-efficient equipment
- New maximum annual operating hours stipulated by DEER building type
- New preponderance of evidence requirements for customized Retrofit Add On (REA) projects, and/or
- The complex nature of the customized process.

To address these challenges, SCE focused on producing Work Papers to standardize measures as deemed instead of customized. This enabled SCE to move more measures to deemed channels and provide them to customers through lower-cost delivery channels, since deemed programs are often more streamlined, less complex, and more cost-effective than customized programs, especially for smaller projects. Transitioning measures from customized

[3] *See* the California Clean Energy Jobs Act (Proposition 39 K-12 Program) funding eligible energy efficiency efforts in schools, *available at* **http://www.energy.ca.gov/efficiency/proposition39/**.

programs to deem programs, such as the Express Solutions and Midstream Point of Purchase Programs, enabled SCE to simplify processing, reduce customer wait time, and improve customer experience and satisfaction with EE programs, as well as bolstering the overall value to ratepayers and the cost-effectiveness of the EE program portfolio.

SCE's Commercial Direct Install Program continued its outreach to small business customers, helping more than 11,000 customers in 2017. In order to increase participation, the program expanded its market reach to national chains that met eligibility requirements. It continued offering LED High Bay/Low Bay, commercial variable-speed drive (VSD) pool pumps, and LED T8 Lamps to eligible customers.

SCE's three Nonresidential HVAC subprograms continued in 2017. The HVAC Commercial Quality Maintenance (CQM) Program was recognized by the U.S. DOE 2017 Advanced Roof Top Unit (RTU) campaign for having the highest number of advanced RTU control retrofits, 867, with energy savings of almost 6 GWh. The Commercial Upstream HVAC Program's savings goals were reduced by 75% from previous years due to the lack of measure eligibility. Field data collection for the Commercial HVAC Quality Installation (CQI) Program was completed in support of Work Paper development for claiming savings, but program strategy reverted to exploring a more cost-effective offering as part of the HOPPS HVAC Comprehensive Value Chain effort. All three HVAC subprograms continue to coordinate with the Workforce Education & Training (WE&T) Program to identify skill gaps and inform trainings for areas of increased focus.

SCE's On-Bill Financing Program funded 108 loans[4] in 2017, representing over $9 million loaned out, thus enabling businesses, local governments, and institutional customers to increase the energy efficiency of their buildings. SCE also continued to work with the other IOUs, the CPUC, and the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to develop a suite of new financing programs (that is, pilot programs), expected to launch in 2018,[5] to leverage third-party capital and provide EE and DSM project

[4] Figures represent both new projects initiated in the 2013-2014 cycle, plus the 2015-2016 bridge years, and projects committed in the 2010-2012 cycle where installation was completed in 2017.

[5] One pilot, the Residential EE Loan (REEL) Program, was launched previously in 2016.

financing options to single-family, multifamily, and small businesses and other nonresidential customers.

C. Partnership Programs

In 2017, 136 cities and ten counties participated in SCE's local government partnerships, including two new partners. Twenty-five partners also moved up a tier in SCE's Energy Leader Partner (ELP) model through demonstrated EE achievements and commitment to the partnerships, including participation in EE retrofits and demand response (DR) enrollment. These advancements include eleven partners advancing to Platinum Level, six to Gold Level, and eight to Silver Level.

SCE continued furthering Local Government EE Strategic Plan Goals, helping local governments develop a long-term EE vision, and identifying specific EE projects for implementation. Partner cities continued developing energy action plans which create greenhouse gas inventories, establish a baseline of energy usage, set energy savings goals, and determine near-term measures to accomplish the goal. Additionally, partner cities continued to use Strategic Plan funds to install utility manager systems, develop benchmarking plans, and establish revolving EE funds.

SCE also continued the successful Statewide Energy Efficiency Collaborative 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, Beacon recognition program, 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 2017, which included the following:

- SCE continued to support the Community College Districts by providing funding for enhanced outreach, project development, Proposition 39-related activity, and technical support to 28 districts containing 46 campuses in SCE's service territory.

- For the University of California / California State University (UC / CSU) Partnership, SCE completed 24 retrofit, monitoring-based commissioning (MBCx), and new construction projects at 12 different UC and CSU campuses, including UC Medical Center and UC Davis Veterinary School. SCE also helped UC / CSU develop a comprehensive pool of EE and new construction projects and identify eligible projects, and worked with individual campus architects and designers to help facilitate the application and approval processes.
- Through the State of California Partnership, SCE continued to participate in the Sustainable Building Working Group of agency sustainability managers tasked with planning and implementing all aspects of the Governor's Executive Order B-18-12. The Partnership continued its regional-level approach to identifying EE opportunities as a parallel effort alongside the California Department of General Services' (DGS) Statewide Energy Retrofit Program for project sourcing. This approach targets facility-level project contracting and implementation.
- SCE continued to support the California Department of Corrections and Rehabilitation (CDCR) Partnership. SCE encouraged EE project development by performing energy audits on all CDCR facilities in SCE's service territory, and CDCR is using the audit results to prioritize the next wave of EE projects. SCE continues to support CDCR's ongoing projects by providing guidance to the energy service companies (ESCOs) involved on technologies that best maximize benefits to both CDCR and the IOUs.

D. Third Party Programs

SCE continued to enhance its outreach efforts to all the communities in its service territory and extend its program offerings through third-party implementers to a wide variety of customer segments. In 2017, the Third Party Programs initiated a comprehensive project pipeline review process to validate project viability in preparation for the upcoming Third Party solicitation process. Throughout the year, many efforts were made to improve the quality of projects being submitted for review. We also re-negotiated third-party pay-for-performance contract terms in order to transition from gross to net savings in 2018.

In 2017, the Water Infrastructure and System Efficiency (WISE) Program, which provides water-energy solutions for all major water-related needs (including pumping, water treatment, water distribution, and wastewater treatment), and the Medium Size Industrial Customer Energy Efficiency Program (MICE), which provides in-depth energy assessment services, were transitioned into Core third-party offerings in 2017. Both programs started as IDEEA 365 pilots in 2016 and have successfully delivered promising results.

The Comprehensive Manufactured Home Program (CMHP) carried out a similar effort on water conservation. CMHP partnered with the Southern California Gas Company (SoCalGas) and the Irvine Ranch Water District to promote water-energy savings. Through this effort, mobile home customers received water conservation measures such as toilets, showerheads, faucet aerators, and some landscaping measures as add-ons to the existing products and services offered under CMHP.

E. Crosscutting Programs

SCE's crosscutting programs provided significant resource and non-resource contributions in 2017. SCE collaborated with the Statewide Codes and Standards (C&S) Program IOU teams and the California Energy Commission (CEC) to prepare customers and the building industry for the implementation of the 2016 Title 24 building energy standards that became effective January 2017. A primary focus for C&S was continued collaboration with the CEC and the California IOUs on the development of the 2019 Title 24 standards, in preparation for the 2019 Title 24 code adoption expected in spring 2018. SCE and the IOUs continued working on Title 20 appliance regulations with the CEC, as well as federal appliance regulations with the U.S. Department of Energy. The statewide team further advanced their collaboration on the development, adoption, and implementation of innovative training, best practices, and tools to support enhanced compliance with Title 24 building energy standards, reach codes, and Title 20 appliance standards within the Compliance Improvement program. The Reach Code subprogram provided local jurisdictions with cost-effectiveness studies to encourage their adoption of reach codes. The Planning and Coordination subprogram began tactical planning for the 2020 residential ZNE goals, which will include support for the building industry and work toward supporting a "plug and play" electric grid. Notably, the statewide C&S Program achieved 164% of its gross GWh goal and 146% of its gross MW goal in 2017.

The Emerging Technologies Program (ETP) continued to implement its three subprogram and engagement strategies:

- Supporting development of new technologies,
- Increasing market supply, and
- Supporting program measure readiness through assessment and introduction of new measures.

As part of these key engagement strategies, the ET Program conducted residential ZNE demonstrations, in partnership with home builders, the Electric Program Investment Charge (EPIC) Program, the Electric Power Research Institute (EPRI), and others, in support of advancing state goals and furthering understanding of grid interactions. Central to its mission are Emerging Technologies Coordinating Council (ETCC) collaboration and outreach activities, including:

- Leveraging the annual ETCC Advisory Council meeting to seek input on the strategic topic of Technology Priority Maps (TMPs), and
- Coordinating assessments and sharing technology research information through ETCC's quarterly meetings on various topics for commercial buildings, agricultural and residential sectors, and data centers

Furthermore, ETP also:

- 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.
- Held a public meeting with the California Energy Commission (CEC), the EPIC Program, and the Public Interest Energy Research (PIER) Program.
- In consultation with the CAEECC, statewide ET Program leadership, and other program stakeholders, produced the Crosscutting – Emerging Technologies chapter of SCE's *Energy Efficiency Rolling Portfolio Business Plan for 2018-2025*.

- Initiated planning for an Emerging Technologies Summit for spring of 2018. The Summit, which typically attracts 500+ attendees, will be hosted by SoCalGas.

F. Lighting Programs

The Statewide Lighting Program supported both the commercial and residential market sectors. SCE's Primary Lighting Program continued to transition the market to LEDs that meet CEC standards and to choose only CFLs that have no qualifying LED equivalent, such as 3-way and very-bright lightbulbs. LEDs accounted for 81% of the total program incentive dollars, up from 58% in 2016. The Lighting Innovation Program further continued its successful implementation of the Advanced Lighting Control Systems (ALCS) Pilot Program (begun in January, 2015) to explore the qualitative attributes and energy savings of leading-edge lighting system controls in various commercial settings. ALCS continued through 2017 and at year's end, 31 customer projects were participating in the pilot.

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

WE&T provided training, seminars, and workshops to over 12,000 industrial professionals in 2017 through SCE's Energy Education Centers.

H. Water-Energy Activities

CPUC Decision D.16-12-047, issued on December 15, 2016, ordered the integration of the Water-Energy Nexus (WEN) calculator and the current Cost-Effectiveness Tool (CET). When the tools' integration is complete, current EE projects that result in water savings will be able to include gallon savings to claim the embedded energy. As these tools are refined, the visibility of coordinated program offerings will be improved.

SCE's EE programs are specifically focused on delivering cost-effective electrical energy and demand savings, but some EE measures also result in water savings. To date, offerings resulting in water savings have been limited to areas of natural synergies. Since SCE is an electric utility with limited electric water heating in its service territory, areas of overlap between electric and water energy savings are smaller than those between gas and water savings in offerings like food service products or water heaters. Nonetheless, in 2017, SCE saved approximately 5 million gallons of water through its deemed and residential offerings and nearly

6 million gallons through projects in calculated ("customized") programs such as Savings By Design.

SCE anticipates that, moving forward, better data will become available as programs investigate water offerings and the WEN and CET tools align. Given the prolonged severity of the State's drought, despite recent rainfalls, SCE continued its engagement with and focus on investigating potential water-related EE measures in 2017. *Chapter XIV, Water Energy*, in this report outlines activities that impact water use (where SCE has the information available).

SCE also worked with the CPUC to conduct an Automated Meter Infrastructure (AMI) Pilot that should be completed in 2018, continued providing its perspectives on relevant water-energy topics through its 24th Annual Water Conference, and continued its partnerships with key water districts on joint program offerings.

I. Proposition 39 Program Coordination

In 2017, SCE continued to coordinate with the other IOUs, municipal utilities, and the CEC on implementing the Proposition 39 Program ("Prop 39"), which is administered by the CEC and provides approximately $550 million per year[6] for EE and renewable projects to California K-12 schools and community colleges.

SCE programs involved in Prop 39 efforts include:

- SCE's California Community Colleges (CCC) Partnership, which coordinated closely with its Partners to provide enhanced outreach, project development, and technical support for 28 CCC districts representing 46 campuses — all the CCC districts in SCE's service territory — and helped the colleges identify over 31 potential Prop 39 projects, delivering 1.56 million kWh in energy savings in 2017.
- SCE also encouraged K-12 school districts to couple Prop 39 funds with IOU services and incentives, and worked closely with the other IOUs, the CEC, the CPUC, and other key stakeholders to ramp up for K-12 Prop 39 implementation.

[6] Beginning in fiscal year 2013-2014, and continuing for five (5) years.

- The Cool Schools Program is ramping down. The program is currently completing the remaining projects in the pipeline and did not accept any new projects in 2017, so there was no new Prop 39 coordination effort for Cool Schools.
- The Schools Energy Efficiency Program (SEEP) completed re-designing its list of program measures to add newer lighting technologies (with customer co-payments) in order to leverage Prop 39 funds and positively impact the savings-to-investment ratio (SIR) of the schools participating in Prop 39.
- In addition, SEEP partnered with companies completing Prop 39 services for school districts within SCE's service territory. These companies help schools submit Energy Expenditure Plans (EEPs). By partnering with such a company and including SEEP-incentivized measures in the EEP, a school district can take advantage of those measures at minimal cost or even no cost, positively impacting its savings-to-investment ratio, while still obtaining the deemed savings from the projects and using its funds to prioritize more comprehensive and costly energy projects.
- SCE and the other IOUs launched the Prop 39 ZNE Pilot Program in April, 2015, working closely with the CPUC, CEC, CCCs, and other stakeholders. Round 2 of the ZNE pilot is currently underway in the San Bernardino Community College District. SCE's Emerging Technologies Program (ETP) is the lead on the "field demonstrations" portion of the pilot, for projects located at both K-12 schools and community colleges. The IOUs have also hosted technical and ZNE workshops, partnering with the New Buildings Institute; most recently, a ZNE workshop was presented at the Community College Facility Coalition 24th Annual Conference in November, 2017.

J. Integrated Demand Side Management (IDSM)

SCE's vision for the effective and comprehensive delivery of energy efficiency is centered on an unprecedented level of IDSM program design and deployment, designed to transform the way customers understand, use, and manage their energy usage. During 2017, SCE pursued an integrated approach to its portfolio of offerings and customer engagement, through integrated marketing, portfolio management, and innovative IDSM statewide

collaboration to improve the integration of EE with other DSM offerings such as demand response and distributed generation.

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, developing integrated marketing collateral and campaigns, conducting outreach events, making website efforts, and establishing an integrated EE measure application process. SCE also continued its participation in the Statewide IDSM task force, ensuring that the vision and leadership of the California EE Strategic Plan (CEESP) is fully realized throughout the EE portfolio.

K. Conclusion

SCE continues its efforts in delivering both cost-effective and innovative EE solutions to meet State policy objectives for reliability and clean energy. SCE continues to work closely with multiple stakeholders to improve both the delivery and value of EE, and to maximize ratepayers' benefit from these resources, through portfolio optimization, exploration of new procurement methods, and advanced measurement and verification of energy savings. In 2018 and beyond, SCE will work to achieve cost-effective energy savings, expand innovative EE solutions, and drive toward market transformation. To realize this vision, SCE will refine and adapt its energy efficiency portfolio and will employ several strategies across the portfolio:

- To achieve cost-effective energy savings, SCE will aim to reduce costs and increase EE adoption by simplifying and streamlining offerings. This will include increased use of upstream and midstream offerings and self-service delivery channels.
- SCE also plans to increase EE adoption by providing customers with greater access to and greater understanding of their energy usage, as well as providing expanded behavioral interventions.

1. Challenges and Market Trends

EE savings and value have declined, creating an urgency to improve portfolio cost-effectiveness, while addressing long-term planning and near-term impacts. Specific challenges that further magnify these challenges include increases in building and

appliance code baselines that have reduced program savings opportunities. Savings have also been reduced through CPUC dispositions for allowable measures, and broader identification of Industry Standard Practice (ISP) measures within our nonresidential portfolio.

2. Efforts to Overcome Challenges: Portfolio Optimization

SCE intends to help enhance the grid, and improve cost-effectiveness and customer experience by focusing resources on high-performing, highly cost-effective programs while addressing locational constraints, and by seeking approval to consolidate and/or reduce cost-ineffective programs.

2017 Energy Efficiency Programs Overview

I. Statewide Program for Residential Energy Efficiency

California's Energy Efficiency Strategic Plan (CEESP or "Strategic Plan") goals — which include 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 2017, 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 2017 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 for homeowners, renters, multifamily property owners, and new construction 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 are a cross-cutting 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 six (6) subprograms that make up the comprehensive program approach.

A. Home Energy Advisor 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. This subprogram 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 2017

a. Home Energy Reports (HERs)

More than 1 million SCE customers received HERs in 2017. Many improvements were made to HERs, including a re-design of the reports, the addition of a Frequently Asked Question (FAQ) section, and new modules to help customers learn about their energy usage. HERs continued to use a social norm behavior strategy, which helps influence recipients by comparing their consumption to their neighbors' usage.

HERs were mailed to approximately 25 percent of SCE's eligible residential customers, exceeding the CPUC target of 5 percent. HERs also helped the portfolio achieve savings of: 86,369,690 kWh and 23,216 kW.

b. Home Energy Efficiency Surveys (HEES)

As a result of a Work Paper disposition that reduced the HEES savings by approximately 70 percent, SCE did not mail any surveys in 2017.

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

The EEAT 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 to be more efficient around the home. EEAT maintained the Single Sign On (SSO) functionalities and enhanced the customer experience by creating a web page, **www.sce.com/energysurvey**, which provides customers with a direct link to the EEAT survey after they log into their SCE.com account.

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

This pilot was launched in April 2017 in partnership with SoCalGas and local water agencies. Its goal is to implement multiple behavior intervention strategies that influence multifamily complexes to reduce consumption of electricity, gas, and water by 10 percent or more. More than 350 multifamily complexes received Comparative Energy Usage reports with a combined representation of their electricity, gas, and water consumption. The reports were designed to influence energy improvements and tenants' engagement in efficiency. Selected sites could and did also opt-in to receive banners, door hangers, and additional tenant marketing from SCE to help drive program awareness, energy-saving actions, and property owner and tenant engagement.

B. Statewide Plug Load and Appliances 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). The PLA Program is undergoing a transformation to focus on offering rebates through more cost-effective delivery methods, which may include the integration of Midstream and POS delivery models. The PLA Program is also striving to be an informational platform that can help teach customers about energy efficiency and help them make well-informed decisions about the types of products that exist in the market. Today's "smart" products can help customers make adjustments to their electricity usage, allowing them to save money and help reduce demand on the grid.

In 2017, 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 to increase the volume of rebates provided via POS channels. This included the HVAC industry, in which local distributors offer whole house fans, a measure that assists in cooling down a 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.

2. Strategies Implemented in 2017

SCE implemented the following strategies for the statewide PLA Program in 2017:

- Continued offering POS rebates for variable-speed drive (VSD) pool pump rebates in participating retail stores.

- Continued working with the Foundation for Pool and Spa Industry Education (FPSIE) to provide specialized training classes for pool pump contractors and installers. Classes focused on the appropriate installation of VSD pool pumps, on energy savings, and on commissioning pumps to operate off-peak.
- Continued to engage the contractor workforce to offer the VSD pool pump measure and 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.
- Developed partnerships with pool pump manufacturers such as Pentair and Hayward to conduct authorized training sessions for pool pump professionals.
- Contacted various distributors to encourage them to offer more energy-saving products such as whole house fans and heat pump water heaters in 2018.
- Worked closely with the Save Power Day demand response program to begin offering an EE rebate for smart thermostats.
- Launched SCE's Marketplace web page (on SCE.com) as the new EE rebate and information platform to engage customers to learn more about SCE's programs and to offer instant rebates in 2018.
- Launched the Energy Management Center (EMC) website[7] 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.

C. Multifamily Energy Efficiency Rebate (MFEER) Program

1. Program Description

The MFEER Program offers deemed rebates for EE products (such as lighting, pool pumps, appliances, 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,

[7] *See* SCE's Energy Management Center website, *available at* **https://pages.email.sce.com/EMC**.

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.

2. <u>Strategies Implemented in 2017</u>

In 2017, SCE implemented the following strategies for the MFEER Program:

- MFEER continued to work closely with the income-qualified Energy Savings Assistance (ESA) Program to maximize the savings potential and benefits for customers. This integrated approach combines market-rate and income-qualified EE measures.
- To maximize effectiveness in reaching property owners and managers, SCE leveraged relationships with a number of trade organizations and associations that support the multifamily market segment. SCE actively participates in numerous meetings, workshops, and networking events, including various trade shows that provide key access to partnerships and resources. SCE also strategically advertises on association websites and in 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 continued its recruitment and training of licensed pool contractors to promote the installation of variable-speed drive (VSD) pool pumps. SCE has partnered with the Foundation for Pool and Spa Industry Education (FPSIE), and pool equipment manufacturers to conduct local training workshops for pool contractors. Training is focused on proper installation and commissioning of VSD pool pumps to ensure

maximum energy savings as well as compliance with program rules and requirements.

- SCE introduced new measures, including ENERGY STAR® LED light fixtures, LED T8 replacement lamps, and efficient fan controllers for residential air conditioners, which improved the program measure mix and increased energy savings.

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 whole-house approach that allows them to achieve deeper and more comprehensive energy savings in keeping with the EE loading order. This approach views a building as a set of interdependent systems that must be considered holistically. The Home Upgrade program is designed to offer a one-stop approach to whole-house energy-efficient improvements. The objectives for Home Upgrade are to introduce contractors and residential customers to the concept of home performance, help transform the home retrofit market, and 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. There are two (2) paths in the Home Upgrade Program:

- A Basic Home Upgrade path that uses a deemed / hybrid approach using a menu-based selection of home energy efficiency improvements, and
- An Advanced Home Upgrade path that offers a tailored home energy efficiency solution using comprehensive energy modeling.

These paths allow customers to choose from a variety of measures that best suit their homes and needs.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the EUC Home Upgrade Program:

- Reached 137 percent of its goal for number of projects and 118 percent of its goal for kW / kWh savings
- Partnered with the Department of Energy's Home Performance with ENERGY STAR® Program in order to:
- Expand program knowledge for both contractors and customers, and
- Grow the EUC Program, using widely recognized name recognition that builds on trust (in the work and the worker), quality (third-party quality assurance), and the Whole House Approach (methodical improvements).
- Established a partnership with the state's California Hub for Energy Efficiency Financing (CHEEF) Residential Energy Efficiency Loan (REEL) Program to provide an easy method of financing projects for customers.
- Implemented new processes due to the passage of California Senate Bill 1414, which requires proof of permit closure for any project reserved or post-retrofit submitted after January 1, 2017 that includes installation of central air conditioning, a furnace, or a heat pump, and of their related fans, in order to receive an incentive check in 2017.
- Continued our partnership with the Residential HVAC Quality Installation (QI) Program in offering an additional $400 incentive per project to complete a HVAC QI project as part of an Advanced Home Upgrade project.
- Continued to streamline program reporting requirements and build on 2016 improvements. The program has continued to work closely with program participants to identify and resolve application and processing challenges. For example, we enhanced the HPXML feature to populate data fields in the database, saving contractors' time during the application process.

- Continued to refine a "Collaborative QC" approach between contractors, the Quality Assurance / Quality Control (QA/QC) vendor, and account managers to resolve QC issues found in field inspections in a timely manner.
- Added a "Witness QC" process, in which QC inspectors observe the on-site post-installation inspection for a new contractor's first two projects, in order to demystify the process and supplement in-field training for new contractors.
- Achieved a 34 percent reduction in vendor costs through negotiation and process improvements.

E. 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)

a. 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, 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.

b. Strategies Implemented in 2017

CAHP continued to support the residential builder community through 2017 by providing education, technical assistance, and financial incentives for single-family and multifamily housing projects which exceeded the Title 24 baseline. The program exceeded its energy savings goals in 2017. Since the adoption of the 2016 Title 24 code (effective January 1, 2017) made future implementation of the

program significantly non-cost-effective, new applications were not released to builders in 2017. However, due to a backlog of applications, 47 new CAHP applications were processed in 2017. The SCE CAHP program will continue to pay incentives on these projects through 2021.

During 2017, SCE Residential Program Management actively participated in the development of a pilot called Clean Energy Homes that focuses on non-resource activities as an alternative to CAHP. Input from RNC Program experience was incorporated into the Clean Energy Home pilot for education and outreach to the entire real estate industry, including lenders, appraisers, potential home buyers, developers, builders, and energy consultants. While continuing strong engagement with the RNC market through education and technical assistance, the emphasis focused on builder preparation for 2020 ZNE goals in a cost-effective manner. Although outreach efforts confirmed that most residential builders are confused about the requirements for implementing ZNE, builders are incorporating high-performance walls, electric heat pump water heaters, and improved insulation, which achieves the non-solar energy efficiency components of ZNE.

F. Residential Heating, Ventilation, and Air Conditioning 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 increase energy efficiency and peak load reduction.

2. Program Description

The Residential HVAC Program has two subprograms:

- The Residential HVAC Quality Installation (RQI) subprogram addresses residential 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.

3. Residential HVAC QI Subprogram Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the RQI subprogram:

- Lessons learned from the 2016 cross-promotion with Energy Upgrade California® were reviewed with the Statewide IOU Residential HVAC team.
- Promoted RQI to contractors through Energy Upgrade California®.
- Incorporated the measures in the approved Work Paper[8] into RQI.
- Held discussions with industry stakeholders, led by the statewide Commercial HVAC lead, which resulted in reducing the tasks delegated to the Western HVAC Performance Alliance, with greater focus on integrating recent legislation into existing programs.
- Authorized a baseline study consistent with AB 802. The study compares two-year baseline home energy usage before an HVAC retrofit with energy usage in the year following the retrofit. The results of the study, using actual billing data, are expected in late 2018 and will inform program review for both RQI and RQM (see #3, below). Residential HVAC contractors and experts in ACCA 5 and ACCA 9 eagerly await the study results, expecting it to reveal that significant energy savings are lost using the current RQI Work Paper measures. Performance-based programs using billing data could provide opportunities for greater program cost-effectiveness.

[8] SCE 17 HC023, *Quality Installation for Residential Split Systems*, which includes multiple measures that correspond with Quality Installation of different HVAC unit efficiency levels.

4. Residential HVAC QM Subprogram Strategies Implemented in 2017

SCE Program Administration did not implement RQM subprogram activities in 2017 for the following reasons:

- SCE's Residential HVAC contractors consistently confirmed that the RQM subprogram incentive was too low relative to the lengthy assessment testing the program required.
- Implementation of alternative methodologies, such as performance-based incentives and/or changes to use of existing baselines, would require significant program changes.
- Although Program Administration identified diagnostics tools readily available for Residential HVAC contractor use, industry disputed whether the tools incorporated industry-standard ACCA-4 procedures.[9]

Please note that the AB 802-related baseline study mentioned above under RQI also relates to RQM.

[9] *See* ACCA = Air Conditioning Contractors of America procedures, *available at* **http://www.acca.org/standards/quality**.

II. Statewide Commercial Energy Efficiency Program

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 subprograms:

- The Commercial Energy Advisor Program
- The Commercial Calculated Program (which includes the Savings By Design Program)
- The Commercial Deemed Incentives Program
- The Commercial Direct Install Program
- The Commercial Continuous Energy Improvement (CEI) Program, and
- The Nonresidential HVAC Program.

A. Commercial Energy Advisor Program

1. Program Description

The Commercial Energy Advisor Program offers 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. This program also offers 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 component also provides targeted education, training, technical support, and renovation and/or replacement incentives.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Commercial Energy Advisor program:

- Implemented the Automated Benchmarking System (ABS), which allows nonresidential customer users to seamlessly upload energy data into their ENERGY STAR® Portfolio Manager accounts in compliance with AB 802.
- Developed enhancements from the proposed revisions to AB 802 around documentation and data expansion, which the California Energy Commission (CEC) made official as of March 3, 2018. The enhancements are anticipated to launch in early 2018.
- Performed over 2,800 pump tests targeting commercial customers.

B. Commercial Calculated Incentives Program

1. Program Description

The Commercial Calculated Incentive Program (aka the Customized Energy Efficiency Program) offers incentives for customized retrofit and BRO (Behavioral, Retrocommissioning and Operational[10]) 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 (i.e., 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 2017

In 2017, 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:

[10] Formerly known as Retrocommissioning.

- Introduced (effective January 1) a mandatory project application pre-screening QA process to examine all Calculated (custom and RCx/BRO) project applications for complete and accurate (documentation), engineering audits (including calculations), and influence requirements. Thus far, this process has reduced issues per project by approximately 76%. Monthly quality feedback reports from SCE's Engineering Project Management (EPM) Group show that project issues were reduced from an average of 2.3 per project to 0.8 out of 126 total projects reviewed. Typical issues include:
  - Verbose, rambling descriptions of facility operations,
  - Poorly-defined baseline(s),
  - Insufficient or missing program influence information, and
  - Inaccurate calculation methodology (ies).
- Implemented mandatory requirements for improved documentation of evidence for program influence for all calculated measures within a project. These enhanced documentation requirements will continue to improve the quality of project applications and mitigate potential for free-ridership. The program influence requirements are supported by an internal and external Energy Efficiency Influence Job Aid that details 14 different forms of influence based on the preponderance of evidence.
- The *Statewide Customized Offering Procedures Manual*, the *Statewide Retrocommissioning (RCx/BRO) Guidelines*, the *Statewide Customized Calculated Savings Guidelines*, and SCE's *Solutions Directory* all received updates throughout 2017 to help ensure that implementers and customers are apprised of all program requirements and information necessary to effectively participate in these Commercial Calculated EE programs.
- Conducted a second annual EE program training event for trade professionals (contractors and/or other energy service providers, formerly known as Customers' Authorized Agents), who act on behalf of customers to submit EE program applications. Mandatory online training requirements for trade professionals were also implemented in 2017. These training requirements include completion of an

advanced training module, focused on Calculated EE programs, before a trade professional can submit a Calculated EE program application. This helps to ensure that trade professionals are knowledgeable about the program's technical and policy requirements 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[11]

1. Program Description

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

A notable strength of the SBD program team, in addition to delivering a high-quality, efficient program offering, has been its focus 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 is also proud to have partnered for many years with the Sacramento Municipal Utility District (SMUD) and the Los Angeles Department of Water and Power (through Southern California 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 2017

In 2017 the statewide Savings By Design team continued to identify and implement changes to policies, procedures, and tools to improve the efficacy and cost-effectiveness of the program. The team also enhanced, leveraged, and developed new relationships with government agencies, trade associations, and internal IOU resource groups to

[11] 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.

establish a unified focus to align the new construction industry towards Zero Net Energy targets.

In 2017, SCE implemented the following strategies:

- Processed more than 70 customer projects, which contributed over 36.6M kWh and 6.9 MW of program-influenced energy savings.
- Enhanced the program focus in supporting customer Zero Net Energy targets by:
- Placing a higher emphasis on the program's Whole Building Approach (WBA). Focusing the SBD program on the Whole Building Approach provides integrated design options and EE recommendations optimized to work in concert across multiple building systems (technologies), rather than approaching systems one at a time.
- Increasing technical support to customers through offering enhanced WBA project energy effectiveness modeling assessments, using Sefaira, an Architecture software tool, to explore design options quickly and to understand their impact on building performance.
- Developing, in conjunction with PG&E, marketing collateral which places a spotlight on California ZNE new construction projects ("Zero Net Energy Case Study Buildings, Volume 2").
- Increased program cost-effectiveness by transitioning previously-offered Systems Approach lighting and HVAC measures to SCE's Midstream Point of Purchase (MPOP) and Upstream HVAC (UHVAC) programs as deemed measures. This change, due to the straightforward nature of single-system EE technologies, benefited the MPOP and UHVAC programs' more efficient and more cost-effective program delivery models.

D. WE&T Energy Design Resources

1. Project Description

The WE&T Energy Design Resources (EDR) website currently serves as a technical resource for the Savings By Design, Residential New Construction, Codes and Standards, and Emerging Technologies programs for the Statewide Utilities.

In 2017 the EDR website management and operations underwent a series of transitional phases which set the tone for the overall objectives and goals of the website going forward. These goals included:

- Transformation of the EDR website management structure to a new governance model
- Establishment of a new maintenance and management structure for the EDR website, and
- Development of a new overarching strategy for the EDR website.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the WE&T Energy Design Resources Website project.

- Established the Statewide Utilities as the governing body for the EDR website. As a body, the Statewide Utilities determine changes and updates to the EDR website based on regulatory requirements, needs, and/or current industry requirements.
- Established a Statewide Utilities Team consisting of program subject matter experts (SMEs), advisors, and consultants who:
    - Advised on industry trends
    - Advised on user and/or customer needs
    - Made recommendations on the type of content (fact sheets, case studies, specification sheets, videos, etc.) and the features and/or functions on the website that is most useful for customers.
- Acquired a new website development agency for the development, design, operations, and maintenance of the EDR website. In 2017, the agency completed planning the migration strategy for the EDR Content Management System (CMS) platform, content, code repository, database, and server setup.
- Established a new overarching purpose and strategy for the website (to be implemented during the restructuring, redevelopment, and redesign phase during the first three Quarters of 2018):

- To serve as a technical resource website that provides:
- Industry design resources – design strategies, energy management, and building design and management
- No-cost design and planning software and tools, and
- Statewide Utility program information, case studies, technical fact sheets, and energy design information and resources.
- To introduce and establish the new governance and management of the Energy Design Resources website, explaining who Statewide Utilities are, what we do, how to contact us, and where to get more information.
- To improve the user experience and position EDR as the expert source for energy efficiency and sustainability solutions.
- To develop new content marketing and search engine marketing initiatives in order to benchmark website traffic and conversion funnels,[12] analyze content (keywords), and determine the behaviors of target audiences.

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 and distributors 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.

[12] "Conversion funnel" is a phrase used in e-commerce to describe the journey a consumer takes through an Internet advertising or search system, navigating an e-commerce website, and finally "converting" from a search to a sale.

The top measures installed in 2017 were variable speed drives (VSDs) on pump controls, exterior LED lighting measures (including street lighting), and commercial food service measures.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Commercial Deemed Incentives Program:

c. Downstream Strategies

To support the development and implementation of meter-based savings protocols, the Commercial Deemed Incentives Program aligned with Southern California Gas Company (SoCalGas) to launch the Restaurant Refresh (RR) Program, formally called the Commercial Restaurant Retrofit Program. The RR Program is a multifaceted energy-management whole building retrofit program that addresses stranded energy and water savings opportunities, with the goal of achieving a 15 percent reduction in energy and water consumption. The program uses meter-based savings protocols to evaluate savings in alignment with AB 802. SCE supports SCG by co-branding marketing materials, coordinating the Customer Information Service Request (CISR) process, and expediting application submittals.

The Commercial Deemed Incentives Program adopted the Design Lights Consortium (DLC) Technical Requirements transition from Version 3.0 to V4.0 / 4.1. This change affected a number of qualifying lighting products across all downstream LED lighting measures and involved increased efficacy requirements.

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 (permitting only one re-inspection per project) and changing invoice requirements (prohibiting updates to equipment costs).

Exterior lighting and some pump measures were removed from the (downstream) program, effective 12/31/2017, due to CPUC dispositions, market studies, and industry standard (ISP) practice studies.

In 2017, the Commercial Deemed Program surpassed its kWh and kW goals by 240% and 106%, respectively. The program received an estimated 18,764,000 kWh and 1,041 kW in savings during the last quarter of 2017, mostly attributed to lighting measures. During 2017 SCE also targeted Food Service measures, HVAC Controls, Process Controls, and Refrigeration Controls which contributed to the program exceeding the kW goal for 2017.

d. Midstream Point of Purchase (MPOP) Strategies

In 2017, SCE continued to offer the MPOP Program as a key deemed offering. The MPOP program offered point-of-purchase (POP) incentives on qualified LED lighting technologies to nonresidential customers. The top measures installed in the 2017 MPOP Program were LED T8 Type A tubes and LED high/low bay fixtures of various wattages. The MPOP program exceeded its annual kWh and kW goals, and:

- Enhanced MPOP Program design to provide distributors with greater flexibility in offering incentives by reducing administrative incentive allocation barriers that hindered distributors' ability to sell products. In 2017, SCE offered incentives to participating distributors through a first-come, first-served approach which allowed distributors to move products at a faster rate.
- Increased the number of participating distributors to expand MPOP's reach and to provide more options for customers wishing to purchase qualified LED products. Through marketing and outreach efforts, SCE increased the number of participating distributors in the MPOP program to more than 60. This helped expand the program and also helped SCE exceed its MPOP savings goals.

- Developed a scalable data processing solution for MPOP program data and customer information collected by distributors that SCE validates before reimbursing partners. This online tool enables greater distributor participation and allows more product technologies to be included in MPOP.
- Successfully received Work Paper approval to offer incentives on LED T8 Type A tubes outside of the target Aliso Canyon Zip Code area. This resulted in SCE being able to continue the measure through 2017, so that many hundreds of thousands of LED tubes were incentivized and installed through the MPOP Program.
- Continued to offer LED high/low bay measures in the MPOP Program. The volume of MPOP LED high bay measures was significantly higher than in 2016, as MPOP incentivized approximately 40,000 high/low bay units in 2017.

F. 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 2017

In 2017, SCE implemented the following strategies for the Commercial Direct Install Program:

- Continued the customer participation demand threshold at a maximum of 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.
- Continued offering LED high bay / low bay and 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. Engaged SCE's Business Customer Division (BCD) account managers to help reach out to eligible hotel and motel owners and managers and promote the measure by informing them about its benefits. The program completed 5 VSD pool pump installations in 2017.
- Worked with BCD account managers and SCE Local Public Affairs (LPA) representatives to visit Catalina Island in the 4th quarter of 2017. Through this coordinated effort, 101 businesses on the island participated in the DI Program.
- Joined with SCE's Energy Leader Partnership Program to leverage the Direct Install Program for projects funded by the partnerships in municipally-owned facilities.

G. Commercial Continuous Energy Improvement Program

1. Program Description

Continuous Energy Improvement (CEI) is a non-resource program designed to make energy an organizational priority for commercial customers by employing change management and process improvement strategies for energy management, resulting in energy efficiency projects that drive energy savings. Energy Advisors provide strategic energy management coaching, consulting, and training. Program milestones for each engagement include forming an energy management team, creating a baseline model of energy intensity, conducting organizational and ASHRAE Level 1 assessments, creating a prioritized pipeline of measures, setting an energy reduction goal, developing a plan to reach the goal, and adopting a strategic energy management plan.

1. Program Successes

In 2017, two school district engagements showed notable success in the CEI Program. CEI provided the framework that allowed them to make informed decisions in moving forward with project implementation and with Proposition 39 funding.[13] The districts assigned personnel to form energy teams where none existed previously. Both districts are also currently finalizing Strategic Energy Management Plans (SEMPs) that will provide energy management structure moving forward. Both districts are using energy data tracking to run campus competitions that include audits on all campuses twice a year, and both are forming Green Teams that will include faculty and students, to ensure that each school district will continue to sustain the program.

A valuable component of CEI is the identification of EE measures resulting in a pipeline of bankable projects. In 2017, 183 projects were identified through ASHRAE Level 1 assessments and data analytics, and prioritized by program participants supported by their Energy Advisor.

The participants completed various projects while in the CEI Program, including LED lighting, HVAC, and upgrades of various other types of equipment. Because of the program, one school district reviewed the output of their solar energy systems and found malfunctions at multiple locations, where the systems were not sending power to the grid. They are currently addressing the malfunctions.

Although not yet countable toward utility savings targets, the implementation of behavioral, operational, and maintenance energy-saving measures for these participants totaled 365,000 kWh and 6,000 Therms.

Improved relationships between customers and the utility were found in a survey by utility account representatives, which indicated positive feedback regarding the program. The utility representatives stated that the CEI Program strengthened the customer/utility relationship, increased communication between the customers and the utility, and

[13] The California Clean Energy Jobs Act of 2012, which funds eligible energy efficiency efforts in schools.

increased customer awareness of EE programs, as well as willingness to partner with the utility to discuss energy efficiency in ways they were not engaged previously.

2. Program Implementation Barriers or Problems Encountered

The CEI Program's two restaurant engagements continued to experience turnover at the Energy Champion positions. Both engagements made efforts to assign co-champions to mitigate this, but there was turnover in those positions as well. The restaurant business environment remained volatile, negatively impacting budgets for project implementation (and in some cases, for program participation altogether). However, after multiple restaurant locations were closed, customers made new efforts to improve the efficiency of the remaining locations. This allowed for multiple projects to be completed in the 4th Quarter of 2017.

H. Nonresidential HVAC Program

1. Upstream HVAC Equipment Incentive Program

a. 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 that offers incentives to contractors to work with customers and influence them to replace old, inefficient operating equipment with new, high-efficiency equipment.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Upstream HVAC Equipment Incentive program:

- Continued to actively promote the program to build on contractor, distributor, and manufacturer participation.
- Implemented program and procedural changes that would improve the efficacy and cost-effectiveness of the program.

- Reduced program savings goals by 75% from previous years due to the lack of measure eligibility.
- Continued to explore market opportunities to adjust and enhance performance tiers for all categories affected by 2015 Federal code updates.
- Continued to develop Early Retirement offerings to participating HVAC contractors, encouraging them to identify opportunities through their existing maintenance agreements and customer contacts. Contractors work with distributors participating in the Upstream HVAC program to identify and select new high-efficiency units.

2. HVAC Commercial Quality Installation (QI) Program

a. Program Description

The HVAC Commercial Quality Installation (QI) Program is a subprogram of the nonresidential Statewide HVAC Program 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).

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the HVAC Commercial QI program:

- Continued to provide classroom training to Commercial Quality Renovation (CQR) contractors.
- Collaborated with the Western HVAC Performance Alliance (WHPA) Commercial QI Committee on field data collection specifications and calculations to measure the field performance and efficiency of installed HVAC systems.

- Concluded HVAC systems field data collection activities in support of a potential Work Paper for claiming savings. QI Work Paper development was suspended to focus on a potentially more cost-effective approach to claiming savings, using Normalized Metered Energy Consumption (NMEC) through the Comprehensive Value Chain HVAC High Opportunity Projects or Programs (HOPPs).

3. HVAC Commercial Quality Maintenance (QM) Program

a. 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 effort supports the long-term strategic goal of transforming the trade from commodity-based to quality-based.

b. Strategies Implemented in 2017

The program's focus in 2017 was to continue to bolster performance by:

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

Specific strategies implemented in 2017 included:

- Aligned customer maintenance plan requirements with objectives described in Section 4 of ASHRAE Standard 180.
- Reduced collection of unused data.
- 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.
- Simplified customer incentive calculations.
- Planned additional administrative program improvements for launch in May, 2018.

III. Statewide Industrial Energy Efficiency Program

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) Statewide subprograms described below — the Industrial Energy Advisor Program, the Industrial Calculated Energy Efficiency Program, the Industrial Deemed Energy Efficiency Program, and the Industrial Continuous Energy Improvement (CEI) Program — comprise the program's core products and services.

A. Industrial Energy Advisor Program

1. Program Description

The Industrial Energy Advisor Program offers a wide and comprehensive offering of audit services, including energy assessments, benchmarking, continuous energy improvement audits, and online "do-it-yourself" audits. This program also offers 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 2017

In 2017 SCE implemented the following strategies for the Industrial Energy Advisor Program:

- Relaunched the pump overhaul measure into the core business program as of June, 2017, after approval from CPUC staff under the guidance of Resolution E-4818.
- Performed nearly 2,800 pump tests targeting commercial customers.

B. Industrial Calculated Energy Efficiency Program

1. Program Description

The Industrial Calculated Energy Efficiency Program offers incentives for customized retrofit and retrocommissioning EE projects, and also 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 2017

In 2017, SCE implemented strategies to improve the quality of applications and projects for the Industrial Calculated Energy Efficiency Program, through communications, training, and program policy updates, including:

- Introduced (effective January 1) a mandatory project application pre-screening QA process to examine all Calculated (custom and RCx/BRO) project applications for complete and accurate paperwork (documentation), engineering audits (including calculations), and influence requirements. Thus far, this process has reduced issues per project by approximately 76%. Monthly quality feedback reports from SCE's Engineering Project Management (EPM) Group show that project issues were reduced from an average of 2.3 per project to 0.8 out of 126 total projects reviewed. Typical issues include:
  - Verbose, rambling description of facility operations
  - Poorly-defined baseline(s)
  - Insufficient or missing program influence information, and
  - Inaccurate calculation methodology(ies).

- Implemented mandatory requirements for improved documentation of evidence for program influence for all calculated measures within a project. This requirement will continue to improve the quality of project applications while reducing free-ridership. The influence requirements are supported by an internal

and external Energy Efficiency Influence Job Aid that details 14 different forms of influence based on the preponderance of evidence.

- The *Statewide Customized Offering Procedures Manual*, the *Statewide Retrocommissioning (RCx/BRO) Guidelines*, the Sta*tewide Customized Calculated Savings Guidelines*, and SCE's *Solutions Directory* all received updates throughout 2017, which helped ensure that implementers and customers possessed up-to-date information so they could effectively participate in programs.
- Conducted a second annual off-site EE program training event for trade professionals (qualifying vendors, contractors, and/or other energy service providers, formerly known as Customers' Authorized Agents), who act on behalf of customers to submit a substantial percentage of EE program applications. Mandatory online training requirements for trade professionals were also implemented in 2017, to ensure that they are properly trained and held accountable for knowledge about SCE's Calculated, Deemed and Finance programs. Unauthorized vendors can no longer submit EE incentive applications. Because of this new training, the quality of vendor submissions has also been improved.

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 2017 were variable speed drives (VSDs) on pump controls and exterior LED lighting.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Industrial Deemed Incentive program:

- Adopted the Design Lights Consortium (DLC) Technical Requirements transition from Version 3.0 to V4.0 / 4.1. This change affected a number of qualifying lighting products across all downstream LED lighting measures and involved increased efficacy requirements.
- 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).

- Exterior lighting and some pump measures were removed from the (downstream) program, effective 12/31/2017, due to CPUC dispositions, market studies, and industry standard (ISP) practice studies.

The program's energy savings goals were not achieved in 2017, but SCE will focus on optimizing VSD measures to achieve future goals.

D. Industrial Continuous Energy Improvement (CEI) Program

1. Program Description

Industrial Continuous Energy Improvement (CEI) is a consultative service to assist industrial customers to engage in long-term strategic energy planning. CEI helps customers better manage energy using a comprehensive, longer-term approach that addresses capital, behavioral, and operational improvement opportunities and creates sustainable practices through a high-level commitment from executive-level management.

Customer assistance services under CEI include the following six steps:

Commitment by management with reinforcement.

Organizational and operational assessments of current operations.

Strategic planning, including commitment of resources and setting energy improvement goals.

Implementation of improvements.

Evaluation of progress towards goals.

Modification of plans and goals as necessary.

These services also include establishing baseline energy use, identification of energy savings opportunities, engaging the workforce, tracking of monthly energy use, and quantifying energy savings.

2. Program Successes

The industrial CEI program has helped customers develop strategic energy plans with energy savings goals, form energy teams and engage employees in behavioral change, identify energy savings opportunities, implement EE measures, and quantify energy savings. Long-term planning leads to the key benefits of the CEI program: reduced energy use and increased employee engagement. In addition, CEI has helped customers adopt continuous improvement in their manufacturing processes, leading to increased productivity, improved product quality, and reduced operating costs.

CEI has also favorably affected customer participation in utility EE programs by providing a channel for utilities, through account executive engagement, to develop:

- Long-term relationships with customers, and
- A mechanism to recognize energy savings for behavior, retrofit, and operational (BRO) energy-saving measures.

CEI has provided documentation of program influence on customers' decisions to implement energy-saving measures and on improved persistence of energy savings.

Beginning in 2013, sixteen industrial customers have enrolled in the current CEI program. Eleven customers completed the program while five customers were off-ramped for various reasons, including severe down-turns in business (one customer closed entirely), new ownership, and/or major reorganizations of business operations.

During 2017, CEI engagements with the remaining customers were completed. Selected highlights include:

- One customer achieved 21% savings over 4 years of CEI participation, exceeding a savings goal of 15%.
- A second customer achieved 15% electricity and 21% natural gas savings. As a result, their management adopted a policy of implementing all energy savings measures having payback less than 6 years, a significant change from past management practice.
- One stand-out customer joined the Department of Energy's Better Plants Challenge, and adopted the long-term goal of reducing energy intensity by 25% in 10 years.

3. <u>Program Implementation Barriers or Problems Encountered</u>

Examples of business issues that can impact program participation include changes in ownership, manufacturing processes, and/or product mix. Also, many industrial customers have a short-term horizon for business planning that can limit their ability to implement a long-term energy management program

Energy tracking and the ability to precisely quantify the impact of improvements on energy savings are complicated by the complexity and variability of industrial processes, which generally do not have consistent energy use patterns like those of commercial buildings. Furthermore, operating data for all factors impacting energy use are not monitored at many facilities. This lack of data can make it difficult to normalize energy use for changes in production variables.

Customers typically have limited resources to manage energy use and to monitor changes in production operations for correlation and decisions on energy. There is a need

for energy sub-metering and improved process monitoring automation to facilitate the collection of energy and production variables that will, in turn, facilitate monitoring of energy use and determining energy savings.

4. Program Changes Made in 2017

To assist customers in maintaining their CEI activities and to monitor customers' performance, extended monitoring of customers' CEI activities, using a "light touch" M&V consulting service, was continued for two CEI customers after the initial 2-year engagement.

5. Program Objectives Met

- Helped customers develop energy teams that included SCE account representatives.
- Helped customers develop and implement long-term strategic energy management plans.
- Trained and supported companies to develop and implement employee and behavior-centric efforts such as rewards programs, "energy treasure hunts," and communications processes.
- Helped customers identify and implement energy savings opportunities, including behavioral measures (such as remembering to turn off lights when leaving a room) and operations and maintenance measures. Developed procedures to normalize electricity and natural gas use with variations in production, assisted customers in tracking their energy use, and quantified energy savings.
- Facilitated improved relationships between customers and their SCE account representatives.
- Developed lessons learned that can be used to inform the 2018 Strategic Energy Management programs.

IV. Statewide Agriculture Energy Efficiency Program

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:

- The Agriculture Energy Advisor Program
- The Agriculture Calculated Energy Efficiency Program
- The Agriculture Deemed Energy Efficiency Program, and
- The Agriculture Continuous Energy Improvement Program.

A. Agriculture Energy Advisor Program

1. Program Description

The Agriculture Energy Advisor Program offers wide and comprehensive audit services, including energy assessments, benchmarking, basic integrated retrocommissioning, continuous energy improvement audits, and online "do-it-yourself" audits. This program also offers 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 2017

In 2017 SCE implemented the following strategies for the Agriculture Energy Advisor Program:

- Performed over 1,000 pump tests for agricultural customers in the Central Valley, as the severe drought forced many agricultural growers to drill new and/or deeper wells to keep their crops alive.
- Began developing a pump test co-pay pilot, based on previous CPUC comments and guidance, to offer pump test services for a fee to customers requesting an audit before the date scheduled for the next test in the regular cycle. This is planned to apply to pumps less than 25 Horsepower, and for audits conducted for non-EE purposes.
- In June, 2017, re-launched the pump overhaul measure into the core business program after approval from CPUC staff (per 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 2017

In 2017, SCE implemented the following strategies to improve the quality of applications and projects for the Agriculture Calculated Energy Efficiency Program, through communications, training, and program policy updates, including:

- Introduced (effective January 1) a mandatory project application pre-screening QA process to examine all Calculated (custom and RCx/BRO) project applications for complete and accurate paperwork (documentation), engineering

audits (including calculations), and influence requirements. Thus far, this process has reduced issues per project by approximately 76%. Monthly quality feedback reports from SCE's Engineering Project Management (EPM) Group show that project issues were reduced from an average of 2.3 per project to 0.8 out of 126 total projects reviewed. Typical issues include:

  - Verbose, rambling descriptions of facility operations
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- Implemented mandatory requirements for improved documentation of evidence for program influence for all calculated measures within a project. This requirement will continue to improve the quality of project applications while reducing free-ridership. The influence requirements are supported by an internal and external Energy Efficiency Influence Job Aid that details 14 different forms of influence based on the preponderance of evidence.

- The *Statewide Customized Offering Procedures Manual*, the *Statewide Retrocommissioning (RCx/BRO) Guidelines*, the *Statewide Customized Calculated Savings Guidelines*, and SCE's *Solutions Directory* all received updates throughout 2017, which helped ensure that implementers and customers possessed up-to-date information so they could effectively participate in programs.

- Conducted its second annual off-site EE program training event for trade professionals ("Trade Pros" — qualifying vendors, contractors, and/or other energy service providers, formerly known as Customers' Authorized Agents), who act on behalf of customers to submit a substantial percentage of EE program applications. Mandatory online training requirements for trade professionals were also implemented in 2017, to ensure that they are properly trained and held accountable for knowledge about SCE's Calculated, Deemed, and Finance programs. Unauthorized vendors can no longer submit EE incentive applications.

Because of this new training, the quality of vendor submissions has also been improved.

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 measure installed in 2017 was variable speed drives (VSDs) on pump controls.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Agriculture Deemed Energy Efficiency Program:

- Adopted the Design Lights Consortium (DLC) Technical Requirements transition from Version 3.0 to V4.0/4.1. This change affected a number of qualifying lighting products across all downstream LED lighting measures and involved increased efficacy requirements.
- 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).

Exterior lighting and some pump measures were removed from the (downstream) program, effective 12/31/2017, due to CPUC dispositions, market studies, and industry standard (ISP) practice studies.

The Agriculture Deemed EE Program's energy savings goals were not achieved in 2017, but SCE will focus on optimizing VSD measures to achieve future goals.

D. Agriculture Continuous Energy Improvement (CEI) Program

1. Program Description

The Agricultural Continuous Energy Improvement (CEI) subprogram is a consultative service that is aimed at helping agricultural customers engage in long-term strategic energy planning. CEI helps customers better manage energy, using a comprehensive approach that addresses both technical and management improvement opportunities and creates sustainable practices through a high-level commitment from executive-level management.

Citing the extended length of the CEI engagement and the required resource commitment necessary to benefit from this type of program, there were no new agricultural customers who expressed an interest in enrolling in the program for 2017.

More effective outreach methods in the agricultural customer sector continue to be evaluated for future program enrollment. It has been observed that farming cooperatives represent a potential opportunity for outreach and for sharing of best practices related to long-term strategic energy management.

V. Statewide Lighting Program

The 2017 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.

Following are descriptions of the Lighting subprograms and strategies employed in 2017.

A. Primary Lighting Program

1. Program Description

This subprogram offers upstream rebates to reduce the cost of EE lighting products. It introduces new EE lighting products each year, and strives to influence the future purchasing and installation behaviors of residential customers. An array of product types, models, and technologies are offered, featuring screw-in LEDs and advanced ENERGY STAR® 2.0-certified compact fluorescent lamps (CFLs).

2. Strategies Implemented in 2017

In 2017 the program expanded the variety of retailers and increased product quality, providing greater energy savings to customers. The program optimized savings and cost-effectiveness by adjusting the measure mix and quantities to adhere to Work Paper values. These adjustments occurred in the first quarter of the year, and again when the mid-year Work Papers went into effect. For example, Omnidirectional A-lamps were

reduced by about 80 percent in the latter half of the year because their savings and cost-effectiveness decreased according to the Work Papers and other analyses.

B. Lighting Innovation Program

1. Program Description

The Lighting Innovation subprogram evaluates products 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, and studies are administered to:

- Collect data on the sales, installation, marketing, and other business aspects of the lighting industry
- Determine data-driven recommendations, and
- Influence future program designs.

The program also conducts pilot programs and small-scale projects to collect data to assist in program design or Work Paper development.

2. Strategies Implemented in 2017

In 2017, SCE continued trial study showcase and demonstration projects to test the viability of new products and program approaches.

- SCE's Sustainable Office Lighting Trial Program, also referred to as the Advanced Lighting & Controls System (ALCS) Pilot and Study, continued through 2017. Forty projects were eligible to participate in the Trial Program, while 31 actually participated, bringing the program valuable knowledge about ALCS installation work from the contractor workforce.
- Richard Heath & Associates (RHA), a third-party engineering firm, was hired to conduct engineering support activities, including pre- and post-installation inspections, desktop engineering reviews, and validation of the energy savings derived from the installed systems. RHA's final report was forwarded to the

Cadmus Group (an EM&V consultant), which will use it to help the program complete the final evaluation report for the ALCS Pilot.

C. Lighting Market Transformation (LMT) Program

1. Program Description

The Lighting Market Transformation (LMT) Program implemented a statewide program strategy that coordinated IOU efforts to promote efficient lighting technologies and best practices in California. This entailed development of innovative data-driven program strategies to adapt utility lighting programs to the ever-changing energy and lighting markets in support of the Strategic Plan. The LMT Program:

- Tracked and coordinated lighting market transformation activities
- Provided collaboration opportunities for utilities, government, and industry, and
- Oversaw the progress of lighting solutions within utility programs such as the Emerging Technologies, Lighting Innovation, Primary Lighting, Codes & Standards, and Commercial, Industrial, and Agricultural EE Programs.

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 has ramped down. It remains as a placeholder and may be revived in the future when more research in the lighting market is needed.

2. Strategies Implemented in 2017

In 2017, SCE began designing a new strategy for the LMT Program which involved a study to obtain data on the persistence of energy savings deriving from advanced lighting control systems. Additional details regarding LMT Program efforts will be provided in the June 2018 Statewide Lighting Market Transformation Annual Report.

VI. Statewide Finance Program

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 Statewide, Third Party, Retrocommissioning, and Local Government Partnership offerings.

In 2017 OBF funded a total of 108 loans covering a total of 263 Service Accounts, representing $9,042,540 in funded loans and $10,434,946 in loan repayments.[14]

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies in order to reduce program constraints and expand the potential for OBF financing to better meet customers' needs:

[14] Figures represent both new projects initiated in the 2013-2014 cycle, plus the 2015-2016 bridge years, and projects committed in the 2010-2012 cycle that were installed in 2017.

- Added the Midstream Point of Purchase (MPOP) program to the list of EE programs eligible for OBF financing. Midstream customers have the same loan limits as other statewide customers.
- As a result of the recent Low Income decision,[15] multifamily customers may qualify for loans in amounts from $5,000 to $250,000 and for terms of up to 120 months. Multifamily property owners were already eligible to receive OBF financing through participation in the Core and Third Party Programs.[16]
- Eliminated the three-year loan term cap for commercial lighting projects.[17] All commercial projects now have a maximum loan term of five years regardless of the measures installed.
- Eliminated the loan reservation amount cap for OBF loans. We are now able to give customers credit for projects when the final energy savings exceed those approved at the time of loan reservation.
- Launched the OBF Loan Aggregation Tool during the first quarter of 2017. This tool allows aggregation, or "bundling," of multiple loans to government and institutional (G&I) customers — regardless of project and/or customer account — into a single loan. These G&I customers benefit since they now must sign and notarize only one set of loan agreements per aggregated loan, and can more easily meet the minimum $5000 requirement to qualify for OBF.
- Allowed OBF loans to be transferred on a case-by-case basis. Existing OBF customers must notify SCE in advance if planning to transfer or close the service account associated with an OBF loan. Failure to do so may result in the loan's remaining balance becoming due immediately. Customers looking to assume an OBF loan from an existing customer must meet SCE's OBF credit requirements.
- Allowed OBF customers to designate a different payee within the same company or organization. This change simplifies the loan repayment process for large

[15] D.16-11-022, pp. 205-206.
[16] OBF is not available to residential accounts.
[17] Government and institutional customers have always been exempt from the lighting loan term cap.

organizations in which the decision maker who signs for the loan is separate from the accounting or finance representatives who are more likely to handle repayments.

- Developed an On Hold process for OBF applications which allows customers to notify SCE, within 10 business days, if they would like to continue with their OBF application in the event that the eligibility of one or more of the service accounts included in the project was declined. This gives the customer the option to withdraw the OBF application altogether while continuing with the incentive program application process.
- Improved the verification of usage vs. savings to ensure that energy savings assumptions in the project application are realistic and avoid free ridership. In the original process, customers or trade professionals that failed this verification were allowed to revise the energy savings information on their project applications in order to meet OBF requirements. The timing of the usage vs. savings verification now takes place after pre-inspection. This ensures that energy savings assumptions are more accurate and that customer expectations can be better aligned with actual project results.
- Changed the requirements for name change requests by requiring new applicants (except G&I customers) to complete a TouchPoint questionnaire.
- Developed training materials which include a "Pro OBF" training video and printed training course. The training video offers knowledge check quizzes at the end of each chapter. The detailed training materials cover all the information required to understand the program and submit a successful OBF application.
- Updated the OBF application, OBF Fact Sheet, and other program communications to reflect the 2017 program changes.

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. ARRA 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, PG&E, and SoCalGas.
- Is administered by the County of Santa Barbara.
- Receives funding for various activities, such as marketing and workforce training.
- Provides credit enhancement funds through a loan loss reserve (LLR).[18]

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the emPower Program:

- SCE continued to recommend working with certified contractors to perform

[18] 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.

"coach visits," rather than hiring additional contractors and energy coaches.[19]

- SCE continued to recommend aligning marketing and advertising efforts with the Home Upgrade program and reduce both advertising in newspapers and program website activities.
- emPower agreed to align its marketing with Home Upgrade and committed to a substantially reduced goal of 35 Statewide IOU closed loans in 2017; however, despite this, emPower only achieved 26 percent of this lower goal.
- Statewide IOUs also agreed to support emPower staff's request to form a partnership with the Community Home Energy Retrofit Project (CHERP), a residential EE effort that has been successful in parts of California in energizing communities to complete EE retrofit projects within a targeted area. Specifically, emPower partnered with CHERP on a pilot in the community of Solvang called the 50 Home Challenge, which seeks to retrofit 50 homes to be more energy-efficient. An official kickoff event took place on October 18, 2017 at Solvang City Hall, and as of the end of 2017, two projects were in progress, 20 Energy Coach site visits had been conducted, seven volunteers had been recruited, and six outreach events had been hosted. However, no resulting emPower-related closed loans were confirmed.

During 2017, emPower only funded two loans in SCE's service territory for a total of $54,617, and at the Statewide level, emPower only funded 9 loans for a total of $205,909. As of December, 2017, 42 loans had been funded from 2013-2017, for a total loan amount of $927,459, with no loan defaults reported. Total emPower 2017 program expenditures were $1,092,253, and SCE's share of these costs was $561,746.

These expense-to-closed-loan ratio figures represent the program's continued lack of cost-effectiveness. The emPower Program did not motivate many interested SCE customers to undertake actual Home Upgrade projects, and as mentioned above there

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

were only two funded EUC loans in SCE's service territory (in Santa Barbara and Ventura Counties) in 2017. Therefore, in its 2018 Business Plan filing, SCE included only the equivalent of one quarter of program funding in anticipation of discontinuing its participation in the emPower Program upon CPUC approval.[20]

C. New Finance Offerings (Pilots)

1. Program Description

In accordance with the Decision implementing 2013-2014 Energy Efficiency Financing Pilot Programs (D.13-09-044), 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' administrator), are developing 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") increases debt service performance across market sectors.

The new finance offerings include the following Off-Bill and On-Bill pilot programs:

a. Off-Bill Repayment Programs

- Residential Energy Efficiency Loan (REEL) Assistance Program (formerly known as the Single Family Loan Program). REEL, the first of these California Hub for EE Financing (CHEEF) Pilot Programs to launch, offers a loan loss reserve to mitigate lender risk in providing access to financing for residential EE projects in IOU service territories.

[20] Since the CPUC requires additional information for the development and approval of a Work Paper for energy savings, the ARRA-Originated Programs did not report energy savings for 2017. Additionally, the ARRA-Originated Programs are pilots and have not yet established program performance metrics. The CPUC prepared a cost-effectiveness study on these programs, which was finalized at the end of 2017. The study results will be reviewed and the related program changes considered in 2018.

- Off-Bill Small Business Lease Providers Program.

b. <u>On-Bill Repayment Programs</u>

- Small Business On-Bill Repayment (OBR) Loan Program
- Small Business OBR Lease Program
- Nonresidential OBR Without Credit Enhancements Program, and
- Master-Metered Multifamily OBR Program.

These pilots also 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 Small Business OBR Loan Program is targeted to launch in late 2018. This will shortly be followed by the launch of the Master-Metered Multifamily Program.

2. <u>Strategies Implemented in 2017</u>

In 2017, SCE worked with CAEATFA and other IOUs to implement the following strategies for the New Finance Offerings:

- The REEL Assistance Program, launched in Q2 of 2016, includes success metrics through 2017 as follows:
  - Four credit unions (lenders) have enrolled and are participating in the REEL program to date.
  - One hundred and seventy-four (174) contractors have enrolled to date.
  - Loan activity for SCE only:
    - 2016: 5 loans = $57,737
    - 2017: 38 loans = $662,128.
  - Loan activity for Statewide IOUs (total):
    - Inception to date: 108 loans = $1,822,395.
- The OBR infrastructure was incorporated into SCE's Customer Service System (CSS) in the 4th Quarter of 2016. The system validation process in CSS was completed and successfully tested in Q1 2017 to prepare for program launch. In addition, a Customer Service Re-Platform (CSRP) Program is underway to bring

the system's software up to date, and milestones and deadlines, including a CSS system freeze mid-2018, have been documented for the OBR Statewide Team and CAEATFA. No additional IT development will be approved after the freeze is initiated.

- The most recent CPUC Decision (D.17-03-026)[21] provided needed clarification to continue momentum, and provided CAEATFA (the Program Administrator) with a commitment allowing the state to hire up to 10 full-time staff in support of the Finance Pilots. 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 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.
- Evaluation metrics for the REEL off-bill pilot program were established by the CPUC under Resolution E-4900 in December 2017. Similarly, metrics are expected to be established after the launch of the OBR pilots. The proposed outcome of this resolution is to use the evaluation metrics as tools to contribute to determining the long-term viability of each EE finance pilot. The review for each pilot program is expected to begin from one to two years after the pilot has launched. The four evaluation metrics for the financing tool are summarized below:
  - Is scalable,
  - Is leveraged by private capital and support,
  - Reaches underserved Californians who would not otherwise have participated in EE upgrades, and
  - Produces energy savings.

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

- In 2016, the program team streamlined the list of Eligible Energy Efficiency Measures (EEEMs) based on IOU Work Papers for the residential sector by consolidating over 700 eligible measures and reducing the total to less than 30, which greatly simplified the customer enrollment process for qualified contractors and lending institutions. In 2017, D.17-03-026 gave CAEATFA authorization to finance "To Code" measures which may not align with IOU Work Papers moving forward, and as a result the EEEMs list was further refined for the Residential Loan Program. Because the measures no longer align with IOU Work Papers, CAEATFA has proposed using ex post energy measurement methodologies to estimate energy savings for non-rebated projects, including Net Meter Energy Consumption (NMEC) Protocols, Investor Confidence Protocols (ICP), etc. Ongoing efforts include coordinating SCE engineering support and CAEATFA to ensure alignment with IOU requirements for the meter-based savings protocols currently under development.
- A budget Advice Letter as mandated by D.17-03-026 was submitted in October 2017 and approved. The approval authorized SCE to add up to $2 million in incremental funds to support the 2018-2020 costs in the Program Administration and Marketing categories.
- The program team completed two amendments to existing Co-Funding Agreements[22] and Purchase Orders (contracts) extending expiration dates and/or adding additional budget as needed to support the programs.
- A Marketing, Education & Outreach (ME&O) Contractor Request for Proposals (RFP) was issued in June, 2017 (jointly with SoCalGas, the Lead IOU). The RFP provided an opportunity to solicit marketing support for the Finance Pilots. The existing ME&O contractor, Center for Sustainable Energy (CSE), was again the successful bidder in a competitive solicitation process which included interviews by the Statewide Team, CAEATFA, and the CPUC. As a result, a comprehensive 3-year Statewide Marketing Road Map is currently under development. It is

[22] HBC Co-funding Agreement Amended and CAEATFA Contract Amended.

targeted to promote the REEL Program and subsequent nonresidential and multifamily program pilots. The Statewide team expects significant uptake from the REEL Program.

- Public workshops were hosted by CAEATFA and the IOUs, as follows:
  - May 19, 2017: Public Workshop on Metrics for Energy Efficiency Financing. The purpose of this workshop was to discuss possible metrics for assessing EE financing pilot programs and to hear from parties. The workshop also reviewed the California finance evaluation, measurement, and verification (EM&V) roadmap and heard from parties regarding it. Resolution E-4900, received in November 2017, established metrics for the REEL Program.
  - July 19, 2017: Public Workshop on Proposed Modifications to Regulations: Residential Energy Efficiency Loan Assistance Program. CAEATFA proposed modifications to the regulations of the REEL Assistance Program and submitted the changes for public comment. The REEL Program, as mentioned above, was the first of the CHEEF pilot programs to launch. The proposed modifications seek to address the needs of program stakeholders and facilitate increased program participation by clarifying and updating:
    - Definitions
    - Project and loan eligibility requirements
    - Enrollment data requirements
    - Loss reserve account structure
    - Quality assurance standards, and
    - Information security disclosures.
  - August 2, 2017: Public Workshop on Mid-point Review of the REEL Assistance Program. This workshop was an opportunity for the IOUs, CAEATFA, and other key stakeholders to provide an update on implementation, barriers, and mitigation strategies and to solicit feedback on the REEL Program as it entered into its second year. The IOUs stressed the need for additional budget to support their expenditures related to marketing and potential IT development. As a result all IOUs received between $2M

and $4M in additional budget for implementation and a time extension to launch all pilot programs by December, 2019.

- November 7, 2017: Public Workshop on Affordable Multifamily Financing Pilot. This workshop was used to gather information from relevant stakeholders on program design, implementation, and alignment with existing multifamily incentive (rebate) offerings. Internal SCE stakeholders (the Multifamily EE Rebate Program team and the Affordable Housing Program[23] team) worked with the New Finance Offerings team to help guide program design and development.

[23] The Affordable Housing Program is an LIEE (Low Income Energy Efficiency) Program.

VII. Statewide Codes & Standards (C&S) 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 regulations. The Program conducts efforts to increase compliance with existing C&S regulations, to ensure that the State realizes the 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. Support for state and federal building codes and appliances standards continues to move California towards these goals:

- Residential new construction ZNE buildings by 2020
- Nonresidential new construction ZNE buildings by 2030, and
- The goal set by Senate Bill 350 (SB 350) to reduce existing building energy usage by 50 percent.

B. Key Initiatives

Key initiatives of the C&S Program in 2017 include:

- Advocacy for new or updated sections of California's Building Energy Efficiency Standards and related American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)[24] and International Code Council (ICC) activities

[24] American Society of Heating, Refrigerating, & Air-Conditioning Engineers.

- 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, and
- Long-term planning and coordination activities to optimize ZNE through the development of statewide strategies and tactics.

C. Appliance Standards Advocacy Subprogram

The Appliance Standards Advocacy subprogram targets both state and federal standards and tests methods, including improvements to the CEC's Title 20 Appliance Efficiency Regulations, and improvements to the DOE's federal appliance regulations and specifications, the Environmental Protection Agency's (EPA) ENERGY STAR® Program, ASHRAE's standards, and the Federal Trade Commission's (FTC) labels. Advocacy activities include:

- Developing Title 20 code enhancement proposals
- Participating in the CEC public rulemaking process and ASHRAE committees
- Submitting comment letters in federal standards proceedings, and
- Participating in direct negotiations with industry.

Additionally, the program monitors state and federal legislation and intervenes as appropriate.

1. 2017 Strategies and Successes

One of the most far-reaching appliance standards in recent times, a minimum 45 lumens per watt efficacy standard for all general service lamps (GSLs), regardless of technology, is to take effect in California for all lamps manufactured after January 1, 2018. This effectively outlaws incandescent general service "A" lamps. Savings are approximately 10,000 GWh for GSLs and another 2,000 GWh for small diameter directional lamps (SDDL). The National Electrical Manufacturers Association (NEMA)

had sued for an injunction against California to prevent the State from implementing this standard and also from setting higher standards for LED GSLs and SDDLs. In NEMA vs. CEC, the U.S. District Court ruled in favor of the CEC, which cleared the path for the CEC to enforce the GSL standard. A similar standard is to take effect nationwide in 2020. The experience of the incandescent ban in California will be watched by other states and the federal government.

In 2017, SCE's Appliance Standards Efficacy Subprogram:

- Participated in several CEC webinars and workshops, and developed CASE studies for the CEC, on the topics of spray sprinkler bodies, irrigation controllers, commercial and industrial (C&I) fans and blowers, an expanded GSL definition, a solar inverter roadmap, a set top box roadmap, tub spout diverters, a low power mode and power factor roadmap, commercial clothes dryer test procedures, and portable spa and pool pump rulemakings.
- Also developed a CASE study on televisions, and completed laboratory testing for commercial clothes dryers with results submitted as part of that CASE study.
- Completed studies for plug-in signs, imaging equipment, and outdoor lighting.

The Subprogram also advocated for changes to federal appliance standards through the following efforts:

- Researched and responded to specific issues related to federal rulemaking and specification processes conducted by the DOE and EPA ENERGY STAR®.
- Participated in stakeholder meetings during rulemakings and specifications processes, resulting in ten rulemaking advocacy letters issued in 2017.
- IOU advocacy letters issued in previous years influenced rulings on seven federal measures taking effect in 2017.
- Participated in DOE's Appliance Standards and Rulemaking Federal Advisory Committee meetings with DOE staff, industry, and other stakeholders.

The subprogram supported case studies and provided technical support for DOE standards which were finalized in 2017, including:

- Walk-in coolers and freezers
- Portable air conditioners
- Uninterruptible power supplies
- Air compressors, and
- Packaged boilers.

The subprogram responded to the following ENERGY STAR® rulemaking or updating events:

- Computer specifications
- Pool pump specifications
- Audio-visual specifications
- Televisions
- Automatic commercial ice machine specifications
- Uninterruptible power supply specifications, and
- Imaging equipment.

The subprogram participated in two Air Conditioning, Heating and Refrigeration Institute (AHRI) test method development activities:

- AHRI 1250: rating method for walk-in coolers and freezers, and
- AHRI 1230: rating method for variable refrigerant flow (VRF) multi-split air-conditioning and heat pump equipment.

2. Implementation Challenges

The current federal administration is working at a slower pace than in previous years, which reduces our opportunity to update federal standards. DOE is focused on process improvements and changes to its overall program rather than on individual equipment

rulemakings or test procedures. Federal preemption, which has been a significant barrier to meeting California's ZNE goals, has become a larger problem as more cost-effective, higher-efficiency technologies are entering the market while the pace of federal regulatory updates is slowing.

3. Opportunities Moving Forward

After DOE failed to publish the federal efficiency standards for portable air conditioners, uninterruptible power supplies, air compressors, and packaged boilers that were adopted at the end of the Obama Administration, the CEC decided to pursue these products as California standards. Therefore, the subprogram is currently developing CASE reports for CEC's rulemakings. These rulemakings will provide significant savings for California.

D. Building Codes Advocacy Subprogram

The Building Codes Advocacy Subprogram primarily targets improvements to Title 24 Building Efficiency Regulations that are updated every three years by the CEC. The subprogram also seeks changes to national building codes that impact California's building codes through ASHRAE, ICC, and other national groups. Advocacy activities include, but are not limited to, development of code enhancement proposals and participation in public rulemaking processes. The C&S Program may coordinate with or intervene in ratings organizations that are referenced in Title 24 (for example, the National Fenestration Rating Council and the Cool Roof Rating Council). These efforts support the Governor's goal of doubling building efficiency by 2030.

1. Subprogram Highlights

The IOUs supported the CEC's 2019 rulemaking by developing 40 building code proposals contained in 25 CASE reports.[25, 26]

Expected savings from the following 2019 Title 24 CASE reports are approximately 671 GWh/yr, 9.8 million therms, and 35 million gallons of water for each year's construction, following the expected effective date of January 1, 2020:

[25] Some reports contained multiple proposals.
[26] The 2019 CASE reports are *available at* **http://title24stakeholders.com/2019casetopics/**.

a. Residential

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

b. Nonresidential

11. Indoor Lighting Power Densities.
12. Nonresidential Indoor Lighting Controls (Alignment with ASHRAE 90.1):
    - Daylight Dimming Plus OFF Controls
    - Occupant Sensing Controls in Restrooms, and
    - Manual ON Time-Switch Controls.
13. Advanced Daylighting Design.
14. Indoor Lighting Alterations.
15. Outdoor Lighting Power Allowances.
16. Outdoor Lighting Controls:
    - Scheduling Controls: 50% Reduction After-Hours, Multi-level Capability
    - Bi-Level Motion Controlled Lighting: Remove 75 Watt Threshold, and
    - Bi-level Motion Controlled Lighting: 75% Wattage Reduction When Vacant After-Hours.
17. Nonresidential Indoor Air Quality Measures (Proposal Based on ASHRAE 62.1-2016).
18. Proposals Based on ASHRAE 90.1:
    - Fan System Power
    - Exhaust Air Heat Recovery

- Equipment Efficiency
- Waterside Economizers
- Transfer Air for Exhaust Air Makeup
- Demand Controlled Ventilation for Classrooms, and
- Occupant Sensor Ventilation Requirements.

19. Prescriptive Efficiency Requirements for Cooling Towers.
20. Economizer Fault Detection and Diagnostics (FDD) for Built-Up Systems.
21. Demand Response Cleanup.
22. High Efficiency Fume Hoods in Laboratory Spaces.
23. Variable Exhaust Flow Control.
24. Adiabatic Condensers.
25. Loading Dock Seals.

c. <u>Likely Residential Changes to Title 24</u>:

- The code will now require renewables equivalent to total electricity use in most mixed fuel homes, which will assist in meeting state ZNE goals.
- CBECC-Res[27] compliance software will include CO_2 emissions reporting.
- CBECC-Res will include the Energy Design Rating (EDR) that includes nonregulated loads, which is comparable to the national Residential Energy Services Network (RESNET) rating. The Standards will require a passing EDR score to comply.
- More stringent envelope requirements, such as high performance attics and quality insulation installation; will yield savings and improved comfort.
- Furnace fan power reduction (based on ATS lab testing) will be standard.
- Grid harmonization features will be added, including improved demand response requirements, a battery storage credit (with more credit allowed for enhanced controls), and a limit on the size of the solar photovoltaic PV system needed for compliance.

[27] California Building Energy Code Compliance – Residential, *available at* **http://www.energy.ca.gov/title24/2016standards/residential_manual.html**.

- Changes to water heating requirements will make it easier to build all-electric homes.

d. <u>Nonresidential Changes to Title 24 included</u>:

- Lighting power densities (LPDs) based on all-LED lighting systems, which was the largest energy reduction measure, accounted for 55% of total Title 24 savings.
- Occupancy sensor control of ventilation was simplified, based on ASHRAE 90.1.
- Automated fume hood sashes automatically close laboratory fume hoods when no one is present.
- Induction fan for laboratory exhaust systems require fan speed controls that respond to wind velocity.
- Fault detection and diagnostics requirements for economizers were expanded to built-up fan systems.

e. <u>General Title 24 advocacy support included</u>:

- User-centered development of code language to improve enforceability in collaboration with the IOU Compliance Improvement team.
- IOU-sponsored stakeholder meetings to develop consensus in advance of formal workshops.
- Review and testing of compliance software.
- Exposure of the largest savings measure, indoor lighting power densities, to stakeholders through the ASHRAE 90.1/189.1 development process.

f. <u>Participation in ASHRAE 90.1 included</u>:

- An improved LPD calculation spreadsheet tool to offer more insight into the basis of LPDs.
- Model development for LPD proposals that will be considered in 2018. Our key impact was to ensure that a Pacific Northwest National Laboratory (PNNL) recommendation to use 70% lamp depreciation was **not** used, since

this would have resulted in a 15% increase in LPD across the board.

- Expanding commercial outdoor lighting beyond what is served through a building's electrical service (e.g., a parking lot).
- Updates to hotel guest room HVAC and lighting controls.

g. <u>Support for ASHRAE 189.1 included</u>:

- An LPD proposal that on average reduced LPDs by 20% from ASHRAE 90.1-2016. Previously, the standard had a table of adjustment factors to the ASHRAE 90.1 values that ranged from 0.9 to 1.0. This set the basis for the LPD proposal in terms of the calculation method and created an opportunity to engage with national stakeholders on the technical issues of an all-LED basis for LPDs.
- An improved LPD calculation spreadsheet tool to offer more insight into the basis of LPDs.
- Updates to daylighting requirements based on daylight autonomy calculations.
- A water treatment requirement for cooling towers.
- A commissioning proposal intended to better align with ASHRAE Standard 202.
- An emission factors table for use in complying with the CO_2-equivalent (CO_2e) component of the Title 24 performance compliance approach.

2. <u>Implementation Challenges</u>

Concerns about the complexity of the Title 24 building energy standards, including the process that builders must use to comply, remain a barrier to acceptance.

- In response to industry engagement and CEC input, a trend towards increasing rigor continued in 2017. Hence, the cost of building codes advocacy will continue to increase.
- Some stakeholders continue to claim that lack of properly trained labor and permitting delays are factors in the difficulty of meeting the requirements.

- As building codes approach ZNE, a great percentage of C&S program effort is focused on non-EE building requirements that include distributed energy resources (DERs, such as PVs, batteries, inverters, DR capabilities, etc.) that are generally funded in separate non-EE proceedings.
- ZNE goals stated in the CEESP do not fully align with the GHG reduction goals of AB-32 in terms of metrics, measurement, and milestones.
- Continued reductions in energy code enforcement personnel by local jurisdictions create greater challenges in implementing more stringent regulations.
- Multifamily buildings have not been adequately addressed even though they represent approximately half of the new residential buildings being constructed.
- The nonresidential compliance software has not been updated to reflect upcoming ZNE requirements and advanced building design practices.

3. Opportunities Moving Forward

In the next code cycle, the Building Codes Advocacy Subprogram will continue to pursue a reduction in complexity in using the Title 24 building energy standards, when possible, without reducing their stringency. As part of this effort:

- The requirements for multifamily buildings may be extracted from the code sections in which they are currently found and combined into a new section that will better serve the needs of this segment of our built environment.
- Advocacy work may also include revising 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 since the 2013 code cycle. This will become increasingly important as HVAC and water heating energy use are reduced, and as new process loads represent a more significant portion of energy use in California.

As the 2030 ZNE goals loom, a focus on the integration of commercial building electrical systems with renewables, storage, and the electrical grid will be evaluated in each code cycle in advance of the 2028 code cycle. It is likely that a continued blending of on-site generation, storage and efficiency measures will continue into the next several code cycles. Greater focus on nonresidential compliance software development will enable a smoother transition to meeting 2030 ZNE goals.

E. Compliance Improvement Subprogram

The Compliance Improvement Subprogram supports increased compliance with the Title 24 Building Energy Efficiency Standards and the Title 20 Appliance Standards after they are adopted. Compliance improvement activities complement advocacy work by maximizing verified savings from C&S activities that are realized and persist over time. The Subprogram targets market actors throughout the entire compliance chain, providing education, outreach, and technical support and resources to improve compliance with both building and appliance energy standards:

- Achieving satisfactory compliance with codes and standards is a crucial requirement for capturing the intended energy savings for the long-term benefit of society.
- High compliance rates are necessary to level the playing field for well-intentioned suppliers and contractors who are otherwise faced with competitive disadvantages when complying with regulations.
- Greater compliance strengthens voluntary program baselines and provides a solid foundation for future robust advocacy efforts.

1. 2017 Strategies and Successes

a. Compliance Improvement Support for Title 24, Part 6 Building Codes

The Compliance Improvement Subprogram launched a new, easy-to-navigate version of EnergyCodeAce.com**:**

- The Energy Code Ace training team delivered more than 120 Title 24, Part 6 standards-related traditional and virtual classroom training sessions, 20 Decoding Talks (targeted web-based or in-person educational sessions on energy code

compliance), launched a new "Code & Coffee" livestream series, and created a new learning block series in support of Certified Energy Analysts.

- A number of new resources and tools were added to the Energy Code Ace library, such as the "Lighting Wheel" and fact sheets on computer and lamp regulations, while the T20 standards were incorporated into the Reference Ace.

The Subprogram also:

- In close collaboration with the CEC, continued development of new dynamic compliance forms and designed a prototype of a user interface that industry will soon use to complete the new forms.
- Represented all of SCE's C&S subprograms at over 55 industry events throughout the state and gathered feedback on C&S-related issues.
- Developed a compliance software roadmap to address the needs of both the residential and nonresidential markets.
- In further support of compliance software development, held a software symposium meeting with industry leaders in order to identify and prioritize areas for discussion and action items related to building simulation and incorporated to compliance software.
- Enhanced the traditional Residential Standards Essentials course for Plans Examiners and Building Inspectors, making it far more activity-based and less lecture-intensive.
- Developed a blended learning series designed to support Residential Certified Energy Analysts. The new blended learning approach includes a combination of learning blocks that students choose to enter and complete according to their specific competency barriers. Learning opportunities are delivered in various formats, including Energy Code Ace's self-study courses, virtual workshops, and mentoring. For example, residential courses include:
    - Res Envelope & Solar Systems (workshop)
    - Res Mechanical Systems (workshop)

    - Res Modeling Tips (workshop)
    - Analyzing the CF1R[28] (workshop)
    - Res & Nonres HERS (self-study)
    - Res Envelope (self-study)
    - Res Solar Systems (self-study), and
    - Res Water Heating (self-study).
- Held more than 118 live training sessions with approximately 3,000 attendees, achieving an average knowledge swing of 20% and overall satisfaction rating of 92%.
- Conducted 20 decoding webinars covering six topics related to the 2016 Standards. Each webinar was offered in three to four separate sessions with a total of approximately 600 attendees.
- Redesigned the Energy Code Ace website. Sample enhancements include:
    - Easier navigation through a new overall search function and the ability to filter offerings by resource type, market actor role, topic, and standard
    - The opportunity to request courses and expert help
    - Ability to view training offerings by calendar or list view
    - Thumbnail images of resources, and
    - A more robust Reference Ace.
- Conducted outreach via Energy Code Ace by distributing 70 targeted messages, responding to more than 170 requests for assistance, and participating in more than 55 industry events, such as Pacific Coast Builders Conference, California Association of Local Building Officials Education Weeks, American Institute of Architects California Council (AIACC) Monterey Design Conference, and the California Association of Building Energy Consultants (CABEC) annual conference.

[28] *See* the State of California Residential Compliance Form, *available at* **http://www.energy.ca.gov/2015publications/CEC-400-2015-032/appendices/forms/**.

- Transitioned the Certified Energy Analyst (CEA) exam administration to CABEC while supporting exam revisions as needed. Additionally, initiated a study designed to assess the difference in the quality of compliance documents submitted for permits by CEAs and energy consultants who are not certified. Study parameters were reviewed by the CEC before launching the analysis so that findings may be used to support future adoption of CEA requirements.

b. Compliance Improvement Support for Title 20 Appliance Standards

The Subprogram:

- Added a new Title 20 section to the Reference Ace.
- Fully incorporated Title 20 into the overall Energy Code Ace website.
- Developed a Title 24/Title 20 "master resource" which lists the equipment and products in both Title 20 and Title 24 that are required to be certified, illustrates the overlap and relationship between Title 24 and Title 20, and highlights the fact that some equipment needs to be certified to the Commission for Title 24 compliance.

The Subprogram also assessed and implemented compliance improvement solutions for the following targeted measures:

- Lighting:
    - Attended Light Show West and gathered feedback to inform efforts to improve lamp compliance.
    - Conducted a focus group designed to uncover market actor needs in relation to new JA8[29] requirements and began developing a work plan detailing specific outreach and training activities the CI Subprogram will implement in 2018.
- Computers:
    - Published a new computer fact sheet, "Computing Saving in California –

[29] 2016 Building Energy Efficiency Standards Joint Appendix No. 8, Qualification Requirements for High Efficacy Light Sources, *available at* **http://www.energy.ca.gov/2015publications/CEC-400-2015-038/CEC-400-2015-038-CMF.pdf**.

California Appliance Efficiency Regulations for Computers," per the CEC's request. This factsheet addresses small-scale servers, high expandability computers, mobile work stations, and work stations in preparation for the requirements that became effective January 1, 2018. The fact sheet has also served as a supplemental resource for the webinars that the Commission offered in 2017.

- Residential Pool Pump Motors (PPM):
    - Exhibited and gathered feedback from contractors at the Pool Industry Expo held September 28-30, 2017.
    - Conducted surveys aimed at rebate customers (i.e., pool owners) and contractors in order to understand what motivates customers to repair or replace equipment, as well as how best to reach consumers with educational materials and messaging.
    - Developed specifications for contractor training expected to begin in the summer of 2018.
- Small Battery Charger Systems (SBCS):
    - Conducted needs assessment activities, including requesting interviews with manufacturers of the top five product categories, and met with several major retailers such as Home Depot, Lowe's, Best Buy, and Sears.
    - Developed plan to conduct in-store audits, which are expected to begin in May 2018.
- Conducted outreach to major retailers to garner feedback on the preliminary design of a Model-Matching Tool. The objective of the tool is to enable users to quickly compare a batch of retail model numbers with model numbers listed in the Modernized Appliance Efficiency Database System (MAEDBS) to help identify products that have been certified to the California CEC. Only products listed in the MAEDBS are legally allowed to be sold or offered for sale in California.
- Compliance software development roadmap activities included:
    - Determined software development priorities by actor (CEC, IOU, designers)
    - Determined specific action items and software improvement needs
    - Created schedules for implementing proposed software changes (for example, all residential changes need to be completed by mid-2018 at the latest)

- Figured costs for conducting the software development (time and expense, and infrastructure needs)
- Determined the dependencies of the various activities
- Determined Key Performance Indicators (KPIs), and
- Identified responsible parties.

c. Implementation Challenges

In 2017 the ability to identify and reach key market actors impacted by the Title 20 standards, in order to understand their unique compliance barriers, proved to be far more complex than identifying market actors impacted by Title 24, Part 6. New needs assessment and outreach efforts were underway to enable application of the user-centered design process which is at the core of all Energy Code Ace offerings. As noted previously, as Title 24 becomes more complex, it has become more difficult for local jurisdictions to understand and enforce its requirements.

d. Opportunities Moving Forward

Continued development of dynamic, digital tools that automate the compliance process will reduce end user frustration. The Subprogram intends to explore opportunities to simplify the use of Title 24 to increase overall compliance.

F. Reach Codes Subprogram

In addition to state and national building codes, the C&S Program provides technical support to local governments that wish to adopt **reach codes** — ordinances that exceed statewide Title 24 minimum EE requirements for new buildings, additions, or alterations. Reach code support for local governments includes:

- Research and analysis to establish performance levels and cost-effectiveness relative to Title 24 by climate zone
- Drafting model ordinance templates to encourage regional consistency
- Assistance with completing and expediting the application process required for approval by the CEC, and
- Supporting implementation once effective.

The subprogram supports local governments seeking to establish residential or commercial energy conservation ordinances for new construction and existing buildings.

1. 2017 Strategies and Successes

Many local jurisdictions have established goals within their Climate Action Plans to reduce energy use and greenhouse gas emissions from buildings through adopting and implementing local energy ordinances. Given the federal government's changing policy and funding priorities, cities and counties are experiencing a greater sense of urgency to take local actions to meet the state's GHG emission reduction goals. This urgency has translated to a greater interest in reach codes as a path to achieve the goals. With reducing GHG emissions as the highest priority, there is a shift in focus from reducing energy use generally to specifically reducing energy use associated with carbon emissions. This shift has resulted in an increased level of interest in all-electric designs, both at the local and state levels.

2017 program work included the following.

- Completed the following cost-effectiveness studies:
    - CALGreen Tiers 1 and 2 for All-Electric Residential New Construction
    - CALGreen Tier 3 for Residential New Construction, and
    - CALGreen Tier 1 for Nonresidential New Construction.
- Began developing a residential new construction study requiring heat pump water heating plus a PV system sized to offset water heater electricity usage.
- Provided post-adoption technical support to the City of Santa Monica for the City's ZNE ordinance, including the presentation of a ZNE code class for the City Building Department, participation in a ZNE panel presentation during a Santa Monica community meeting, and development of an educational video to highlight and explain Santa Monica's ZNE ordinance.
- Provided technical support to the City of West Hollywood and the City of Huntington Beach, including presentation of cost-effectiveness studies,

consultations on options and opportunities, and reviews of and recommendations on proposed ordinance structure, triggers, and language.

- Launched the **LocalEnergyCodes.com** website which contains all program studies, as well as model ordinance and resolution language which jurisdiction staff may use to help them draft ordinances. Beginning from a common core helps to support consistency across jurisdictions. The website also contains links to other providers, state agencies, and other resources. From its launch in July through December, the home page was viewed more than 7,000 times. The Nonresidential New Construction Study was downloaded most often (100 times), followed closely by the Residential New Construction CALGreen Tiers 1 and 2 Mixed-Fuel Study (94 times) and All-Electric Study (84 times).
- Attended the Statewide Energy Efficiency Collaborative (SEEC) Forum. Coordinated and hosted a reach codes panel presentation with the County of San Mateo and the Cities of Fremont and Santa Monica.
- Began working with ICLEI[30] to determine if the ICLEI ClearPath tool will be helpful for forecasting and tracking reach code impacts.

In 2017, several reach codes were adopted by local jurisdictions and approved by the CEC, based on IOU cost-effectiveness studies.[31] Following is a list of approved local energy standards:

* City of Brisbane, July 12, 2017, Cool Roof, Solar PV
* City of Davis, December 13, 2017, Efficiency, Solar PV
* City of Fremont, July 12, 2017, Solar PV
* City of Fremont, April 2, 2017, Lighting
* City of Healdsburg, July 12, 2017, Efficiency
* City of Lancaster, October 11, 2017, Solar PV
* Marin County, March 8, 2017, Efficiency

[30] International Council for Local Environmental Initiatives.
[31] Approved local ordinances may be found on the CEC website and are *available at* **http://www.energy.ca.gov/title24/2016standards/ordinances/.**

* City of Mill Valley, April 27, 2017, Efficiency
* City of Novato, April 27, 2017, Efficiency
* Town of Portola Valley, July 12, 2017, Efficiency, and
* City of Santa Monica, March 8, 2017, Efficiency, Solar PV

2. 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 (CE) studies can be completed. Then local jurisdictions adopt reach codes based on the CE studies, followed by CEC approval. By the time this work is completed, there may be only year or two before the next code becomes effective. While reach codes help a local government's planning department meet Climate Action Plan goals, a jurisdiction's building department has the additional burdens of verifying compliance with the reach codes and reporting those results to the planning department, which often takes the form of an unfunded mandate for the building department and thus acts as a barrier to local governments wishing to pursue reach codes.

3. Opportunities Moving Forward

Most cost-effectiveness studies are conducted in response to specific requests from local governments, leading to a variety of reach codes which support implementation of upcoming codes — for example, reach codes based on 2016 codes help prepare the building industry for 2019. Opportunities exist to develop tools that will increase the value of reach codes to cities and may promote even more advanced reach codes that, in turn, better prepare the market for new codes. New compliance options in the 2019 Title 24 Part 6 & Part 11 code, combined with updated compliance software capabilities, may provide new paths for achieving cost-effectiveness in new and existing reach code studies.

G. Planning and Coordination Subprogram

The planning element of this subprogram includes long-term planning and scenario analyses, modeling of impacts from potential C&S program activities relative to California policy goals and incentive programs, development of business and implementation plans,

responses to CPUC and other data requests, and maintenance of a C&S savings database consistent with evaluation protocols.

The coordination element includes internal and external harmonization with other groups. Internal activities have traditionally included collaboration with several internal SCE areas of responsibility (AORs), including:

- Incentive, training, and demand response programs
- Policy, regulatory, and corporate affairs AORs, and
- Emerging technology and product teams.

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

Since Codes and Standards impacts the entire state and almost all building types, occupancy categories, and related technologies, external harmonization activities encompass:

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

1. 2017 Strategies and Successes

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

2. Implementation Challenges

Planning and coordination are challenging because the C&S program impacts 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.

Since ZNE cannot be achieved by EE alone, these efforts also require the coordination of DERs (renewable energy generation, storage technologies [batteries], inverters, DR, etc.), 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 set forth in AB/SB-32.

3. Opportunities Moving Forward

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

VIII. Statewide Emerging Technologies Program (ETP)

The statewide Emerging Technologies Program (ETP) supports the California 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 a number of 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, an 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 2017

In 2017, 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 and the California Technical Forum (CalTF), with technology measures successfully transferring to deemed rebates and custom incentive measures
- Supported measure development and measure revision processes for internal IDSM resource acquisition efforts
- Coordinated assessments and shared technology information through the four (4) quarterly meetings of the Emerging Technologies Coordinating Council (ETCC)[32] on various topics for commercial buildings, agricultural and residential sector buildings, and data centers, and
- Sent personnel to meet with the ETCC Advisory Council twice in person (as well as participating in webinars multiple times) to gain insight from national experts in the field.

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

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 2017

In 2017, 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.
- Collaborated with the ETCC and IOUs on various program-related activities. Continued ongoing business relationships with investors interested in funding cost-effective EE technologies.
- Held meetings with the California Energy Commission (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 consist of placing a measure 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 the Zero Net Energy (ZNE) goals of the California Energy Efficiency Strategic Plan (CEESP). D&S projects introduce measures at a systems level to stakeholders, whether they are 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.
- The Technology Resource Innovation Program (TRIP) solicits third-party projects and funds selected projects up to $300,000 to deploy emerging technologies to the market on a limited scale. These projects can be conducted in collaboration with SCE's EE programs.

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the TIS subprogram:

- Conducted residential ZNE demonstrations in partnership with home builders, the Electric Program Investment Charge (EPIC) Program, the Electric Power Research Institute (EPRI), and other partners in support of advancing state goals and furthering the understanding of grid interactions.
- Launched, with the other IOUs, a Prop 39[33] ZNE pilot program in April, 2015, working closely with the CPUC, CEC, CCCs, and other stakeholders. Two rounds of formal Requests for Proposals (RFPs) produced four candidate sites for pilots in K-12 schools and community colleges. The TIS subprogram is the lead on the field demonstrations portion of the pilot projects at those four sites.
- Scanned and screened a wide variety of sources for measures, coordinating closely with EE Programs, and prioritized measures suitable for TIS projects.
- Conducted a number of SFP projects (example: Linear LED Tubes Technology) in support of Work Paper 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 2017</u>

- As part of the SCE EE Programs Business Plan, filed the Crosscutting – Emerging Technologies chapter.
- In collaboration with ETCC leadership and partners, the Statewide ETP program successfully conducted the 2017 ET Summit, which attracted over 400 attendees, and had more than 30 sessions and more than 40 exhibitors.[34]
- Leveraged the annual ETCC Advisory Council meeting to seek input on the strategic topic of Technology Priority Maps (TMPs). Specifically, facilitated

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

[34] More information on the 2017 Emerging Technologies Summit is *available at* **https://www.etcc-ca.com/event/2017-emerging-technologies-summit**.

three panels around the topic: "Structure of Technology Roadmaps," "Using Roadmaps to Prioritize Research," and "Managing Research Using Roadmaps." Input from these panels was used to guide ETP's TPM development.

- Enhanced the ETCC Quarterly meetings (which focus on strategic technology issues) by upgrading the remote participation experience, and continued to attract robust participation from a diverse stakeholder group.

IX. Statewide Workforce Education & Training Program

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 three (3) subprograms: WE&T Centergies, WE&T Connections, and WE&T Strategic Planning and Implementation.

In 2017, 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 2017 program highlights, by subprogram:

A. WE&T Centergies Subprogram

1. Program Description

Offerings in the Centergies 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 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 2017, the Irwindale and Tulare Energy Education Centers ("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,[35] and Statewide initiatives. This effort included significant internal collaboration with SCE's DSM Programs, and engagement with external EE program and service educators and with key stakeholders in many trades who encourage participation in SCE's resource programs.

2. WE&T Centergies Strategies Implemented in 2017

In 2017, WE&T Centergies 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 Chancellor's Office (CCCCO)
    - The Community Colleges
    - The Heating, Ventilating and Air Conditioning (HVAC) Collaborative
    - Local and regional labor unions, and
    - Contractors' associations.

Some highlighted collaborations included:

[35] 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.**

- The Economizer Train the Trainer HVACR Collaborative Project with the CCCCO, designed toward certifying Community College instructors and utilizing community college recourses as part of the HVAC sector strategy.

- The High Performance Building Operations Professionals (HPBOP) pilot program launch. 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 2017 WE&T Stakeholder Engagement Forum. The Forum provided a forward-looking discussion with a panel of WE&T stakeholders on the topic of how we can collectively build a workforce capable of doubling energy efficiency in California by 2030.

3. Energy Education Centers Strategies Implemented in 2017

The 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, CLEAResult, and the National Comfort Institute (NCI). Efforts with NCI focused on commercial and residential air balancing, system performance through comprehensive test-in / test-out procedures, advanced digital economizers, residential renovation and retrofit, ComfortMaxx software expertise, and performance-based sales of EE equipment.

- Certified 392 participants, as follows:
    - 51 Economizer Optimization
    - 95 Commercial Air Balancing
    - 68 Commercial System Performance
    - 46 Duct System Optimization
    - 61 Residential Air Balancing, and
    - 71 Residential System Performance.
- Also recertified 140 participants.
- Continued to support HVAC Commercial QI and QM by providing targeted training through our industry partnership with 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.
- Trained close to 5000 contractors and technicians in 2017, through both IHACI QI / QM 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, utilizing 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 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 sixty-nine (169) NATE Core exams were delivered with a pass rate of 95%. Twenty-six (26) technicians trained in Commercial Quality Maintenance, with an average post-test score increase of 25%:
    - 18 Level 2 (credentialed technicians), and
    - 8 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, industrial automation, and integrated demand response technologies.
- 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.
- In partnership with the Codes & Standards Program, delivered over 100 workshops and seminars on Title 24, CALGreen codes, T24 building energy codes, lighting, residential and nonresidential standards, and energy code software to over 2,500 customers throughout SCE's service territory. 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.
- Continued to deliver the Mobile Integrated Building Energy Science Training Program (MI-BEST) in 2017, 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 hosted 12 workshops with a total of 151 attendees. The GRID Program gives income-qualified participants free

solar energy systems. A requirement for the program is for participants to attend an Energy Efficiency seminar to learn more about energy efficiency in the home and other details on the program.

- SCE's Foodservice Technology Center (FTC), at the Irwindale Energy Center, in partnership with the statewide IOU WE&T programs, collaborated 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, used to train food service operators on the advantages of high-efficiency, high-performance appliances, fundamentally changing the way that these operators make purchasing decisions. The FTC hosted 50 equipment demonstrations with a total of 220 attendees.
- The Centers also work 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.[36]
- In 2017, SCE's Tool Lending Library loaned nearly 300 unique energy measurement and building performance evaluation tools, through over 145 individual transactions, to homeowners, business owners, and contractors throughout SCE's service territory.
- In 2017, the Irwindale Energy Education Center 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.

[36] For more information, *see* "Culinary Students Learn Latest Technology at SCE's Foodservice Tech Center," *available at* https://www.insideedison.com/stories/culinary-students-learn-latest-technology-at-sces-foodservice-tech-center.

4. 2017 Energy Education Centers Performance

Deliverable	Tulare	Irwindale	Total
Seminars	210	255	**465**
Total Energy Efficiency attendance	5,120	7,466	**12,586**
Total on-location seminars	94	52	**146**
Tool Loan Transactions	289	N/A	**289**
Energy Efficiency consultations or Energy Efficiency equipment demonstrations	161	93	**254**

B. WE&T Connections Subprogram

1. Program Description

The WE&T 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 Connections achieves its educational goals and promotes green career pathways by working with community-based organizations, state education agencies, and educational stakeholders to help promote DSM concepts and green career awareness. WE&T Connections also imparts EE, demand response (DR), and relevant green career messages through educational materials, student assemblies, teacher workshops, and outreach events.

SCE's WE&T Connections subprogram comprises five (5) elements:

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

2. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the WE&T 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:
  - California Science Teachers Association Conference
  - California Science Technology Engineering Art Math (STEAM) Symposium, and
  - Green Schools Summit.

3. 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 6,348 students were reached throughout SCE's service territory. Of the 70 schools that participated in the K-8 program, 54 were Title 1 schools.
- Continuing from its launch in the fall of 2016, the 9-12 program was successful in reaching its targets. This program prepares high school students for energy

careers and higher education programs through a sustainability project-based curriculum, teacher training, and student-led action projects. Some of the program's highlights include:

- Collaboration with the International Brotherhood of Electrical Workers (IBEW) on constructing a functioning residential circuit at Oak Hills High School in Hesperia, CA, and
- Launch of the fall 2017 Energy Conservation Competition, in which schools competed in a three-week challenge to reduce energy usage. Thirteen high schools across California participated in the competition, resulting in over 100,000 kWh of energy savings.

A total of 12,483 students were reached throughout SCE's service territory. Of the 33 schools that participated in the 9-12 program, 24 were Title 1 schools.

- The Post-Secondary program continued to hire interns across Community Colleges, the University of California (UC), and California State University (CSU) campuses within SCE's service territory. Through the program, Fellows and interns collaborated with college professors to incorporate EE, DR, and DG concepts into new and existing courses. Some of the program's highlights include:
  - Hired a total of ten interns from the following campuses: College of the Desert, Claremont McKenna / Harvey Mudd Colleges, University of California at Irvine, Orange Coast College, and Mt. San Antonio College.

    Two students from College of the Desert interned at the Cathedral City Building & Safety Department, working alongside code enforcement officers at construction sites to verify safety and code compliance.
  - Created and signed program agreements with all 12 participating campuses to continue the program through June 2018.
  - Collaborated with campus faculty and staff at the Claremont Colleges to host the first in a series of faculty train-the-trainer workshops focused on integrating sustainability into the curriculum.

- 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. Nine seminars were conducted, and 88 booths were hosted, reaching over 15,000 customers.
- The Mobile Energy Unit program continued its presence throughout SCE's service territory, attending 92 events while educating customers on residential EE tips, programs, and rebates. Throughout the year, the program reached over 16,000 people, and collected 45 completed CARE Program applications and two Energy Savings Assistance (ESA) Program applications from customers.

C. WE&T Strategic Planning and Implementation Subprogram

1. Program Description

The WE&T Strategic Planning and Implementation subprogram involves management and execution of several strategic statewide planning tasks identified in the Strategic Plan, including (but not limited to) forming an IOU-WE&T task force, holding annual WE&T public workshops and stakeholder engagement sessions, conducting needs assessments, and hiring industry subject matter experts and consultants to help develop a comprehensive approach to IOU WE&T program design and implementation.

2. Strategies Implemented in 2017

SCE continued to prioritize and refine existing program activities by considering recommendations and findings from the 2011-2012 Needs Assessment,[37] the 2014 Guidance Plan document[38] (referenced in *Chapter IX.A.1.,* above), and other WE&T program evaluations.

3. Stakeholder Engagement and Collaboration

Long-term success for the Statewide WE&T program depends on several factors, including stakeholder engagement and support. Previously, the CPUC required the IOUs

[37] Produced by the Don Vial Center, University of California at Berkeley.
[38] "Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities."

to hold Taskforce meetings to monitor and track progress of the Statewide WE&T program and to advance strategies to meet Strategic Plan goals and objectives. In 2015, with CPUC support, the WE&T team re-envisioned the Taskforce meetings and launched the Stakeholder Engagement Forum as a way to increase collaboration and create an opportunity for dialogue and discussion across the state.

The Stakeholder Engagement Forum was used to introduce several innovative ways to connect with participants, including web-based video conference technology, online chat forums, and real-time polling. By "virtually" connecting participants across the state, the IOUs were able to share a statewide vision while interacting with stakeholders at a regional and local level. This opportunity allowed the IOUs to engage with a broader audience and allowed people to attend in person in San Francisco, Los Angeles, and San Diego, or to participate online from any location.

One of the guiding principles of the Stakeholder Engagement Forum was to foster an open and transparent environment that encouraged dialogue and fostered innovation. To achieve this, the Forum meetings were designed to include more opportunities to gather input, including breakout sessions where stakeholders could delve into high-value topics that could inform and enhance the WE&T program.

In 2017, these efforts continued and the Stakeholder Engagement Forum was leveraged for the California Energy Efficiency Coordinating Committee (CAEEC) and Business Plan process. Response has been productive with specific feedback received.

4. <u>Collaborations with the Community Colleges and the State University System</u>

To better understand potential opportunities, the IOU team (SCE and the other California IOUs) met with a number of internal and external stakeholders. The IOUs continued to conduct collaborative planning discussions with educational institutions, such as the CCC Energy Efficiency and Utility Sector Navigators, the CCC Chancellor's Office, and the CSU Office of the Chancellor. These collaborative planning discussions provided an opportunity for the IOUs (on both statewide and local levels) and the educational institutions to better understand mutual WE&T objectives, activities, potential issues, and future opportunities.

X. Statewide Marketing, Education & Outreach (SW ME&O) Program

1. Program Description

The 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, 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 to expand the scope of the ME&O proceeding to allow for monitoring of the Energy Upgrade California® program. The memo and ruling opened Phase 4 of this proceeding which will encompass any actions necessary for continued and effective coordination.

2. Strategies Implemented in 2017

DDB's 2017-2018 Joint Consumer Action Plan detailed which customer segments would be targeted, what the message would be, where the message would come from, and how the message would be conveyed to the customer. The Plan stated this as follows: [39]

"For the purposes of the Joint Consumer Action Plan, the following programs are regarded as high-level priorities in 2017-2018, ranked in order of importance as they relate to customer engagement:"

- Energy Management Behaviors
- Energy Management Technologies (EMT)
- Lighting
- Home Energy Checkup/Advisor
- Residential Rate Reform / Time of Use (RRR/TOU)
- Energy Savings Assistance Program (ESA), a Low-Income EE program
- Energy-Efficient Appliances
- Home Upgrade Program / Whole House

The IOUs and the Regional Energy Networks (RENs) consistently coordinated and collaborated with DDB on all marketing phases, from the development of strategy and advertising agency briefing documents through creative development and execution, in an effort to maximize statewide messaging for the benefit of ratepayers. Throughout the year, the IOUs and RENs have provided comments on various items, including:

- The integrated communications plans
- The new statewide Energy Upgrade California® website, which launched on Earth Day (April 22), 2017
- Creative concepts for various programs, and

[39] Advice Letter DDB-2 dated April 5, 2017; Appendix A: 2017-2018 Joint Consumer Action Plan, p. 6.

- Community-based outreach strategies.

The IOUs and RENs also:

- Collaborated with DDB on a high-visibility integrated campaign around the 2017 solar eclipse that helped to drive customer engagement and awareness of the Energy Upgrade California® brand, and
- Worked collaboratively with DDB's website developer, Tribal, to develop a process for funneling leads to the local and regional programs of the IOUs and RENs.

XI. Statewide Integrated Demand Side Management (SW IDSM) 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,[40] 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

[40] D. 09-09-047, *Decision Approving 2010 to 2012 Energy Efficiency Portfolios and Budgets*, issued on October 1, 2009, pp. 210-211.

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[41] are coordinated with EE integrated marketing efforts."

2. Strategies Implemented in 2017

a. Directives 1 and 2

Further efforts on integrating cost-effectiveness and EM&V methodologies are being addressed in the Integrated Distributed Energy Resources (IDER) proceeding.

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.

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

[41] Category 9 funding is from the DR Balancing Account and outside of EE funding.

- 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 2017, 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 2017 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.

XII. Local Government and Institutional & Government Partnerships[42]

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, to maintain a focus on long-term sustainability.

In 2017, 136 cities and 10 counties, including Los Angeles, Riverside, and San Bernardino, participated in SCE's Local Government Partnerships, including two (2) new partners. Twenty-five (25) 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 eleven (11) partners advancing to Platinum Level, six (6) to Gold Level, and eight (8) 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 93 energy action plans, which establish a baseline of energy usage, set energy savings goals, and determine near-term measures to accomplish the goal. Partner cities continue to use Strategic Plan funds to install utility energy management systems, develop benchmarking plans, and leverage a revolving EE fund to further promote energy efficiency.

[42] Although SCE, the other IOUs, and the participating local government entities use the term "partnerships" to describe the EE-related alliances formed, none of the participants have formed a legal partnership with SCE or any other entity through participation in these programs.

1. Partnership Strategic Support Subprogram

a. 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.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Partnership Strategic Support Subprogram:

- The annual SEEC Forum had 281 participants, from 86 unique cities, counties, and regional agencies.
- Twenty-nine (29) new participants joined the Beacon Program, totaling 129 cities and counties representing more than 30% of California's population. The Beacon Program recognized a record number of cities and counties with awards, including 102 Spotlight Awards and 9 full Beacon Awards.
- Overall usage of the SEEC ClearPath tool remains very strong, with 2017 representing the highest number of login sessions of any year for ClearPath's existence. Replacing the static SEEC Resource Portal, the SEEC Learning Management System (LMS) offers California local governments and stakeholders continuous access to content and interactive educational opportunities. The LMS has engaged 141 participants, who have completed 472 topic-based learning plan assignments. Leveraging LMS content and functionality, the ICLEI staff provided technical support to the first SEEC GHG emissions inventory cohort, which allowed 15 cities to create new emissions inventories.

- The Best Practices Coordinator received 244 new requests to join the EE Coordinator Weekly Newsletter listserv (electronic mailing list) and shared 576 weekly update stories, resources, or events. There are currently 887 subscribers to the Newsletter. The Best Practices Coordinator also hosted best practice webinars for local governments on the Building Operator Certification program and Local "Reach" Energy Code development and implementation.

- SEEC also developed the following r resources in 2017:

  - Weatherization Guide for Local Governments
  - 2017 Climate and Energy Legislative Updates
  - SEEC Calendar
  - Currents Quarterly Newsletter, and
  - Webinars on topics including innovative local funding measures.

2. City of Beaumont Energy Leader Partnership

a. Program Description

Per the City of Beaumont's request, the Partnership was terminated and removed as an LGP effective December 31, 2015.

3. City of Long Beach Energy Leader Partnership

a. Program Description

The City of Long Beach Energy Leader Partnership is a local government partnership between the City of Long Beach and SCE. Partnership activities in 2017 focused on implementing EE in municipal facilities and promoting EE in the community through community education, marketing, and outreach efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the City of Long Beach Energy Leader Partnership:

- The City was working on citywide street-lighting projects replacing over 25,000 street lights, financed through the On-Bill Financing (OBF) Program. The project is in its final phase and will be complete by mid-2018.

- The City has more involvement with the partnership in 2017, now including representatives from the Long Beach Convention Center, Airport, Sustainability Office, Facilities Management Office, the Water, Public Works, Gas, and Parks & Recreation Departments, and the Port of Long Beach. Additional project opportunities have been identified, audits performed, and applications submitted as a result of including these various departments.
- The City participated in the Direct Install Program with installations completed at fire stations and Parks & Recreation facilities.
- The Partnership promoted SCE's core EE programs and other energy offerings at city-sponsored events.
- The City is working on additional project opportunities that the partnership identified for the Parks & Recreation Department and the Long Beach Convention Center.
- The City submitted was working on the Energy Action Plan, which will be completed in early 2018.

4. City of Redlands Energy Leader Partnership

a. Program Description

Per SCE's request, the Partnership was transitioned to the San Bernardino Regional Energy Partnership effective December 31, 2016.[43]

5. City of Santa Ana Energy Leader Partnership

a. Program Description

The City of Santa Ana Energy Leader Partnership is a local government partnership between the City of Santa Ana and SCE. Partnership activities focus on implementing EE in municipal facilities specifically and promoting EE in the community generally. The partnership:

- Establishes energy savings goals for retrofits of city-owned facilities,

[43] *See* Chapter XII.22, below.

- Identifies, scopes, and implements projects,
- Funds community marketing, education, and outreach (ME&O) efforts to create awareness and connect residents and businesses with information and opportunities to take actions to reduce energy consumption, and
- Includes Strategic Plan activities such as climate action planning, code compliance, and reach codes development.

In early 2017, SCE completed the transition for the city of Santa Ana into a regional partnership joining other cities in Orange County. SCE submitted an Advice Letter in January, 2017, which was approved on February 3, 2017.[44]

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the City of Santa Ana Energy Leader Partnership:

- Continued to hold monthly team meetings with city Team Leaders, facility-related city staff, and IOU Account Representatives. The purpose of these team meetings is to further cement working relationships among Partner cities and the IOUs. These meetings were essential in successfully reaching all program goals in 2017 and maintaining a focus on EE and sustainability.
- Completed seven (7) energy efficiency projects with energy savings of 234,000 kWh and 23 kW.
- Continued to promote IDSM audits and DR programs to the City during team meetings.
- Sent regular communications to the City for education and training opportunities, along with encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Conducted multiple Community Outreach events to promote EE through partnership information booths, brochures, and SCE's Mobile Energy Unit.

[44] *See also* Section XIII.A.12, below.

- Regularly produced "city accomplishments" documents to showcase the city's achievements, and distributed them to the city manager, council members, and other city decision-makers.

6. City of Simi Valley Energy Leader Partnership

a. Program Description

The City of Simi Valley Energy Leader Partnership was — through the end of 2015 — a local government partnership between the City of Simi Valley and SCE. It transitioned to membership in the Ventura County Energy Leadership Partnership (aka Ventura County Regional Energy Alliance [VCREA]), joining that Partnership as of January 1, 2016.

See *Chapter XIII.A.17,* below, for complete information on VCREA activities, including activities in the City of Simi Valley.

7. Gateway Cities Energy Leader Partnership

a. Program Description

The Gateway Cities Energy Leader Partnership Program is a local government partnership comprising SCE, SoCalGas, and the Cities of Downey, Norwalk, South Gate, Lakewood, and Lynwood. Partnership activities focus on:

- Implementing EE in municipal facilities
- Promoting EE in the communities
- Establishing energy savings goals for EE retrofits of city-owned facilities
- Identifying, scoping, and implementing EE projects
- Funding community education, marketing, and outreach efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions, and
- Strategic Plan activities, such as climate action planning, code compliance, and reach codes.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Gateway Cities Energy Leader Partnership:

- SCE and the Partner cities met monthly to discuss Energy Leader Program goals, milestones for marketing, training, and EE projects.
- The Cities of Lakewood and Lynwood started working on their Energy Action Plans.
- The Partnership completed several EE projects in 2017, including street lighting projects in the Cities of Lakewood and Norwalk.
- The Partnership included information about SCE's core programs and other energy offerings in its monthly newsletter and on its website.
- The Partnership promoted EE by participating in major community events and utilizing SCE's Mobile Energy Unit.

8. Community Energy Leader Partnership

a. Program Description

The Community Energy Leader Partnership (CEP) program is a unique local government partnership comprising the Cities of Corona, Irvine, Moreno Valley, San Bernardino, Santa Clarita, and Santa Monica, and SCE, SoCalGas, and The Energy Coalition (TEC), the implementing partner. CEP members work in collaboration to deliver energy savings in municipal facilities and create EE awareness throughout the municipal, residential, and nonresidential market segments. CEP initiatives also include an emphasis on activities that support the Strategic Plan and that coordinate utility core programs with Partner city communities.

In early 2016, the California Public Utilities Commission directed the Partnership to transition the participating cities to their regional Partnerships, and TEC, the implementer, helped facilitate that process. As a result:

- Irvine, Moreno Valley, San Bernardino, and Corona were transitioned into their regional Partnerships in late 2016.
- Santa Monica and Santa Clarita remained part of the CEP until their official transfer to the West Side Partnership, which occurred in July, 2017.

- In July 2017, SCE completed the transition for the cities of Santa Monica & Santa Clarita into a regional West Side partnership joining Culver City.
- Irvine completed the transition into the Orange County Cities partnership.
- Corona and Moreno Valley completed the transition into the Western Riverside Energy Leader Partnership.
- San Bernardino completed the transition into the San Bernardino Energy Partnership.

SCE's Advice Letter on the transition process, submitted in January, 2017, was approved on February 3, 2017.[45]

b. <u>Strategies Implemented in 2017</u>

In 2017, SCE implemented the following strategies for the Community Energy Leader Partnership:

- Continued to hold bi-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 the participants' working relationships. These relationships were essential in successfully reaching all program goals in 2017 and maintaining a focus on EE and sustainability.
- Completed twenty-eight (28) EE projects totaling 1.15M kWh and 97 kW.
- Continued to promote IDSM audits and DR programs to Partner cities during team meetings.
- Sent twelve Partnership E-blasts to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Conducted nine (9) Community Outreach events and one (1) Team Leader Meeting in 2017.

[45] *See also* Chapter XIII.A.12, below.

- 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.

9. Eastern Sierra Energy Leader Partnership

a. Program Description

The Eastern Sierra Energy Leader 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.

b. Strategies Implemented in 2017

In 2017, 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 worked with Mono County on lighting retrofit projects that resulted in energy savings of 75,969 kWh, and completed IDSM menu items to advance them to the Silver tier level.
- The partnership worked with Inyo County to receive 3,983 kWh savings through the Nonresidential Direct Install (DI) Program.
- 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, 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, and also taught an abridged version of the course to Lee Vining Elementary School's 6th grade class.
- The Partnership presented updates to all jurisdictions' councils or boards.
- The Partnership participated in monthly Rural and Hard-to-Reach (RHTR) calls, attended three in-person meetings, and, as part of an RHTR sub-committee, proposed an abstract (which was not accepted) for the American Council of Energy Efficiency Economies (ACEEE) conference.
- The Partnership participated in SCE's Peer-to-Peer Best Practices monthly calls.
- The Partnership participated in the Statewide Energy Efficiency Collaborative (SEEC) forum in Fresno, California in 2017 and participated in a panel discussion titled "Tales from the Other California – the Rural EE-xperience."
- The Partnership participated on SCE's CenCal Meeting Planning Team, and attended the CenCal Meeting in San Luis Obispo, SCE's LGP Kick-off Meeting in Downey, and the All Partners Meeting in Irwindale.
- The Partnership participated in four (4) web-based workshops and webinars. These workshops were designed to educate participants on energy efficiency and/or climate-related topics and were open to all local governments.
- The Partnership helped facilitate applications for Mono and Inyo Counties to retain grandfathered Time of Use rates.

- The Partnership participated with an outreach float in the Town of Mammoth Lakes' community Independence Day parade and a booth at the Banff Film Festival World Tour in Bishop.
- The Partnership completed 17 projects in 2017, for an aggregate energy savings of 81,172.11 kWh and 17.57 kW.

10. Desert Cities Energy Leader Partnership

a. Program Description

The Desert Cities Energy Leader Partnership is a local government partnership comprising the Cities of Blythe, Cathedral City, Desert Hot Springs, Indian Wells, Palm Desert, Palm Springs, and Rancho Mirage, the Agua Caliente Tribe, the Imperial Irrigation District, SoCalGas, and SCE. The program is designed to help local governments effectively lead their communities in increasing EE, reducing GHG emissions, and promoting other demand-side management and sustainability goals.

This Partnership promotes community marketing, education, and outreach (ME&O) efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions. Additionally, the Partnership includes Strategic Plan activities, such as climate action planning, code compliance, and reach codes.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Desert Cities Energy Leader Partnership:

- The Partnership met monthly to discuss program goals, milestones, marketing, training, and EE projects.
- The Partnership held quarterly working group meetings with partner Cities to discuss their ongoing projects.
- The City of Rancho Mirage completed comprehensive audits at its fire stations in order to identify EE opportunities.
- The Partnership worked with partner cities to implement SCE's Direct Install Program in municipal buildings to reduce energy consumption.

- The Partnership, working with the Coachella Valley Association of Governments (CVAG), conducted trainings for the cities on reach codes, Title 24, and Climate Action Plans, in order to promote strategic planning activities and educate the cities on the effects and benefits of reach codes.

11. Kern County Energy Leader Partnership

a. 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.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Kern County Energy Leader Partnership:

- Assisted all member jurisdictions to submit Strategic Plan applications to fund benchmarking efforts through SCE and SCG to supplement ongoing work with PG&E.
- Held individual meetings with the Cities of Delano, Tehachapi, 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 Fresno, California.

- Met monthly to discuss program goals, milestones, and marketing, training, and EE projects.

12. Orange County Cities Energy Leader Partnership

a. Program Description

The Orange County Cities Energy Leader Partnership includes the Cities of Huntington Beach, Westminster, Fountain Valley, Costa Mesa, and Newport Beach, 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.

In early 2016, SCE proposed to regionalize partnerships in order to better serve its cities and to increase regional collaboration and sharing of best practices. SCE submitted an Advice Letter for this proposal in January, 2017, which was approved on February 3, 2017, and the Cities of Irvine and Santa Ana completed transition into the Orange County Cities Partnership in 2017.

b. Strategies Implemented in 2017

In 2017, 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 successfully reaching all program goals in 2017 and maintaining a focus on EE and sustainability.
- Completed twenty-three (23) EE projects, with energy savings totaling 2.1M kWh and 72 kW.
- Continued to promote IDSM audits and DR programs to partner cities during team meetings.

- 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, brochures, and SCE's Mobile Energy Unit.
- 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.

13. San Gabriel Valley Energy Leader Partnership

a. 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.

b. Strategies Implemented in 2017

In 2017, 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.
- Assisted several partner cities in completing DR and Energy Action Plan efforts to help them move up the Energy Leader Tier levels.
- Completed benchmarking efforts as part of Strategic Plan activities.
- Continued the EASY Program (Energy Assessment Screening for Your Home), a free energy assessment for home owners in the cities.

- Exceeded its annual goal by completing several municipal projects.
- Participated in approximately 39 outreach events, including several community outreach events to promote DR and EE.
- Targeted outreach in multiple cities, which included distribution of flyers at community events, outreach to local businesses, and participation in a lamp exchange event.
- Hosted its annual kick-off event focusing on the utilities' EE incentive application process.
- Hosted four (4) Energy Working Group meetings with city staff members responsible for managing municipal and community-wide energy programs.
- Participated in the local government Direct Install initiative.
- Conducted a "Road Show" to selected cities to increase engagement and encourage project execution.

14. San Joaquin Valley Energy Leader Partnership

a. 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, and
- 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. 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), and
- The California Energy Efficiency Coordinating Council (CAEECC) as a general member, and also as a member of the Public Sector and Cross Cutting subcommittees.

In 2017, the San Joaquin Valley Energy Leader Partnership exceeded its kWh and kW goals.

b. Strategies Implemented in 2017

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

- Held three quarterly VIEW Partnership meetings.
- Held eight "Lunch & Learn" sessions with VIEW Partner cities.
- Performed continued maintenance on the roughly 4,000 ENERGY STAR® Portfolio Manager accounts.
- Assisted the City of Hanford in completing their Energy Action Plan, accepted by the City Council in December 2017.
- Assisted the City of Woodlake in completing their Energy Action Plan; the City Council accepted the Plan in Q1 2018.
- Obtained $35,000 in supplemental funding to support Partnership interests and efforts:
    - $25,000 in a subcontract from the California Energy Commission (CEC) to supplement Partnership interests in Agricultural ZNE, and
    - $10,000 as a grant award from SCG Environmental Champions to organize

and host Gas Camp assemblies in VIEW Partnership territory schools.

- Participated in twelve Peer to Peer Working Group monthly member calls and/or in-person meetings.
- Hosted seven San Joaquin Valley Energy Watch Collaborative meetings.
- Co-chaired ten RHTR Local Government Partnerships' Working Group monthly member calls and participated in three quarterly in-person meetings.
- As a party to CPUC Proceeding 17-01-013, filed formal comments under the RHTR supporting IOU administration of LGPs and in opposition to a Local Government Sustainable Energy Coalition (LGSEC) proposal for statewide administration of LGPs.
- Filed comments for Docket Number 15-OIR-05, "Building Energy Use Disclosure and Public Benchmarking Program Mandated under Assembly Bill 802," regarding unintended impacts on stakeholders.
- Participated in seven CAEECC and ad hoc CAEECC meetings.
- Participated in CPUC Energy Division Statewide Advisory Group (StAG) calls.

15. South Bay Energy Leader Partnership

a. Program Description

The South Bay Energy Leader Partnership provides an energy resource center — the South Bay Energy Savings Center (SBESC) — and supports fifteen local governments in the South Bay and their respective communities. SoCalGas and the West Basin Municipal Water District are also part of this partnership. The program provides energy information, workshops, and community outreach. The Energy Efficiency Plus (EE+) element of the program provides technical assistance to cities to help identify EE opportunities and provide access to statewide and local EE incentives and rebates. The South Bay Partnership also engages in strategic planning activities, including Climate Action Plans, Enterprise Energy Management Information Systems, and online permitting.

b. Strategies Implemented in 2017

In 2017, 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 forty-three (43) EE projects totaling 942,000 kWh and 130 kW.
- Supported all fifteen (15) member cities in adopting (and completing approval of) Climate Action Plans (CAPs) to reduce community GHG emissions.
- Continued to have the SBESC promote community EE and/or DR awareness by producing items such as water bill inserts, along with social media content, for the South Bay region.
- Conducted 155 educational events throughout the 15 partner cities, including workshops and Farmers' Market 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.

16. South Santa Barbara County Energy Leader Partnership

a. Program Description

The South Santa Barbara County Energy Efficiency Partnership (SCEEP) includes SCE, Santa Barbara County, and the Cities of Santa Barbara, Goleta, and Carpenteria. 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

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.

b. <u>Strategies Implemented in 2017</u>

In 2017, SCE implemented the following strategies for the South Santa Barbara County Energy Efficiency Partnership:

- Completed four projects totaling 129,669 kWh and 45.94 kW.
- 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
    - 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.
    - SCEEP Partners met twice in 2017 with the Ventura Regional Energy Alliance (VCREA) to share best practices and lessons learned between partnerships. The neighboring LGPs toured the Limoneria facilities in Santa Paula and the Port Hueneme facilities. SCEEP partners also received additional presentations on the WISE Program and the RES-BCT solar tariff.

- Continued to partner with the countywide Green Business program,[46] 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 businesses and calculated total on-bill energy savings of 1.15 million kWh per year.
- Three members of the Partnership moved up to the next higher Energy Leader tier during 2017.

17. Ventura County Energy Leader Partnership (aka Ventura County Regional Energy Alliance [VCREA])

a. Program Description

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[47] 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.

b. Strategies Implemented in 2017

In 2017, 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 564,000 kWh.

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[46] 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).

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

- Offered over 35 community events and presentations, and four trainings on topics including 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, 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.
- Five cities moved up to higher ELP tier levels, resulting in the current city standings of four Platinum, two Gold, and five Silver.
- Collaborated with the South Santa Barbara Partnership (SCEEP) to co-host two meetings.

In addition, the city of Simi Valley received the Cool Planet Honorable Mention Award in the Government and Institutional sector from SCE and Climate Registry.

18. Western Riverside Energy Leader Partnership

a. 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.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Western Riverside Energy Leader Partnership:

- Conducted SCE monthly and quarterly meetings to discuss Energy Leader Program goals and milestones.

- Conducted one-on-one meetings with member cities to help them move up the tier levels of the Energy Leader model.
- Promoted the Direct Install Program to member cities for municipal retrofits and community outreach.
- Continued to promote SCE's DR programs and encourage partner cities to participate.
- Coordinated numerous community events with SCE's Mobile Energy Unit and Global Energy Contractor.
- Completed a streetlight retrofit project in the City of Murrieta.
- Continued to support the streetlight acquisition process for 11 jurisdictions.
- Completed Strategic Plan Solicitation Phase III activities.
- Began coordinating a regional effort, in conjunction with the Western Riverside Council of Governments, to help partner cities implement street light acquisitions, retrofit projects, and maintenance activities.
- Coordinated Holiday Light Exchange events in the Cities of Hemet, Murrieta, Canyon Lake, Wildomar, and Norco.
- Promoted the Energy Savings Assistance (ESA) Program and the Middle Income Direct Install (MIDI) Program in the region.

19. High Desert Regional Partnership (formerly Adelanto Energy Leader Partnership)

a. Program Description

The High Desert Regional (HDR) Partnership is a Local Government Partnership (LGP) between Southern California Edison (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), which continued participation in the CAEECC as a general member and Public Sector subcommittee co-chair (as the non-PA representative).

The HDR 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. 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, and the California Energy Efficiency Coordinating Council (CAEECC) both as a general member and on the Public Sector and Cross Cutting subcommittees.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the High Desert Regional Partnership:

- Held six bi-monthly HDR Partnership meetings and the annual HDR Partnership awards luncheon.
- Performed continued maintenance on 200 ENERGY STAR® Portfolio Manager accounts and collected data characteristics for an additional 400 municipal energy accounts.
- Participated in twelve Peer to Peer Working Group monthly member calls/in person meetings.
- Co-chaired ten RHTR Local Government Partnerships' Working Group monthly member calls and participated in three quarterly in-person meetings.
- As a party to CPUC Proceeding 17-01-013, filed formal comments under the RHTR supporting IOU administration of LGPs and in opposition to a Local Government Sustainable Energy Coalition (LGSEC) proposal for statewide administration of LGPs.

- Filed comments for Docket Number 15-OIR-05, "Building Energy Use Disclosure and Public Benchmarking Program Mandated under Assembly Bill 802," regarding unintended impacts on stakeholders.
- Participated in seven CAEECC and ad hoc CAEECC meetings.
- Participated in CPUC Energy Division Statewide Advisory Group (StAG calls).
- Began twelve new projects in 2017, with aggregate energy savings totaling 79,026 kWh and 22 kW.

20. West Side Energy Leader Partnership

a. Program Description

The West Side Energy Leader Partnership is a local government partnership including SCE and the Cities of Culver City, Santa Monica, and Santa Clarita, 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
- Funding community education, marketing, and outreach efforts to create awareness and connect residents and businesses with information and opportunities to take energy actions, and
- Strategic Plan activities, such as climate action planning, code compliance, and reach codes.

In early 2016, the California Public Utilities Commission directed the Community Energy Leader (CEP) Partnership to transition the participating cities to their regional Partnerships, and TEC, the implementer, helped facilitate that process. Santa Monica and Santa Clarita remained part of CEP until their official transfer to the West Side Energy Leader Partnership, completed in July 2017, joining Culver City. SCE submitted an Advice Letter in January, 2017, which was approved on February 3, 2017.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the West Side Energy Leader Partnership:

- Continued to hold bi-monthly Efficiency Now! Team meetings with the City of Culver 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 reaching all program goals in 2017 and maintaining a focus on EE and sustainability.
- Completed thirteen (13) EE projects with energy savings totaling 246,000 kWh and 49 kW.
- Continued to promote IDSM audits and DR programs to the cities during team meetings.
- Sent twelve Partnership E-blasts to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Conducted two (2) Community Outreach events and one (1) Team Leader Meeting.
- 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.

21. North Orange County Cities Energy Leader Partnership

a. 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.

b. Strategies Implemented in 2017

In 2017, 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 reaching all program goals in 2017 and maintaining a focus on EE and sustainability.
- Completed eleven energy efficiency projects with energy savings totaling 564,000 kWh and 8 kW.
- Continued to promote IDSM audits and DR programs to partner cities during team meetings.
- Sent twelve Partnership e-blasts local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative (SEEC) forum.
- Conducted several Community Outreach events.
- 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.

22. San Bernardino Regional Energy Partnership

a. Program Description

The San Bernardino Regional Energy Partnership (SBREP) joined SCE's Local Government Partnership Program in September, 2015. It is a joint partnership between SCE, SoCalGas, and the San Bernardino Council of Governments,[48] with 13 member Cities, the majority of which had already passed resolutions to participate in the Partnership. SBREP 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 participating cities.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the San Bernardino Regional Energy Partnership:

- Conducted monthly and quarterly meetings to discuss Energy Leader Program goals and milestones for EE projects, marketing, and the Strategic Plan.
- Held "One on One" meetings with each partner city to educate them on Partnership program elements and identify EE opportunities.
- Worked with all partner cities to complete the requirements of the Energy Leader Partnership Model in order to help them move up the tiers.
- Hosted five (5) Holiday Light Exchange and EE Starter Kit events in December, 2017.
- Coordinated SCE's Direct Install Program to promote T-LED measures.
- Continued to identify potential projects by providing technical assistance for energy audits at the top three highest energy-consuming facilities in the partner cities.

[48] Formerly known as the San Bernardino Associated Governments (SANBAG).

- Placed informational kiosks at each partner city facility in order to promote SCE's core programs.
- Developed an SBREP informational brochure for general outreach purposes.
- Received approval of its application for benchmarking municipal facilities as part of Strategic Plan activities.
- Continued to promote SCE's DR programs and encourage partner cities to participate.

23. Local Government Strategic Planning Program

a. 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. These programs are a result of a solicitation process whereby local governments proposed activities, above and beyond normal partnership work, that would directly align with the California Energy Efficiency Strategic Plan ("Strategic Plan").

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Partnership Strategic Planning Subprogram:

- Received 12 applications in 2017 for Strategic Plan-related funds. The applications were for various deliverables including benchmarking policies, energy action plans, reach codes, and EE revolving funds.
- Sent out Notices to proceed on three applications received in 2017 and two applications received in 2016.
- Worked in collaboration with Commission staff, the other IOUs, and LG 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 and of best practices for projects.

- Worked in collaboration with Commission staff to develop future processes for Strategic Plan activities, utilizing key lessons from the Strategic Plan Pilots and from stakeholder feedback to develop a revised Strategic Plan Program. The new streamlined process incorporates evidence of applicant commitment, past performance record(s), the SCE ELP tiered model, and consistent scoring criteria.

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.

24. County of Los Angeles Energy Efficiency Partnership

a. 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.

b. Strategies Implemented and/or Continued in 2017

i. Administrative Successes:

- 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.

- 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:

- Completed audit and eQuest models for eight retrocommissioning projects and presented them for approval.
- Completed nine lighting projects for the Metropolitan Department of Transportation.
- Completed installing five variable frequency drives (VFDs) on pool pumps for the Parks & Recreation department.

iii. Strategic Planning Support:

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

- Continued the work on expansion of the EEMIS System to over 50 local governments
- Continued support of 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:

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:

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

25. County of Riverside Energy Efficiency Partnership

a. 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.

b. Strategies Implemented in 2017

In 2017, 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.
- Continued to promote IDSM audits and DR program offerings

- Supported County staff members who attended the Statewide Energy Efficiency Collaborative (SEEC) Forum in Fresno, California
- 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[49] 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.

26. County of San Bernardino Energy Efficiency Partnership

a. Program Description

The County of San Bernardino Partnership is a collaborative effort with the County's Architectural and Engineering Department and other internal organizations to build an infrastructure that will deliver cost-effective EE projects and provide comprehensive outreach and energy education to facility managers. The program team works closely with nine different departments within the County to learn their needs and develop strategies to address EE and DR concerns for each department.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the County of San Bernardino Energy Efficiency Partnership:

i. Administrative Successes:

- Held monthly Management Team meetings to discuss program status, project tracking, and overall program implementation and coordination issues.
- Held regular Outreach Team meetings with project managers from various County departments to identify opportunities and provide information

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

available on SCE resources and core program offerings.

- Provided technical support through SCE engineers to better understand the operations of County facilities, and worked with the County's Facilities Management department to develop strategies to operate their buildings more efficiently. Identified simple EE measures, such as parking lot lamps, and control strategies that can be easily implemented across all departments. The County implemented block heater and HVAC optimization throughout its facilities, and continued to evaluate its need to reduce operating costs.
- Met with the Project team to discuss project status and reviewed EE opportunities with other departments, including the Facilities Management, Special District, Sheriff, Information Technology, Library, and Fire Departments.
- Met quarterly with the County's project managers to get project updates and helped them identify EE opportunities.

ii. Municipal Retrofits:

- Worked with the Special District Department to identify pumps that can be used to improve or increase efficiency.
- Completed the second phase of HVAC optimization on 150 units throughout County facilities. The Partnership plans to implement Demand Control Ventilation (DCV) for the third phase.

iii. Core Program Coordination:

- Continued to integrate the Savings By Design (SBD) Program and, where applicable, DR opportunities into the Partnership.
- Promoted the Nonresidential Direct Install Program to retrofit lighting and control system for the Special District Department.

iv. Education and Outreach:

- Educated County project managers and staff on the importance and value of EE, motivating them to look for opportunities to reduce operating costs by

implementing EE projects and conservation practices.

C. Southern California Regional Energy Network

27. Southern California Regional Energy Network Fiscal Oversight Partnership

a. 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. On October 28, 2015, the Commission issued its Decision 15-10-028,[50] which authorized SoCalREN to continue operating as a REN through 2016 and beyond. 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 2017, 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.

b. Strategies Implemented in 2017

In 2017, SCE implemented the following strategies for the Southern California Regional Energy Network Fiscal Oversight Partnership:

- Continued working committees that facilitated discussion and resolution of issues:
    - The IOU-SoCalREN Coordinating Committee met quarterly to discuss overarching and strategic issues.
    - The IOU-Southern California Regional Energy Center (SoCalREC)[51] Technical Committee met monthly to discuss coordination of core program activities to minimize customer and ratepayer confusion.
    - Additional working meetings were conducted as needed to coordinate and support implementation of Energy Upgrade California® (EUC), Finance, and SoCalREC Programs.

[50] D.15-10-028, p. 124.
[51] SoCalREC should not be confused with SoCalREN.

- On a monthly basis, reviewed and processed for payment the program implementer invoices forwarded through SoCalREN for work performed in 2016-2017, 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 SoCalREC Coordination Plan to streamline coordination of our individual core program activities and third-party offerings to minimize customer and ratepayer confusion when working with SoCalREN and/or SoCalREC.
- Amended the contract between SCE, SoCalGas, and SoCalREN to extend the funding period through 2017.
- 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.

D. Institutional and Government Energy Efficiency Partnership Program (IGPP)

The Institutional and Government Energy Efficiency Partnership Program (IGPP) is an umbrella program comprising four (4) Statewide subprograms, including partnerships with the California Community Colleges (CCC), California University Systems (UC and CSU), the California Department of Corrections and Rehabilitation (CDCR), and the 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,

retrocommissioning (RCx), and monitoring-based commissioning (MBCx) projects for implementation.

28. California Community Colleges Energy Efficiency Partnership

a. 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 of over $2.5M for the 2017 program year 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.

b. Strategies Implemented in 2017

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 2018.
- In early 2017, a restructuring of the Management Team was implemented to

streamline meetings by removing IOU Account Representatives ("Reps") from attendance. In addition, meeting frequency was changed from monthly to quarterly. By the end of the year it was apparent that without the participation of Account Reps, there was a significant lack of information from the field. It was thus decided that Account Reps should again be members of the Management Team to provide this perspective.

- 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:

- Held a system-wide Call for Projects in January in order to identify energy efficiency projects for both the Partnership and Proposition 39 (Prop 39).[52]
- Worked closely with the California Community College Chancellor's Office to develop a process to integrate the resources and infrastructure of the Partnership into the CCC system and successfully implement hundreds of Prop 39 projects across the State.
- Implemented projects using FY 2016-2017 and 2017-2018 Proposition 39 funding, and built a project pipeline for FY 2018-2019 funding.
- Continued SCE's support of the CCC Prop 39 Program, which began in early 2013 and included hands-on services from 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.

[52] *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:

- Participated in five CCC conferences (for example, the CA Higher Education Sustainability Conference and the Community College Facilities Coalition Conference) to reach a diverse audience of facilities staff, business officers, administrative personnel, and board members.
- Participated in Southern California quarterly Campus Forums targeted towards campus facilities and energy managers, providing time-sensitive updates on new technologies, information on program implementation, and direct assistance to districts in attendance.
- Held 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 Association of Chief Business Officials (ACBO) Facilities Task Force quarterly meetings

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

a. 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.

b. Strategies Implemented in 2017

i. Administrative Successes:

- Conducted regular management team meetings (every four weeks) and executive team meetings (quarterly) which have been key to identifying and managing projects and to addressing challenges.
- Undertook an effort to ensure that new construction projects and gas-saving water conservation projects were clearly tracked and proactively managed.

ii. Retrofit Projects:

- In 2017 CDCR started to reactivate retrofit projects that had been put on hold in 2016, by performing Investment Grade Audits and scoping out projects.
- 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.
- To support more project development, the IOUs performed energy audits on all CDCR facilities in SCE's service territory, which CDCR is using to prioritize the next wave of projects.

iii. Education and Outreach:

- Provided ongoing training to the ESCOs around changes to IOU financing options (enhanced incentives and/or rebates and on-bill financing [OBF]) and processes.

30. State of California Energy Efficiency Partnership

a. 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 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.

b. <u>Strategies Implemented in 2017</u>

i. Administrative Successes:

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

ii. Retrofit Projects:

- The DGS began the lengthy process of Investment Grade Audits (IGAs) on behalf of various departments, and worked with the departments to scope and approve projects. The IOUs worked with the State to prioritize agencies that may benefit from ESCO work, for both large and small buildings. While these projects are slow to unfold, due to many legal hurdles, they are expected to yield large energy savings upon completion.
- For smaller facilities, individual state departments worked with the IOUs to implement quick, technology-specific projects using existing third-party programs, such as Direct Install. Despite many legal hurdles, the IOUs and the state worked together to find solutions paving the way for more work to be completed more efficiently.

iii. Education and Outreach:

- Supported the DGS by training their ESCO pool on IOU program requirements and processes, ensuring that IGAs and project scopes include energy efficiency elements that qualify for funding assistance (through either enhanced OBF and enhanced incentives, or both), and that the calculations quantifying the savings were 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 this as a platform for agency outreach.

31. UC / CSU Energy Efficiency Partnership

a. 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). The program generates energy savings by identifying

and implementing energy efficiency projects and through training and education to support those projects. 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.

b. <u>Strategies Implemented in 2017</u>

i. Administrative Successes:

- Continued Public Sector Business Planning activities with stakeholders and the CPUC. The Business Plans provide a description and analysis of Public Sector customers, identify barriers faced by these institutions, and address intervention strategies for overcoming these barriers.
- Launched the approved Performance Based Retrofit Program, a HOPPs[53] program. The Performance Based Retrofit Program, which has a performance-based incentive structure to drive persistence of savings, was approved in Advice Letter 3460-E-A. It utilizes net meter energy consumption (NMEC) methodology to demonstrate measured savings against existing conditions and encourage a comprehensive whole-building approach to building efficiency.
- Closely coordinated the partners via Executive Team meetings quarterly and Management Team meetings every three weeks
- Expanded the Partnership Data Dashboard, first begun in 2016, to allow the partners to more easily access and export current and historical Partnership project data. In addition, new charts were added to the site to show the full pipeline of all UC / CSU Partnership projects planned for future years. Projects are arranged by the year in which SCE is expected to claim the program energy savings for each project, thus providing greater visibility to the Partnership's future outlook.

[53] HOPPs = High Opportunity Project or Programs.

- Assisted UC to focus on addressing barriers to energy efficiency by coordinating two lighting initiatives. The first initiative addresses challenges at UC medical centers by creating successful projects as templates that can be applied system-wide. The Million Lamps Challenge, UC's second initiative, leverages utility incentives and economies of scale to purchase one million high-quality LED retrofit lamps to be installed across UC campuses.

ii. Retrofit Projects:

- Completed 80 retrofit, MBCx, and New Construction projects at 21 different UC and CSU campuses (including the UC Med Centers).
- Initiated a significant number of new energy efficiency projects in 2017 that are currently underway.

iii. Education and Outreach:

- Hosted an Energy Managers' Meeting as a post-conference workshop of the California Higher Education Sustainability Conference. The Meeting provided an interactive session for UC and CSU energy managers to share best practices, lessons learned, and other practical advice.
- Continued the Training and Education scholarship program, 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.
- Developed a highlight video and web-based case studies for the 2017 Best Practice Awards.
- Held two workshops (run by the Partnership's Training and Education Team) in northern and southern California, focusing on explaining how to use whole-building energy performance targets throughout a building's design, construction, and operation.
- Teamed with PG&E's Pacific Energy Center to provide a free training session at UCSF on energy efficiency in laboratories.
- Held a workshop at UCLA introducing energy managers to the basic

fundamentals of SkySpark, a building analytics software widely used across both UC and CSU systems.

32. Water Infrastructure System Efficiency (WISE) Program

a. 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.

b. Strategies Implemented in 2017

i. Administrative Successes:

* Participated in bi-weekly progress meetings with customers, SCE Account Representatives ("Reps"), and the third party-implementer's PM
* Approved invoices for payment and reported on activities on a monthly basis, and
* Updated the Subcontractor Management and Reporting Tool (SMART) software to ensure accurate project tracking.

ii. Retrofit Projects:

* Performed 22 new preliminary program services for customers
* Completed 13 new energy assessments for 14 customers
* Presented 10 new Project Feasibility Studies (PFS) to customers
* Submitted 11 new projects for SCE project review
* Reached the "Proof of Equipment Order" milestone submission for 15 projects
* Submitted Installation Reports (IRs) for 18 existing projects
* Facilitated IR review for 22 projects
* Achieved IR approval for 14 projects, and
* Approved incentives for 6 projects.

We are continuing follow-up to finalize additional customer project submissions and installations.

iii. Education and Outreach:

Implemented a marketing campaign as follows:

- Identified 36 water agencies and 86 cities suitable for the Program, and
- Held kickoff meetings to introduce the Program to 13 water agencies and cities.

XIII. Third-Party Programs

Third-Party programs deliver electric savings and demand reduction through consultants in a wide variety of customer segments defined by North American Industry Classification System (NAICS) code 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 2017

In 2017, SCE implemented the following strategies for the CMHP program:

- Targeted hotter climate zones to achieve additional energy savings by utilizing the HVAC Quality Maintenance measures.
- Continued collaboration with SCE Local Public Affairs and Partnership Programs to leverage relationships with city councils and mobile home communities.
- Conducted outreach to multiple mobile home communities where door-to-door solicitations were not allowed. As a result, many communities were receptive and allowed outreach to be conducted, and over 200 homes received services and installations.
- Collaborated with the North Orange County Chamber of Commerce on holding presentations and providing services to the following mobile home communities:
    - Lake Park Brea
    - Crestmont
    - Park La Habra
    - View Park Mobile Estates, and
    - Mobile Hacienda.

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 ("Registry"). 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

Registry 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.

The Registry is a non-profit organization which represents California's (and most of North America's) official voluntary GHG Registry. The Registry 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 2017

In 2017, 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 the Los Angeles County Arboretum, was well-received by all the attendees, including the award recipients and local and state officials. Los Angeles County Chief of Sustainability Gary Gero provided keynote remarks and also presented SCE with a proclamation from the County of Los Angeles. 2017 Cool Planet Award winners were:
    - City of Culver City (L.A. County)
    - City of Fullerton (Orange County)
    - City of La Habra (Orange County)
    - City of Simi Valley (L.A. County)
    - Cucamonga Valley Water District.
    - International Bay Club
    - NBC / Universal, and
    - Torrance Memorial Medical Center.
- Continued to educate SCE staff and customers about climate policies, mitigation strategies, and best practices through presentations and distributed collateral.

- Produced and distributed "Success Stories" highlighting the environmental leadership of Cool Planet members, such as Torrance Memorial Medical Center, Walnut Valley Water District, and City of Simi Valley.
- Awarded Cool Planet benefits to eight Local Governments that attained Partnership Gold, Silver, or Platinum Tier status:
    - City of Culver City – Platinum
    - City of Hawthorne – Platinum
    - City of Cathedral City – Gold
    - City of Indian Wells – Gold
    - City of Pomona – Gold
    - City of Santa Barbara – Gold
    - City of Simi Valley – Silver, and
    - City of Ventura – Silver.
- Continued to see increased participation in demand response (DR) and Registry membership. The Registry added DR program participation to its eligibility requirements to encourage Registry enrollment of customers who do not qualify under EE eligibility requirements.
- 19 members either joined or renewed through marketing and outreach efforts:
    - Aquarium of the Pacific
    - City of Cathedral City
    - City of Culver City
    - City of Hawthorne
    - City of Indian Wells
    - City of Long Beach
    - City of Pomona
    - City of Santa Barbara
    - City of Simi Valley
    - City of Ventura
    - Inland Empire Utilities Agency
    - Kaiser Permanente

- Kilroy Realty
- Marriott Hotel Corporation
- Orange County Transportation Authority
- Torrance Memorial Medical Center
- Victor Valley Wastewater Reclamation Authority, and
- Water Walnut Valley Water District.

- 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, and
  - West Basin 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. <u>Strategies Implemented in 2017</u>

- Continued outreach through SCE account executives to help customers identify eligible EE measures and to provide support services through on-site performance measurements and application support.
- Surveyed customers previously enrolled in HEEP to determine prevailing project drivers and/or barriers.
- Engaged industry professionals, contractors, and local industry trade groups.
- Focused on providing a business case to influence customers' decision-making process, especially where project incentives can tip the scales for the customer to commit to a capital-intensive energy retrofit.
- Updated application, benchmarking, and project processing procedures, in conjunction with the energy division of Willdan Energy Solutions, to streamline projects and help accomplish state EE goals.

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 2017

- Continued outreach through SCE account executives, previous customer relationships, industry networking, and new business development strategies to identify EE measures and support services through energy assessments and on-site performance measurement and verification.
- Documented program influence on customers' decision-making processes, showing how incentives motivate customers to commit to capital-intensive energy retrofits.
- Utilized Willdan Energy Solutions' energy division team to identify, streamline, and implement EE measures and projects.
- Provided a wide range of support services to data centers, including energy assessments, energy and engineering analyses, incentive application development and management, contractor referrals and installation oversight, and financial incentives to help offset project costs and comprehensively address the needs of targeted facilities.
- Provided regular technical consultations through Willdan Energy Solutions to help customers get better results by coordinating program improvements with other aspects of their operations, thus helping accomplish state EE goals.

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 2017

- Employed Willdan Energy Solutions' energy division team to identify, streamline, and implement EE measures and projects.
- Cooperated with SCE account executives to help identify customers who may be interested in installing eligible EE measures in lodging facilities.
- Provided customers with EE support, including conducting site assessments to identify qualifying EE opportunities, calculating energy savings, developing incentive applications, and providing project management and oversight through the measure implementation process.
- Documented program influence on customers' decision-making processes, showing how incentives motivate customers to commit to capital-intensive energy retrofits.
- Provided regular technical consultations through Willdan Energy Solutions to help customers get better results by coordinating program improvements with other aspects of their operations, thus helping accomplish state EE goals.

F. 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 2017

In 2017, the Food and Kindred Products Program:

- 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, representing SCE in the Track 1 (Preponderance of Evidence and Baselines) and Track 2 (Custom Process and Industry Standard Practice) Working Groups.
- Provided technical resources to involved stakeholders, and participated in weekly and monthly stakeholder meetings with the California Energy Efficiency Industrial Council. This input from stakeholders informed CAEECC engagement with the CPUC and its Energy Division.
- Engaged with many local vendors servicing SCE's service territory, and contracted with consultants to assist with project implementation in the Central Valley and adjoining SCE territory.
- Exhibited program displays in a variety of industry trade shows and association events, such as World Ag Expo, Southern California Green Facilities Expo, West Coast Energy Management Congress, and the Association of Energy Engineers (AEE) Annual Conference, and also at SCE Water Conferences hosted at the Irwindale and Tulare Energy Education Centers.

- The program implementer continued to expand its capabilities in refrigeration by engaging subcontractors with subject matter expertise to better assist the industry in achieving deep energy savings, and facilitated ongoing education and training.

G. 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 customers comprising businesses and facilities in the primary and fabricated metals and industrial gas[54] manufacturing industries within SCE's service territory.

2. Strategies Implemented in 2017

- 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 Energy Efficiency

[54] 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.

Industrial Council. This input from stakeholders informed CAEECC engagement with the CPUC and its Energy Division.

- 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.
- Engaged with many local vendors in SCE's service territory, and contracted new consultants to assist with project implementation in the Central Valley and adjoining SCE territory.
- Attended and engaged in a variety of industry trade shows and association events, such as the California Metals Conference, Southern California Green Facilities Expo, West Coast Energy Management Congress, and Association of Energy Engineers (AEE) Annual Conference.
- The program implementer continued to expand expertise in process cooling as it relates to metal process operations, by engaging subcontractors with subject matter expertise to better assist the industry in achieving deep energy savings, and facilitated ongoing education and training.

H. 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 2017

- 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.
- Piloted a collaborative "Early Opinion" project development process between SCE, the CPUC Energy Division, and the program implementer to increase the likelihood that large EE projects utilizing newer technology will produce viable savings opportunities.

I. 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 2017

- Continued outreach through SCE's Business Customer Development (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 emission, efficient water use, and distributed renewable generation.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

J. 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 manufacturing industry. 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 2017

- Continued outreach through SCE's 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.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

K. 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 2017

- Continued outreach through SCE's 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.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

L. 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, versus 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 2017

- Continued collaborating with SCE customer account representatives and the implementer's account managers to discuss potential EE projects in K-12 schools and private colleges, in order to identify new customers' EE goals and promote viable EE measures.
- Completed energy audits and presented the findings to school and district personnel to increase participation in the program.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

M. 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 ESCO model,[55] 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

[55] The ESCO model guarantees savings for a set period of time in exchange for payment from the energy cost savings.

- 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 2017

- Continued outreach to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.
- Shifted focus from project development to bringing existing projects to completion.
- Explored retrocommissioning opportunities as a possible new set of customer offerings.
- Continued to bring awareness of the program to new and existing SCE account representatives through internal communications and educational sessions.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

N. 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 2017

- 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,[56] and partnered with Proposition 39 consultants to support school districts in a combined effort to reduce their energy consumption.
- 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.
- Provided information to schools interested in the Title 24 Exemption offered by the Division of the State Architect (DSA).
- Distributed program information to SCE account representatives to help them increase customer referrals to the program.
- 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.

O. IDEEA 365 Program[57]

1. Program Description

The intent of the statewide IDEEA 365 Program is to find, fund, and foster the best 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

[56] The California Clean Energy Jobs Act of 2012, which funds eligible energy efficiency efforts in schools.

[57] IDEEA = Innovative Design for Energy Efficiency Activities.

- 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. 2017 Highlights

- Continued outreach efforts through announcements on the CPUC's PEPMA[58] 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).
- The "Pump Up Program" selected in 2016 began its pilot program in mid-2017. To date, the pilot program 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 near future.

P. 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

[58] Proposal Evaluation and Proposal Management Application.

qualifying facilities and, along with program incentives, encourage the implementation of qualifying energy-saving and demand reduction measures.

2. Strategies Implemented in 2017

- Increased program outreach to implementers.
- Engaged industry professionals, contractors, and other local industry trade groups.
- Continued working with the implementer to focus on project development and completion.
- Identified new customer candidates for the program.
- Implemented a Project Influence Job Aid to improve the quality of influence and evidence for all submitted projects starting in the 4th Quarter of 2017.

XIV. Water-Energy Nexus (WEN) Activity

A. Water-Energy Nexus Background

The California 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, the Governor issued Executive Order B-29-15 mandating statewide urban water reductions of 25%. The CPUC supports the Governor's Order through the Water-Energy Nexus, which aims to enable further coordination of EE and water use efficiency. As these initiatives continue being developed, our understanding of the data and our ability to define best practices for joint programming efforts are still evolving. Equally important, as noted in the Commission's Decision D.12-01-015, 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, aims to support these efforts.

B. Strategies Implemented in 2017

SCE partners with water agencies to coordinate multi-utility offerings. For example, SCE works with the Southern California Gas Company (SoCalGas) and retail water agencies to deliver our 10-10-10+ Multi-Family Behavior Pilot (aka "Communities for Conservation"). The pilot leverages customer usage data from three sources — electricity, water, and gas — to provide multifamily complexes with a quarterly dynamic energy comparison report for each property, designed to help provide information and tips to help lower consumption of all resources. Results are expected in 2018.

New activities include the Residential Direct Install (DI) program, which works with water agencies to provide a targeted approach to the residential sector. Residential DI was proposed in SCE's 2017 Annual EE Program and Portfolio Budget Request Advice Letter 3465-E, based on lessons learned from previous program efforts to reach customers in the residential sector. These customers face many of the same barriers as our low-income

customers, such as renters who face a split incentive, or homeowners who struggle with making EE improvements due to high upfront costs.

SCE continuously evaluates opportunities to coordinate and leverage external existing partnerships to expand offerings. A number of SCE's programs are coordinated with SoCalGas, partnering with large wholesale water agencies such as the Metropolitan Water District (MWD). SCE will continue to leverage and expand partnerships with water agencies to provide complete offerings to our customers, as outlined in SCE's submitted EE Business Plan.[59]

To support coordination across agencies, WEN has sought to integrate its embedded Energy Calculator Tool with the Commission's approved Cost-Effectiveness Tool. The goal was to better streamline, integrate, and evaluate multi-utility offerings. An action plan on how to best integrate the tools is under development and will require the cooperation of the IOUs; a decision is likely to be reached by the end of 2018. Integrating the tools and leveraging our experience with partnerships for multi-utility offerings, including water agencies, will guide assessing multi-utility offerings across SCE's demand-side management (DSM) portfolios. SCE will make use of its lessons learned from programs and pilots (like Residential Direct Install and 10-10-10+), and also apply further developments from the WEN proceeding, to help plan matters such as measure mixes and scale of future partnerships. Furthermore, these enhancements will enable third parties to propose approaches that include multi-utility offerings.

C. Outreach and Education

1. SCE's Annual Water Conference

This conference, now in its 25th year, was held on September 12, 2017. It once again included a General Session that provided perspectives on a wide range of topics, statewide and local issues, and customer-specific case studies where best practices and successes were shared. The latest information on EE, demand response (DR), and distributed generation (DG) technologies and programs was also discussed, with a focus on the unique needs of water districts and their customers. A panel discussion attended by

[59] Southern California Edison Company's Amended Energy Efficiency Rolling Portfolio Business Plan for 2018-2025 (U 338-E), *available at* **https://media.wix.com/ugd/0c9650_bc928ec1f1aa47c99d3e266c8b1591a2.pdf**.

representatives of the water sector and key state agencies addressed both water issues and broader concerns.

In addition to the General Session content, the conference also featured a series of classes allowing attendees to discuss specific topics in greater depth, such as pumping plant efficiency, renewable energy, water loss intervention strategies, and more.[60] Many classes offered Continuing Education Units to help attendees meet various certification requirements.

2. SCE's Advanced Metering Infrastructure (AMI) Pilot

This pilot was approved by the CPUC in 2016 to test the effects of leveraging electric usage data (from SCE's electric AMI infrastructure pilot) with water usage data (from the City of Beverly Hills' AMI infrastructure pilot[61]), to provide feedback to the end user. The goal of the pilot is threefold:

1. Take usage data from both of these AMI infrastructures, combined on a interface platform, for presentation to the customer by a third-party provider.
2. Estimate water savings impact by providing access to real-time water usage data.
3. Assess energy and water usage correlations.

The pilot is currently still in operation. We expect useful results in 2018.

3. SCE's Preferred Resources Pilot (PRP) Partnership with Irvine Ranch Water District (IRWD)

In 2015, the Irvine Ranch Water District (IRWD), with support from SCE, was awarded a grant from the California Department of Water Resources (DWR) to fund a pilot water-energy program to implement water efficiency programs or projects that reduce greenhouse gas emissions, water use, and energy use. The pilot began in 2015 through a Memorandum of Understanding (MOU) that outlined this unique partnership, in which SCE and its customer, IRWD, pledged to collaborate closely on identifying,

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[60] 24th Annual Water Conference Energy Education Center, *available at* **http://scewaterconference.com/irwindale/**.

[61] City of Beverly Hills Department of Public Works, Water Services; web page *available at* **http://www.beverlyhills.org/living/utilities/waterservices/.**

evaluating, and (potentially) co-developing preferred energy resources in south Orange County to support local and regional electric reliability. The SCE-IRWD PRP Partnership Program is the first partnership between a California electric utility and its customer dedicated to seeking innovative opportunities for customers to support electric reliability. It is comprehensive, encompassing the full scope of Preferred Resources as defined by SCE and the CPUC, including a wide variety of demand-side strategies, such as (but not limited to) changes to IRWD's water, wastewater, and bio solids systems and facilities, where such changes could have a beneficial impact on electric reliability.

In 2017, SCE continued its collaboration with IRWD to support a "One-Stop Shop" approach for water and energy efficiency, in which SCE promoted and implemented the installation of water conservation measures, such as toilets, shower heads, faucet aerators, and some landscaping measures, as add-ons to the products and services offered under our existing residential EE programs. SCE also offered home assessments to identify areas of opportunity, including lighting, HVAC optimization, and pool pumps as well as the water conservation measures. Based on the home assessment findings, qualified customers were offered products and services at no cost to address identified needs.

Products and services were provided to all residential segments (single-family, multifamily, and manufactured homes) through these programs, respectively: Residential Direct Install (Res-DI) Program, Multifamily Energy Efficiency (MFEER) Program, and Comprehensive Manufactured Homes Program (CMHP).

Table: 2017 SCE-IRWD PRP Program Results

Participants, Savings, & Demand Reduction	Units	Qty.
Number of participants	Households	**1,819**
Annual gas energy savings	Gross Therm	7,277
Annual electric energy savings	Gross KWh	**1,569,544**
Annual peak demand savings	Gross KW	**482**
Annual water savings	Gross AF/y	277
Annual embedded energy savings from water savings	Gross KWh	**654,869**

In 2017, the pilot's third year, SCE continued to work with IRWD to accomplish numerous goals, including:

- SCE worked with IRWD to:
    - Identify, evaluate, and accelerate implementation of all preferred energy resources that can be cost-effectively developed by IRWD under existing SCE customer DSM programs, and
    - Consider new and emerging technologies related to energy, water, wastewater, bio-solids, and/or controls systems — any type of technology that could affect IRWD's electric requirements — to create new offerings to water / wastewater utilities.
- SCE and IRWD also explored alternative transaction mechanisms and innovative development approaches for preferred energy resources that do not meet IRWD's investment criteria under existing SCE customer DSM programs.

In 2018, SCE is continuing these efforts in its partnership with IRWD, and plans to augment its program offerings to include Smart Communicating Thermostats and Smart Sprinkler Control Systems.

4. <u>Water Savings and the EE Portfolio</u>

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 2017 program activities that might impact water energy savings began by pinpointing what information about water-saving measures and projects was tracked and available.

- For deemed measures, a review was conducted to identify measures that were likely to save water, and then the associated Work Papers were reviewed for water savings.
- Deemed measures with the highest savings included faucet aerators, high-efficiency ice machines, and low-flow showerheads, which in total saved 5,084,240 gallons of potable water. That is equivalent to 13,180 average annual embedded IOU kWh[62] according to the WEN calculator, depending on the hydrologic zone.[63]
- These measures were included in SCE's Plug Load and Appliances Program, Multifamily EE Rebate Program, Commercial Deemed Incentives Program, and Energy Upgrade California® Home Upgrade (among others), as well as through Workforce Education & Training (WE&T) activities.
- A similar process completed for customized projects required deeper scrutiny of projects that were thought to have impacted water use and a comparative assessment of completed 2017 projects.

Moving forward, SCE anticipates tracking more water-related data. Programs and measures in customized projects in 2017 saw water savings of 5,660,958 gallons resulting in approximately 6,524 average annual embedded kWh.

[62] 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.

[63] The Water Energy Nexus calculator uses the South Coast and South Lahontan hydrologic zones and indoor water consumption. The WEN tool is *available at* **http://www.cpuc.ca.gov/nexus_calculator/**.

XV. Appendix A

List of Acronyms and 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
CEEIC	California Energy Efficiency Industry Council
CEESP	California Energy Efficiency Strategic Plan [*preferred acronym*]
CEI	Continuous Energy Improvement [Program]
CEP	Community Energy Partnership
CET	Cost-Effectiveness Tool
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]
CLTC	California Lighting Technology Center
CMHP	Comprehensive Manufactured Homes Program
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent

Acronym or Abbreviation	Explanation
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
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]
ED	[CPUC] Energy Division

Acronym or Abbreviation	Explanation
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
ETP	Emerging Technologies [Program]
eTRM	Electronic Technical Reference Manual
EUC	Energy Upgrade California® [Program]
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

Acronym or Abbreviation	Explanation
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
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

Acronym or Abbreviation	Explanation
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
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
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
NAICS	North American Industry Classification System
NATE	North American Technician Excellence
NBI	New Buildings Institute
NCI	National Comfort Institute
NEEA	Northwest Energy Efficiency Alliance

Acronym or Abbreviation	Explanation
NEM	Net Energy Metering
NEMA	National Electrical Manufacturers Association
NFRC	National Fenestration Rating Council
NMEC	Net Meter Energy Consumption
NRDC	National 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
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]
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

Acronym or Abbreviation	Explanation
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
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)
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)
SoCalREC	Southern California Regional Energy Center

Acronym or Abbreviation	Explanation
SoCalREN	Southern California Regional Energy Network
SPOC	Single Point Of Contact
SRO	Single-room occupancy
SSO	Single Sign On
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

2017 Energy Efficiency Pilot Program Target Updates

The following narratives for the 2017 Energy Efficiency Pilot Programs are submitted herein, pursuant to Commission Decision (D.) 09-09-047 (Ordering Paragraphs 11 & 20). The program performance metrics were submitted via Advice Letters and approved through Disposition Letters issued by the Energy Division.

A. Local Government Strategic Planning Pilot Program, SCE-L-004t

1. Pilot Program Description

The Local Government Strategic Planning Program is designed to provide increased funding and support for city, county, and regional governments to pursue activities that directly support the local government Strategic Plan goals and strategies. These projects provided the means whereby local governments proposed activities above and beyond normal partnership work that would directly align with the local government Strategic Plan. This pilot was completed in 2016 and final reports were developed and submitted to the Energy Division in January 2017. (It is now a full-fledged program; for further information going forward, see *Chapter XII, Local Government and Institutional & Government Partnerships*, in this Report).

2. Target/Metrics: Program Progress and Performance Metrics

Program Performance Metrics	Progress
Dollars distributed to participating local governments or agencies to date	• $21.5 million was distributed to local governments or agencies for the 2010-2012 program cycle. • $3.7 million was distributed to local government or agencies for the 2013-2014 program cycle.
Percent of awarded dollars distributed to participating local governments or agencies to date	• Eighty-nine percent (89%) of the funds awarded through the 2010-2012 program cycle were distributed to participating local governments and agencies. • Sixty-seven percent (67%) of the funds awarded through the 2013-2014 program cycle were distributed to participating local governments and agencies. Although there was no additional funding, SCE continued these pilots

Program Performance Metrics	Progress
	during 2016, as authorized in D.15-01-002, to enable local governments to complete their tasks.
Complete summary report on lessons learned and best practices that can be used by other local governments	SCE worked with the CPUC Energy Division to develop a summary report on lessons learned and best practices for local governments. The 2010-2012 and 2013-2015 reports were published in January 2017.[64]

B. 10-10-10+ Multifamily Behavior Pilot

1. Pilot Program Description

This pilot launched in April 2017 and is a partnership with SoCalGas and local water agencies. Its goal is to implement multiple behavior intervention strategies that influence multifamily complexes to reduce consumption of electricity, gas, and water by 10% or more. More than 350 multifamily complexes received Comparative Energy Usage reports with a combined representation of their electricity, gas, and water consumption. The reports were designed to influence energy improvements and tenant engagement in efficiency. Select sites also opted in to receive banners, door hangers and additional tenant marketing from SCE to help drive program awareness, energy saving actions, and property owner and tenant engagement.

[64] Reports *are available at* **http://eecoordinator.info/coordinator-utility-reports/**.

XVI. Appendix C

2017 EE Annual Report Technical Appendices

I. Section 1: Energy Savings

Table 1 [65]

Table 1. *Electricity and Natural Gas Savings and Demand Reduction (Gross)*			
Annual Results	**2017 Installed Savings**	**CPUC 2017 Adopted Goals (D.15-10-028)**	**% of Goals (2017)**
2017 Energy Savings (GWh) – Annual	*1,555*	*1,216*	*128%*
2017 Energy Savings (GWh) – Lifecycle	*16,887*	*N/A*	
2017 Natural Gas Savings (MMth) – Annual	-	-	
2017 Natural Gas Savings (MMth) – Lifecycle	-	-	
2017 Peak Demand savings (MW)	*292*	*231*	*127%*

In 2017, the following programs and program strategies were successfully implemented and contributed greatly to the portfolio energy savings results:

A. Primary Lighting Program

In 2017, the Primary Lighting program's success was largely due to ongoing optimization of cost-efficiencies during the allocation process and meeting customer demand for a variety of product types. SCE exceeded its objective of reducing the ratio of program dollars for CFLs by at least 5% compared to 2016; the reduction was 17%, decreasing from 42% in 2016 to 19% in 2017. SCE made sure that LED products consistent with the Voluntary California Quality LED Lamp Specification were eligible for the program. The total quantity of LED products rebated through the program in 2017 was more than 10.6 million.

Market Transformation activities included the addition of 190 new retailers. In-store signage educated customers on LEDs and energy efficiency. Very-high-efficiency CFLs were promoted heavily during the first half of the year, along with A-lamps. During the second half,

[65] 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.

these products were de-emphasized and LED flood lamps received the primary focus. This helped prepare the market for the coming 2018 code changes.

B. Home Energy Advisor (HEA) Program

In 2017, the Home Energy Advisor (HEA) Program focused on mailing behavior-based Home Energy Reports (HERs). HEA placed four waves in market (Waves 2-5), reaching nearly 1.1 million residential customers. The HERs were implemented using a Randomized Control Trial (RCT) design. Savings were measured using actual customer usage data by ex-post measurement. The HEA program achieved energy savings of more than 87 million kWh and more than 23,000 kW.

C. Commercial Deemed Incentive Program

In 2017, the Commercial Deemed Program surpassed its kWh and kW goals by 242% and 106%, respectively. At the end of the program year, the program was required to withdraw several expired deemed measures impacted by various California Public Utilities Commission (CPUC) decisions, market studies, and/or Industry Standard Practice (ISP) studies, the most significant being Work Papers involving exterior lighting. In fact, the program achieved an estimated 18,764,000 kWh and 1,041 kW in savings during the last quarter of 2017, mostly attributed to lighting measures. During 2017 SCE also targeted Food Service measures, HVAC Controls, Process Controls, and Refrigeration Controls which contributed to the program exceeding the kW goal for 2017. SCE also made improvements to the program, now requiring contractors to complete mandatory training in order to participate in the program and ensure adherence to all program guidelines and deadlines.

Goal		Reported (Actual)	Percentage (Reported Above Goal)
kWh	18,210,941	43,990,758	242%
kW	2,488	2,646	106%

D. Savings By Design

SCE's Savings By Design (SBD) team was very successful in 2017. The year culminated a nearly four-year period of diligence, managing customer projects from application submittal to

construction completion. This outstanding effort by SCE's SBD team focused on maintaining a strong relationship with the customer and design teams to help ensure that energy recommendations were installed and not "engineered out" of the project. This effort resulted in SBD's reportable energy savings at well above both its forecasted kWh and kW goals:

Goal		Reported (Actual)	Percentage (Reported Above Goal)
kWh	30,881,415	34,483,880	112%
kW	4,446	6,422	144%

Additional factors contributing to SCE's success were operational improvements, continued improvement of tools which simplified the data collection and input process for SCE's New Construction Representatives, and modifications to program policies and rules which strengthened documentation related to energy savings calculations and influence.

E. <u>Midstream Point of Purchase Incentive Program</u>

In 2017, the Midstream Pont of Purchase (MPOP) Program surpassed its kWh and kW goals by 36% and 43%, respectively. The MPOP program provided point-of-purchase (POP) incentives on qualified LED lighting products to SCE nonresidential customers through a midstream distributor channel. The MPOP Program exceeded its energy savings goals by employing key strategies in 2017 to grow the program and drive results. SCE increased the number of participating distributors in the program to over 60 to expand the reach of the program and to provide more options for customers to receive an incentive. SCE also made process improvements to key processes and eliminated an internal incentive allocation process which resulted in distributors being able to provide incentives on a first-come, first-served basis. These strategies, along with proactive distributor communication and follow-up, allowed SCE to exceed its energy savings goals for the MPOP program in 2017.

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II. Section 2: Emission Reductions

Table 2 [66]

Table 2 *Environmental Impacts (Gross)*						
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**
2017 Portfolio Targets	**732,813**	**7,811,241**	**93**	**995**	**50**	**527**
2017 SCE Energy Efficiency Portfolio	727,135	7,918,042	92	901	49	535

[1] Environmental impacts do not include any results associated with Energy Savings Assistance or SoCalREN.
[2] EE program calculations based on gross reductions. C&S calculations based on net as C&S savings are reported on net.
[3] SCE's Compliance Advice Letter 3465-E-B, filed July 28, 2017 and approved by the Commission on July 28, 2017 established SCE's electric emission reduction targets for the program year 2017.

This section describes programs and program strategies that were successfully implemented during the past year that contributed to the emissions reductions reported in the table above.

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 2017 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:

[66] 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.

1. The environmental benefits (annual and lifecycle CO2, 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 (CO2) 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 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 CO2 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[67] (or its successor proceeding).

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[67] 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*.

III. Section 3: Expenditures

Table 3 [68]

2017 Expenditures, Including Expenditures From Past Cycle Commitments, Paid in 2017

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.2017.2.xlsx.**

For the description of SCE's Partnership programs that were included in the portfolio in the past year, see ***Chapter XII, Partnerships*,** above. For descriptions of programs that were selected as part of the competitive bidding process, see ***Chapter XIII, Third-Party Programs,*** above.

IV. Section 4: Cost-Effectiveness

Table 4 [69]

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)
2017 SCE[2]	$ 705,356,703	$ 1,426,461,396	$ 721,104,693	2.02	$ 279,070,815	5.11	N/A	0.02	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. 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.

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[68] 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.

[69] *Id.*

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:

1. The cost-effectiveness tables provided in this report reflect a summary of the cost-effectiveness calculations developed for SCE's 2017 programs. These tables provide energy savings and program costs associated with activity in 2017.

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 all 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 are approved in the process outlined in D.11-07-030.

A. Units (Number and Definition)

Measure of the unit counts are displayed as collected in program tracking databases during 2017. 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 2017 programs. The measure-level savings information used to calculate the 2017 program results are 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 estimates (see more information in the Net-to-Gross and Effective Useful Life sections, 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 total 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 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 net-to-gross 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 EULs 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 2017. 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, non-labor, and contract labor cost.

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 2017 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 those for 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.

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V. Section 5: Bill Payer Impacts

Table 5 [70]

Table 5 *Ratepayer Impacts*				
2017	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	$0.147	$0.000	$ 97,439,469	$ 925,786,135

[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] 2017 first year and lifecycle net KWh savings excluded Codes & Standards and Energy Savings Assistance.

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

In 2017, SCE was authorized to collect $333 million (approval of AL-3465-E-B on July 28, 2017) in rates to implement approved EE programs. Customer bills included the authorized collection on January 1, 2017, 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 2017.

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.

[70] 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.

2. The following methodology was utilized for the calculation of bill impacts resulting from the 2017 EE portfolio:

    - The calculation methodology for determining the 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 the 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.

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VI. Section 6: Savings by End-Use

Table 6 [71]

Table 6
Annual Savings By End-Use 2017 Only

Use Category	GWH	% of Total	MW	% of Total	MMTh	% of Total
Appliances	2.2	0.1%	0.8	0.3%		
Audits	87.1	5.6%	23.6	8.1%		
Building Envelope	0.2	0.0%	0.2	0.1%		
Consumer Electronics	-	0.0%	-	0.0%		
Foodservice	2.2	0.1%	0.3	0.1%		
HVAC	62.2	4.0%	28.9	9.9%		
Lighting	409.8	26.4%	56.9	19.5%		
Motors	0.0	0.0%	0.0	0.0%		
Office Equipment	0.8	0.1%	0.0	0.0%		
Process	17.9	1.2%	3.3	1.1%		
Pumping	39.7	2.6%	6.6	2.3%		
Refrigeration	15.7	1.0%	1.3	0.5%		
Water Heating	0.1	0.0%	0.0	0.0%		
Whole Building	17.6	1.1%	6.7	2.3%		
Codes & Standards	860.1	55.3%	157.5	53.9%		
Energy Savings Assistance	31.8	2.0%	4.9	1.7%		
SoCalREN	7.3	0.5%	1.3	0.4%		
SCE Annual Portfolio Savings	**1,554.8**	**100.0%**	**292.2**	**100.0%**		

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 2017 results, by end use, of SCE's portfolio of EE programs.

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[71] 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.

VII. Section 7: Commitments

Table 7 [72]

Table 7
Commitments

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

2010-2012[1]	Committed Funds[1] $	Expected Energy Savings GWH	MW	MMth
Resource	$ 141,623	0.06	0.09	
Non-Resource	$ -	-	-	
Codes & Standards	$ -	-	-	
EM&V (SCE & CPUC)	$ 4,187,764	-	-	
OBF/ARRA/NFOLoan	$ -	-	-	
SCE Total	$ 4,329,387	0.06	0.09	

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

2013-2015[2]	Committed Funds[2] $	Expected Energy Savings GWH	MW	MMth
Resource	$ 21,137,136	96.96	17.03	
Non-Resource	$ 11,812,840	-	-	
Codes & Standards	$ 367,860	-	-	
EM&V (SCE & CPUC)	$ 6,065,551	-	-	
OBF/ARRA/NFOLoan	$ 18,037,664	-	-	
SCE Total	$ 57,421,050	96.96	17.03	

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

2016[3]	Committed Funds[3] $	Expected Energy Savings GWH	MW	MMth
Resource	$ 13,957,636	74.34	12.60	
Non-Resource	$ 1,713,323	-	-	
Codes & Standards	$ 565,596	-	-	
EM&V (SCE & CPUC)	$ 12,554,829	-	-	
OBF/ARRA/NFOLoan	$ 10,846,594	-	-	
SCE Total	$ 39,637,978	74.34	12.60	

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

2017[3]	Committed Funds[3] $	Expected Energy Savings GWH	MW	MMth
Resource	$ 18,765,586	105.33	16.31	
Non-Resource	$ 5,403,818	-	-	
Codes & Standards	$ 1,745,350	-	-	
EM&V (SCE & CPUC)	$ 12,469,719	-	-	
OBF/ARRA/NFOLoan	$ 10,276,084	-	-	
SCE Total	$ 48,660,557	105.33	16.31	

[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 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).

[72] 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 Programs with 2017 Commitments

The following programs had commitments that will be installed in 2017 and beyond:

- Agriculture Calculated Energy Efficiency Program
- Agriculture Deemed Energy Efficiency Program
- California Community Colleges Energy Efficiency Partnership
- California Dept. of Corrections and Rehabilitation EE Partnership
- City of Long Beach Energy Leader Partnership
- City of Redlands Energy Leader Partnership
- City of Santa Ana Energy Leader Partnership
- Codes and Standards Program
- Commercial Calculated Program
- Commercial Deemed Incentives Program
- Commercial Direct Install Program
- Commercial Utility Building Efficiency
- Community Energy Leader Partnership
- Comprehensive Chemical Products
- Comprehensive Petroleum Refining
- Cool Schools
- County of Los Angeles Energy Efficiency Partnership
- County of San Bernardino Energy Efficiency Partnership
- Data Center Energy Efficiency
- Emerging Technologies Program
- Enhanced Retrocommissioning
- Food & Kindred Products
- Gateway Cities Energy Leader Partnership
- Healthcare EE Program
- IDEEA365 Program
- Industrial Calculated Energy Efficiency Program
- Industrial Deemed Energy Efficiency Program
- Kern County Energy Leader Partnership
- Lodging EE Program
- Midsize Industrial Customer Program
- Multifamily Energy Efficiency Rebate Program
- Nonmetallic Minerals and Products
- North Orange County Cities
- Oil Production
- Orange County Cities Energy Leader Partnership
- Primary and Fabricated Metals

- Primary Lighting Program
- Residential New Construction Program
- San Bernardino Association of Governments
- San Joaquin Valley Energy Leader Partnership
- Savings By Design
- School Energy Efficiency Program
- South Bay Energy Leader Partnership
- South Santa Barbara County Energy Leader Partnership
- State of California Energy Efficiency Partnership
- UC/CSU Energy Efficiency Partnership
- Ventura County Energy Leader Partnership
- Water Infrastructure Systems Energy Efficiency Program
- West Side Energy Leader Partnership
- Western Riverside Energy Leader Partnership

In 2017, these programs secured commitments of $ 48.6M, 105 gigawatt-hours of energy savings, and 16 megawatts in demand reduction, as shown in Table 7 above.

B. Explanation of How Commitments Are Calculated [73]

In 2017, 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.

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[73] Committed funds represent incentive amounts only.

VIII. Section 8: Shareholder Performance Incentives

Table 8

Table 8
Shareholder Incentives (ESPI)

Program Year	2013 [1,5]	2014 [2,3,5]	2015 [3,4,6]	2016 [4,7,10]	2017 [8]	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	$ 10,594,348	*Pending*	*Pending*

* forecasted ESPI payments for PY X as submitted in the forecasted budget AL for PY X (this number has to be forecasted ESPI payments for the same PY the IOUs are requesting budgets for)
** 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 included a downward adjustment to 2013-2014 for $3,884,445.
[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 is expected in 2018.

In accordance with the reporting schedule as adopted in D.13-09-023 dated September 5, 2013 and modified by D.15-10-028 Appendix 5 dated October 28, 2015, current values for the 2017 Efficiency Savings and Performance Incentives (ESPI) have not yet been submitted by the IOUs.

The IOUs will file their respective ESPI advice letters on September 1 of this year. The first ESPI awards claims are expected to be approved by the Commission no later than December 31 of this year. The second 2017 ESPI awards claims will be submitted for approval to the Commission on September 1 of the following year.

XVII. Appendix D

Southern California Edison Programs for 2017

Appendix D contains the list of programs included in SCE's 2017 EE Portfolio, and the date the programs were added or removed, where applicable.

Table: Programs Included in SCE's 2017 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	N/A
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	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	N/A
SCE-13-SW-002F	Nonresidential HVAC Program	1/1/2013	N/A

CPUC ID	Program Name	Date Added	Date Removed
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	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	N/A
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
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

CPUC ID	Program Name	Date Added	Date Removed
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
SCE-13-L-002	Energy Leader Partnership Program	1/1/2013	N/A
SCE-13-L-002 Rollup	Energy Leader Partnership Program	1/1/2013	N/A

CPUC ID	Program Name	Date Added	Date Removed
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
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

CPUC ID	Program Name	Date Added	Date Removed
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-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-002U	Local Government Strategic Planning Pilot Program	1/1/2013	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

CPUC ID	Program Name	Date Added	Date Removed
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
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	1/1/2017	N/A
SCE-13-TP-023	Midsize Industrial Customer Program	1/1/2017	N/A

XVIII. Appendix E

SCE's Final December Monthly Report for 2017

For access, please visit the California Public Utilities Commission – California Energy Data and Reporting System (CEDARS) *available at* **https://cedars.sound-data.com/monthly-reports/confirmed-dashboard/SCE/**

XIX. Appendix F

2017 WE&T Joint Annual Report

A. Introduction

With the vision of a skilled workforce capable of meeting California's energy savings goals, the Workforce Education and Training (WE&T) Program teaches people how to recognize energy savings opportunities, and provides them with information, skills, and resources to act upon those opportunities.

WE&T targets the incumbent energy workforce and students who will become part of the workforce that designs, builds, maintains, and operates buildings and building systems. WE&T also supports K-12 teachers, college professors, and trades instructors who are preparing future generations of the energy workforce.

In 2017, the investor-owned utilities (IOUs) — Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), Southern California Edison (SCE), and Southern California Gas Company (SoCalGas) — collaborated with one another and with subject matter experts, stakeholders, professional organizations, government agencies, trade organizations, workforce development organizations, and educational institutions to deliver a diverse set of training programs and resources across California.

This WE&T Joint Annual Report highlights 2017 accomplishments around three areas of emphasis:

- **Collaboration:** Leveraging the strengths of the IOUs and other organizations to best serve our mutual audiences,
- **Operational Efficiency:** Streamlining operations and leveraging resources to improve the quality of our offerings and to expand our reach, and
- **Support for Low-Income Students and Disadvantaged Workers:** Expanding our reach to serve low-income customers and disadvantaged workers who lack the skills and resources to enter the energy workforce.

Table 1: Filed Program Goals and Accomplishments

		Classes	EE Consultations	Outreach	TLL Transactions
PG&E	**Total**	330	76	90	671
	Goal	260	180	92	820
SCE	**Total**	465	120	29	289
	Goal	290	n/a	n/a	N/A
SoCalGas	**Total**	151	310	131	N/A
	Goal	125	220	40	N/A
SDG&E	**Total**	283	79	256	705
	Goal	120	100	356	100

1. Collaboration

The IOUs are among several organizations with the responsibility for and interest in building and supporting a skilled California energy efficiency (EE) workforce. In 2017, the IOUs collaborated with each other and with union and non-union training institutions, community colleges, professional organizations, and industry groups. The IOUs collectively delivered a statewide WE&T Program, and each IOU worked with regionally-focused organizations to address specific barriers and needs of the local EE workforce.

a. K-12 and Post-Secondary Teachers and Students

Through the Energize Schools program for high schools, the IOUs partnered with the International Brotherhood of Electrical Workers (IBEW) Local 340 and West Sacramento's River City High School. High school students learned about solar energy and photovoltaic (PV) system sizing and design, and participated in the installation of a PV system. The installed PV system powers the school's garden greenhouse and is used as an instructional tool for several classes at River City High School.

Through the Energize Colleges program, the IOUs supported the next generation of sustainability leaders by hiring and placing 168 student interns. At Orange Coast College in Costa Mesa, interns assisted with curriculum design, co-taught a PV installation course, and oversaw the construction of two PV installations. One intern was offered a

part-time faculty position to teach this course. At Skyline College in San Bruno, an intern was hired to support the construction of a new campus LEED™ building. Across the 12 Energize Colleges campuses, interns played a significant role in supporting their campuses' EE, water efficiency, renewables procurement, and transportation planning projects.

b. Commercial Food Service

In collaboration with SCE, PG&E and SDG&E, SoCalGas hosted the 7th Annual Food Service Equipment Expo. At this two-day event, food service equipment manufacturers introduced California food service operators to the latest energy-efficient, high-performance equipment. The Expo included equipment demonstrations, energy-efficiency workshops, and one-on-one customer consultations. Over 800 food service customers, including many local Hispanic business representatives who received targeted promotion cards in Spanish, attended the Expo. This event supported the IOUs' efforts to transform the way manufacturers sell energy-efficient equipment to utility customers and to influence food service operators' purchasing habits.

c. High Performance Building Operations Professionals (HPBOP)

In 2017, PG&E and SCE supported the High-Performance Building Operations Professionals (HPBOP) program launch in collaboration with Laney College in Oakland. HPBOP targets building technicians who manage commercial buildings, and provides them with information, tools, and skills to improve building performance and reduce energy consumption. The training program was delivered at Laney College to professionals from the public and private sector. The training classes included Information Technology, Energy Literacy, Building Systems, Whole Systems Analytics, Systems Manuals, Building Automation Control Systems, Energy Conservation, Commissioning, and Continuous Quality Improvement.

SCE, PG&E, and SoCalGas are in the process of modifying and expanding the HPBOP program by training additional instructors to teach the HPBOP curriculum, and will offer HPBOP training in other locations in Northern and Southern California in

2018. HPBOP will track outcomes, including knowledge gain and changes to workplace practices that result from students taking the training.

d. California Advanced Lighting Controls Training Program (CALCTP)

The California Advanced Lighting Controls Training Program (CALCTP) provides electricians, contractors, and acceptance test technicians the knowledge and technical skills necessary to properly install and commission advanced lighting control systems while meeting mandatory code compliance requirements. In 2017, the IOUs transitioned CALCTP to a co-funded agreement that improved program administration oversight while continuing to deliver CALCTP training. The IOUs also developed pre- and post-course tests of CALCTP participants to capture data on their knowledge gain, and modified monthly reporting requirements to collect participant demographic information and course evaluation data. Knowing more about the participants' goals and reasons for attending the class, their professional affiliations and/or certifications, and their reasons for lapsed certifications helps the IOUs and the CALCTP program implementer make better-informed decisions on program modifications.

e. San Jose Pipe Trades

As part of its effort to support trade organizations' need for EE education and training, PG&E collaborated with the San Jose Pipe Trades Training Center to deliver 17 training sessions to 264 individuals on topics including Title 24, energy audits skills, plumbing, and HVAC systems. These classes provided technicians and apprentices with information on and skills for installation, start-up, and service best practices. For San Jose Pipe Trades, the collaboration provided an opportunity to leverage existing EE training resources rather than recreating content. The collaboration also expanded PG&E's ability to reach the workforce needing these skills the most, and attracted appropriate participants who would best be able to use the course content and acquired skills on job sites.

2. Operational Efficiency

In 2017, the IOUs improved several parts of their back-office operations, implemented new methods for understanding the outcomes of educational programs, and

moved contracted educational programs toward becoming self-sustaining. These changes will help to streamline the WE&T program and to achieve more consistency across IOUs.

a. Common Job Classifications

The IOUs developed a common list of job classifications that will be used for marketing to the right audiences, for developing WE&T metrics, for better understanding of class participant demographics, and for comparing data across IOUs. The IOUs are integrating the new list of job classifications into their tracking systems in 2018, and developing baselines around the number of participants in each job classification who attend IOU training programs.

b. Post-Course Evaluations

In the WE&T sections of their Business Plans, the IOUs identified the need to move away from **outputs**-based metrics such as number of students and number of classes and to begin answering questions such as, "Did course participants learn what they should have learned? Did course participants acquire the skills outlined in the course learning objectives? Did course participants do their jobs differently after the training?" The IOUs proposed to move toward **outcomes**-based metrics, such as knowledge gain and changes to workplace practice.

In 2017, the IOUs developed and implemented a common set of outcomes-based questions for their post-course evaluations and gathered data for the purposes of establishing a baseline. This data will not only aid in developing metrics around these knowledge gain and changes to workplace practice; it will also allow WE&T program managers to better understand the effectiveness of their trainings and to improve future class offerings.

c. Tool Lending Library Database Implementation

To improve operations, PG&E's Tool Lending Library replaced its existing tool management software with **myTurn,** a cloud-based tool reservation and tracking system. Advantages of this change include faster response times, more reliable tool tracking, more efficient loan processing, and improved technical support and data security, all at a lower cost. The myTurn system was first implemented at the PG&E Pacific Energy

Center; adoption at PG&E's Energy Training Center in Stockton was underway in early 2018. In addition to the operating efficiencies gained through the adoption of myTurn, the system positions PG&E's Tool Lending Library for improved statewide collaboration with other IOU tool lending libraries. SDG&E will implement myTurn in 2018, and SCE is in the process of evaluating the tool.

d. Moving Toward Sustainability

One way for the IOUs to improve cost-effectiveness and expand their reach is to co-pilot a program under an agreement that the collaborating organization will partially or fully fund the program in subsequent years. Across the IOUs' territories in 2017, partner campuses of the Energize Colleges program began paying for half of the campus coordinators' and college interns' labor costs, thus starting the transition to full campus ownership of the program. More importantly, the transition demonstrates that the campuses see value in having campus coordinators and college interns as part of their staff. These program savings allow the IOUs to further expand the program to other campuses in a cost-effective and sustainable way.

e. Commercial Food Service

The strong 2017 economy led to an expansion in the food service market with a corresponding need for a full, "all-hands-on-deck" workforce. Unfortunately, this meant that fewer food service operators could attend WE&T workshops, just when they needed the information most. In response, the IOUs increased the amount of direct, hands-on, "Try-Before-You-Buy" equipment training available to food service customers. PG&E also created a library of high-efficiency, high-performance equipment and dedicated a staff member to serve as a Consulting Chef to teach customers how to operate efficient equipment using the customers' own recipes. SCE launched an initiative to rebuild its Food Service Technology Center, adding more space, more equipment, and real-time monitoring of energy use for customer equipment training. SCE also shifted its training hours to accommodate food service operators' schedules, and began streaming classes over the Internet for operators unable to attend classes in person. SoCalGas revised its training schedule to accommodate food service operators' busy schedules by providing entire days dedicated to hands-on training on specific cooking appliances.

Diversifying the training schedules and formats expanded the opportunities for educating the time-constricted food service workforce.

3. Support for Low-Income Students and Disadvantaged[74] Workers

The IOUs serve a wide range of customers across a diverse geographic and socioeconomic spectrum. In 2017, the IOUs continued to serve low-income students and disadvantaged workers who face barriers to entering the energy workforce. In some cases, the IOUs worked with students and workers directly, and in other cases, the IOUs leveraged the expertise of other organizations that serve the same audience.

f. Supporting Low-Income Students and Communities

In 2017, through the Energize Schools program, the IOUs served students in 156 high schools by providing students educational resources and materials on green career awareness, energy efficiency, and sustainability. The IOUs focused on serving and working with lower income schools, so that over 70 percent of schools served in 2017 were Title 1 schools. [75]

At Claremont McKenna College and U.C. Irvine, Energize Colleges interns designed and installed solar panels through a partnership with GRID Alternatives and Community Home Energy Retrofit Project — non-profit organizations that support solar and EE projects in low-income homes. Through this collaborative effort, the IOUs supported low-income communities' access to renewable energy while helping college students gain hands-on work experience in the renewable energy sector.

g. Supporting Disadvantaged Workers

In 2017, the IOUs supported disadvantaged workers and workforce development organizations that help disadvantaged workers acquire both soft skills and technical skills to enter the EE workforce. Across the IOUs, WE&T staff enhanced or expanded the EE components of training programs provided by workforce development training

[74] PG&E Advice 3567-G / 4592-E; SDG&E Advice 2705-E / 2361-G; SCE Advice 3179-E; SoCalGas Advice 4765-G.

[75] A Title 1 school is a school where more than 40% of the students qualify for free or reduced-price lunch.

organizations, served as board members to such organizations, provided subject matter expertise on the organizations' curricula, and provided training directly to skilled but unemployed building operations workers.

Through these collaborations, disadvantaged workers:

- Obtained industry-recognized Building Operator Certifications
- Participated in certification programs funded by the IOUs
- Were placed in home performance, solar installation, and solar manufacturing jobs and internships, and
- Attended jointly-hosted events at IOU energy centers to learn about energy efficiency.

In their WE&T Business Plans filed in January, 2017, the IOUs proposed to expand their services to disadvantaged workers through the statewide third-party pilot Career & Workforce Readiness (CWR) Program. CWR will support disadvantaged workers by combining the IOUs' funding and expertise in EE education and training with resources and support services provided by workforce development organizations.

4. Looking Ahead

In January, 2017, the IOUs filed their 2018-2025 Energy Efficiency Business Plans. The Business Plans provide an overview of how the IOUs propose to structure their EE Programs by continuing to serve all parts of California's future energy workforce, as well as the current energy workforce which has an ongoing need for technical skill improvement. Furthermore, the IOUs proposed two statewide WE&T third-party programs, one targeting K-12 students and teachers, and another focusing on disadvantaged workers.

In April 2018, the California Public Utilities Commission (CPUC) issued a Proposed Decision (PD) on the IOUs' Energy Efficiency Business Plans. Most relevant to WE&T, the PD mentioned the significance of workforce standards, the need to serve disadvantaged communities and disadvantaged workers, and the value of moving toward outcomes-based metrics. The IOU WE&T team will work with the relevant resource

programs to support any of the programs' new goals, requirements, and metrics related to workforce issues.

We encourage the reader to review the WE&T portions of the Business Plans to learn more about the proposed WE&T Program. More information about the third-party solicitations will become available upon CPUC approval of the Business Plans. We also encourage the reader to visit the California Energy Efficiency Coordinating Committee (CAEECC) website (**www.caeecc.org**) for additional information and the most up-to-date information on the Energy Efficiency proceeding.

PG&E, SDG&E, SCE, and SoCalGas appreciate the support they received in 2017 and in years past from various industry groups, workforce development organizations, and professional organizations who share the vision of a highly skilled workforce that can help California meet its ambitious energy targets.

XX. Appendix G

2017 List of EE Program Third Party Implementers

Program ID	Program Name	Primary Sector (Market Segment)	Sector (Sub-segment / Type of Customers)	Delivery Channel	Vendor	Length	Dollar Value
SCE-13-TP-002	Cool Planet	Commercial	Commercial (Com)	N/A	The Climate Registry	8years, 9months	
SCE-13-SW-002G	Cool Planet	Commercial	Commercial	Downstream	VCCT Inc. (Vacom Technologies)	8years, 5months	
SCE-13-SW-010B	Savings By Design	Commercial	Commercial	Downstream	Global Energy Services, Inc.	8years, 3months	
SCE-13-TP-001	WE&T Connections	Residential	Residential	Downstream	Synergy Companies	7years, 9months	
SCE-13-SW-001C	Water Infrastructure Systems Energy	Cross-Cutting	Commercial	Downstream	American Power Solutions	7years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate	Residential	Residential (Res)	Downstream	Coast to Coast Lighting Inc.	7years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate	Residential	Residential (Res)	Downstream	Monterey Energy Inc.	7years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate	Residential	Residential (Res)	Downstream	Optima Energy Inc.	7years, 9months	
SCE-13-SW-001C	Multifamily Energy Efficiency Rebate	Residential	Residential (Res)	Downstream	Utility Incentive Corp.	7years, 9months	
SCE-13-TP-021	Enhanced Retrocommissioning	Commercial	Commercial (Com)	Downstream	Nexant, Inc.	6years, 6months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial (Com)	Downstream	California Retrofit, Inc.	5years, 9months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial (Com)	Downstream	FESS Energy Inc.	5years, 9months	
SCE-13-SW-002D	Commercial Direct Install Program	Commercial	Commercial (Com)	Downstream	FCI Management Consultants	5years, 9months	
SCE-13-TP-005	Lodging EE Program	Commercial	Commercial (Com)	Downstream	Willdan Energy Solutions	5years, 9months	
SCE-13-TP-004	Data Center Energy Efficiency	Commercial	Commercial (Com)	Downstream	Willdan Energy Solutions	5years, 9months	
SCE-13-TP-003	Healthcare EE Program	Commercial	Commercial (Com)	Downstream	Willdan Energy Solutions	5years, 9months	
SCE-13-TP-008	Nonmetallic Minerals and Products	Industrial	Industrial (Ind)	Downstream	Onsite Energy Corporation (OEC)	5years, 9months	
SCE-13-TP-014	Commercial Utility Building Efficiency	Commercial	Commercial (Com)	Downstream	Southern California TRANE Service	5years, 9months	
SCE-13-TP-013	Cool Schools	Commercial	Commercial (Com)	Downstream	Southern California TRANE Service	5years, 9months	
SCE-13-TP-018	School Energy Efficiency Program	Commercial	Commercial (Com)	Downstream	WILLDAN ENERGY SOLUTIONS (fka. INTERGY CORP.)	5years, 0months	
SCE-13-TP-022	Water Infrastructure Systems Energy Efficiency Program	Cross-Cutting	Commercial (Com)	Downstream	Lincus, Inc.	4years, 10months	
SCE-13-TP-023	Midsize Industrial Customer Program	Industrial	Industrial (Ind)	Downstream	Onsite Energy Corporation (OEC)	4years, 7months	
SCE-13-TP-003	Healthcare EE Program	Commercial	Commercial (Com)	Downstream	Willdan Energy Solutions	4years, 1months	
SCE-13-SW-010B	WE&T Connections	Residential	Residential (Res)	Downstream	Strategic Energy Innovations	2years, 6months	
SCE-13-SW-002F	Nonresidential HVAC Program	Commercial	Commercial (Com)	Upstream	Cohen Ventures, Inc.	2years, 11months	
SCE-13-SW-010B	WE&T Connections	Residential	Residential (Res)	Downstream	The Energy Coalition	2years, 9months	
SCE-13-SW-001G	Residential Direct Install Program	Residential	Residential (Res)	Downstream	Synergy Companies	2years, 5months	
SCE-13-TP-010	Comprehensive Petroleum Refining	Industrial	Industrial (Ind)	Downstream	CLEAResult Consulting, Inc.	1years, 9months	
SCE-13-TP-009	Comprehensive Chemical Products	Industrial	Industrial (Ind)	Downstream	CLEAResult Consulting, Inc.	1years, 9months	
SCE-13-TP-011	Oil Production	Industrial	Industrial (Ind)	Downstream	CLEAResult Consulting, Inc.	1years, 9months	
SCE-13-TP-020	IDEEA365 Program	Industrial	Industrial (Ind)	Downstream	Lincus, Inc.	2years, 2months	
SCE-13-TP-006	Food & Kindred Products	Industrial	Industrial (Ind)	Downstream	Lockheed Martin Corporation	1years, 6months	
SCE-13-TP-007	Primary and Fabricated Metals	Industrial	Industrial (Ind)	Downstream	Lockheed Martin Corporation	1years, 6months	
SCE-13-SW-003D	Strategic Energy Management Program	Industrial	Industrial (Ind)	N/A	Cascade Energy	3years, 2months	
SCE-13-TP-024	AB793 Residential Pay for Performance	Residential	Residential (Res)	Downstream	Power TakeOff, Inc.	3years, 1months	
SCE-13-TP-024	AB793 Residential Pay for Performance	Residential	Residential (Res)	Downstream	Home Energy Analytics, Inc.	5years, 10months	
	Total						**$ 341,019,280**

Attachment B

Notice of Availability of Southern California Edison Company's Posting of 2017 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 (Filed November 14, 2013)

NOTICE OF AVAILABILITY OF SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) POSTING OF 2018 ENERGY EFFICIENCY PROGRAMS ANNUAL REPORT AND SUPPORTING DOCUMENTS

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Dated: **May 1, 2018**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

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

NOTICE OF AVAILABILITY OF SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) POSTING OF 2018 ENERGY EFFICIENCY 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, 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 2018 Energy Efficiency Annual Report and supporting documents, including the following appendices, as shown in the table of contents:

- Appendix A- List of Acronyms & Abbreviations,
- Appendix B - 2017 Energy Efficiency Program Pilot Program Target Updates,
- Appendix C- 2017 EE Annual Report Technical Appendix,
- Appendix D – Southern California Edison Programs for 2017,

[1] Energy Efficiency Statistic Application is *available at* http://eestats.cpuc.ca.gov

- Appendix E- SCE's Final December Monthly Report for 2017,
- Appendix F – 2017 Work Force and Education 2018 Annual Report, and
- Appendix G – 2017 List of EE Program Third Party Implementers.

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 2017 is included in the Joint IOU WE&T Program Annual Report, which has been uploaded by Pacific Gas and Electric Company on behalf of the IOUs to the EESTATS website. This report is available on the date of this filing, May 1, 2018.

Respectfully submitted,

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