BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Order Instituting RulemakingConcerning 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) 2017 ANNUAL REPORT FOR ENERGY EFFICIENCY PROGRAMS REVISED, MAY 23, 2017

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Dated: **May 23, 2017**

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Southern California Edison Company (SCE) hereby submits its 2017 Energy Efficiency Annual Report Revised, May 23, 2017 ("Annual Report Revised) for its 2016 energy efficiency programs and results, as Attachment A hereto. SCE is also attaching as Attachment B the select pages showing redline changes in the Executive Summary section of its Annual Report and Appendix C.

The Annual Report is filed and served in this proceeding pursuant to the Administrative Law Judge's Ruling Adopting Annual Reporting Requirements for Energy Efficiency and Addressing Related Reporting Issues dated August 8, 2007.

In addition, SCE is concurrently filing a Notice of Availability of the 2017 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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DATE: May 23, 2017

Attachment A

SCE's 2017 Energy Efficiency Annual Report Revised, May 23, 2017

2017 Energy Efficiency Annual Report (Revised)

- **Summary Report**

  2016 Program Overview & Strategies

- **Technical Appendix**

  2016 Results

May 23, 2017

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Executive Summary

Southern California Edison Company (SCE) continues to build upon its leadership role through the delivery of a diverse, innovative, and cost-effective Energy Efficiency (EE) portfolio designed to meet the needs of our customers, help ensure the reliability of the grid, and meet the State of California's clean energy goals. In 2016, SCE programs collectively achieved over 1.47 billion kilowatt-hours (kWh) of annualized energy savings and 286 megawatts of peak demand reduction. These savings are equivalent to the amount of power required annually for over 221,000 standard residential homes, or the removal of over 219,000 cars from the road.

The Company also continues to drive innovation with the introduction of new programs and pilots focused on supporting state policy goals, as well as aligning EE to meet future grid reliability needs. SCE's support of new state policies includes:

- Supporting Senate Bill (SB) 350 and Assembly Bill (AB) 802 – SCE explored High Opportunity Program proposals and submitted advice letters for two; more submissions are expected in 2017.
- Supporting AB793, SCE is working with the CPUC and stakeholders to develop implementation strategies.

SCE also continues to support the overarching policy goals of the California Long Term Energy Efficiency Strategic Plan (CLTEESP) and Existing Buildings Energy Efficiency Action Plan (AB 758).

SCE also aligns with the California Public Utilities Commission (CPUC or "Commission") and industry stakeholders in the adoption and implementation of a more flexible EE program framework. In 2015, the CPUC formally established a 10-year EE "Rolling Portfolio" process in lieu of the existing three-year funding cycle. The Rolling Portfolio approach is an innovative planning concept for funding that moves away from the start / stop nature of a shorter funding cycle. This new structure is intended to increase flexibility and allow continuity of the EE portfolios. In Decision (D.)15-10-028, the CPUC directed EE Program Administrators (PAs) to develop business plans that provide strategic direction and an estimated budget and savings forecast for the years 2018-2025.

Additionally, through D.15-10-028, the Commission adopted a stakeholder process to enable interested parties to collaborate with PAs, called the California Energy Efficiency Coordinating Committee (CAEECC) in 2016. Among other tasks, one of the primary functions of CAEECC is to "provide input into development of business plans prior to and throughout the drafting process."[1] CAEECC currently comprises 22 members of PAs, program implementers, regulatory agencies, advocacy groups, and other important industry stakeholders across California. CAEECC serves as an important venue for key stakeholders and the public to provide input into the EE programs of the future. SCE serves as a CAEECC member and participated in all CAEECC meetings (and associated sub-committee meetings) during the development of its business plan. Feedback obtained from stakeholders via discussions, presentations, and written comments on early drafts of SCE's business plan were appreciated and helped shape SCE's business plan. The collaborative effort resulted in *Southern California Edison Company's Energy Efficiency Rolling Portfolio Business Plan for 2018-2025* and associated Application filed on January 17, 2017, with an amendment filed on February 10, 2017.

Complementing all new changes to the EE program framework and portfolio, below are some highlights of the accomplishments of SCE's active EE portfolio during 2016. For further detail, please see the summary program descriptions in each section of this report.

A. Residential Programs

In 2016, the Statewide Program for Residential Energy Efficiency reached both single-family and multifamily customers by providing audits, incentives and rebates, new construction assistance, and comprehensive whole home upgrades (including building envelope, heating, ventilation & air conditioning [HVAC], and plug load measures) to over 114,000 residential customers. The Energy Upgrade California® (EUC) Home Upgrade Program continued to encourage comprehensive residential upgrades, completing over 3,700 projects in 2016, and once again continuing to reach the highest number of home retrofit projects since the program's inception. EUC Home Upgrade also partnered with the Residential HVAC Quality Installation Program to drive deeper retrofits and educate customers about right-sizing and quality

[1] D.15-10-28, p. 73.

installation of their HVAC equipment. SCE worked directly with program participants for the purpose of making all residential programs and the customer experience simpler, faster, and more efficient. SCE also collaborated with trade organizations and distributors to recruit a diverse array of contractors, and now has representation in multiple trades, including HVAC, insulation, plumbing, electrical, and general contracting.

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. Home Energy Advisor continued behavioral program pilots (such as Home EE Survey (HEES) Enhancement, Energy Pledge, and 10-10-10+ Multifamily Behavior) to explore ways to test behavioral effectiveness and impacts for homeowners, renters, and multifamily property owners.

The Appliance Recycling Program (ARP), which successfully removed old, inefficient refrigerators and freezers from the market by having components of the discarded units disposed of in an environmentally appropriate manner, was shut down in the first quarter of 2016.[2] Leading market factors in 2015 indicated that these intervention strategies had successfully transformed the market, so the existence of the ARP program was no longer necessary.

In 2016, SCE continued to serve multifamily customers through the Multifamily EE Rebate Program (MFEER), focusing on close coordination with the Energy Savings Assistance (ESA) Program. This created an integrated approach to providing market-rate and income-qualified customers with EE measures in a way that continues to simplify processes, eliminate duplicative functions, and deliver an improved customer experience. SCE continued to provide single-point-of-contact (SPOC) account executive services to help streamline property owner engagement. The SCE SPOC works directly with property owners to guide them through available services based on qualifications, needs, and ability to make EE investments.

[2] SCE received approval to cancel the Appliance Recycling Program via Advice 3365-E effective March 13, 2016.

SCE's Residential New Construction Program supported California's progress towards Zero Net Energy homes, including support for the development of the Master Builder Program and the Workforce Instruction for Standards and Efficiency (WISE) Program.

B. Nonresidential Programs

SCE's nonresidential statewide programs include the statewide Commercial, Industrial, and Agricultural EE Programs and the Commercial Midstream Point of Purchase (MPOP) Program, providing nonresidential audits and related services, deemed and calculated ("customized") incentives, new construction support, direct installation, HVAC programs, and continuous energy improvement (CEI) offerings to customers. These programs delivered EE measures to over 21,000 nonresidential customer service accounts in 2016.

SCE continued development of its audit tools. The Business Energy Advisor was enhanced with new functionality to allow for saving and retrieving completed customer survey results. Complying with AB 802, SCE started building the Automated Benchmarking System (ABS) via SCE.com to streamline the transfer of energy data to customer accounts in the Energy Star® Portfolio Manager. The anticipated launch date for ABS is the second quarter of 2017. SCE performed over 4,700 pump tests for agricultural customers in the Central Valley as the California drought forced many to drill new and deeper wells.

Deemed and customized programs faced continuing challenges to achieve savings and cost-effectiveness goals in 2016. These challenges include reductions in claimable energy savings due to:

- Higher baselines required by Title 24, Industry Standard Practice, and/or higher penetrations of energy-efficient equipment in the marketplace,
- Maximum annual operating hours stipulated by Database for Energy Efficiency Resources (DEER) building type,
- Preponderance of evidence requirements for customized Early Retirement (RET) projects, and/or
- The complex nature of the customized process.

As a result of the challenges above, SCE focused on standardizing measures by moving measures to deemed channels to simplify processing and reduce customer wait time (thus

improving customer experience), and improve cost-effectiveness by delivering EE measures through lower-cost delivery channels.

Deemed programs are often more streamlined, less complex, and more cost-effective than customized programs, especially for smaller projects. Transitioning measures from customized programs to deemed programs, such as the Express Solutions and Midstream Point of Purchase Programs, can improve customer experience and satisfaction with EE programs, and can bolster 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 13,000 customers in 2016. In order to increase participation, the program expanded its market reach to national chains that met eligibility requirements. It also introduced new measure offerings such as LED High Bay/Low Bay, commercial variable pool pumps, and LED Tubes replacing 4-foot T8 lamps for customers in the eligible Aliso Canyon/Preferred Resources Pilot (PRP) zip codes.

In 2016, SCE's Nonresidential HVAC Program was recognized by the U.S. Department of Energy for leadership in rooftop unit efficiency, as part of the Better Buildings Alliance Rooftop Unit Campaign (ARC) to make buildings 20 percent more energy-efficient by 2025. The program enrolled four (4) new contractors in the "Early Retirement" subprogram, which assisted customers in identifying replacement, and/or replacing, over 11,000 tons of inefficient equipment. The HVAC Early Retirement, Quality Maintenance (QM), and Quality Installation (QI) subprograms continue to coordinate with the Workforce Education & Training (WE&T) Program to align available trainings with program objectives.

SCE's On-Bill Financing Program funded 194 projects[3] in 2016, representing $12.99 million in loans, thus enabling businesses, local governments, and institutional customers to pursue additional EE projects. SCE also worked with the other investor-owned utilities (IOUs), the CPUC, and the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to develop a suite of new finance pilot programs to leverage third-party capital and provide EE and DSM project financing options to single-family,

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

multifamily, small businesses and other nonresidential customers. The Residential Energy Efficiency Loan (REEL) pilot launched in 2016, and other Finance pilots are expected to launch in 2017.

C. Partnership Programs

In 2016, 134 cities and 10 counties participated in SCE's Local Government Partnerships, including participation from six (6) new partners. Seven (7) 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 one (1) partner advancing to Platinum Level, three (3) to Gold Level, and three (3) to Silver Level.

SCE continued working to further Local Government EE Strategic Plan Goals, 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. Additionally, partner cities have used Strategic Plan funds to install utility management systems, develop benchmarking plans, and establish revolving EE funds.

SCE also successfully administered the Institutional Partnership Programs in 2016:

- SCE continued supporting 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 19 retrofit, monitoring-based commissioning (MBCx), and new construction projects at three (3) UC campuses and five (5) CSU campuses in SCE's service territory. SCE also helped UC/CSU develop a comprehensive pool of EE and new construction 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, which consists of agency sustainability

managers tasked with planning and implementing all aspects of the Governor's Executive Order B-18-12. SCE also successfully integrated the Direct Install (DI) Program into this partnership, focusing on state-owned facilities located within the PRP and Aliso Canyon area.

- SCE continued to support the California Department of Corrections and Rehabilitation (CDCR) Partnership by assisting with an initiative to renew provider contracts through a new Energy Service Company (ESCO) solicitation. SCE continues to support CDCR's ongoing projects by providing guidance to the ESCOs on the best technologies that maximize the benefits to both CDCR and the IOUs.

D. Third Party Programs

Through third-party implementers, SCE continued to enhance its outreach to the community and extend its program offerings to a wide variety of customer segments including businesses, industrial customers, health care facilities, universities, and schools. In 2016, the Third Party Programs focused on consolidating programs, optimizing resources, and improving overall cost-effectiveness. Much effort has been done to evaluate vendor performance and review existing third-party pay-for-performance contract structures as we prepare for competitive solicitations in 2017.

The Water Infrastructure and System Efficiency (WISE) Program which provides water-energy solutions for all major water-related needs (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 successfully enrolled over 100 projects in 2016 and have shown promising results to date (for details, see Section XIII, Third Party Programs, below, and see the Technical Appendices for additional information). Plans are being developed to transition the WISE and MICE programs into the core third-party offerings in 2017.

The Comprehensive Manufactured Home Program (CMHP) continued to carry out a similar effort on water conservation. CMHP partnered with the Southern California Gas Company (SCG or 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.

E. Crosscutting Programs

SCE's crosscutting programs provided significant resource and non-resource contributions to the portfolio in 2016. SCE collaborated with the statewide IOU Codes and Standards Program team and the California Energy Commission (CEC) to prepare IOU customers and the building industry for the implementation of the 2016 Title 24 building energy standards that became effective January 2017, and continued collaboration on the development of the 2019 Title 24 standards. Regarding appliance standards, the statewide team continued working on Title 20 appliance regulations with the CEC, as well as federal appliance regulations with the US Department of Energy. The statewide team played a significant role in 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 appliance standards. The statewide team's Reach Code subprogram provided local jurisdictions with cost-effectiveness studies to support the adoption of reach codes, with results that included the City of Santa Monica adopting the first-ever zero net energy (ZNE) ordinance.[4] SCE's Codes and Standard's Planning and Coordination subprogram began tactical planning for the 2020 residential ZNE goal to include support for the building industry and make accommodations for a "plug and play" electric grid.

Regarding goals, the statewide program achieved 101 percent of its GWh goal in 2016, but only 85 percent of its MW goal. As noted in D.15-10-028,[5] this was primarily because the Codes and Standards adopted goal for 2016 included anticipated savings from Title 20 activity expected to be in effect in 2016, but these savings were not realized due to delayed adoption of some measures. Additional discussion and results of the program are included in the Codes and Standards chapter of the Annual Report and Technical Appendices.

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[4] The first such ordinance adopted by any city in the world. See "Santa Monica City Council Votes in the World's First Zero Energy Building Requirement" article, *available at* **https://newsroom.smgov.net/2016/10/27/santa-monica-city-council-votes-in-the-world-s-first-zero-net-energy-building-requirement-implementation-begins-in-2017**.

[5] D.15-10-028, p. 38.

The Emerging Technologies Program (ETP) continued to implement its three (3) 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 ETP 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 14 ETCC Advisory Council members on two strategic topics related to Commercial ZNE Building and Leveraging Meter Data, and
- Coordinating assessments and sharing technology research information through ETCC's four (4) 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 CEC, the EPIC Program, and the Public Interest Energy Research (PIER) Program.
- Produced the Crosscutting – Emerging Technologies chapter of SCE's EE Programs Business Plan in consultation with the CAEECC, statewide ETP leadership, and other program stakeholders.
- Initiated planning for an Emerging Technologies Summit for spring of 2017. 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 58 percent of the total program incentive dollars, up from 41 percent in 2015. The Lighting Innovation Program 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 2016 and at year's end 40 customer projects were participating in the pilot.

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

WE&T provided training, seminars, and workshops to over 12,500 industrial professionals in 2016 through SCE's Energy Education Centers.

H. Water-Energy Activities

On December 15, 2016, D.16-12-047 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 2016, SCE saved more than 21 million gallons of water through its deemed and residential offerings and consumed nearly 29 million gallons through projects in calculated ("customized") programs (e.g., Savings By Design). Additionally, Codes and Standard's 2015 Case Study for water technologies, adopted in 2016, saved 3,074 million gallons of water in 2016.

SCE anticipates that moving forward, as programs investigate water offerings and the WEN and CET tools align, better data will become available. 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 2016. The Water Energy chapter of this report outlines activities that impact water use and where SCE has the information available about activities and values (savings, gallons, kWh) that have been identified as affecting water as outlined in the decision. SCE also worked with the CPUC to approve an Automated Meter Infrastructure (AMI) Pilot, continued its water agency outreach through its 23rd Annual Water Conference, and completed a "deep dive" investigation of a partner water agency's energy use and potential for joint program offerings.

I. Proposition 39 Program Coordination

In 2016, 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 are in SCE's service territory — and helped the colleges identify over 130 potential Prop 39 projects, delivering 4.7 million kWh in energy savings in 2016.
- 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, and
    - Coordinate SCE's commercial deemed and customized programs and the third-party Cool Schools Program with Prop 39.

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

- The Schools Energy Efficiency Program (SEEP) completed re-designing its list of program measures to add new 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 1 of the pilot produced interesting ZNE demonstration projects, and Round 2 is currently underway. SCE's ETP is the lead on the "field demonstrations" portion of the pilot, including projects with both K-12 schools and community colleges. The IOUs have also hosted technical and institutional workshops, partnering with the New Buildings Institute.

J. Integrated Demand Side Management (IDSM)

During 2016, 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 CLTEESP is fully realized throughout the EE portfolio.

K. Conclusion

SCE continues to lead the way in delivering both cost-effective and innovative EE solutions to meet State reliability and clean energy policy objectives. 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 2017 and beyond SCE will continue working to achieve cost-effective energy savings, expand innovative EE solutions, and drive toward market transformation. To realize this vision, SCE will continue to 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, and will also entail reducing the number of customer touchpoints in certain sectors.
- 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.
- For non-residential customers, SCE plans to increase adoption and decrease costs by tailoring EE services based on customer energy usage and demand.

2016 Energy Efficiency Programs Overview

I. Statewide Program for Residential Energy Efficiency

California's Long-Term Energy Efficiency Strategic Plan (CLTEESP or "Strategic Plan") goals — encouraging cost-effective Zero Net Energy (ZNE) new construction activities, achieving 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 2016, SCE continued to work with other California program administrators, water purveyors, and other organizations in the state to advance these important objectives. In addition, SCE responded to the California legislation to support mandated energy efficiency (EE) goals, set forth by SB 350, AB 802, and AB 793, in a cost-effective manner. SCE program intervention and implementation activities in 2016 were designed to reach California's diverse population, climate zones, and socio-economic classes, and tap its economic potential, while striving to improve cost-effectiveness.

The 2016 California Statewide Program Residential Energy Efficiency (CalSPREE) program offered and promoted specific and comprehensive energy solutions within the residential market sector. The 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.
- To cultivate, promote, and sustain lasting EE behaviors by residential customers, through a collaborative statewide education and outreach mechanism.

- To 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 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 to transform the residential consumer markets. Market transformation and 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 utilizes 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 2016

(a) Home Energy Reports (HERs):

HERs were used to provide customers feedback about their energy usage and to influence recipients' behavior on conservation. HERs also used a social norm behavior strategy, which helps influence recipients by comparing their consumption to their neighbors' usage.

HERs were mailed to approximately 11% of SCE's eligible residential customers, exceeding the CPUC target of 5%.

(b) Home Energy Efficiency Surveys (HEES):

More than 300,000 HEES surveys were mailed, with an impressive customer response rate of 13%. Customers who responded to HEES surveys received a customized

Home Energy Report with a list of recommendations to help reduce energy, water, and gas usage within their households. Links were provided to existing residential rebate programs to motivate additional EE savings activity.

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

The EEAT tool offers customers an interactive online survey of their home's energy usage based on structure, heating & cooling, and appliances, and provides customized EE tips and actions the customer may take to be more efficient around the home. In 2016, EEAT was updated with Single Sign On (SSO). SSO enables direct linkage to EEAT when SCE customers are logged into SCE's My Account Profile.

(d) Online Buyer's Guide:

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

(e) HEA Program CPUC-Approved Pilots:

(i) Energy Pledge Pilot:

This pilot is designed to leverage Energy Star® and industry-adopted behavioral strategies in the form of pledges to motivate customers to change their behavior and reduce energy consumption within their homes. This pilot is designed with bi-monthly mailings to enlist pledge commitments, within a Randomized Control Trial (RCT) design. The Energy Pledge pilot was completed in late 2016 and SCE expects to have evaluation results in 2017. These results will yield insights into the success of the pilot and determine if alternate behavior strategies should be implemented.

(ii) 10-10-10+ Multifamily Behavior Pilot:

This pilot is in the planning and development stage and will be launched in 2017. It is a partnership effort with SoCal Gas 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. SCE expects the first results for this pilot to be available in 2018.

B. Statewide Plug Load and Appliances Program

1. Program Description

The Plug Load and Appliances (PLA) Program merged the former Home Energy Efficiency Rebate (HEER) and Appliance Recycling (ARP) Programs. This subprogram develops and builds upon existing Point of Sale (POS) retailer relationships and includes Responsible Appliance Disposal (RAD) appliance recycling strategies. The PLA Program offers rebates and incentives to customers for purchasing and installing high-efficiency appliances (such as those with Energy Star® approval) and recycling inefficient refrigerators and freezers.

In 2016, the PLA Program discontinued operating the Appliance Recycling sub-program through an Advice Letter filed with the CPUC. ARP was discontinued due to many factors impacting its cost-effectiveness, including a Work Paper disposition that reduced energy savings by approximately 70%, recycling vendors' inability to recoup their costs from scrap metal, and retailers offering recycling at the time of purchase.

Additionally, the PLA Program stopped offering rebates for Energy Star® Refrigerators and Energy Star® Most Efficient Refrigerators due to increases in the federal refrigerator specification baseline. More than 70% of refrigerators that were eligible for a rebate in 2015 were no longer eligible in 2016, so the measure did not maintain its cost-effectiveness.

2. Strategies Implemented in 2016

SCE implemented the following strategies for the statewide PLA Program in 2016:

- Continued offering Point of Sale rebates for Variable Speed 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 Variable-Speed Drive (VSD) pool pumps, on energy savings, and on commissioning pumps to operate off-peak.

- Developed partnerships with Pool Manufacturers such as Pentair and Hayward to conduct authorized training classes for pool professionals.

C. Multifamily Energy Efficiency Rebate (MFEER) Program

1. Program Description

The MFEER Program offers prescriptive 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 common and dwelling areas of multifamily complexes, and in common areas of mobile home parks and condominiums. 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. Strategies Implemented in 2016

In 2016, 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 expanded 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, such as Energy Star® 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 to carry out 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% and up to 45% 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.
- An Advanced Home Upgrade path that uses comprehensive energy modeling.

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

2. <u>Strategies Implemented in 2016</u>

In 2016, SCE implemented the following strategies for the EUC Home Upgrade Program:

- Implemented changes to the program which lowered incentive amounts, while placing safeguards to achieve an overall project average of 10% energy savings.
- Continued our collaborative partnership with the Residential HVAC Quality Installation (QI) Program, by offering an additional $400 incentive to complete a HVAC QI project as part of an Advanced Home Upgrade project.
- Continued to streamline program reporting requirements and building on 2015 improvements, by working closely with program participants to identify and resolve application and processing challenges, improving desktop review practices, and providing additional training for contractors.
- Continued to refine a "Collaborative QC" approach between contractors, the Quality Assurance / Quality Control (QA/QC) vendor, and account managers to timely resolve QC field inspection issues. Conducted targeted efforts to identify customers with a higher propensity to participate and buildings with attributes that contribute to achieving higher potential savings. This analysis was used to determine target regions for marketing and outreach efforts.

3. Energy Upgrade California Multifamily Pilot

The EUC Multifamily (MF EUC) Pilot was an extension of the existing statewide EUC Program. This pilot program specifically targeted the multifamily housing retrofit market and promoted long-term energy benefits, fostering 15 successfully completed projects spanning over 118 buildings and serving 1,919 individual dwelling units. The SCE program was implemented in coordination with SoCalGas, with SCE serving the Lead Utility role.

The MF EUC Pilot concluded on March 31, 2016. Process evaluation is expected to be completed in 2017; insights and findings will be used to inform future program designs.

E. Residential New Construction (RNC) Program

The 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 2016

CAHP continued to support the residential builder community through 2016, providing education, technical assistance, and financial incentives for single-family and multifamily housing projects which exceeded the Title 24 baseline. The program

exceeded energy savings program goals in 2016. However, the adoption of the 2016 Title 24 code (effective January 1, 2017) rendered future implementation of the program significantly non-cost-effective. During 2016, SCE began exploring other strategies to continue engagement with the RNC market, with emphasis on builder preparation for 2020 ZNE goals in a cost-effective manner. Outreach efforts confirmed that most residential builders are not currently prepared to implement ZNE and require focused education as well as design assistance.

F. Residential Heating, Ventilation, and Air Conditioning Program

The Residential Heating, Ventilation, and Air Conditioning (HVAC) Program has the primary objective of driving 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.

1. Program Description

The Residential HVAC Program has two subprograms:

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

2. Residential HVAC QI Subprogram Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the Residential HVAC QI subprogram:

- Continued cross-promotion with Energy Upgrade California® during Residential HVAC QI contractor forums.

- Residential HVAC QI contractors were strongly encouraged to complete HVAC retrofits through Advanced Home Upgrade, with a small additional incentive, and several joint projects were completed.
- Contractor training decreased in 2016 as industry provided comparable training on load calculation software and installation best practices.
- Due to consistently low Residential HVAC QI program cost-effectiveness, program administrators and planners began to engage with industry through the Western HVAC Performance Alliance in order to identify new program strategies. Contractors confirmed that most of the loss in energy savings is due to the existing baseline standards. Future implementation of AB 802 in combination with the efficient use of diagnostic tools may provide opportunities for greater cost-effectiveness. Utilization of these practices would require significant program revisions.

3. Residential HVAC QM Subprogram Strategies Implemented in 2016

In view of the following considerations, and due to previous low participation rates, Program Administration did not implement Residential QM program activities in 2016:

- Residential HVAC contractors consistently confirmed that the QM subprogram incentive was too low relative to the lengthy assessment testing the program required.
- Implementation of alternative methodologies, such as performance-based incentives and change to use of existing baseline, would require significant program changes.

Although the program was inactive, SCE participated in discussions with the other IOUs during 2016 in preparation for the future statewide administration of Residential HVAC programs by SDG&E. SCE will participate in the development of a Request for Proposals (RFP) for third-party implementers, in pursuit of an automated and cost-effective approach to implementing the Residential HVAC Quality Maintenance Program.

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 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 2016

In 2016, SCE implemented the following strategies for the Commercial Energy Advisor program:

- Implemented a single sign-on (SSO) to the Business Energy Advisor (BEA) online "do-it-yourself" audit tool. With SSO, users log in once at SCE.com, without being prompted to log in again. Multi-account customers can also now use an Account Selector to select which account they would like to view, and the "Save Profile" feature allows authenticated customers to return to the BEA home page and review completed survey results.
- Developed the Automated Benchmarking System (ABS), which will allow nonresidential customer users to seamlessly upload energy data into their Energy Star® Portfolio Manager account in compliance with AB 802. Anticipated launch will be during 2017.

B. Commercial Calculated Incentives Program

1. Program Description

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

2. Strategies Implemented in 2016

In 2016, SCE implemented strategies to improve the quality of applications and projects for the Commercial Calculated Energy Efficiency program, through communications, training, and program policy updates, including:

- Enforcement of the "Deemed Must Go Deemed" policy which does not allow the submission of EE projects to the Customized Retrofit Offering when a CPUC-approved Work Paper mandates that specific measures are eligible only through

the Express Solutions or Midstream Point-of-Purchase (MPOP) Programs (with specific installation requirements).

- The Statewide Customized Offering Procedures Manual, the Statewide Retrocommissioning (RCx) Guidelines, the Statewide Customized Calculated Savings Guidelines, and SCE's Solutions Directory all received updates throughout 2016, which helped ensure that implementers and customers possessed up-to-date information so they could effectively participate in programs.
- Conducted an off-site training event for Customers' Authorized Agents (contractors and/or other energy service providers), who act on behalf of customers to submit a substantial percentage of program applications.

C. Savings By Design Program[7]

1. Program Description:

Savings By Design (SBD) serves the commercial new construction market segment. The program promotes integrated design by providing owner incentives, design team incentives, and design assistance to participants who design spaces that perform at least 10% better than Title 24 requirements.

Projects completed in 2016 were the culmination of up to four years of managing customer projects and ensuring previously documented energy-saving recommendations were installed by customers instead of being removed in building engineering or construction processes.

A notable strength of the SBD program team, in addition to delivering a high-quality, efficient program offering, has been its focus on sharing tools, resources, and common leadership approaches statewide. 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 and Los Angeles Department of Water and Power (through Southern

[7] 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.

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 2016

In 2016, the statewide SBD team established the following strategies:

- Continue to identify and implement changes to policies, procedures, and tools that would improve the efficacy and cost-effectiveness of the program.
- Enhance, leverage, and develop new relationships with government agencies, trade associations, and internal IOU resource groups to establish a unified focus on aligning the new construction industry towards Zero Net Energy targets.

In 2016, SCE's SBD Program implemented the following strategies:

- Simplified the program process by removing Letter of Interest documentation.
- Confirmed a statewide SBD agreement to increase program focus on Whole Building Approach projects, with the goal of increasing cost-effectiveness supporting customers' ZNE Goals.
- Initiated the transition of Systems Approach lighting and process measures to deemed new construction measures.
- Strengthened relationships with the American Institute of Architects, California Council (AIACC). AIACC has been a strong partner with SBD in providing energy-efficient building education, tools, and resources to their membership.
- Acknowledged and supported the CPUC decision to move towards a statewide Administrative Lead model for the program. SBD was the only downstream program selected.

3. WE&T Energy Design Resources

WE&T Energy Design Resources (EDR) has served as the technical resource website for the Savings By Design, Residential New Construction, Codes and Standards, and Emerging Technologies Programs for many years. EDR has become an important New

Construction website, visited by over 78,250 users, with over 118,468 reviews of the available resource materials.[8] The website was in a relatively static state in 2016, which accounts for the 9% reduction in unique users visiting the site. In 2017, the website will look for strategic improvements that will enhance content while reducing overall costs.

In 2016 the statewide Savings By Design/Energy Design Resources team established the following strategies:

- Enhance the collaborative management process (partnership with internal groups, trade associations, etc.) which governs the operation and content for the website.
- Identify and implement program and procedural changes that will result in increased cost-effectiveness but will still enable meeting program goals.

In 2016, SCE implemented the following strategies:

- Identified two ways to increase the cost-effectiveness of the website:
  (1) Modify the website management model and issue a solicitation for a narrower scope of work which focuses only on the development, operation and maintenance of the website, and
  (2) Begin transforming the current model — where the IOUs pay for the development of most of the resources posted on the website — to another model where the partners with educational and consultative entities share material, in return for recognition and the opportunity to reach a broader audience.
- Renewed statewide commitment to support the funding and operation of the EDR website. This will be documented by establishing a co-funding agreement.
- Transitioned management of the website to SCE's Workforce Education and Training program (WE&T). WE&T is especially experienced in developing multiple channels to provide education to a wide variety of parties interested in EE technologies, codes and standards, and new construction activities. WE&T's

[8] Statistics from January to December 2016, available at **https://energydesignresources.com/**.

EDR program manager will facilitate statewide IOUs and other stakeholders in the management of the website, both operationally and in its content.

D. Commercial Deemed Incentives Program

1. Program Description

The Commercial Deemed Incentive 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.

The top measures installed in 2016 were Variable Speed Drives (VSDs) on Pump Controls, various LED Lighting measures, and Commercial Electric Combination Ovens.

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the Commercial Deemed Incentives Program:

- Implemented a new tiered incentives structure for Variable Speed Drive (VSD) measures based upon installed horsepower to better align incentive levels with incremental measure costs.
- Transitioned the Midstream Point of Purchase (MPOP) offering from a Lighting Innovation Program pilot to a full-fledged incentive program[9] working with distributors (as a subprogram under the Commercial Deemed program) to provide SCE business customers with point-of-purchase rebates for high-efficiency equipment.
- Developed a scalable data processing solution for MPOP program data and customer information collected by distributors that SCE validates before

[9] MPOP savings claimed for 2016 are attributed to the Lighting Innovation program during this transition period.

reimbursing partners. This online tool enables greater distributor participation and allows more product technologies to be included in MPOP.

- Successfully launched LED troffer and retrofit kit measures in the MPOP program. These measures have a tiered incentive structure, based on the efficacy and kilolumen output of the fixture, to provide higher incentives for higher efficacy. Also, provided training to customers and distributors on incentive calculations for these measures. Incentivized over 60,000 kilolumens, representing approximately 15,000 LED troffers and retrofit kits.
- Transitioned LED high bay measures from the Express Solutions program to the MPOP program on June 1, 2016. The volume of MPOP LED high bay measures was significantly higher than in the Express Solutions program. MPOP incentivized approximately 13,000 high bay units from June 1 to December 31, 2016, whereas the Express program, during roughly the same time period, incentivized about 3,200 high bay units.

The 2016 program results fell short of meeting its goals, in large part, due to lower than anticipated program uptake and the transition of some high-volume lighting measures to the more cost-effective MPOP program. In addition, 95% of the overall Deemed Program energy savings goal was assigned to the Commercial Deemed Program due to the lack of eligible measures for the Industrial and Agricultural sectors.

E. 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 2016

In 2016, 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, increasing program efficiency.
- Added LED High Bay / Low Bay measures, with co-pays ranging from $65/fixture to $100/fixture, in the fourth quarter of 2016.
- Added the commercial variable speed pool pump measure for hotel and motel building types in the fourth quarter of 2016.
- Added LED T8 lamps for customers in the eligible Aliso Canyon / PRP zip codes in the fourth quarter of 2016.
- Joined with SCE's Energy Leader Partnership Program to leverage the Direct Install offering to municipally-owned facilities (funded by the partnership programs).

F. 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 customers by employing change management and process improvement strategies for energy management, resulting in EE projects and driving 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 and/or Level 2 assessments,
- Creating a prioritized pipeline of measures,
- Setting an energy reduction goal,
- Developing a plan to reach the goal, and
- Adopting strategic energy management principles as part of a standard operational practice.

2. Strategies Implemented in 2016:

In 2016, SCE implemented the following strategies and/or gained the following learnings for the CEI program:

- Identified EE measures through ASHRAE Level 1 and 2 assessments and data analytics, resulting in a pipeline of 525 bankable projects. These projects were prioritized by program participants supported by their CEI Energy Advisors.
- Surveyed assigned account executives[10] and received positive feedback about the program. These account executives stated that the CEI program strengthened the relationship between the customer and the utility, increased customer and utility communication, and increased customer awareness of EE programs. One account executive mentioned that a previously un-engaged customer is now partnering with the utility to discuss and consider energy efficiency. Another program participant was able to integrate energy management into daily operations by augmenting existing employee checklists with energy actions.
- CEI Program Energy Advisors maintained minimal contact with the previous year's CEI participants; however, it was noted that the customers continued to strategically manage energy in 2016. Given access to their data, the CEI Advisors were able to model energy savings by normalizing metered data against multiple variables including weather, occupancy, and calendar variability. Although energy savings for these participants were not yet reportable toward utility

[10] In SCE's Business Customer Development division, account executives work directly with business customers to support their participation in EE and other programs.

savings goals, since CEI is a non-resource program, the energy savings were significant.

- In anticipation of and preparation for the future roll-out of a resource-based Strategic Energy Management (SEM) program, reporting formats were streamlined and updated to make it easier to identify utility influence on customer decisions to implement projects. The most notable change to the program in 2016 was the incorporation of data analytics into the assessment process. This approach allowed CEI Energy Advisors to gather actionable information for a broad number of buildings. The effort generated energy baselines for each site, as well as 473 actionable measures made up of 163 capital recommendations and 310 operational/behavioral recommendations.

G. 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 2016

In 2016, 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 in the previous year and engage those who have not yet participated, resulting in the addition of new distributor participants and marked growth in overall program participation.

- Promoted new technologies and/or related equipment categories, such as package equipment that meets or exceed the U.S. DOE "RTU Challenge," variable refrigerant flow equipment, air-cooled chillers, and water-cooled chillers.
- 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.
- Enrolled 4 new contractors in the Early Retirement subprogram, for a total of 82 participating contractors.
- Replaced (or identified for replacement) over 11,154 tons of equipment.
- Expanded program quarterly performance reports and annual performance summaries to contractors participating in Early Retirement.

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 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 2016

In 2016, SCE implemented the following strategies for the HVAC Commercial QI program:

- Continued to provide classroom training to Commercial Quality Renovation (CQR) contractors, and on-site coaching to CQR contractors and technicians.
- Began conducting HVAC systems field data collection activities in support of a potential work paper for claiming savings.

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 2016

The program's focus in 2016 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 2016 included:

- Streamlined incentive processing for customers by reducing from the number of installments from four to three over the 3-year maintenance agreement.
- Reduced collection of unused data.
- Implemented a feedback loop between the program inspection team and WE&T trainers to identify skill gaps and inform trainings for areas of increased focus.
- Held stakeholder forums with customers, contractors, the CPUC, statewide IOUs, and the Western HVAC Performance Alliance to obtain input into the assessment process.
- Planned additional administrative program improvements for launch in February, 2017.

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 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 2016

In 2016, SCE implemented the following strategies for the Industrial Energy Advisor program:

- Implemented a single sign-on (SSO) to the Business Energy Advisor (BEA) online "do-it-yourself" audit tool. With SSO, users log in once at SCE.com, without being prompted to log in again. Multi-account customers can also now use an Account Selector to select which account they would like to view, and the "Save Profile" feature allows authenticated customers to return to the BEA home page and review completed survey results.

- Developed the Automated Benchmarking System (ABS), which will allow nonresidential customers to seamlessly upload energy data into their Energy Star® Portfolio Manager account in compliance with AB 802, with an anticipated launch during 2017.

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 2016

In 2016, 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:

- Enforcement of "Deemed Must Go Deemed" policy which does not allow the submission of EE projects to the Customized Retrofit Offering when a CPUC-approved Work Paper mandates that specific measures are eligible only through the Express Solutions or Midstream Point of Purchase (MPOP) programs (with specific installation requirements).
- The Statewide Customized Offering Procedures Manual, the Statewide Retrocommissioning (RCx) Guidelines, the Statewide Customized Calculated Savings Guidelines, and SCE's Solutions Directory all received updates throughout 2016, which helped ensure implementers and customers possessed up-to-date information about offerings so they could effectively participate in programs.

- Conducted an off-site training event for Customers' Authorized Agents (contractors or other energy service providers), who act on behalf of customers to submit a substantial percentage of program applications.

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 2016 were variable speed drives (VSDs) on pump controls and exterior LED lighting.

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the Industrial Deemed Incentive program:

- Retired several Deemed measures from the program at the end of 2016 due to workpaper updates resulting in TRC and EUL reductions, which impacted the cost-effectiveness and eligibility of those measures.
- Transitioned high-volume lighting measures to the new, more cost-effective Midstream Point of Purchase (MPOP) program.[11]
- Implemented a new tiered incentives structure for specific measures to better align incentive levels with incremental measure costs for each tier.

The Industrial Deemed Incentive program's 2016 goals were reduced overall — to only 4% of the Deemed program goal — due to the lack of measures eligible for the

[11] See Section V.(B), Lighting Innovation Subprogram, below.

Industrial sector. Achievement toward goals can be attributed to launching of new VSD measures that provided substantial energy savings opportunities.

D. Industrial Continuous Energy Improvement (CEI) Program

1. Program Description:

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

Energy Advisors provide strategic energy management coaching, consulting, and training. Services offered as part of the CEI program involve organizational and technical assessments of customers' energy management practices, long-term strategic energy planning, action plan implementation, quantifying energy savings, and updating of plans to provide continuous improvement.

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies and/or gained the following learnings for the CEI program:

- CEI and the program participants, supported by their CEI Energy Advisors, identified and prioritized EE measures through ASHRAE Level 1 and/or 2 assessments, resulting in a pipeline of 127 bankable projects.
- The CEI Energy Advisors surveyed assigned account executives and received positive feedback about the program. Account executives noted that the CEI program strengthened the relationship between customers and the utility, increased customer-utility communication, increased customer awareness of energy efficiency programs, and increased customers' overall understanding of their needs. One account executive pointed out that CEI provides support to the

implementer in documenting the influence of the utility and its representatives on customers' decisions to move forward with EE projects.

- The Industrial CEI program continued CEI engagements with ten customers, representing different industrial sectors, who enrolled in the program in 2015 or earlier. CEI provided extended "light touch" measurement & verification (M&V) assistance to these customers, including continued tracking of key performance indicators (KPIs) for energy use, review and updating of strategic energy management plans, and helping customers follow through with EE project implementation. A total of 30 additional energy-saving measures were identified and added to these customers' Project Trackers.
- Utility account executives were instrumental in promoting CEI to their customers and recruiting every industrial participant; for the first time, the program was able to rely exclusively on this preferred recruiting channel. This is evidence of a more mature market that is ready to embrace strategic energy management.
- One participant that excelled in CEI was able to document and implement standard procedures for energy management that will stay in place beyond the CEI engagement. This company now routinely finds and repairs steam and compressed air leaks, and implements equipment start-up and shutdown procedures instead of leaving machinery turned on when the facility is not in production. These efforts resulted in significant energy savings, and additional natural gas measures are currently in the approval process.
- To assist customers with maintaining their CEI activities and to monitor customers' persistence in applying CEI principles in their operations, the program implemented extended post-engagement monitoring of some previous years' program participants, including obtaining feedback from those participants, using a "light touch" M&V consulting service.

3. Challenges Going Forward

The complexity and variability of industrial processes complicate establishing a consistent baseline period for use in quantifying improvements and energy savings.

Frequent changes in production activities can also impact tracking energy use and quantifying energy savings. Customers typically have limited resources available for such documentation when changes in production operations impact energy use.

There is a need for energy sub-metering and improved process-monitoring automation to facilitate collecting energy and production variables that will allow quantification of energy-related improvements.

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 from the agriculture sector may 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, and 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 2016

In 2016 SCE implemented the following strategies for the Agriculture Energy Advisor Program:

- Implemented a single sign-on (SSO) to the Business Energy Advisor (BEA) online "do-it-yourself" audit tool. With SSO, users log in once at SCE.com, without being prompted to log in again. Multi-account customers can also now use an Account Selector to select which account they would like to view, and the "Save Profile" feature allows authenticated customers to return to the BEA home page and review completed survey results.
- Developed the Automated Benchmarking System (ABS), which will allows nonresidential customers users to seamlessly upload energy data into their Energy Star® Portfolio Manager accounts in compliance with AB 802, with an anticipated launch during 2017.
- Performed over 4,700 pump tests targeting agricultural customers in the Central Valley area, as the severe drought situation forced many agricultural growers to drill new and/or deeper wells to keep their crops alive.

B. Agriculture Calculated Energy Efficiency Program

1. Program Description

The Agriculture Calculated Energy Efficiency Program offers incentives for customized retrofit and 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 2016

In 2016, 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:

- Enforcement of the "Deemed Must Go Deemed" policy, which does not allow the submission of EE projects to the Customized Retrofit Offering program when a CPUC-approved Work Paper mandates specific measures to be eligible only through the Express Solutions or Midstream Point of Purchase (MPOP) programs (with specific installation requirements).
- The Statewide Customized Offering Procedures Manual, the Statewide Retrocommissioning (RCx) Guidelines, the Statewide Customized Calculated Savings Guidelines, and SCE's Solutions Directory all received updates throughout 2016, which helped ensure that implementers and customers possessed up-to-date information about offerings so they could effectively participate in programs.
- Conducted an off-site training event for Customers' Authorized Agents (contractors or other energy service providers), who act on behalf of customers to submit a substantial percentage of program applications.

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 Customers' Authorized Agents.

The top measure installed in 2016 was variable speed drives (VSDs) on pump controls.

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the Agriculture Deemed Energy Efficiency Program:

- The Agricultural Deemed program goals were reduced overall — to only 1% of the Deemed program goal — due to the lack of measures eligible for the Agricultural sector. Achievement toward goals in 2016 can be attributed to the launch of new VSD Measures that provided substantial energy savings opportunities.
- Several Deemed measures were retired from the program at the end of 2016, due to Work Paper updates resulting in total resource cost (TRC) and Estimated Useful Life (EUL) reductions which impacted the cost-effectiveness and eligibility of those measures.

D. Agriculture Continuous Energy Improvement (CEI) Program

1. Program Description

The Agricultural Continuous Energy Improvement (CEI) subprogram is a consultative service intended to help 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.

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies and/or gained the following learnings for the CEI program:

- Rather than taking on new engagements, reviewed enrollment obstacles and researched alternative agricultural forums to reach and motivate customers, which will be used to inform future outreach. Feedback from two agricultural facilities, which participated in a previous year's pilot program to determine the energy efficiency issues, needs and priorities of the agricultural sector, indicated that addressing the drought was their priority for the first half of 2016. Because energy is primarily used for water pumping, it is currently of much less concern than is water.

- Evaluated better outreach methods for the program to identify agricultural customers who will be interested in participating in future programs. Since cooperatives bring together a number of farmers, they represent a significant opportunity for outreach and for sharing of best practices related to energy management.

V. Statewide Lighting Program

The 2016 Statewide Lighting Program includes three (3) subprograms:

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

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 the strategies employed in 2016.

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 compact fluorescent lamps (CFLs).

2. Strategies Implemented in 2016

In 2016, the program expanded the variety of retailers and focused on higher-quality products that provided greater energy savings and better cost-effectiveness. In previous years, most general service LEDs replaced 60-Watt incandescent-equivalent products, but in 2016 the program promoted more LEDs to replace 75- and 100-Watt models. The program added products from a new technology, very-high-efficiency CFLs, near the end of the year. These new CFLs were more efficient than 55 of the 70 LED models in the program. They were capable of replacing 150- and 200-Watt

incandescent lightbulbs in brightness, which no qualifying LED products could accomplish. These year-end shipments helped show that the market would accept the new technology in preparation for 2017.

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,
- To determine data-driven recommendations, and
- To influence future program designs.

The program conducts pilot programs and small-scale projects to collect data to assist in program design or work paper development.

2. Strategies Implemented in 2016

In 2016, SCE continued with trial study showcase and demonstration projects to test the viability of new product and program approaches:

- SCE's Sustainable Office Lighting Trial Program (aka Advanced Lighting & Controls System [ALCS] Pilot and Study) continued through 2016. Forty projects were approved for participation in the Sustainable Office Lighting Trial Program, 34 of which actually participated.
- The LED Back-Lit Menu Board Trial Program and Study was an effort to explore the market potential of the sign industry. This project's main objectives were to explore new program delivery models and market channels for utility incentives and education while gathering technical and market information to help inform a more accurate work paper for LED menu board signs. The Project ended in August 2016 with 60 restaurant participants.

In addition, a third-party engineering firm (Richard Heath & Associates) 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.

C. Lighting Market Transformation (LMT) Program

1. Program Description

The Lighting Market Transformation (LMT) subprogram 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 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 is no longer needed and may not be renewed in 2017.

2. Strategies Implemented in 2016

In 2016, SCE did not implement new strategies for the LMT Program due to a decrease in program needs. Additional details regarding Statewide Lighting Program efforts will be provided in the June 2017 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 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 with other SCE programs, including statewide, Third Party, Retrocommissioning and Local Government Partnership offerings. OBF funded a total of 194 projects, representing $12.99 million in loans, during 2016.[12]

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies in order to reduce program constraints and expand the potential for OBF financing to better meet customers' needs:

- Improved customer experience by implementing system enhancements to allow Customer Service Representatives ("Reps") to provide immediate loan information to customers. The improvements also simplified credit check and loan setup processes, improved loan tracking and reporting, and reduced OBF loan processing times by approximately 4.7 days.

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

- Developed an automated loan bundling process that allows aggregation of small loans that do not meet the required minimum loan threshold ($5,000 per service account). By bundling loans, we reduced processing times and improved customer service since there is only one loan agreement to sign and notarize for the combined loan amount.

- SCE filed Advice Letter 3409-E, which modified the language of the Rate Section and the Special Conditions Section of the OBF tariff by removing reference to the Bill Neutrality concept. Although bill neutrality is a goal, it is not always possible because of factors unrelated to the project for which financing was secured. The updated tariff language is more simple, accurate and customer-friendly, and provides customers with a clearer understanding of their payment obligations.

- Advice Letter 3409-E also modified the "assignment" language in the OBF Loan Agreement forms to permit loan assignment with SCE's consent. SCE proposed this change to allow customers to transfer loans where the new customer is creditworthy, based on SCE's standards, in order to minimize an already low loan default rate. If a service account associated with an OBF loan is closed, this enhancement allows transfer of a loan or loans to another active service account within the customer account. This process prevents the need to bill the OBF balance in full and improves customer service.

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 now is no longer active. ARRA was designed to encourage the implementation of comprehensive EE retrofits by providing access to affordable financing options.

The "emPower Program" (formerly "emPower Santa Barbara County" or "emPower SBC") is SCE's only current ARRA-originated financing program. It provides

unsecured loans for single-family homeowners implementing home energy upgrades. The Program:

- 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, within Santa Barbara, Ventura, and San Luis Obispo Counties,
- Provides credit enhancement funds through a loan loss reserve (LLR),[13] and
- 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.

2. Strategies Implemented in 2016

In 2016, SCE implemented several strategies aimed at improving program cost-effectiveness, a historical challenge for the emPower Program:

- SCE requested that emPower cease hiring additional contractors and energy coaches,[14] and instead work with certified contractors to perform "coach visits."
- SCE identified for emPower opportunities to reduce advertising in newspapers and program website activities, and to align marketing and advertising efforts with the Home Upgrade program.
- To focus marketing strategies on financing for Home Upgrade Projects, emPower agreed to increase loan activity and align its marketing with Home Upgrade, and set a goal to close 50 SCE IOU loans in 2016.

However, during 2016, the emPower Program did not finance any loans in SCE's service territory. At the Statewide level, emPower only closed 11 loans for a total of $258,000 in 2016. As of December 2016, 33 loans from 2013-2016 had been closed, with a total loan amount of $721,551, and no loan defaults were reported. Total 2016

[13] An LLR provides reimbursement to a financial institution only 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.

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

emPower Program expenditures were $1,392,913, and SCE's share of these costs was $716,375.

These expense amounts illustrate the program's lack of cost-effectiveness. Unfortunately, emPower did not motivate many interested SCE customers to undertake actual Home Upgrade projects, and there were no closed EUC loans in SCE's service territory (in Santa Barbara and Ventura Counties) in 2016. Therefore, in its 2017 Budget filing Advice Letter, SCE proposed to discontinue its participation in emPower Program upon the expiration of the Program Agreement on March 31, 2017.[15]

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), and
- Off-Bill Small Business Lease Providers Program.

(b) On-Bill Repayment Programs:

- Small Business On-Bill Repayment (OBR) Loan Program.

[15] The ARRA-Originated Programs did not report energy savings for 2016 that SCE can claim**.** Additionally, as pilots, the ARRA-Originated Programs have not established program performance metrics. SCE understands that the CPUC is preparing a cost-effectiveness study, expected to be finalized in mid-2017, on these programs.

- Small Business OBR Lease Program.
- Nonresidential OBR without Credit Enhancements Program.
- 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 2017. This will shortly be followed by the launch of the Master-Metered Multifamily Program.

2. <u>Strategies Implemented in 2016</u>

In 2016, SCE worked with CAEATFA and other IOUs to implement the following strategies for the New Finance Offerings:

- The REEL Assistance Program was launched in Q2-2016. Success metrics to date include:
  - On-boarded three credit unions (lenders) into the REEL program
  - On-boarded over 70 contractors to support the program, and
  - Funded 11 residential loans (all in SCE's service territory) in 2016, with a total project cost of $187,937.
- The OBR infrastructure was incorporated into SCE's billing system in the 4th Quarter of 2016. Extensive system testing was completed with Concord, the OBR Master Servicer. When onboarding of one or more commercial lenders takes place, we will be able to perform final system validation.[16]
- The program team streamlined the list of Eligible Energy Efficiency Measures (EEEMs) 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.

[16] IT costs for this work during 2013-2016 totaled $2,840,000. The total IT costs for 2016 only were $946,000.

- The program team worked to develop a finance-only pathway for the program, with the goal of developing a methodology to allow IOUs to claim energy savings from customer projects that receive financing but do not receive a rebate.
- SCE supported the Center for Sustainable Energy (CSE) in developing a marketing campaign and web page, "Energy Upgrade California > Go Green Financing," for the Off-Bill REEL Assistance Program.
- Public workshops were hosted by CAEATFA and the IOUs, as follows:
  - July 20, 2016 workshop: This workshop focused on the credit enhancement structure, product and provider eligibility, and the loan underwriting guidelines for the small business pilots.
  - October 28, 2016 workshop: This workshop's objective was to provide stakeholders an opportunity for input on the proposed structure for the commercial finance pilots and the related program regulations. The workshop also focused on contractor requirements, QA / QC requirements, reporting, and the finance-only pathway versus the finance-and-rebate pathway.
  - November 14, 2016 workshop: This workshop's objectives were:
    * To present a midpoint review[17] of the program's history and development
    * To update external stakeholders on program progress
    * To obtain CPUC approval for a budget increase to continue pilot implementation
    * To establish long-term funding for CAEATFA, and
    * To propose recommended changes to program design.

Outcomes related to the November 2016 workshop were codified in early 2017 in CPUC Decision D.17-03-026.

[17] The finance pilots are expected to operate for a period of two (2) years. November of 2016 was midway through the original expected period, and the review was used to explain implementation delays and request program modifications.

VII. Statewide Codes & Standards (C&S) Program

1. Program Description

The Statewide Codes and Standards (C&S) Program saves energy on behalf of ratepayers by influencing appliance and building standards and code-setting bodies, such as the CEC and the U.S. Department of Energy (DOE), to strengthen and advance energy efficiency regulations by:

- Continuous improvements in and advancement of energy regulations
- Improving compliance with existing codes and standards
- Assisting local governments in developing ordinances that exceed statewide minimum requirements, and
- Coordinating with other programs and entities to support the State's ambitious policy goals.

The advocacy and compliance improvement activities of the Codes and Standards Program extend to virtually all buildings and potentially all appliances sold in both California and beyond.

2. Key Initiatives

- SCE worked collaboratively with the other Investor-Owned Utilities and the CEC to identify more than 20 Codes and Standards Enhancement (CASE) topic proposals and begin the CASE development process for the 2019 Title 24, Part 6 rulemaking. In addition to the CEC, SCE also participated with the ASHRAE 90.1 and 189.1 technical committees in supporting their code development activities to ensure harmonization with Title 24. Additionally, SCE continued to work with the CEC on the post-docket phase of the 2016 Title 24 code that has been adopted but not yet implemented. SCE's support for state and federal building codes and appliance standards continues to move California towards residential Zero Net Energy (ZNE) by 2020, nonresidential ZNE by 2030, and the Governor's goal of doubling energy efficiency savings by 2030.
- In 2016, SCE continued working on updates to the Title 20 appliance standards which led to the adoption of new standards for lighting and computers, as well as

supporting CASE studies for Phase 1 rulemakings for pool equipment, expected to be adopted in 2017. SCE took an active role in several DOE, EPA Energy Star®, and Federal Trade Commission (FTC) stakeholder meetings during various rulemakings and specification processes, which led to the issuance of 30 rulemaking advocacy letters in 2016. The results of these efforts will be determined in future years. It is also important to note that IOU Advocacy letters issued in previous years influenced rulings on seven federal measures that took effect in 2016.

- SCE, along with the other IOUs' Compliance Improvement subprograms, delivered extensive Title 24, Part 6 standards-related training resources using a variety of teaching modes. The Energy Code Ace tools and resources were updated for the 2016 Standards, and working closely with the CEC, the statewide C&S Compliance Improvement team developed dynamic compliance resources expected to be released in 2017.

- SCE supports the development and implementation of "Reach Codes" that may be adopted by local jurisdictions or agencies as ordinances that exceed statewide Title 24 minimum energy efficiency requirements for new buildings, additions, or alterations. In 2016, SCE supported the City of Santa Monica in the adoption of an ordinance requiring all new nonresidential buildings to comply with CALGreen Tier 1 requirements, and, for the first time, requiring all new low-rise residential buildings to comply with ZNE requirements.

3. Impact on Savings

C&S achieved 101% of its GWh goal in 2016, but only 85% of its MW goal. As noted in D.15-10-028,[18] this was primarily because the C&S adopted goal for 2016 included anticipated savings from Title 20 activity expected to be in effect in 2016, these savings were not realized due to delayed adoption of some measures. The Decision further deferred modifying the Codes & Standards goal to reflect the revised adoption timeline to the "goals bus stop," [19] which did not occur as planned due to delays from

[18] D.15-10-028, p. 38.
[19] *Id.*

engineering Work Papers and associated dispositions. As a result, the Codes & Standards 2016 savings goal was never updated to accurately reflect proper timing of code adoptions.

4. Implementation Challenges

Increasing scrutiny by stakeholders of CEC and DOE rulemakings during 2016 continued to drive the technical rigor of the IOUs' advocacy efforts (CASE Studies and DOE comment letters) in order to achieve successful outcomes in the Advocacy subprograms. The complexity of building codes and the number of appliance standards continued to increase. DOE standards for new product categories increasingly continued to preempt state appliance standards and constrain prescriptive baselines for building codes, thereby limiting opportunities for California to require increased cost-effective energy savings through its codes and standards.

The audience requiring Title 24, Part 6 training increased in scope and now includes architects, designers, commissioning agents, acceptance test technicians, and electric distribution inspectors. Increased training modules were added in 2016 and will continue to be added to serve this expanded user group.

5. Opportunities Moving Forward

Looking ahead, there are several opportunities to increase savings from state and federal building codes and appliance standards, increase compliance and understanding of the code, and move towards the State's ZNE policy objectives, including:

- Continue working with the Emerging Technology Program (ETP), Technology Test Center, and EM&V to expand primary research activities, refining and improving data used in CASE study proposals.
- Expand the C&S Program's support for increasing compliance with appliance standards, as well as further expanding Title 24, Part 6-related education and training, so as to achieve significant energy savings.
    - Prepare for the California 2020 ZNE policy goal by working with the CEC, the building industry, statewide organizations such as California Building

Officials (CALBO) and the California chapters of the International Code Council (ICC), and California's many jurisdictions to prepare the industry for ZNE through training, reach codes, and demonstration projects.

- Work to simplify codes and improve the efficiency of existing buildings, both efforts that will be increasingly important.
- Develop new reach codes based on 2016 building codes and upcoming ZNE policy goals.
- Continue to collaborate with the Compliance Improvement team to recruit a diverse cross-section of market actors to actively participate earlier in the advocacy process of the Building Energy Efficiency Standards rulemaking, resulting in broader acceptance, improved compliance rates, and smoother implementation.

A. Appliance Standards Advocacy Subprogram

The Appliance Standards Advocacy subprogram targets both state and federal standards and test methods, including improvements to Title 20 Appliance Efficiency Regulations by the CEC, and improvements to Federal appliance regulations and specifications by the U.S. DOE, EPA Energy Star,® and the FTC. Advocacy activities include developing Title 20 Codes and Standards Enhancement (CASE), participating in the CEC public rulemaking process, submitting comment letters based on IOU research and analysis in federal standards proceedings, and participating in direct negotiations with industry. Additionally, the program monitors state and federal legislation and intervenes, as appropriate.

1. Subprogram Highlights

(a) Advocated Changes to Title 20 Appliance Efficiency Regulations

Activities included:

- Working with the CEC and participating in webinars and workshops about LEDs and small-diameter directional lamps, as well as computers and displays, all of which were adopted into code in 2016. Continued supporting activity on pool pump motors and portable electric spas through CEC workshop participation;

adoption expected in 2017.

- Worked on CASE development for the CEC on products including plug-in signs, outdoor lighting, imaging equipment, and televisions.

(b) Advocated Changes to Federal Appliance Standards

Activities included the following:

- Actively participated in several stakeholder meetings during the rulemakings and specification processes conducted by the U.S. DOE, EPA Energy Star®, and Federal Trade Commission, which led to the issuance of 30 rulemaking advocacy letters in 2016. The results of these efforts will be determined in future years.
- IOU Advocacy letters issued in previous years influenced rulings on seven federal measures taking effect in 2016.
- Participated in DOE's Appliance Standards and Rulemaking Federal Advisory Committee working groups with industry and other stakeholders.

B. 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

- Finalized a gap analysis report on CBECC-Com and EnergyPlus to identify and prioritize missing features and to identify discrepancies in capabilities between the two. Based on work done to date, the report shows that CBECC-Com has implemented about 40% of the features otherwise available in EnergyPlus. As a

result, significant work will be needed to enable all the features in EnergyPlus within CBECC-Com.

  - The gap analysis ranked PV, HVAC, and natural ventilation features as the highest priorities, so that any issues related to these features can be addressed quickly and thoughtfully.
  - Subprogram personnel coordinated externally with the CEC CBECC-Res team on developing several updates to the CBECC-Res software, including adding capabilities to model photovoltaics, heat pump water heaters, and improvements to the overall water heating model.

- Developed a white paper to explore two key issues related to the cost-effectiveness of ZNE for residential new construction. These issues include:
  - Value of solar rooftops in the time-dependent valuation (TDV) metric, and
  - Off-site vs. on-site generation for ZNE compliance.

  The white paper describes challenges CEC should consider when establishing residential ZNE compliance paths for 2019 Title 24.

- Began initial work to prepare for 2019 Title 24, Part 6 standards development. The C&S team scheduled and held stakeholder meetings in September, October, and December of 2016 to inform and engage stakeholders, gather input, and refine the measure list and specifications. The meetings covered approximately 24 code change proposals in ten categories:
  - Advanced Daylighting Design
  - Demand Response
  - Laboratory Measures
  - Nonresidential HVAC
  - Nonresidential Indoor Air Quality
  - Nonresidential Lighting
  - Residential Envelope
  - Residential HVAC
  - Residential Water Heating, and

- Warehouse Topics.

- The current status of CASE measure development includes:
  - Working with stakeholders to gather data that will inform code change proposals, market analysis, and cost-effectiveness analyses
  - Developing market and cost-effectiveness analyses
  - Preparing the first drafts of the CASE Reports for CEC review, and
  - Collaborating with the Compliance Improvement team to identify and address compliance and enforcement implications of proposed code changes.
- Conducted efforts to influence national lighting standards referenced in Title 24. Activities included working with the Illuminating Engineering Society (IES), in conjunction with the Virginia Tech Transportation Institute, to update IES Recommended Practice 20 guidelines for outdoor lighting levels in parking areas, based on more realistic scenarios and measurements.

C. Compliance Improvement Subprogram

Following code adoption, C&S supports compliance improvement for both the Building Energy Efficiency Standards and the Appliance Standards. The Compliance Improvement subprogram targets market actors throughout the entire compliance chain, providing education, outreach, and technical support and resources to improve compliance with both the building and appliance energy standards. These activities complement advocacy work by maximizing verified savings from C&S CASE studies that are realized and persist over time. Achieving satisfactory compliance with Building Energy Efficiency Standards and the Appliance Standards is a crucial requirement for the IOU statewide C&S program, in order to capture the intended energy savings for the long-term benefit of IOU customers. High compliance rates are necessary to level the playing field for well-intentioned suppliers and contractors who are otherwise faced with a competitive disadvantage when complying with regulations. Greater compliance strengthens voluntary program baselines and provides a solid foundation for future robust advocacy efforts.

1. **Subprogram Highlights: Title 24, Part 6 Building Energy Standards Compliance Improvement Efforts**

The Title 24 Compliance Improvement statewide team:

- Updated existing training assets (courses, classes, tools, resources, etc. designed for 2013 Standards) and created new 2016 Title 24, Part 6 training courses designed to support market actors across the compliance industry. Training is offered in several modalities, including traditional classroom sessions (at training centers and other locations as requested), virtual classroom sessions (live, online classes, also known as v-classes), webinars, and online self-study, allowing users to take the course at their convenience. The Title 24, Part 6 Decoding Webinar and Title 20 On-Demand Video courses are recorded and available on the Energy Code Ace website.[20] In addition, five 2013 Title 24, Part 6 online self-study courses, which required minor maintenance in 2016, will remain available through the end of 2017.
- Delivered training via classroom sessions, code interpretation ("decoding") webinars,[21] virtual classes ("v-classes"), online self-study courses, and virtual workshops. The accomplishments from each type of training include:
  - Conducted 244 classroom (in-person) training sessions with approximately 4,800 attendees.
  - Conducted decoding webinars covering five topics related to the 2016 Standards update. Each webinar was offered in four separate sessions, resulting in completion of 20 decoding webinars with a total of 659 attendees.
  - Updated five v-class courses to reflect changes in the 2016 Standards, and conducted 20 v-classes (each held over a three-day period) with a total of 441 attendees. Virtual classes are modified versions of the traditional Standards Essentials suite of classroom courses targeting energy consultants.

[20] Webinars are available at **http://energycodeace.com/**.
[21] See **http://energycodeace.com/content/training-ace/training_event_type=course-type-decoding-talk.**

- Offered online self-study courses. The number of users decreased in 2016,[22] possibly because many people postponed training until the new 2016 training materials became available later in the year, and/or until the effective date for the new code.

- Began development — partly in response to the California Association of Building Energy Consultants (CABEC) Certified Energy Analyst (CEA) certification test results — of two virtual workshops: "Residential Modeling Tips" and "Analyzing the CF1R:[23] A Conceptual Overview."

- In collaboration with CABEC, commenced a project to thoroughly update the 2013 CEA Residential and Non-Residential certification exams from the 2013 to the 2016 Energy Code, and to develop a user guide to help facilitate the writing of future exams. At the end of 2016, this update project was close to being complete, with the majority of exam questions complete, and exams scheduled. This project is scheduled to be completed in the first half of 2017.

- Updated the existing Energy Code Ace fact sheet and triggers sheet for the 2016 Standards, and developed seven new Application Guides.

- Continued outreach via Energy Code Ace by participating in industry events, distributing 70 targeted messages, and updating EnergyCodeAce.com. Specific activities and outcomes in 2016 include the following:

  - Participated in 36 industry outreach events (including exhibiting, presenting, sponsoring, and distributing materials collateral at the 2016 American Council for an Energy-Efficient Economy [ACEEE] conference in California).

  - Built and/or strengthened strategic partnerships with organizations such as:

    * The Energy Commission
    * CABEC
    * American Institute of Architects, California Council (AIACC) and its local chapters

[22] "Fewer users" does not mean "less knowledge." The level of knowledge is not a direct function of the number of users during the year, especially in a "transition" year like 2016, since the new code went into effect on January 1, 2017.

[23] State of California Residential Compliance forms (Certificate of Compliance) for 2013, Title 24.

    - Institute of Heating and Air Conditioning Industries (IHACI)
    - California Building Officials (CALBO)
    - International Code Council (ICC) Chapters, and
    - The Statewide Energy Efficiency Collaborative (SEEC).

- The Energy Code Ace team updated all four of the "Ace" tools for the 2016 Standards. The tools are designed to facilitate compliance by addressing known barriers in the industry.
- Coordinated with the Building Advocacy subprogram to strengthen the process by which market actors contribute input to the codes and standards improvement process and minimize compliance issues created by the language of the standards. Coordination includes webinar collaborations discussing code users and compliance tasks, CASE topic reviews, and attendance at and collaboration in stakeholder meetings. This coordination will continue during 2017.
- Continued updating CEA residential and nonresidential examinations for 2016 Standards. As part of this effort, the team revisited and updated the exam blueprint, criteria, and candidate skill set descriptions.
- Worked to implement the Master Builder Program which assists builders in implementing new high-performance walls and high-performance attic insulation techniques.

2. <u>Title 20 Appliance Standards Compliance Improvement</u>

The Title 20 Appliance Standards Compliance Improvement team completed the following activities in 2016, which was the first full year of Title 20 compliance support activities:

- Coordinated with the Energy Commission to refine and finalize a 2016 outreach plan.
- Completed the launch of twelve Energy Code Ace on-demand video modules (an effort that began in 2015) to support Title 20 compliance improvement.

- Developed a 60-minute online self-study course, available through the Energy Code Ace website, on the Water-Energy Nexus.
- Hosted and recorded "Test, Certify and Comply," an online event focusing on the high-efficacy residential lighting requirements in Joint Appendix 8 of Title 24, Part 6.[24]
- Developed Title 20-related fact sheets documenting requirements for the equipment and Title 20 certification processes.
- Added a Title 20 Appliance Standards document to the 2016 Reference Ace tool, allowing users easy reference to performance requirements so as to ensure that specified equipment is compliant with the Standards.
- Completed the following Title 20-related outreach activities:
    - Examined methods to begin outreach to manufacturers with regard to certification of appliances at the time when standards are adopted.
    - Developed outreach plans for plumbing fixtures and fittings and for residential lighting products.
    - Initiated relationships for potential future collaboration with local water utilities, the California Building Standards Commission, and the California Department of Housing & Community Development.
- In collaboration with CEC, initiated monthly analysis of Title 20 hotline calls to determine whether resources are addressing market needs.
- Disseminated Title 20 compliance tools and information (including Energy Code Ace information) at conferences and events.
- Added Title 20 web resources:
    - "Title 20 On-Demand Videos"[25] page views totaled approximately 0.1% (272) of all page views (268,379). For context, Energy Code Ace homepage page

[24] This topic pertains to both Title 20 and Title 24, Part 6.
[25] Title 20 on Demand Videos are available at: **http://energycodeace.com/content/title-20-training.**

views constituted 34% of the 268,379 total page views in 2016.

- Title 20 documents (e.g., fact sheets, FAQs, handouts) totaled approximately 4% (3,992) of all file views (100,762). For context, the fact sheet title "What's New: 2016 Residential Code" was downloaded most often (8,392 times) in 2016.

- Collaborated with the Advocacy team to prepare for new rulemakings and support recent adoptions.
- Worked with the CEC to develop the Voluntary California Quality Light-Emitting Diode (LED) Lamp Specification 3.0, and to align the voluntary program requirements with this lamp specification.

Continued work for 2017 that started in 2016 includes:

- Preparing for the effective date for LED replacement lamp standards (A-lamps, small diameter, portable luminaires), and
- Conducting assessment for small battery chargers (SBCs) via interviews with retailers, importers, and manufacturers.

D. Reach Codes Subprogram

In addition to mandatory minimum-level codes, the C&S program supports the development and implementation of "Reach Codes" that may be adopted by local jurisdictions or agencies as ordinances that exceed statewide Title24 minimum energy efficiency requirements for new buildings, additions, or alterations. The Reach Codes Subprogram provides technical support to local governments that wish to adopt these types of ordinances (and that may also wish to adopt residential or commercial energy conservation ordinances for existing buildings), including:

- Research and analysis for establishing performance levels and cost-effectiveness relative to Title 24 by climate zone
- Drafting of model ordinance templates for regional consistency, and

- Assistance with completing and expediting the application process required for approval by the CEC.

The subprogram also monitors and/or participates in a wide range of activities or proceedings that have direct or indirect impacts on California regulations. This includes, but is not limited to:

- ASHRAE[26] code development
- Voluntary standards such as green building codes, and
- Ratings organizations such as the Cool Roof Rating Council (CRRC), National Fenestration Rating Council (NFRC), Collaborative for High Performance Schools (CHPS), and the United States Green Building Council (USGBC).

Additionally, the subprogram intervenes in Energy Star® and other voluntary activities to shape future regulations and support coordination with voluntary programs.

1. **Subprogram Highlights**
   - Supported the City of Santa Monica in the adoption of an ordinance requiring all new nonresidential buildings to comply with CALGreen Tier 1 requirements, and, for the first time, requiring all new low-rise residential buildings to comply with ZNE requirements.
   - Commenced development of a Reach Code Toolkit Website to assist cities and jurisdictions that are interested in adopting reach codes. The website will serve as a database of reach code resources the subprogram has developed. Types of resources include:
     - Summary documents, developed in response to requests from Local Government staff to facilitate internal discussions with others who may be less familiar with the specifics of Reach Codes
     - Model ordinance and model resolution language, and
     - Reach code cost-effectiveness analysis reports.
   - Created several technical resources for local jurisdictions' use, including:

[26] Formerly known as the American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

- Nonresidential Outdoor Lighting Cost-Effectiveness Study
- Cool Roof Cost-Effectiveness Study
- Plug-In Electric Vehicles Infrastructure, and
- 2016 CALGreen Cost-Effectiveness Study for Low-Rise Residential New Construction.

E. Planning and Coordination Subprogram

The Planning and Coordination subprogram works with the CEC, the CPUC, the Emerging Technologies Program (ETP), the Workforce Education and Training (WE&T) Program, and SCE's rebate and other voluntary programs to conduct strategic planning in support of CLTEESP policy goals, including Zero Net Energy (ZNE) goals for new construction. As part of expanded outreach and communications efforts, the subprogram maintains a codes and standards collaborative forum and continues to facilitate the statewide Compliance Improvement Advisory Group (CIAG). In addition, the subprogram maintains regular contact with state and federal code-setting agencies to minimize duplication of efforts and coordinate activities.

1. Subprogram Highlights

- Continued to plan and coordinate codes and standards advocacy activities with external stakeholders, including state and federal code development bodies, other utilities, RENs, energy efficiency advocacy groups, and other industry stakeholders.
- Continued to plan and coordinate codes and standards advocacy activities with internal stakeholders, including EE incentive programs, ETP, EM&V, and WE&T.
- Completed the first phase of the development of a "compliance software roadmap" document for future short-term and long-term building energy simulation (BES) activities related to compliance. The roadmap will assess current and future BES software needs and explore solutions that would address those needs. Began planning also to establish a project steering committee as the primary venue to discuss software ownership and maintenance structure, software development priorities, compliance registries, and training needs, and to identify

how code compliance calculations can be aligned with analysis of integrated designs or otherwise "above-code" designs.

- Began to increase focus on ZNE-preparedness, with emphasis on supporting the residential new construction industry to meet 2020 ZNE policy goals and the 2019 Title 24 requirements.
- Continued to increase coordination with internal transmission & distribution (T&D) organizations to facilitate ZNE.

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 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 be used to achieve any of the subprogram objectives, and this list is not comprehensive.

A. Technology Assessments Subprogram

1. 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. TAs may use data from different sources 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 the data necessary for EE

incentive programs to construct a Work Paper for each measure, estimating energy and demand savings over the life of the measure.

2. Strategies Implemented in 2016

In 2016, the SCE Technology Assessment Subprogram implemented the following strategies:

- Collaborated with IOU and non-IOU partners and scanned 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.
- Actively engaged the various EE Programs and other program stakeholders.
- Transferred TA results to EE programs stakeholders and the California Technical Forum (CalTF), with technology measures successfully transferring to deemed rebates as well as 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 quarterly meetings of the Emerging Technologies Coordinating Council (ETCC)[27] on various topics for commercial buildings, agricultural and residential sector buildings, and data centers.
- Supported market-ready technologies with an ET Forum focused on agricultural technology.
- 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.

[27] For more information, go to the ETCC website, available at **http://www.etcc-ca.com/.**

B. Technology Development Support Subprogram

1. 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.

Several ETP activities support technology developers, primarily Technology Resource Innovation Outreach (TRIO) symposia and round tables:

- TRIO symposia are intended to educate multiple technology developers on the requirements that IOUs must comply with in considering new technologies for inclusion in IOU programs, and
- TRIO round tables, targeted to smaller audiences, have focused on cost -effectiveness, energy management systems, and ET assessments.

TRIO provides support and networking for EE and DR entrepreneurs, investors, research institutions, and universities. TRIO goals include:

- Providing participants the necessary perspective and tools to work with IOUs, and
- Introducing new EE measures, ultimately, to the marketplace.

2. Strategies Implemented in 2016

In 2016, 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 and innovators from universities and other research institutions.
- Collaborated with the ETCC and IOUs on various program-related activities. Continued on-going business relationships with investors who were interested in funding cost-effective EE technologies.
- Hosted a TRIO symposium and a TRIO roundtable with ETCC.
- Held a public meeting with the California Energy Commission (CEC) Electric Program Investment Charge (EPIC) and Public Interest Energy Research (PIER).

C. Technology Introduction Support Subprogram

1. 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 California Long Term Energy Efficiency Strategic Plan (CLTEESP) Zero Net Energy (ZNE) goals. D&S introduces 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.
- TCCT Market and behavioral studies are designed to perform targeted research on customer behavior, decision-making, and market behavior to gain a qualitative

and quantitative understanding of customer perceptions, customer acceptance of new measures, and market readiness and potential for new measures.

- 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 2016

In 2016, 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.
- 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 1 of the pilot has produced interesting ZNE demonstration projects, and Round 2 is currently underway. ET is the lead on the field demonstrations portion of the pilot projects with K-12 schools and community colleges.
- Scanned, screened, and prioritized a wide variety of sources, coordinating closely with EE Programs, for measures suitable for TIS projects.
- Conducted 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. Other Notable ET Program Activities in 2016

- In consultation with the CAEECC, statewide ET Program leadership, and other program stakeholders, produced the Crosscutting – Emerging Technologies chapter of SCE's EE Programs Business Plan.
- Initiated ET Summit planning for spring of 2017. The Summit, which typically attracts 500+ attendees, will be hosted by SoCalGas.[28]
- Continued to enhance ETCC collaboration activities and leveraged the expertise of ETCC Advisory Council members on two strategic topics related to Commercial ZNE Building and Leveraging Meter Data.
- Enhanced ETCC Quarterly meetings, which focus on strategic technology issues, and continue to attract robust participation from a diverse stakeholder group.

[28] For more information on the ET Summit, see the website available at **www.ETSummit.com.**

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 other IOUs. The Program includes three Subprograms: WE&T Centergies, WE&T Connections, and WE&T Strategic Planning and Implementation.

In 2016, the WE&T Program continued to consider and implement enhancements in order 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 primary areas:

- Expanding the WE&T Program's reach.
- Evolving the WE&T Program to address customer, market, and industry needs.
- Collaborating with industry and stakeholders to deliver WE&T programs through core education and trades training providers.

Following is an overview of the 2016 program highlights, by subprogram:

A. WE&T Centergies Subprogram

1. Program Description

Offerings in this 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 2016, the Irwindale and Tulare Energy Education Centers ("Energy Centers") continued to align activities with the goals identified in the California Long Term Energy Efficiency Strategic Plan (CLTEESP). 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,[29] and statewide initiatives. This effort included significant internal collaboration with SCE's DSM Programs, as well as engagement with external EE program and service educators and with key stakeholders in a variety of trades who encourage participation in SCE's resource programs.

2. WE&T Centergies Strategies Implemented in 2016

In 2016, 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.
- Exploring new ways to engage relevant stakeholders through strategic partnerships.

Some highlighted efforts included:

- Centergies continued collaborating with relevant industry stakeholders and training organizations to expand the access and reach of IOU WE&T offerings, including the California Community College (CCC) Chancellor's Office, the Community Colleges Heating, Ventilating and Air Conditioning (HVAC) Collaborative, the Department of Apprenticeship Standards, local and regional labor unions, and contractors' associations. Some highlighted collaborations included:
    - Centergies hosted two Community College HVAC Collaborative meetings at the Energy Education Center, Irwindale.
    - Statewide IOU WE&T programs teams attended, presented, and discussed

[29] Don Vial Center, University of California at Berkeley, document is available at **http://laborcenter.berkeley.edu/pdf/2014/WET-Plan14.pdf**

collaboration opportunities at the Division of Apprenticeship Standards conference.

- To explore integration of IOU WE&T Program offerings, Centergies conducted multiple, targeted stakeholder engagement meetings with Local 39/501 Stationary Engineers, Southwest Carpenters Training Fund, United Associated Local 250/230, Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), and Sheet Metal Workers Local 206.
- Centergies represented the IOUs at the Western HVAC Performance Alliance (WHPA) Annual Conference in Pasadena, to promote strategic HVAC sector activities for workforce education and training and to provide feedback on the current and future state of WE&T and the HVAC industry.

3. Energy Education Centers Strategies Implemented in 2016

The Energy Centers:

- Supported the delivery of a two-day "Train the Trainer" seminar for the Southern California Carpenters, "Introduction to Enclosure Performance and Diagnostics," as part of the joint IOU and Carpenters Union collaboration. The session consisted of a total of ten classroom hours and four lab hours over the two days. The IOUs and the Carpenters Union have agreed to continue these Train the Trainer sessions as a continued partnership in 2017 so as to further leverage EE content, and will look for opportunities to enhance and expand efforts at low cost or no cost.
- 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 the National Comfort Institute (NCI). Efforts 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.

- 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.
- 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.
- Trained over 4,500 contractors and technicians in 2016, through 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 an average 30% increase in knowledge as measured by pre- and post-training tests.
- Implemented the "It's About Q" program throughout SCE's service territory through a continued partnership with HVAC Redu (an online, on-demand HVAC contractor and technician installation and maintenance training organization). 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. Some key performance metrics for the Commercial Quality Maintenance (CQM) Technicians Training are:
    - 102 technicians trained in Commercial Quality Maintenance, with an average post-test score increase of 24%, and
    - 211 NATE Core exams delivered, with a pass rate of over 90%.
- Continued the development and 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 133 certifications for workshops in the following areas:

- 57 Systems Certifications
- 51 Acceptance Technician Certifications, and
- 25 Acceptance Technician (Employer) Company Certifications.

- Delivered, by partnering with the Codes & Standards Program, over 100 workshops and seminars on Title 24, building energy codes, lighting, residential and nonresidential standards, and energy code software to over 2,000 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 trades professionals.
- Continued to deliver the Mobile Integrated Building Energy Science Training Program (MI-BEST) in 2016, 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.

Two other Energy Center-related efforts of note in 2016 include:

- SCE led an effort by the statewide IOU WE&T teams to enhance customer satisfaction surveys, integrating recommendations from the 2013-2014 Statewide WE&T Program Theory and Logic Model Update study.[30] The team worked with SCE's EM&V staff and the other IOUs to finalize a new survey for 2016, which was approved for delivery in the 3rd Quarter of 2016. The purpose of the

[30] 2013-2014 Statewide WE&T Program Theory and Logic Model Update study is available at **http://www.calmac.org/publications/2013-2014_WET_PTLM_and_Critical_Data_Gap_Assessment.pdf.**

enhanced survey, which was implemented at both Energy Centers on November 1, 2016, is to capture customer data and feedback to better inform training development and delivery, and respond to evolving customer training needs.

- 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, that fundamentally changes the way these operators make purchasing decisions. The Centers also work to train culinary students and their teachers through programs in high schools, community colleges, and universities. Coordinated efforts between SCE's FTC and Emerging Technologies teams in conducting 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.
- In 2016, SCE's Tool Lending Library loaned nearly 250 unique energy measurement and building performance evaluation tools through over 120 individual transactions with homeowners, business owners, and contractors throughout SCE's service territory.

4. 2016 Energy Education Centers Performance

Deliverable	Tulare	Irwindale	Total
Seminars	165	332	**497**
Total Energy Efficiency attendance	4,014	8,493	**12,507**
Total on-location seminars	27	62	**89**
Tool Loan Transactions	122	N/A	**122**
Energy Efficiency consultations or equipment demonstrations	67	126	**193**

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 2016

In 2016, SCE implemented the following strategies for the WE&T Connections Subprogram:

- Spurred by input from recent studies and recommendations, and to build on the strengths and lessons learned, the IOUs put in motion a full revamp of program offerings to ensure the best programs are in place going forward.
- Through an open RFP process, the statewide WE&T Connections team issued three contracts for the K-8, 9-12, and Post-Secondary programs. Program implementation began in 2016, with enhancements including standardized offerings across the state, increased cost-effectiveness, increased numbers of

teachers and students, expansion of participating schools, and increased in-kind staff resources.

- Curriculum offerings in all WE&T Connections programs were enhanced to integrate EE, DR, distributed generation (DG), and green career awareness. Additionally, the K-12 curriculum was updated to correlate with the California Department of Education's content standards, as well as the Next Generation Science Standards.

3. <u>Connections Subprogram Highlights</u>

- The K-8 program was successful 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 6,389 students were reached throughout SCE's service territory. Of the 65 schools that participated in the program, 54 were Title 1 schools.

- The 9-12 program launched statewide in the fall of 2016. This program focused on developing new relationships and cultivating existing relationships with teachers and schools to identify projects and develop instructional plans for implementation in the 2016-2017 school year. Some of the program's highlights include:
  - Development of a project-based learning two-course series that fulfills the California Career Technical Education standards for the Energy, Environment & Utilities sector (Introduction to Green Technology & Advanced Green Technology), and
  - Collaboration with the John Muir Charter Schools network to implement the Solar Certificate program, which includes curriculum, instructional planning,

teacher training, and direct instructional support for teachers.

A total of 360 students were reached throughout SCE's service territory. Of the four schools that participated in the program, two were Title 1 schools.

- The Post-Secondary program hired 12 interns across Community College, 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. The program spent a significant amount of effort in getting college campuses and faculty to agree to, and sign off on, program efforts that would require resources including financial commitments from the campuses. However, given this challenge, three of the five campuses targeted for the 2016-2017 school year were secured.
- The Community Language Efficiency Outreach (CLEO) program reached out, in Chinese, Vietnamese, Korean, and Spanish, to SCE's non-English speaking customers through EE seminars at local venues and by hosting booths at community events. A total of 16 seminars were conducted, and 62 booths were hosted, reaching over 13,000 customers.
- The Mobile Energy Unit program continued its presence throughout SCE's service territory, attending 125 events while educating customers on residential EE tips, programs, and rebates. Throughout the year, the program reached over 21,000 people, and collected 146 completed CARE Program applications and 154 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 assist in the

development of a comprehensive approach to IOU WE&T program design and implementation.

2. Strategies Implemented in 2016

SCE continued to prioritize and refine existing program activities by considering recommendations and findings from the 2011-2012 Needs Assessment,[31] the 2014 Guidance Plan document[32] (mentioned in Section IX.A.1., above), and 7other 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 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. As a result, with CPUC support, the WE&T team re-envisioned the Taskforce meetings and in 2015 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

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[31] Produced by the Don Vial Center, University of California at Berkeley. document is available at **http://laborcenter.berkeley.edu/pdf/2014/WET-Plan14.pdf**

[32] "Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities." Document is available at **http://laborcenter.berkeley.edu/pdf/2014/WET-Plan14.pdf**

input, including breakout sessions where stakeholders could delve into high-value topics that could inform and enhance the WE&T program.

In 2016 these efforts were sustained and the Stakeholder Engagement Forum was leveraged for the California Energy Efficiency Coordinating Committee (CAEECC) and Business Plan process; the responses have been productive with specific feedback received.

4. Collaborations with the Community Colleges and the State University System

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, current activities, potential issues, and future opportunities beyond 2016.

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

1. Program Description

On May 10, 2012, the California Public Utilities Commission ("Commission") issued Decision D.12-05-015, in which it described Energy Upgrade California as "a statewide umbrella brand for energy information and encouraging demand-side management actions." [33]

D.12-05-015 also stated that messages that are within the umbrella brand "should not be limited to energy efficiency, and should also include generalized energy education and awareness, such as information related to demand response, dynamic rate options, enabling technologies, climate change impacts, the Energy Savings Assistance Program, distributed generation investment, smart grid upgrades, and any other general impacts of energy use for individuals or for the state as a whole." [34]

On December 27, 2013, the Commission issued D.13-12-038 establishing the SW ME&O program for the 2014-2015 cycle and adopted a "governance structure that, while leaving the details of running the statewide marketing campaign to the Center for Sustainable Energy (CSE), also provides for strong oversight by the Commission and the CEC, while also allowing the utilities and others to provide collaborative input and advice." [35]

D.13-12-038 identified the responsibilities of the IOUs and the Southern California Regional Energy Network (SoCalREN), which are to:

- Provide information to CSE and the marketing firm in a timely manner.
- Participate in the EM&V roadmap for marketing.
- Coordinate with CSE on local and statewide marketing activities.
- Raise any issues with the semi-annual marketing plans proposed by CSE.

[33] D.12-05-015, at 13.
[34] *Id.* at 300.
[35] D.13-12-038, at 73.

On July 28, 2015, the Commission issued D.15-08-033 authorizing 2016 bridge funding to enable CSE to continue to implement the SW ME&O program in the same manner, and under the same governance structure, as authorized in D.13-12-038.

On October 26, 2015, the Commission issued a scoping memo to begin a third phase of the proceeding to consider issues relating to the funding and implementation of the SW ME&O campaign (that is, of "Energy Upgrade California"), after the bridge funding approved in D.15-08-033 expires at the end of 2016. As required in D.16-03-029 on March 17, 2016, the Commission authorized issuance of a Request for Proposal (RFP) to select the statewide administrator 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 Commission issued Decision 16-09-020, approving the selection of a new statewide implementer for the 2017-2019 SW ME&O Program and setting annual budget allocations. D.16-09-020 also:

- Clarified that the budget allocation 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 ME&O Strategic Roadmap and Annual Joint Consumer Action Plan for Statewide ME&O.

In compliance with D.16-09-020, PG&E filed Advice Letter 3770-G/4939-E of the executed contract with DDB San Francisco as the new statewide ME&O implementer. The effective date of contract is from October 1, 2016 until September 30, 2019. Also in compliance with D.16-09-020, on December 15, 2016, SCE filed Advice Letter AL 3508-E-A for approval of its October 1, 2016 through September 30, 2017 SW ME&O budget.

2. Strategies Implemented in 2016

Consistent with its approach in 2015 and regulatory decisions, CSE developed and filed integrated communications plans to define strategies, objectives, target audiences, channels, tactics, and budget in 2016. CSE's 2016 integrated communications plans included the following topics:

- Help California Stay Golden – Play Your Part
- Cool California Challenge
- California Climate Credit
- Standby Energy / Plug Load
- Lighting
- Energy Efficiency/Appliances
- Home Upgrade
- Weather Prep
- Drought: Energy and Water
- Home Automation
- Demand Response
- Time Varying Rates
- Electric Vehicle
- Demand Generation, and
- Zero Net Energy.

The IOUs and Regional Energy Networks (RENs) consistently coordinated and collaborated with CSE 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 items including the integrated communications plans, creative concepts for Finance and other programs, and channel tactics such as the retail engagement and community-based outreach strategies. The IOUs and RENs also worked collaboratively with CSE to develop a process for funneling leads to the IOUs and RENs for programs such as the Energy Upgrade California "Home Upgrade" Program.

XI. Statewide Integrated Demand Side Management (SW IDSM) Program

1. Program Description

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

An IOU and Energy Division Statewide IDSM Task Force was formed in 2010 and has continued, as the Statewide IDSM Program, coordinating activities that promote the strategies identified in the Strategic Plan and the eight integration directives described in the EE decision, as follows:

1. Development of proposed methods to measure cost-effectiveness for integrated projects and programs, including quantification and attribution methods, that include GHG and water reduction benefits and potential long-term economic and electricity / gas hedging benefits.

2. Development of proposed measurement and evaluation protocols for IDSM programs and projects.

3. Review of IDSM-enabling emerging technologies for potential inclusion in integrated programs.

4. Development of cross-utility, standardized, integrated audit tools, using PG&E's developed audit tools as a starting point.

5. Tracking integration pilot programs to estimate energy savings and document lessons learned, and development of standard integration best practices that can be applied to all IOU programs. These best practices are (or will be) based on evaluating the pilot programs and the results of additional integration-promoting activities (namely, EM&V and cost-benefit results).

6. Development of regular reports on progress and of recommendations to the CPUC.

7. Organization and oversight of 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 DR marketing programs approved as Category 9 programs are coordinated with EE integrated marketing efforts.

The IOUs have developed well-established processes ensuring delivery of integrated messaging via marketing, education, and outreach to residential and business customers. Delivery of IDSM marketing has become more than just promotion of multiple programs within specific tactics like collateral or websites. It is now a key component in the planning phases of integrated marketing, education and outreach to help provide the right solutions to the right customer at the right time.

2. Strategies Implemented in 2016

In 2016, the Task Force implemented the following strategies for the SW IDSM Program:

- Continued to keep additional efforts toward developing integrated cost-effectiveness and EM&V methodologies "on hold," pending direction from the Energy Division.
- 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.
- Compiled and submitted four (4) joint quarterly reports for 2016, each including an Executive Summary section, to provide Energy Division staff with updates on the eight (8) IDSM directives. All quarterly reports were uploaded and available for viewing on the California Energy Efficiency Statistics Data Portal (EE Stats).
- Joined in regular coordination phone calls to discuss lessons learned and to continue to ensure alignment across the state.

In addition to the meetings described above, the IOUs have coordinated on a statewide basis in several areas:

- The statewide Online Integrated Audits team continues to coordinate the delivery of a consistent online integrated audit tool that works with each IOU interface and educates customers on managing their energy use costs.
- The Onsite Integrated Audits team continues to collaborate in sharing approaches and best practices. The IOUs continue to offer onsite integrated audits to small, medium, and large customers.

SCE's SW IDSM efforts included the following activities:

- Gathered SCE-specific data for, and collaborated with internal and external stakeholders in preparing, the joint quarterly and annual reports to the CPUC Energy Division mentioned above.
- Identified and collaborated upon items with the other IOUs to further pursue alignment of IDSM objectives.
- Met with IOU subject matter experts on EE and DR, who provided information about their areas of focus.
- Provided liaison services for integration efforts among SCE departments, sectors, teams, and groups, and informed the SW taskforce of progress being made.
- Continued coordinating integrated marketing campaigns and collateral throughout the year in SCE's service territory for residential and large, medium, and small business customers.
- The staff of SCE's income-qualified Energy Savings Assistance (ESA) Program continued to collaborate with EE program staff members assigned to the Middle Income Direct Install (MIDI), Energy Upgrade California (EUC), and Multifamily EE Rebate (MFEER) Programs to streamline program processes. This included continuing to refer customers who exceed ESA Program income guidelines to the MIDI Program.
- Provided thorough training about IDSM objectives throughout the year. The cornerstone of the training program was hosting a "summit" with staff members from SCE's DSM Operations teams and with field representatives from SCE's

Commercial and Industrial Services departments. The training covered many aspects of the best ways to communicate the benefits of energy efficiency, demand response, and sustainability to customers.

- The IDSM Program assisted the Statewide Marketing, Education & Outreach (SW ME&O) Program in continuing to share cross-cutting measure information and offering IDSM comprehensive solutions to customers in all market segments, and SCE developed best practices for the integration of EE, DR, and DG program measures into advanced training curricula presented by SCE's Energy Education Centers.
- The IDSM Program assisted the Emerging Technologies Program with conducting and reviewing studies on multiple products and services that could serve the policy objectives of IDSM in the future, including zero net energy (ZNE) homes, demonstration of zero net energy integration with the grid, and deep retrofits with low-income multifamily housing.

XII. Local Government and Institutional & Government Partnerships[36]

A. Energy Leader Partnership Program

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

In 2016, 134 cities and 10 counties participated in SCE's Local Government Partnerships, including six new partners. Seven 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 one partner advancing to Platinum Level, three to Gold Level, and three 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 have also used Strategic Plan funds to install Utility Energy Management Systems, develop benchmarking plans, and leverage a revolving EE fund to further promote energy efficiency.

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

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

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 2016

In 2016, SCE implemented the following strategies for the Partnership Strategic Support Subprogram:

- The annual SEEC Forum had a total of 320 participants, the highest level of participation since the forum first started in 2010, from 90 unique cities, counties, and regional agencies, representing over 88% of the state's population.
- Twenty-three (23) new participants joined the Beacon Program, totaling 100 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 83 Spotlight Awards and 8 full Beacon Awards.
- Twenty-six (26) new emissions management calculators were developed for the ClearPath software tool. ClearPath was selected as the official inventory tool for the Compact of Mayors and now supports one-click reporting of summary data to the Carbon Climate Registry[37] (CCR) reporting platform. A total of 128 Community and 53 Government Operations inventories were created in 2016, including over a thousand individual calculations, and 83 new U.S. cities are now using ClearPath. In addition, users created 135 business-as-usual forecasts and 29 action plan scenarios in the tool, collectively logging over 1,000 hours of use in the tool during 2016.

[37] *See* Carbon Climate Registry's website, available at **http://carbonn.org.**

- The Best Practices Coordinator shared 731 best practices, funding opportunities, news highlights, events, and resources with over 900 local government staff and other key stakeholders.

- SEEC also developed the following resources in 2016:

  - State of Local Climate Action: California 2016
  - Zero Net Energy Hub for Local Governments
  - Weatherization Guide for Local Governments
  - 2016 Climate and Energy Legislative Updates
  - SEEC Calendar, and
  - Currents Quarterly Newsletter.

2. City of Beaumont Energy Leader Partnership

Per the City of Beaumont's request, the Partnership was terminated and removed from 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 comprising the City of Long Beach and SCE. Partnership activities in 2016 focused on implementing EE in municipal facilities specifically 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 2016

In 2016, SCE implemented the following strategies for the City of Long Beach Energy Leader Partnership:

- The City began executing citywide street-lighting projects to install and/or replace over 25,000 street lights, financed through the On-Bill Financing (OBF) Program.

- The Port of Long Beach successfully launched the "Rebate Match" program in which the Port will pay up to 50% of EE rebates to its tenants.

- The City increased participation in the partnership in 2016 with 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 three facilities.
- The Partnership promoted SCE's core EE programs and other energy offerings at two 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 an application to SCE to prepare the Energy Action Plan, which will roll into their Sustainable City Action Plan.

4. City of Redlands Energy Leader Partnership

(a) Program Description

The City of Redlands Energy Leader Partnership is a local government partnership comprising the City of Redlands and SCE. It provides marketing, education, and outreach, coordinates with core utility EE and DR programs, and implements strategic planning activities.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the City of Redlands Energy Leader Partnership:

- SCE, SoCalGas, and the City held monthly meetings to discuss core objectives, Energy Leader program goals, milestones for EE projects, and community outreach.

- The City maintained its status on the Silver Tier level in the Energy Leader Model.
- The City completed various pump retrofit and VFD projects and explored the opportunity for a Water Infrastructure System Efficiency (WISE) project at its waste water treatment plant.
- The City completed an LED street light project (Phase 2).
- The Partnership promoted the Energy Savings Assistance (ESA) and Middle Income Direct Install (MIDI) Programs on the City's community catalogue as part of a core program coordination effort.
- The Partnership posted summer readiness EE tips on the City's Facebook page as part of its community outreach.

In early 2016, SCE proposed to transition the City of Redlands into the San Bernardino Regional Energy Partnership (SBREP),[38] joining the other city members of the San Bernardino Council of Governments (SBCOG). After further discussion with the city, SoCalGas, and the ED, SCE submitted an Advice Letter in January, 2017, which was approved on February 3, 2017.

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;
- Identifies, scopes, and implements projects;

[38] See also **Section XIII.A.22**, San Bernardino Regional Energy Partnership, below.

- 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 2016, SCE proposed to transition the city of Santa Ana into a regional partnership joining other cities in Orange County. After further discussion with the city, SoCalGas, and the ED, SCE submitted an Advice Letter in January, 2017, which was approved on February 3, 2017.[39]

(b) <u>Strategies Implemented in 2016</u>

In 2016, 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 2016 and maintaining a focus on EE and sustainability.
- Completed four energy efficiency projects with energy savings of 264,000 kWh and 20 kW.
- Continued to promote IDSM audits and DR programs to the City during team meetings.
- Regular communications were sent to the City for education and training opportunities, along with encouragement to attend the annual Statewide Energy Efficiency Collaborative forum.
- Conducted multiple Community Outreach events to promote EE through partnership information booths, brochures, and SCE's Mobile Energy Unit.

[39] 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

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 ***Section 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, and South Gate, as well as a new Partner, the City of Lakewood, which joined the Partnership in 2016. 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 2016

In 2016, 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 submitted applications to SCE to prepare their Energy Action Plans.
- The Partnership completed several EE projects in 2016, including street lighting projects in the Cities of Lakewood and Norwalk.
- The City of Lakewood submitted applications for EE projects for their water department.
- 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: Annual Azalea Festival, Family Day at the Park, Summer Concerts for the City of Norwalk, and the Annual Children Day and Street Fair for the City of Downey.

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 will remain part of the CEP until their official transfer to the West Side Partnership, anticipated to occur in July, 2017.

(b) Strategies Implemented in 2016

In 2016, 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 2016 and maintaining a focus on EE and sustainability.
- Completed 21 EE projects totaling 2.4M kWh and 179 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 Community Outreach events and one Team Leader Meeting in 2016.
- 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. 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) <u>Strategies Implemented in 2016</u>

In 2016, SCE implemented the following strategies for the Eastern Sierra Energy Leader Partnership:

- The Partnership and SCE's Program Manager participated with an outreach float in the Town of Mammoth Lakes' community Independence Day parade
- The partnership continued hosting monthly calls with local government staff, IOU PM's, and Account Managers to help identify opportunities for IDSM projects and outreach.
- The partnership met with local organizations, including the Chamber of Commerce and the Mammoth Lakes Contractors Association, to further promote EE opportunities in the region.
- The Partnership, working with the Mammoth Community Water District and the Mammoth Unified School District, completed the tenth year of the LivingWise water conservation / energy efficiency course for 100 sixth-grade earth science students at Mammoth Middle School.
- The City of Bishop completed two projects in February, 2016: an EE pump incentive retrofit and solar commissioning.
- The Partnership participated in the City of Bishop Christmas parade with an LED outreach float.
- The Partnership participated in the Statewide Energy Efficiency Forum in Riverside, California in 2016.
- The Partnership participated in three web-based workshops and webinars. These workshops were designed to educate participants on the benefits of benchmarking and were open to all local governments.
- The partnership completed four projects in 2016, and submitted an additional 15 projects expected to be completed in 2017, for an aggregate energy savings of 101,000 kWh and 20 kW.

10. Desert Cities Energy Leader Partnership

(a) Program Description

The Desert Cities Energy Leader Partnership is a local government partnership comprised of 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 2016

In 2016, 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 their fire stations in order to identify EE opportunities.
- The Partnership assisted the Agua Caliente Tribe in completing their parking lot LED lighting projects.
- The Partnership assisted the City of Blythe in completing pump-related projects at its Waste Water Treatment Plant by utilizing the Water Infrastructure System Efficiency (WISE) Program.
- 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 2016

In 2016, SCE implemented the following strategies for the Kern County Energy Leader Partnership:

- Began discussions to encourage the County of Kern to apply for SCE's strategic planning funds to pursue benchmarking for the cities that hold SCE service accounts.
- Met with the cities of McFarland, Tehachapi, California City, and Ridgecrest 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 Forum in Riverside, 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 include 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 in January, 2017, which was approved on February 3, 2017, and the cities of Irvine and Santa Ana will join the OC Cities Partnership in 2017.

(b) Strategies Implemented in 2016

In 2016, 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 2016 and maintaining a focus on EE and sustainability.
- Completed 16 EE projects, with energy savings totaling 993,000 kWh and 30 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 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 2016

In 2016, 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.
- 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 business, and participation in a lamp exchange event.
- Hosted its annual kick-off event focusing on the utilities' EE incentive application process.
- Hosted six 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.
- Held EE Award recognition ceremonies for the Cities of Claremont and Pomona, which were the largest contributors to the program's success by completing well streetlights retrofits.

14. San Joaquin Valley Energy Leader Partnership

(a) Program Description

The San Joaquin Valley Energy Leader Partnership is a partnership between SCE, SoCalGas, PG&E, the San Joaquin Valley Clean Energy Organization (SJVCEO), the Cities of Hanford, Lindsay, Porterville, Tulare, Visalia, and Woodlake, and King and Tulare Counties. The Partnership identifies opportunities for improving EE in municipal and county facilities, offers customized incentives for municipal and county projects, and conducts EE training and outreach events to drive participation in SCE's core programs.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the San Joaquin Valley Energy Leader Partnership:

- Met nine times to discuss and promote Energy Leader program goals, milestones for marketing, trainings available at SCE's Energy Education Center in Tulare, and EE projects.

- Participated in the Statewide Energy Efficiency Forum in Riverside, California.
- Promoted SCE programs such as Direct Install, Energy Upgrade California, Demand Response, and On-Bill Financing.
- Presented community engagement opportunities at Partnership meetings and Energy Awareness Month community outreach events throughout the Partnership territory.
- Distributed EE and DR literature, including but not limited to:
    - "Edison Be Wise" coloring books (with the SCE Owl)
    - "Power Down During Peak Demand" sticker handouts
    - CARE Program brochures
    - Let's Talk Energy booklets
    - Summer Discount Plan brochures
    - Energy Savings Assistance Program brochures, and
    - Summer Breeze Energy Saving booklets.
- Continued Strategic Plan activities for cities, including continued maintenance on 4,000 accounts in Energy Star® Portfolio Manager, a three-IOU Energy Action Plan (EAP) for Kings County, an EAP for the city of Hanford, and updates to EAPs for the cities of Lindsay and Woodlake.
- Obtained alternative funding from the Clean Energy Financing Advisory Committee, the California Energy Commission, and the Wonderful Corporation to supplement funding from the IOUs.
- Participated in regular meetings with other partnership implementers, including five Peer to Peer meetings, seven San Joaquin Valley Energy Watch Collaborative (SJVEWC) meetings, and ten (10) Rural Hard-to-Reach (RHTR) monthly member calls (as co-chair).

In addition:

- The Executive Director of Partnership member SJVCEO served as the CAEECC Public Sector committee co-chair.
- Two Partner cities completed seven EE retrofits:

- The City of Hanford completed six projects yielding energy savings of approximately 747,559 kWh.
- The City of Porterville completed one project yielding energy savings of approximately 26,870 kWh.

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 2016

In 2016, 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 15 energy efficiency projects totaling 604K kWh and 87 kW.
- Supported all 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 and refrigerator-shaped inserts promoting SCE's Appliance Recycling Program in 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 Carpentaria. 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) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the South Santa Barbara County Energy Efficiency Partnership:

- Completed four projects totaling 294,253 kWh and 58.94 kW.
- Began five new projects in 2016, with aggregate energy savings totaling 217,196 kWh and 16 kW, which are expected to be completed in 2017.

- 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 30,000 attendees
  - The Central Coast Sustainability Summit at UCSB in November
  - The Local Government Commission Statewide Energy Efficiency Collaborative (SEEC) meeting in June
  - A presentation by internationally acclaimed architect and thought leader Ed Mazria in May, focused on "Zero Net Carbon" goals through energy efficiency in the building sector, and
  - A SCEEP Awards Luncheon, held in April, to honor SCEEP partners for their contributions toward increasing energy efficiency in Santa Barbara County's southern region.
- Continued to partner with the countywide Green Business program,[40] a voluntary certification program that SCEEP supports. More than 84 businesses have been certified through the program. Using modeling tools from the statewide Green Business Network, the partnership compiled data from current certified businesses and calculated total on-bill energy savings of 1.15 million kWh per year.
- Hosted a training session for the municipal partners on Title24 (building codes) in May of 2016, and organized two informational sessions on battery storage technologies for partners during Energy Manager Meetings.

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 to date towards implementing a targeted program of energy savings for public agencies throughout the Ventura County region. VCREA supports efforts for ten (10) cities: Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port

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

Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and Ventura, and the County of 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 2016

In 2016, SCE implemented the following strategies for the Ventura County Energy Leader Partnership:

- Added an 11th jurisdiction, the City of Simi Valley, to the partnership.
- Continued to meet monthly to discuss Energy Leader program goals, marketing milestones, training, and EE projects.
- Completed seven projects leveraged with utility incentives to public agencies, with energy savings totaling 1.8 million kWh.
- Offered over 40 community events and presentations, six LED Holiday Light Exchange events, and four trainings including benchmarking, HVAC, Solar, 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, 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.

In addition, VCREA was honored by the Institute for Local Government (ILG) as Beacon Program "Champion of the Year," and the Partner Cities received 26 Beacon Spotlight Awards.

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 participating cities.

(b) Strategies Implemented in 2016

In 2016, 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, such as Astronomy Night in the City of Wildomar, Fall Festival in the City of Menifee, and Winter Wonderland in the City of Eastvale.
- Partnered with the Regional Energy Network to help the City of Murrieta identify a streetlight retrofit project and other outdoor light projects.
- 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 Cities of Hemet, Temecula, and Murrieta. The promotion sent direct-mail letters about both programs, co-branded with the Partner cities' logos, to approximately 57,000 customers.

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

(a) Program Description

The High Desert Regional Partnership sets EE goals, generates measurable, verifiable energy savings through identification of specific EE projects, and conducts community outreach activities. Projects are referred to SCE's core programs and can be residential or nonresidential, including small businesses, larger commercial and industrial businesses, municipal and other government agencies, and non-profit organizations. Low-income and DR program referrals are also included. The program offers customized incentives for municipal projects and conducts EE training and outreach events to drive participation in SCE's core programs.

The Partnership includes the Cities of Adelanto, Barstow, Hesperia, and Victorville, and the Town of Apple Valley, and is implemented by the San Joaquin Clean Energy Organization.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the High Desert Regional Partnership:

- Held monthly meetings (also including the implementer, San Joaquin Clean Energy Organization), to discuss Energy Leader Program goals, marketing milestones, training, and EE projects.
- Held information sessions for local businesses in the Cities of Apple Valley and Hesperia, which (along with the Town of Apple Valley) participated in SCE's Direct Install program at various city- and town-owned facilities.

- Participated in multiple community events emphasizing EE through brochures and the use of SCE's Mobile Energy Unit, including the City of Adelanto Conversation Fair.
- Provided technical assistance and guidance on SCE program offerings, incentives, and financing options to help the Partner cities develop energy retrofit projects.
- Participated in the Statewide Energy Efficiency Forum in Riverside, California.
- Completed seven projects with energy savings totaling 198,412 kWh and 51.11 kW.
- Began twelve new projects in 2016, with aggregate energy savings totaling 426,304 kWh and 32 kW, which are expected to be completed in 2017.

20. West Side Energy Leader Partnership

(a) Program Description

The West Side Energy Leader Partnership is a local government partnership comprising the City of Culver City, SCE, and 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.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the West Side 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 working relationships that were essential in successfully reaching all program goals in 2016 and maintaining a focus on EE and sustainability.

- Completed seven EE projects with energy savings totaling 593,000 kWh and 35 kW.
- Continued to promote IDSM audits and DR programs to the City during team meetings.
- Sent 12 Partnership e-blasts to local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative forum.
- Conducted two Community Outreach events and one Team Leader Meeting.
- Regularly produced "city accomplishments" documents, customized for the 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, SoCalGas, and 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 2016

In 2016, 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 2016 and maintaining a focus on EE and sustainability.
- Completed seven energy efficiency projects with energy savings totaling 46,000 kWh and 7 kW.
- Continued to promote IDSM audits and DR programs to Partner cities during team meetings.
- Sent 12 Partnership e-blasts local energy champions for partner education, training opportunities, and encouragement to attend the annual Statewide Energy Efficiency Collaborative 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, SoCal Gas, and the San Bernardino Council of Governments,[41] with 13 member

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

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 2016

In 2016, 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 Holiday Light Exchange and EE Starter Kit events in December, 2016.
- Coordinated SCE's Direct Install Program with the Town of Yucca Valley, the City of Twenty-nine Palms, and the City of Fontana.
- Continued to identify potential projects by providing technical assistance for energy audits at the top three highest energy-consuming facilities in the Partner cities.
- Placed informational kiosks at each City facility in order to promote SCE's core programs.
- Developed an SBREP informational brochure for general outreach purposes.
- Initiated the application process 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 Pilot Program

(a) Program Description

The Local Government Strategic Planning Pilot 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 pilot 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 Long Term EE Strategic Plan.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the Partnership Strategic Support Subprogram:

- Completed all 47 of the remaining Strategic Plan Pilot programs (developed through the Phase 1, 2, and 3 solicitations issued in 2010 and 2013) by the end of 2016. These 47 pilots produced a total of 2,549 deliverables, including benchmarking policies, energy action plans, reach codes, and EE revolving funds.
- Completed Best Practices Reports for both 2010-2012 and 2013-2015. Best Practices Reports have been published on the Best Practices Coordinator's website.[42]
- 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. The first revised Semi-Annual Report was submitted in October, 2016.
- Worked in collaboration with Commission staff to develop future processes for Strategic Plan activities, utilizing key lessons from the Strategic Plan Pilots and

[42] The reports are on the Coordinator's website and available at **http://eecoordinator.info/coordinator-utility-reports/.**

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

As noted above, the County partnerships described in this section were authorized as part of the Institutional Partnership Program and 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 Long Term Energy Efficiency Strategic Plan (CLTEESP). 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. 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 2016

(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:

- With ISD, completed two Savings By Design projects using the Whole Building Approach.
- Completed nine lighting projects for the Metropolitan Department of Transportation.
- Completed 14 lighting projects and one chiller replacement project for the Public Works department.
- Completed installing 18 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 LA County Enterprise Energy Management Information System (EEMIS) 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 the LA County Enterprise Energy Management Information System (EEMIS), with the support of SCE's IT Division, 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 aims 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.

(b) Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the County of Riverside Energy Efficiency Partnership:

(i) Retrofits:

The County did not have any energy efficiency projects.

(ii) Core Program Coordination:

The Partnership continued to integrate the Savings By Design (SBD) Program into the Partnership.

(iii) Education and Outreach:

The County of Riverside was selected to make a presentation on Partnership Best Practices at the 7th Annual Statewide Energy Efficiency Forum, which was held in Riverside.

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 2016

In 2016, 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 available on SCE resources and other core program offerings.
- Provided technical support through internal 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 Facilities Management, Special Districts, Sheriff, Information Technology, Library, and Fire.
- Met quarterly with the County's project managers to get project updates and helped them identify EE opportunities.

(ii) Municipal Retrofits:

- Completed three pump replacement projects with the Special District department.
- 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.
- Used the Nonresidential Direct Install Program to retrofit lighting and control systems in 15 facilities.

(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.

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,[43] 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 2016, 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) <u>Strategies Implemented in 2016</u>

In 2016, SCE implemented the following strategies for the Southern California Regional Energy Network Fiscal Oversight Partnership:

- Established 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)[44] 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.
- On a monthly basis, reviewed and processed for payment program implementer invoices forwarded through SoCalREN for work performed in 2015-2016, 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.
- Worked on Phase II of Secure Transfer Protocol for transmitting completed EUC project data (single-family and multifamily) to the utilities.

[43] D.15-10-028, Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics.
[44] SoCalREC should not be confused with SoCalREN.

- 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 2016.
- 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.
- Coordinated program messaging to reduce customer confusion where co-branding opportunities exist when implementing SCE's One Voice Program, to ensure messaging is in alignment with SCE's requirements.

C. 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 available 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 approved statewide incentive funding of $15.1M for the 2013-2016 program cycle was used to maintain the program's processes and framework, established in previous program cycles, for sustainable, comprehensive energy management at campuses served by California's four Investor-Owned Utilities.

The program has a hierarchical management structure to ensure successful implementation. The Management Team meets monthly 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:

- 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
- Evaluation of new project technologies for suitability in the Community College market, and
- Planning and participation in CCC conferences and regional Campus Forums.

(b) <u>Strategies Implemented in 2016</u>

(i) Administrative Successes:

- Held monthly Management Team and quarterly Executive Team meetings to discuss overall program status, initiatives, and policy issues.
- Held periodic Outreach Team meetings with representatives from all IOUs, the Chancellor's Office, and CCC districts to plan, evaluate, and implement Outreach activities.
- Actively tracked project savings data in a database tracking tool, and continued to create regular reports to show the overall status of the program and forecasts relative to goals.
- Held follow-up meetings at campuses to discuss long-term energy goals and develop a series of projects to achieve these goals.
- Participated and presented information in five (5) statewide community college conferences.

(ii) Retrofit Projects:

- 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).[45]
- Worked closely with the Chancellor's Office to develop a process to integrate the resources and infrastructure of the Partnership into the CCC Prop 39 program and to successfully implement hundreds of Prop 39 projects across the State.

[45] The California Clean Energy Jobs Act, available at **www.energy.ca.gov/efficiency/proposition39**.

- Implemented projects with FY 2014-2015, 2015-2016, and 2016-2017 Prop 39 funding and built a project pipeline for 2017 and 2018 Partnership projects.
- Continued SCE's support of the CCC Prop 39 Program, which began in early 2013 and included hands-on services from account representatives 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.

(iii) Education and Outreach:

- Participated in five CCC conferences, including the California Higher Education Sustainability Conference, Community Colleges Facilities Coalition conferences, and Community College League of California conferences, with diverse audiences of facilities managers, business officers, administration personnel, and board members.
- Hosted Campus Forums to provide regional informational workshops targeted towards campus facilities and energy managers.
- Held campus meetings with Facilities and Operations & Maintenance (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.

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) <u>Strategies Implemented in 2016</u>

(i) Administrative Successes:

- Met with the new CDCR Chief of Energy and Sustainability to explain the purpose of the Partnership and the program's policies and procedures.
- Completed a competitive solicitation for a new Program Administration Management (PAM) third-party engineering firm contracted to provide administrative and technical support for the Partnership.
- Held monthly Management Team and quarterly Executive Team meetings to discuss overall program status, initiatives, and policy issues.
- Supported the CDCR's initiative to renew provider pool contracts through a new ESCO solicitation to be completed in 2017. Upon conclusion of the solicitation, the Partnership will deliver a training module to the new provider pool regarding EE program processes, procedures, and project eligibility.

(ii) Retrofit Projects:

- Completed one large comprehensive retrofit project in SCE's service territory.
- Continues to support CDCR's ongoing projects by providing guidance to ESCOs on the best technologies for maximizing benefits to both CDCR and the IOUs.
- Discussed (and has continued to discuss) plans for 2017 to perform a round of outreach and project identification through the IOUs' engineering resources.

(iii) Education and Outreach:

- Provided Title 24 (T24) training to facility staff to help them understand program eligibility requirements.

- Provided On-Bill Financing (OBF) Program training to the existing ESCO pool of CDCR vendors to ensure that participating OBF and vendor personnel understand what is expected of them.

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. The continuing Department of Finance Energy $Mart Program (revived in 2013) provides financing for EE projects. This level of engagement and establishment of infrastructure are important in achieving both immediate EE savings and long-term sustainability.

(b) Strategies Implemented in 2016

(i) Administrative Successes:

- The Partnership continued to support the project management group under new direction from the Deputy Director of the Office of Sustainability.
- The Partnership implemented a best practice in awarding a Program Administration Management (PAM) contract to an engineering firm to help coordinate the IOUs' efforts to support, track, and report on State of California agencies' projects.
- The Partnership continues to support the DGS Statewide Energy Retrofit program by providing (a) technical assistance to influence projects in development and maximize energy savings and (b) incentive funds to help offset the projects' cost.
- 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 its task of planning and implementing all aspects of the Governor's Executive Order B-18-12 and the Green Building Action Plan.
- The Partnership continues to work with the State's Judicial Branch by providing technical guidance for the development of their Request for Proposals (RFP) for projects we previously identified for the Judicial Council of California (JCC).

(ii) Retrofit Projects:

- The Partnership completed a total of six (6) lighting projects in 2016. Of these, two (2) were the result of integrating the Direct Install Program into the Partnership in 2016.
- The JCC, with the support of the IOUs, started its solicitation process for lighting, HVAC, and RCx projects. The IOUs will continue supporting the technology and program eligibility aspects of this effort.

(iii) Education and Outreach:

- The Partnership team continues to work with the Department of General Services' Sustainability Task Force and the Sustainable Building Working Group (SBWG) to support the Governor's Executive Order B-18-12 by offering outreach and education support to the 36 State agencies.
- The State of California's Office of Planning and Research (OPR) has decided to discontinue the Energy Policy Action Committee, which provided additional outreach to and reported on all of the State's agencies during the past few years. It was determined that the SBWG, with its more purposeful work, performs sufficient outreach to support Executive Order B-18-12.

31. UC / CSU Energy Efficiency Partnership

(a) Program Description

The UC / CSU Energy Efficiency Partnership is a unique statewide program that includes California's four Investor-Owned utilities, Pacific Gas and Electric (PG&E), Southern California Edison (SCE), Southern California Gas Company (SCG), and San Diego Gas and Electric (SDG&E), as well as the recently added 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 EE projects and providing training and education to support those projects. The Partnership consists of three main project types: retrofit, monitoring-based commissioning (MBCx), and new construction. Since its establishment in 2004, the Partnership has provided approximately 65 MW demand reduction and delivers approximately 467 million kWh/yr and 25 million therms/yr in energy savings.

(b) Strategies Implemented in 2016

(i) Administrative Successes:

- With the assistance and input from of the University of California, SCE filed an Advice Letter regarding various High Opportunity Project or Programs (HOPPs), including the SCE Performance Based Retrofit Program (consistent with SB 350, AB 802, and AB 1150) to demonstrate measured savings against existing conditions, a pay-for-performance incentive structure, and a comprehensive whole-building approach to building efficiency.
- The Partnership closely coordinated with the partners via Executive Team meetings quarterly and Management Team meetings every three weeks.
- A Partnership Data Dashboard was developed, allowing partners to easily access and export current and historical Partnership project data. This new dashboard also contains a variety of interactive graphs, and hosts reports measuring the progress of the Partnership.

(ii) Retrofit Projects:

- Completed 19 retrofit, MBCx, and New Construction projects at three UC

campuses and five CSU campuses in SCE's service territory.

- Continued working with UC and CSU to develop a comprehensive pool of EE projects, and to integrate new construction projects into the pool, by identifying eligible projects and working with individual campus architects and designers to help facilitate the application and approval processes.
- Continued to implement an enhanced project tracking and scheduling approach, giving UC campuses more direct control and responsibility for project tracking.

(iii) Education and Outreach:

- The Training and Education Team hosted a Campus Forum, held in April at CSU San Marcos, that consisted of IOU presentations on NEM 2.0 and Non-Utility Supply Guidance, as well as campus discussions surrounding these topics.
- An Energy Managers' Meeting, hosted by the Partnership as a post-conference workshop of the California Higher Education Sustainability Conference, provided an interactive session for UC and CSU energy managers to share best practices, lessons learned, and other practical advice.
- A new Training and Education scholarship program was implemented, granting $3,500 in funding to each UC and CSU campus to attend the energy efficiency related training(s) of their choice, as approved by the Partnership.
- A new Best Practice Awards case studies approach was implemented for the 2015 and 2016 Best Practice Awards, employing a highlight video and short web-based write-ups.
- The Training and Education Team held four workshops in northern and southern California, addressing Zero Net Energy on university campuses.

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 process 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 will provide complete programs, overseeing all program activities from marketing and recruitment to installation and verification of EE measures, demand response (DR) measures, and incentive payment documentation. As part of verification, 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 respective 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 SoCalGas, provides installation of energy-efficient products in mobile home dwellings and the common areas of mobile home parks at no charge.

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

2. Strategies Implemented in 2016

In 2016, SCE implemented the following strategies for the CMHP subprogram:

- Introduced Tier 2 Smart Power Strips into the program along with HVAC measures such as quality maintenance and efficient fan controllers, improving program cost-effectiveness.
- Continued collaboration with SCE Local Public Affairs and Partnership Programs to leverage relationships with city councils and mobile home communities.
- Expanded promotion and marketing for its water-energy conservation effort with SoCalGas and Irvine Ranch Water District. Through this effort, mobile home customers received water conservation measures, such as toilets, shower heads, faucet aerators, and some landscaping measures, as add-ons to the existing products and services offered under CMHP.

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 marketing tool kit, which has traditionally focused on saving energy and money.

The program incentivizes business customers who 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. It assists customers to complete a high-quality GHG inventory that captures any energy and carbon reductions already made, and identifies new inefficiencies found 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 2016

In 2016, SCE implemented the following strategies for the Cool Planet subprogram:

- Organized an awards ceremony to acknowledge organizations' efforts to manage GHG reduction. The event was well-received by all the attendees, including the award recipients and local and state officials.
- Continued to educate SCE staff and customers about climate policies, mitigation strategies, and best practices through presentations and distributed collateral.
- Awarded Cool Planet benefits to Local Governments that attained Partnership Gold, Silver, or Platinum Tier status.
- Continued to see increased participation in demand response (DR) and Registry membership. The Registry added DR program participation to its eligibility requirements to encourage customers who do not qualify under EE eligibility requirements to enroll as Registry members.
- Added 3 new memberships to the program and renewed 14 members through marketing and outreach efforts.
- Developed Water-Energy GHG Guidelines for SCE business customers in response to their requests for a resource to help them accurately determine the GHGs associated with energy embedded in water.
- The Water-Energy GHG was recognized by White House Water Saving Programs for the Water Day Summit in 2016.

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.

The Healthcare Innovative Technology EE Program (HITEEP), a retrofit subprogram described in SCE's 2013-2014 Healthcare PIP filing, serves small and mid-size healthcare customers. The program primarily targets medical office buildings and acute care facilities with low involvement by the Office of Statewide Health Planning and Development (OSHPD), and offers customized measure solutions, prescribed measure solutions, and DR solutions for these facilities' energy management needs. HITEEP provides complete audit and project identification services, in addition to incentives and fixed-unit-price measures (with or without a customer copayment) to qualified customers.

2. Strategies Implemented in 2016

- 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.
- Engaged industry professionals, contractors, and other local industry trade groups.
- Developed a process to influence customers' decision-making process, especially where project incentives can tip the scale for the customer to commit to a capital-intensive energy retrofit.
- Updated application, benchmarking, and project processing processes, in conjunction with the energy division of Willdan Energy Solutions, to streamline projects.

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.

2. Strategies Implemented in 2016

- Continued outreach through SCE account executives to identify EE measures and support services through site assessments and on-site performance measurement.
- Developed a process to influence customers' decision-making process, especially where project incentives can tip the scale for the customer to commit to a capital-intensive energy retrofit.
- Updated application, benchmarking, and project processing processes, in conjunction with the energy division of Willdan Energy Solutions, to streamline projects.
- Provided a wide range of support services to data centers, including energy assessments, engineering analysis, project implementation consulting, financial incentives, and coordination of other demand reduction activities (with SCE) to comprehensively address the needs of the targeted facilities.
- Was highly involved in both local and international industry data center trade groups, and leveraged industry contacts with data center companies in other utility service territories that also operate data centers in SCE's service territory.

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 an integrated approach to EE that is specifically tailored to the hotel and motel market segment, including spas and resorts, within SCE's service territory. The Program also seeks out DR opportunities in this market segment.

2. Strategies Implemented in 2016

- 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 supplemental technical consultations through the implementer with respect to energy-saving equipment and control strategies.
- Developed a process to influence customers' decision-making process, especially where project incentives can tip the scale for the customer to commit to a capital-intensive energy retrofit.
- Updated application, benchmarking, and project processing processes, in conjunction with the energy division of Willdan Energy Solutions, to streamline projects.
- For select customers, provided turnkey support of EE measures.
- Continued to explore and implement new, innovative technologies to help lodging customers.

F. Food & Kindred Products Program

1. Program Description

The Food & Kindred Products Program is designed to deliver energy savings and demand reduction by offering qualifying SCE customers a variety of services: facility audits, design and engineering support, implementation support, vendor review, measurement and verification, and incentives for the installation of EE measures. The program targets facility owners, ranging from small to large companies and representing a broad spectrum of food producers, such as producers of bread, breakfast cereals, and sugar, as well as cold storage providers.

2. Strategies Implemented in 2016

- 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 policy implications affecting their customers to assist them with potential project engagement.
- Provided technical resources to and participated in weekly and monthly stakeholder meetings with the California Energy Efficiency Industrial Council. This input from stakeholders informed CEEIC engagement with the CPUC and its Energy Division.
- Participated in California Statewide Working Groups, representing SCE for the Track 1 (Preponderance of Evidence and Baselines) and Track 2 (Custom Process and Industry Standard Practice) Working Groups.
- Engaged with many local vendors and contracted with new consultants that serve the Central Valley.
- Participated a variety of industry trade shows and association events, such as Con Edison Summit, World Ag Expo, Southern California Green Facilities Expo, and SCE Water Conferences (at the Irwindale and Tulare Energy Education Centers).
- Continued to expand expertise in refrigeration (by engaging subcontractors with subject matter expertise) to better assist the industry in achieving deep energy savings, facilitated with ongoing education and training.
- Implemented a Locational Targeted Offering (LTO) pilot to assist in providing grid relief to the capacity-restrained Preferred Resource Pilot (PRP) area.

G. Primary and Fabricated Metals Program

1. Program Description

The Primary and Fabricated Metals Program delivers energy savings and demand reduction by offering qualifying SCE customers a variety of services: facility audits, design and engineering support, implementation support, vendor review, measurement

and verification, and incentives for the installation of EE measures. The program targets its customers, which include the many facilities in the primary and fabricated metals and industrial gas[46] manufacturing industries in SCE's service territory.

2. <u>Strategies Implemented in 2016</u>

- Engaged with industry subject matter experts to review EE opportunities, including baselines, variable speed drives, pumping soft starts, etc.
- 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 policy implications affecting their customers to assist them with potential project engagement.
- Provided technical resources to, and participated in weekly and monthly stakeholder meetings with, the California Energy Efficiency Industrial Council. This input from stakeholders informed CEEIC engagement with the CPUC and its Energy Division.
- Participated in the California Technical Forum to support Statewide Working Groups:
  - Review and approve selected measures (12 total)
  - Facilitate statewide coordination of IOU workpapers
  - Continue development of the Electronic Technical Reference Manual (eTRM) Workplan, and
  - Develop technical position paper(s) related to eTRM.
- Participated in California Statewide Working Groups, representing SCE for the Track 1 (Preponderance of Evidence and Baselines) and Track 2 (Custom Process and Industry Standard Practice) Working Groups.

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

- Engaged with many local vendors and contracted with new consultants that serve the Central Valley.
- Participated a variety of industry trade shows and association events, such as Con Edison Summit, California Metals Conference, and Southern California Green Facilities Expo.
- 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. This was facilitated with 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 EE 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 2016

- 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.
- Expanded integration of Strategic Energy Management (SEM) strategies to develop additional, innovative new EE projects.

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 2016

- 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 industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- 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.

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 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 2016

- 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 industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- 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.

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 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 2016

- 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 industrial end-users, vendors, trade associations, and utility personnel to overcome market barriers and maximize savings.
- 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.

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. Key to the value of the program is its penetration of a difficult, hard-to-reach market sector to encourage the installation of EE measures.

2. Strategies Implemented in 2016

- 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.

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 provides comprehensive energy audits and financial projections from in-house engineering staff, and draws upon the internal and external funding sources of the ESCO model, in a market where lack of capital has traditionally been a significant barrier to the upgrading of capital equipment. This allows for extended repayment periods, positive cash flows, and low-to-zero net up-front cost. The program also provides:

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

2. Strategies Implemented in 2016

- Continued outreach to help customers identify eligible EE measures and to provide support services through site assessments and on-site performance measurement.

- Worked with new lighting and energy contractors to develop additional channels for marketing the program.
- 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.

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 upon request.

2. Strategies Implemented in 2016

- Continued outreach to schools and universities through SCE account representatives.
- Built relationships with school district 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.
- 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, resulting in the addition of sixteen new school districts.

- Provided information to schools interested in the Title 24 Exemption offered by the Division of the State Architect (DSA).[47]
- Distributed program information to SCE account representatives to help them increase customer referrals to the program.
- Outreached to local resource and referral agencies and provided brochures to distribute to schools.
- 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

1. Program Description

The intent of the statewide IDEEA365 Program is to find, fund, and foster the best energy efficiency (EE) or integrated demand side management (IDSM) delivery approaches available in the marketplace and discovered through outreach events. The IDEEA365 Program is designed to:

- Encourage innovative concepts
- Reduce and eliminate market barriers
- Achieve energy savings and demand reduction for both the short-term — the years in which they 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 California Public Utilities Commission (CPUC).

2. 2016 Highlights

- SCE received a record nine abstract submittals in 2016. This success was due to a program change in 2015 to allow year-round submission.
- Of those abstracts, one named **Pump Up** is currently under review for a pilot in mid-2017. It is similar to the Water Infrastructure and System Efficiency (WISE)

[47] DSA is part of the California Department of General Services.

pilot program, which focuses on energy savings from SCE agricultural customers and from water agencies.

- The **WISE** Program achieves energy savings by optimizing water and wastewater systems belonging to agencies, special districts, cities, and other bodies. The program:
  - Benchmarks each participating customer's pumps
  - Evaluates the pumping system for improvements and for the state of integrated water-energy resource management
  - Develops project feasibility studies
  - Performs measurement and verification services as necessary, and
  - Provides technical implementation assistance to drive projects to installation.

  In addition, WISE provides Water-Energy Nexus (WEN) Education and Outreach opportunities to selected water and wastewater system operators. It successfully enrolled projects in 2016 while leveraging other funding sources to deliver additional commitments. The WISE pilot has shown promising results to date, and has transitioned into SCE's core third-party offering in 2017.

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

  The MICE Program closes the gap by providing customers with detailed, in-depth energy assessments which identify EE opportunities, accurately estimate potential savings and costs, and provide a path to implementation. The program has successfully enrolled and completed numerous projects and has transitioned into SCE`s core third party offering in 2017.

P. Enhanced Retrocommissioning Program

1. Program Description

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

2. Strategies Implemented in 2016

- 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.

XIV. Water-Energy Nexus (WEN) Activity

1. Water-Energy Nexus: Background

The California Long Term Energy Efficiency Strategic Plan ("Strategic Plan") predates the Water-Energy Nexus (WEN) Proceeding (R.13-12-011) and does not include reference to water-energy savings strategies or market transformational approaches for water. However, in response to California's historic drought, the Governor issued Executive Order B-29-15 mandating statewide urban water reductions of 25%. The California Public Utilities Commission (CPUC) supports the Governor's Order through the Water-Energy Nexus, which aims to enable further coordination of energy efficiency (EE) and water use efficiency. As these initiatives develop, it is important to recognize that a significant amount of data and understanding still needs to be developed in order to define best practices for joint programming efforts. 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.

2. Strategies Implemented in 2016:

SCE currently 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 Pilot (aka "Communities for Conservation"), significantly coordinating and leveraging customer data to provide a "one-stop shop" for customers and utilities alike. More results will be expected in 2017.

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. Currently, a number of SCE's programs are coordinated with SoCalGas, which partners 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 more complete offerings to our customers, as outlined in SCE's recently submitted EE Business Plan.[48]

In support of coordination across agencies, the Water-Energy Nexus proceeding is seeking to integrate its embedded Energy Calculator Tool with the Commission's approved Cost-Effectiveness Tool. The goal is to better streamline, integrate, and evaluate multi-utility offerings. As requested by the WEN proceeding, an action plan on how to best integrate the tools is under development and is likely to be completed by the end of 2017. Integrating the tools and leveraging our experience with partnerships for multi-utility offerings, including water agencies, will provide guidance on assessing multi-utility offerings across SCE's Demand Side Management (DSM) portfolios. SCE will utilize its lessons learned from programs and pilots (like Residential Direct Install and 10-10-10+), and utilize further developments from the WEN proceeding, to help plan matters such as the measure mix and scale of the future partnerships. Furthermore, these enhancements will enable third parties to propose approaches that include multi-utility offerings.

3. <u>Outreach and Education:</u>

(a) <u>SCE's Annual Water Conference.</u>

This conference, in its 24th year, includes events such as a General Session that provides perspectives on a wide range of relevant topics: statewide and local issues, updates on the WEN proceeding, WEN calculator use, and customer-specific case studies where best practices and successes are shared. The latest information on EE, demand response (DR), and distributed generation (DG) technologies and programs are also discussed focusing on the unique needs of water districts and their customers.

[48] Southern California Edison Company's Amended Energy Efficiency Rolling Portfolio Business Plan for 2018-2025 (U338-E), available at **https://media.wix.com/ugd/0c9650_bc928ec1f1aa47c99d3e266c8b1591a2.pdf.**

In addition to the General Session content, the conference also features a series of classes allowing attendees to take a deeper dive into specific topics such as pumping plant efficiency, renewable energy, drought mitigation, water loss intervention strategies, and more.[49] Many of the classes offer Continuing Education Units to help attendees meet various certification requirements. SCE also provided a training course on use of the WEN calculator to increase water agencies' understanding of:

- The CPUC's perspective on embedded energy and its relationship to water savings, and
- SCE's program opportunities.

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

This pilot was approved by the CPUC 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 water utility's existing AMI infrastructure pilot to provide feedback to the end user. The goal of this pilot is threefold:

1. Take usage data from both of these AMI infrastructures, combined on an 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 ramping up and we expect useful results in late 2017 or 2018.

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

This pilot began January 9, 2015 through a Memorandum of Understanding (MOU) that outlined this unique partnership, in which SCE and its customer, IRWD, committed to collaborate on identifying, evaluating, and (potentially) co-developing preferred energy resources in south Orange County to support local and regional electric reliability. This is the first partnership between a California electric utility and its customer that is

[49] Information about the 24th Annual Water Conference is available at **http://scewaterconference.com/irwindale/**.**http://scewaterconference.com/irwindale/.**

dedicated to seeking innovative opportunities for customers to support electric reliability. The SCE-IRWD PRP Partnership Program is comprehensive, encompassing the full scope of preferred resources as defined by SCE and the CPUC. Now in its second year, SCE has worked with IRWD to accomplish numerous including:

- SCE is helping 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.
- SCE and IRWD will also explore 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.
- The scope of preferred energy resources includes a wide variety of demand-side strategies, including but not limited to changes to IRWD's water, wastewater, and biosolids systems and facilities, where such changes could have a beneficial impact on electric reliability.
- The scope of preferred energy resources will also consider new and emerging technologies related to energy, water, wastewater, biosolids, and/or controls systems — any type of technology that could affect IRWD's electric requirements — with the aim of creating new offerings to water / wastewater utilities.

(d) <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 2016 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 workpapers were reviewed for water savings. Deemed measures with the highest savings included showerheads, aerators, food service equipment, and clothes washers, which in total saved over 21 million gallons of potable water. That is equivalent to 40,000 – 55,000 kwh average annual embedded IOU kWh[50] according to the Water Energy Nexus calculator, depending on the hydrologic zone.[51] These measures were included in SCE's Plug Load and Appliances Program, Multifamily EE Rebate Program, Commercial Deemed Incentives Program, and Home Upgrade[52] (among others), as well as through Workforce Education & Training (WE&T) activities.

A similar process completed for customized projects required a deeper dive into projects that may have impacted water use and a comparative assessment of completed 2016 projects. Moving forward, SCE anticipates tracking more water-related data. Programs and measures that saw water savings in addition to energy savings include: Savings By Design, and Commercial, Industrial and Agriculture calculated programs, which in total consumed nearly 29 million gallons resulting in 17,000 – 38,000 embedded kWh.[53] Collectively, for both deemed and custom projects, these customers received $2.2 million of incentives and achieved over 16 million kWh in electric savings. Additionally, Codes and Standard's 2015 Case Study for water technologies, adopted in 2016, and saved 3,074 million gallons of water in 2016.

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50 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 the CPUC (D.16-12-047, OP 2-4, and available at **http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M171/K495/171495551.PDF**).

51 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/WorkArea/DownloadAsset.aspx?id=5360.**

52 Also known as Energy Upgrade California (EUC).

53 See footnote 50, above.

Appendix A

List of Acronyms and Abbreviations

List of Acronyms & Abbreviations

Acronym or Abbreviation	Explanation
9-12	High school grades
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
AGs	Associations of Governments
AIACC	American Institute of Architects, California Council
aka	also known as
ALCS	Advanced Lighting Control System(s)
AMI	Automated (or Advanced) Metering Infrastructure
ARP	Appliance Recycling Program
ARRA	American Recovery and Reinvestment Act [of 2009]
ASA	Appliance Standards Advocacy
ASHRAE	American Society of Heating, Refrigerating, & Air-Conditioning Engineers
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
C&S	Codes and Standards
CABEC	California Association of Building Energy Consultants
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
CALGreen	California Green Building Standards Code
CalPlug	California Plug-Load Center
CalSPREE	California Statewide Programs for Residential Energy Efficiency
CALTEESP	See **CLTEESP,** below
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

Acronym or Abbreviation	Explanation
CCC	California Community Colleges [System]
cCR	carbonn® 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
CEI	Continuous Energy Improvement
CEP	Community Energy Partnership
CET	Cost-Effectiveness Tool
CF-1R	Form number, State of California Residential Compliance forms (2013 T24)
CFL	Compact Fluorescent Lamp
CHPS	Collaborative for High Performance Schools
CIAG	Compliance Improvement Advisory Group
CLEO	Community Language Efficiency Outreach [Program]
CLTC	California Lighting Technology Center
CLTEESP	California Long Term Energy Efficiency Strategic Plan [*preferred acronym*]
CMHP	Comprehensive Manufactured Homes Program
CO_2	Carbon dioxide
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
CSU	California State University [System]
CUBE	Commercial Utility Building Efficiency
CVAG	Coachella Valley Association of Governments
CZ	Climate Zone
D&S	Demonstration and Showcase
DCEEP	Data Center Energy Efficiency Program
DCV	Demand Control Ventilation
DEER	Database for Energy Efficient Resources
DER	Distributed Energy Resources
DG	Distributed Generation
DGS	[California] Department of General Services
DI	(a) Direct Install [Program] (b) Direct implementation
DOE	U.S. Department of Energy

Acronym or Abbreviation	Explanation
DR	Demand Response
DS	See **D&S,** above
DSA	[California] Division of the State Architect (part of DGS)
DSM	Demand-Side Management
DVC	Don Vial Center
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
EDR	Energy Design Resources
EE	Energy Efficiency
EE+	Energy Efficiency Plus
EEAT	Energy Efficiency Online Audit Tool (aka Enhanced Energy Audit Tool)
EEC	Energy Education Center
EELTSP	[Energy Efficiency] Long Term Strategic Plan (see CLTEESP)
EEMIS	[LA 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
EPA	U.S. Environmental Protection Agency
EPIC	Electric Program Investment Charge
EPRI	Electric Power Research Institute
ESA	Energy Savings Assistance [Program]
ESCO	Energy Services Company
ESIS	Energy, Sustainability and Infrastructure Section (see CDCR)
ETCC	Emerging Technologies Coordinating Council
ETP	Emerging Technologies Program
eTRM	Electronic Technical Reference Manual
EUC	Energy Upgrade California
EUL	Effective (or Estimated or Expected) Useful Life
FAQ	Frequently Asked Questions
FERC	Federal Energy Regulatory Commission
FPCM	Facility Planning, Construction and Management [Division] (see CDCR)
FPSIE	Foundation for Pool and Spa Industry Education
FTC	(1) Federal Trade Commission; (2) Foodservice Technology Center
FY	Fiscal Year

Acronym or Abbreviation	Explanation
GBC	Green Building Council
GHG	Greenhouse Gas
GWh	Gigawatt-hours
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
HOPPS	High Opportunity Projects or Programs
HTR	Hard-to-Reach
HVAC	Heating, Ventilation and Air Conditioning
ICC	International Code Council
ICLEI	International Council for Local Environmental Initiatives (former name of Local Governments for Sustainability)
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
IT	Information Technology
JCC	Judicial Council of California
K-8, K-12	Kindergarten through 8th / 12th grade schools
KEDC	Kern Economic Development Corporation
KPI	Key Performance Indicator
kW	Kilowatts
kWh	Kilowatt-hours
LADWP	Los Angeles Department of Water & Power
LCR	(a) Local Capacity Requirements (b) Local Capacity Reliability
LED	Light-emitting diode
LEEP	Lodging EE Program
LG	Local Government
LGC	Local Government Commission
LGP	Local Government Partnership
LLR	Loan Loss Reserve

Acronym or Abbreviation	Explanation
LMT	Lighting Market Transformation [Program]
LPAs	Lighting Power Allowances
LTO	Locational Targeted Offering
LTSP (Long Term Strategic Plan)	See **CLTEESP,** above
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
NEM	Net Energy Metering
NFRC	National Fenestration Rating 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
PA	Program Administrator
PAM	Program Administration Management
PES	Pump Efficiency Services
PG&E	Pacific Gas & Electric Company
PIER	Public Interest Energy Research
PIP	Program Implementation Plan
PLA	Plug Load and Appliances [Program]
POS	Point of Sale
Prop 39	California Proposition 39, the California Clean Energy Jobs Act
PRP	Preferred Resources Pilot
PUC	(1) See **CPUC** (2) Public Utilities Code

Acronym or Abbreviation	Explanation
PV	PhotoVoltaic
QA	Quality Assurance
QC	Quality Control
QI	Quality Installation
QM	Quality Maintenance
RAD	Responsible Appliance Disposal
RCT	Randomized Control Trial
RCx	Retrocommissioning
REEL	Residential Energy Efficiency Loan [Program]
REN	Regional Energy Network
RFP	Request for Proposal
RHTR	Rural Hard-to-Reach
RP	Recommended Practice
RTU	Remote Terminal Unit
SB	Senate Bill
SBC	Small Battery Charger
SBCOG	San Bernardino Council of Governments[1]
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
SDG&E	San Diego Gas & Electric Company
SEEC	Statewide Energy Efficiency Collaborative
SEEP	Schools Energy Efficiency Program
SEM	Strategic Energy Management
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
SoCalGas	Southern California Gas Company (aka SCG)
SoCalREC	Southern California Regional Energy Center
SoCalREN	Southern California Regional Energy Network
SSO	Single Sign On

[1] Formerly San Bernardino Associated Governments or SANBAG.

Acronym or Abbreviation	Explanation
Strategic Plan	See **CLTEESP,** 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
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
VSD	Variable Speed Drive
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
WP	Work Paper
WRELP	Western Riverside Energy Leader Partnership
ZNE	Zero Net Energy

Appendix B

2016 Energy Efficiency Program Overview Pilot Program Target Updates

2016 Energy Efficiency Program Overview
Pilot Program Target Updates

The following narratives for the 2016 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.

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

A. Pilot Program Description

The Local Government Strategic Planning Pilots are designed to provide increased funding and support for city, county, and regional governments to pilot activities that directly support the local government Strategic Plan goals and strategies. These pilot 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 local government Strategic Plan.

B. 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 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.[1]

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

C. Description of Changes in Metrics Used and Reasons for the Change

N/A.

D. Program-Related or Economic Changes that Impact Metric Results

N/A.

II. Upstream Residential Heating, Ventilation and Air Conditioning (HVAC) Pilot Program

A. Pilot Program Description

The statewide Upstream Residential Heating, Ventilation and Air Conditioning (HVAC) Pilot Program offered incentives to upstream market actors, such as HVAC distributors, to stock and promote qualifying high-efficiency residential HVAC equipment. During the program, SCE provided incentives to these upstream market actors for the sale of high-efficiency residential HVAC systems, with measures covering air conditioning units and furnaces. Activity in 2015 resulted in exhaustion of funding allocated for the pilot.

The pilot activity demonstrated that, unlike Upstream Commercial HVAC Program distributors, the distributors in the residential HVAC market have little influence on the equipment choices of customers in the vast and diverse downstream market. Due to low cost-effectiveness, SCE did not continue offering the pilot in 2016. SCE will report to the CPUC after the other IOUs complete their pilots.

B. Target/Metrics: Program Progress and Performance Metrics

Program Performance Metrics	Progress
N/A	The 2015 program expended funding allocated for the Residential Upstream HVAC Pilot. Since this is a statewide pilot, SCE is waiting for the other IOUs to complete their pilot activity before submitting the joint pilot report to the CPUC.

C. Description of Changes in Metrics Used and Reasons for the Change

N/A.

D. Program-Related or Economic Changes that Impact Metric Results

N/A.

III. Sustainable Communities Pilot Program (Third Party), SCE-TP-19

A. Pilot Program Description

SCE's Sustainable Communities Program (SCP) is a non-resource program that provides design and technical assistance, training, and other professional resources to new construction projects, in order to advance the projects beyond Title 24 code requirements to achieve Zero Net Energy (ZNE). The program intervenes to incorporate sustainable and/or green building practices in:

- Large-scale master-planned projects, and/or
- Mixed-use projects that may include single-family and multifamily master-planned communities, office campuses, and retail space, and/or
- Unique, smaller-scale, Zero Net Energy (ZNE) projects.

SCP was designed to help the developers of these types of projects achieve energy savings beyond core program requirements and to incorporate sustainable building practices beyond energy efficiency. SCP also emphasizes sustainable development for community-scale projects and ZNE goals.

B. Target/Metrics: Program Progress and Performance Metrics

The Sustainable Communities Program included six (6) projects in 2016, which varied from large-scale infill to single-family ZNE homes. The program placed greater emphasis on assessment and outreach to multifamily builders, since permitting rates in the multifamily sector continued to climb, and continued to support the Proposition 39 Zero Net Energy Schools Statewide Pilot Program, though progress toward project development was very slow. SCE recognizes the need to increase emphasize of ZNE requirements to make progress toward California's Residential ZNE goals.

SCP showcased its results via speaking engagements, educational tools, and case studies. Examples of these marketing efforts include posting information online (at the Sustainable

Communities Program website[2]) and participating in two "green" conferences: the Los Angeles Metropolitan Water District (LAMWD) Conference and the Pacific Coast Builders Conference. SCP also hosted a Residential ZNE Workshop for builders, developers, and in-house energy experts.

Program Performance Metrics	Progress in 2016
Number of master-planned communities intervened in and with documented improvement in the qualitative nature of urban form, per the LEED for Neighborhood Development (LEED-ND) checklist.	Two (2) projects
Number of master-planned communities intervened in and with documented improvement in DSM performance, per Title 24.	Two (2) projects
Number of master-planned & zero net energy (ZNE) projects offered technical assistance and financial incentives.	Four (4) projects [3]
Number of new tools developed or existing tools calibrated to refine assumptions about non-code usage, such as plug load and occupant behavior.	Began review of CBEC-Res and CBEC-Comm for mixed use high rise. Scope of work will be transferred to Codes & Standards.
Number of ZNE products intervened in and with documented progress toward ZNE.	None in 2016.

C. Description of Changes in Metrics used and Reasons for the Change

N/A.

D. Program-Related or Economic Changes that Impact Metric Results

In 2016:

- It was proposed that the Southern California Gas Company assume statewide administration of the Residential New Construction program in 2018.
- The SCP Statewide IOU team began discussions for improving cost-effectiveness.

[2] Sustainable Communities Program website *available at* **https://www.sustainablecommunities.gov/.**
[3] The Sustainable Communities Program did not provide financial incentives to developers.

- The SCP included Codes & Standards and Emerging Technologies in Residential ZNE activities.
- Funding for the SCP was substantially reduced, resulting in reduced support for the builder-and-developer community.

Appendix C (Revised)

Technical Appendices to 2017 Annual Report

Section 1: Energy Savings

Table 1 [1]

A	B	C	D
Table 1. *Electricity and Natural Gas Savings and Demand Reduction (Gross)*			
Annual Results	**2016 Installed Savings**	**CPUC 2016 Adopted Goals (D.15-10-028)**	**% of Goals (2016)**
2016 Energy Savings (GWh) – Annual	***1,477***	***1,304***	***113%***
2016 Energy Savings (GWh) – Lifecycle	***15,328***	***N/A***	
2016 Natural Gas Savings (MMth) – Annual	-	-	
2016 Natural Gas Savings (MMth) – Lifecycle	-	-	
2016 Peak Demand savings (MW)	***286***	***267***	***107%***

[1] Savings data based upon authorized signature received date, which have been verified and approved by SCE.
[2] Includes savings associated with Energy Savings Assistance Program, Codes & Standards Program, and SoCalREN.

In 2016, the following programs and program strategies were successfully implemented and contributed greatly to the portfolio energy savings results:

A. Primary Lighting Program

In 2016, Primary Lighting surpassed its kWh and kW targets by 28 and 39 percent, respectively. The 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 goal of reducing the ratio of program dollars for CFLs by at least 5 percent compared to 2015. The reduction was 17 percent, whereas the 2015 ratio was 59 percent and the 2016 ratio was 42 percent. 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 2016 was more than 5.6 million.

Market Transformation activities included the addition of 202 new retailers and two new manufacturers to the program. In-store signage educated customers on LEDs and energy efficiency. The program increased incentives for and quantities of LED A-lamps equivalent in brightness to traditional 75 Watt and 100 Watt light bulbs, which helped mitigate market stagnation at the 40 Watt and 60 Watt-equivalent levels. The program added a new technology towards the end of 2016: Very High Efficiency CFLs, which at 80 lumens per Watt are more

[1] 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.

efficient than 79% of the LED models in the program. CFLs were chosen that would not impede LED market transformation but rather would fill a market gap for brightness levels much higher than any qualifying LED product.

B. Nonresidential HVAC Program

In 2016, the SCE Nonresidential HVAC Program experienced better-than-expected distributor participation in its Upstream HVAC Equipment Distributor Incentive subprogram as distributors continued to gain experience with upselling high-efficiency equipment. There was also a significant increase in contractors' participation in and familiarity with the HVAC Early Retirement subprogram, as their awareness and experience of the subprogram grew in its third year.

The HVAC Quality Maintenance (QM) subprogram continued to cost-effectively increase participation by reducing participation barriers, even though the program lowered incentive amounts. It also targeted large accounts and focused on promoting enhanced ventilation controls. Barriers to adopting Standard 180 Maintenance Agreements were addressed by streamlining data collection from participating contractors and encouraging them to communicate the value proposition of Standard 180 Maintenance to customers. The participating contractors also continued to adopt and promote advanced rooftop control technologies in their business models

C. Home Energy Advisor Program

In 2016, the Home Energy Advisor (HEA) Program focused on initiatives that helped the program exceed its energy savings goals. HEA was able to mail over 400,000 Home Energy Efficiency Surveys to residential customers, with a response rate of 7.9%. The surveys helped the program bring in over 7,000 MWh and 3.4 MW. HEA also continued its mailings of customized Home Energy Reports to customers; (1) Mailing Wave 2 and Wave 3 of the Reports were delivered to more than 230,000 customers and helped the program bring in over 18,000 MWh and over 4 MW, (2) Mailing Wave 4, which was new in 2016, reached more than 250,000 customers and brought in over 11,000 MWh and over 3 MW.

Altogether, the HEA program engaged over 800,000 customers and achieved energy savings of over 37,000 MWh and over 10 MW.

D. Home Energy Advisor (HEA) Program

In 2016 SCE's Savings By Design (SBD) team was very successful in 2016. The year culminated a nearly four-year period of diligence, managing customer projects from application to completed construction. 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	35,526,667 kWh	40,232,912 kWh	**112%**
kW	7,300 kW	8,366 kW	**113%**

Additional contributing factors to SCE's success were operational improvements, addition 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. Commercial Direct Install Program

In 2016, the Commercial Direct Install program achieved energy savings of 9,362 kW and 33,606,982 kWh. The success of the program was a result of continuing its successful marketing plans that promote collaboration and serving customers using a district approach, which allows for broad coverage by audit and construction teams in larger geographic areas. The program also implemented a new policy of accepting national store chains that meet program eligibility requirements as participants in the program, which drove up program activity. SCE's Account Managers' relationship with the national store chains helped bridge the gap between existing Commercial Direct Install contractors and the contacts from the national store chains. In addition, the program added LED High Bay / Low Bay measures with co-pays in the fourth quarter of 2016, again leading to increased program activity.

Section 2: Emission Reductions

Table 2 [2]

Table 2
Environmental Impacts (Gross)

Annual Results[2,3]	Annual tons of CO2 avoided	Lifecycle tons of CO2 avoided	Annual tons of NOx avoided	Lifecycle tons of NOx avoided	Annual tons of SOx avoided[1]	Lifecycle tons of SOx avoided[1]	Annual tons of PM10 avoided	Lifecycle tons of PM10 avoided
2016 Portfolio Targets [4]	**233,523**	**2,551,045**	**21**	**251**	**N/A**	**N/A**	**16**	**174**
SCE	329,629	3,072,019	43	394	N/A	N/A	23	211
2016 Total								

[1] The avoided SOX reductions are not calculated in the cost effectiveness tool (CET.) It was determined that none of the IOUs uses coal power on the margin and the energy efficiency savings have impact on the margin only.
[2] Environmental impacts do not include any results associated with Energy Savings Assistance and Codes & Standards Programs.
[3] All calculations based on gross reductions.
[4] SCE's Compliance Advice Letter 3149-E, filed February 10, 2015 and approved by the Commission on May 5, 2015 establishes SCE's electric emission reduction targets for the program year 2015.

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 2016 portfolio of EE programs. These results are shown in Table 2 above.

[2] 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.

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

1. The environmental benefits (annual and lifecycle 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 (CO_2) costs, increased by marginal energy losses for each time of use (TOU) period. E3 estimated the emissions avoided-cost streams by multiplying the costs per pollutant (on a yearly basis) by the emission rate (per hour of the year). The emissions costs vary by voltage level, hour, and year.

3. The NOx costs ($/MWh) are based on California offset prices generators must pay for NOx emissions, and the estimated emission rate of NOx at the implied heat rate of the market price. The NOx cost per MWh of energy saved at the customer site is increased by the incremental energy losses in each TOU period between the end use and the bulk system. In Period 1, when the forward market prices of electricity are based on NYMEX forward market prices, the assumption is that these prices already include the cost of NOx emissions, so this value is equal to zero in Period 1.

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

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

The environmental benefits utilized in the cost-effectiveness analysis of the programs included in this document are only applicable to EE program reporting. The factors utilized in the development of these environmental benefits were agreed upon specifically to reflect an appropriate and approximate value for the reduced energy savings due to EE programs. As such,

these environmental benefits should not be used in any other context and should also be reviewed for future use in EE program planning and evaluation.

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

These numbers are consistent with the current developments in the greenhouse gas proceeding currently pending before the Commission, R.06-04-009[3] (or its successor proceeding).

[3] 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.

Section 3: Expenditures

Table 3 [4]

Please see EE Stats for the table, current reporting requirements does not permit a screen capture of the table to fit in this report format. The Excel document on EE Stats is entitled, "SCE Annual Excel."

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

At of the end of 2016, over 26.8 percent of SCE's 2013-2015 EE funding was procured through a competitive bid solicitation.

[4] 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.

Section 4: Cost-Effectiveness

Table 4 [5]

Table 4
Cost Effectiveness (Net)

Annual Results[2]	Total Cost to Billpayers (TRC)	Total Savings to Billpayers (TRC)	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)
SCE 2016	$ 686,807,995	$ 1,238,273,479	$ 551,465,484	1.80	$ 278,973,514	4.44		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.

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

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

The Program Administrator Cost (PAC) Test measures the net benefits of a program as a resource versus the total program costs, including both the program incentive and program administration costs. The PAC Net Benefits amount is the result of subtracting the Total PAC costs from the Total Resource Benefits, Net (RBn). The Total Resource Net Benefit is a measure of the total resource benefits from a measure or program, as derived by multiplying the energy

[5] 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.

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 2016 programs. These tables provide energy savings and program costs associated with activity in 2016.

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.2.3.0, 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.2.3.0, 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 2016. 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 2016 programs. The measure-level savings information used to calculate the 2016 program results are based upon estimates contained in READI v2.3.0. If READI v2.3.0 does not contain an estimate, SCE's energy and capacity savings are documented in SCE's workpapers 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.2.3.0, 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.2.3.0, 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.2.3.0 for ex ante incremental measure cost values, as required by the Commission. If READI v.2.3.0 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 2016. 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 that are 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 2016 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 that are 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, are consistent with 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 and D.14-04-046.

Section 5: Bill Payer Impacts

Table 5 [6]

A	B	C
Table 5		
Ratepayer Impacts		
2016	**Electric Average Rate (Res and Non-Res) $/kwh**	**Gas Average Rate (Core and Non-Core) $/therm**	**Average First Year Bill Savings ($)**	**Average Lifecylce Bill Savings ($)**
SCE	$0.15	$0.00	$103.47	$930.87

[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] 2016 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 2016, SCE was authorized to collect $333 million (D.15-01-023) in rates to implement approved EE programs. Customer bills included the authorized collection on January 1, 2016, 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 2016.

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.

[6] 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 2016 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.

e

Section 6: Savings by End-Use

Table 6 [7]

Table 6

Annual Savings By End-Use 2016 Only

	GWH	% of Total	MW	% of Total	MMTh = 1,000,000 therms	% of Total
Residential						
Appliances	9	0.63%	2	0.81%	-	0.00%
Consumer Electronics	1	0.07%	0	0.07%	-	0.00%
Cooking Appliances	-	0.00%	-	0.00%	-	0.00%
HVAC	8	0.56%	7	2.36%	-	0.00%
Lighting	214	14.48%	23	7.86%	-	0.00%
Pool Pump	13	0.89%	3	1.04%	-	0.00%
Refrigeration	-	0.00%	-	0.00%	-	0.00%
Water Heating	0	0.00%	0	0.00%	-	0.00%
Other	48	3.27%	20	7.01%	-	0.00%
Nonresidential						
HVAC	92	6.23%	21	7.29%	-	0.00%
Lighting	194	13.15%	40	14.07%	-	0.00%
Office	2	0.13%	0	0.05%	-	0.00%
Process	47	3.16%	6	2.23%	-	0.00%
Refrigeration	21	1.41%	3	0.94%	-	0.00%
Water Heating	-	0.00%	-	0.00%	-	0.00%
Other	46	3.10%	9	3.16%	-	0.00%
Low Income Energy Efficiency	27	1.86%	4	1.54%	-	0.00%
Codes & Standardss Energy Savings	754	51.06%	**148**	51.56%	-	**0.00%**
SCE ANNUAL PORTFOLIO SAVINGS (2016)	**1,477**	**100%**	**286**	**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 2016 results, by end use, of SCE's portfolio of EE programs.

The 2016 Energy Savings Assistance Program relies on the most up-to-date evaluation data in order to determine the program's effectiveness. Primarily, SCE relies upon the Impact Evaluation of the 2011 Energy Savings Assistance Program Impact Evaluation Report, and other sources as described in Attachment A-2 of SCE's Testimony in Support of Application for Approval of Low Income Programs and Budgets for Program Years 2012-2014, filed May 16,

[7] 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.

2011. Both contain the latest and best available information for the energy savings and demand reduction associated with low-income measures for this program cycle. These sources stemming from vetted and approved EM&V studies developed a robust set of information that SCE relied upon to report the energy savings and demand reduction associated with its Low-Income programs.

Section 7: Commitments

Table 7 [8]

Table 7
Commitments

Commitments Made in the Past with Expected Implementation after December 2010-2012				
	Committed Funds [1]	Expected Energy Savings		
2010-2012[1]	$	GWH	MW	MMth
SCE Total	**$ 0**	**0.0**	**0.0**	**0.00**

Commitments Made in the Past Year with Expected Implementation after December 2015				
	Committed Funds[2]	Expected Energy Savings		
2013-2015[2]	$	GWH	MW	MMth
SCE Total	**$ 0**	**0.0**	**0.0**	**0.00**

Commitments Made in the Past Year with Expected Implementation after December 2016				
	Committed Funds [3]	Expected Energy Savings		
2016[3]	$	GWH	MW	MMth
SCE Total	**$ 33,901,623**	**183**	**31**	**0**

[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 Guidence Document and EE decision (D.15-10-025).
[3] Committed funds are associated with the 2016 program year. These funds are reserved or encumbered for future work permitted per the EESTATS CPUC Guidence Document and EE decision (D.15-10-025).

A. List of Programs with 2016 Commitments

The following programs had commitments that will be installed in 2016 and beyond:

- Residential New Construction
- Commercial Calculated Incentives Program
- Commercial Direct Install Program
- Commercial Deemed Incentives Program
- Savings by Design
- Industrial Calculated Energy Efficiency Program

[8] 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.

- Industrial Deemed Energy Efficiency Program
- Agriculture Calculated Energy Efficiency Program
- Agriculture Deemed Energy Efficiency Program
- Emerging Technologies Program
- City of Long Beach Energy Leader Partnership
- City of Redlands Energy Leader Partnership (merged with SBREP)
- City of Santa Ana Energy Leader Partnership (merged with OCC)
- City of Simi Valley Energy Leader Partnership
- Gateway Cities Energy Leader Partnership
- Community Energy Leader Partnership
- Desert Cities Energy Leader Partnership
- Orange County Cities Energy Leader Partnership
- San Gabriel Valley Energy Leader Partnership
- San Joaquin Valley Energy Leader Partnership
- South Bay Energy Leader Partnership
- South Santa Barbara County Energy Leader Partnership
- Ventura County Energy Leader Partnership
- Western Riverside Energy Leader Partnership
- High Desert Regional Partnership (formerly City of Adelanto Energy Leader Partnership)
- West Side Energy Leader Partnership
- California Community Colleges Energy Efficiency Partnership
- California Dept. of Corrections and Rehabilitation EE Partnership
- County of Los Angeles Energy Efficiency Partnership
- County of Riverside Energy Efficiency Partnership
- County of San Bernardino Energy Efficiency Partnership
- State of California Energy Efficiency Partnership
- UC/CSU Energy Efficiency Partnership.

In 2016, these programs secured commitments of over $33 million, over 183 gigawatt-hours of energy savings, and over 31 megawatts in demand reduction, as shown in Table 9 above.

B. Explanation of How Commitments Are Calculated [9]

In 2016, SCE actively enrolled customers into EE programs, which encourage customers' decisions 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

[9] Committed funds represent incentive amounts only.

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.

Section 8: Shareholder Performance Incentives

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 2016 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 2016 ESPI awards claims will be submitted for approval to the Commission on September 1 of the following year. Therefore, there is no information on earnings presented in this report for the 2016 period.

Appendix D

Southern California Edison Programs for 2016

Appendix D – Program List

Appendix D

Southern California Edison Programs for 2016

Appendix A contains the list of programs included in SCE's 2016 EE Portfolio, and the date the programs were added or removed, where applicable.

Table: Programs Included in SCE's 2016 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-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

CPUC ID	Program Name	Date Added	Date Removed
SCE-13-SW-002F	Nonresidential HVAC Program	1/1/2013	N/A
SCE-13-SW-002G	Savings By Design	1/1/2013	N/A
SCE-13-SW-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	N/A
SCE-13-L-001	Integrated Demand Side Management Pilot for Food Processing	1/1/2013	N/A
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

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Appendix E

Southern California Edison's Final December Monthly Report for 2016

Appendix E – Final December Monthly Report

Appendix E

SCE's Final December Monthly Report for 2016

For access, please visit the California Public Utilities Commission Energy Efficiency Groupware Application available at **http://eestats.cpuc.ca.gov/Views/Documents.aspx**.

Attachment B

Select Redline Pages of SCE's 2017 Energy Efficiency Annual Report, Revised May 23, 2017

Executive Summary

Southern California Edison Company (SCE) continues to build upon its leadership role through the delivery of a diverse, innovative, and cost-effective Energy Efficiency (EE) portfolio designed to meet the needs of our customers, help ensure the reliability of the grid, and meet the State of California's clean energy goals. In 2016, SCE programs collectively achieved over 1.478 billion kilowatt-hours (kWh) of annualized energy savings and 2868 megawatts of peak demand reduction. These savings are equivalent to the amount of power required annually for over 22122,000 standard residential homes, or the removal of over 2192020,000 cars from the road.

The Company also continues to drive innovation with the introduction of new programs and pilots focused on supporting state policy goals, as well as aligning EE to meet future grid reliability needs. SCE's support of new state policies includes:

- Supporting Senate Bill (SB) 350 and Assembly Bill (AB) 802 – SCE explored High Opportunity Program proposals and submitted advice letters for two; more submissions are expected in 2017.
- Supporting AB793, SCE is working with the CPUC and stakeholders to develop implementation strategies.

SCE also continues to support the overarching policy goals of the California Long Term Energy Efficiency Strategic Plan (CLTEESP) and Existing Buildings Energy Efficiency Action Plan (AB 758).

SCE also aligns with the California Public Utilities Commission (CPUC or "Commission") and industry stakeholders in the adoption and implementation of a more flexible EE program framework. In 2015, the CPUC formally established a 10-year EE "Rolling Portfolio" process in lieu of the existing three-year funding cycle. The Rolling Portfolio approach is an innovative planning concept for funding that moves away from the start / stop nature of a shorter funding cycle. This new structure is intended to increase flexibility and allow continuity of the EE portfolios. In Decision (D.)15-10-028, the CPUC directed EE Program Administrators (PAs) to develop business plans that provide strategic direction and an estimated budget and savings forecast for the years 2018-2025.

Appendix C (Revised)

Technical Appendices to 2017 Annual Report

Section 1: Energy Savings

Table 1 [1]

A	B	C	D
Table 1. *Electricity and Natural Gas Savings and Demand Reduction (Gross)*			
Annual Results	**2016 Installed Savings**	**CPUC 2016 Adopted Goals (D.15-10-028)**	**% of Goals (2016)**
2016 Energy Savings (GWh) – Annual	~~*1,487*~~ *1,477*	*1,304*	*113%*
2016 Energy Savings (GWh) – Lifecycle	~~*15,356*~~ *15,328*	*N/A*	
2016 Natural Gas Savings (MMth) – Annual	-	-	
2016 Natural Gas Savings (MMth) – Lifecycle	-	-	
2016 Peak Demand savings (MW)	~~*288*~~ *286*	*267*	*107%*

[1] Savings data based upon authorized signature received date, which have been verified and approved by SCE.
[2] Includes savings associated with Energy Savings Assistance Program, Codes & Standards Program, and SoCalREN.

In 2016, the following programs and program strategies were successfully implemented and contributed greatly to the portfolio energy savings results:

A. Primary Lighting Program

In 2016, Primary Lighting surpassed its kWh and kW targets by 28 and 39 percent, respectively. The 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 goal of reducing the ratio of program dollars for CFLs by at least 5 percent compared to 2015. The reduction was 17 percent, whereas the 2015 ratio was 59 percent and the 2016 ratio was 42 percent. 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 2016 was more than 5.6 million.

Market Transformation activities included the addition of 202 new retailers and two new manufacturers to the program. In-store signage educated customers on LEDs and energy efficiency. The program increased incentives for and quantities of LED A-lamps equivalent in brightness to traditional 75 Watt and 100 Watt light bulbs, which helped mitigate market stagnation at the 40 Watt and 60 Watt-equivalent levels. The program added a new technology

[1] 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.

towards the end of 2016: Very High Efficiency CFLs, which at 80 lumens per Watt are more efficient than 79% of the LED models in the program. CFLs were chosen that would not impede LED market transformation but rather would fill a market gap for brightness levels much higher than any qualifying LED product.

B. Nonresidential HVAC Program

In 2016, the SCE Nonresidential HVAC Program experienced better-than-expected distributor participation in its Upstream HVAC Equipment Distributor Incentive subprogram as distributors continued to gain experience with upselling high-efficiency equipment. There was also a significant increase in contractors' participation in and familiarity with the HVAC Early Retirement subprogram, as their awareness and experience of the subprogram grew in its third year.

The HVAC Quality Maintenance (QM) subprogram continued to cost-effectively increase participation by reducing participation barriers, even though the program lowered incentive amounts. It also targeted large accounts and focused on promoting enhanced ventilation controls. Barriers to adopting Standard 180 Maintenance Agreements were addressed by streamlining data collection from participating contractors and encouraging them to communicate the value proposition of Standard 180 Maintenance to customers. The participating contractors also continued to adopt and promote advanced rooftop control technologies in their business models

C. Home Energy Advisor Program

In 2016, the Home Energy Advisor (HEA) Program focused on initiatives that helped the program exceed its energy savings goals. HEA was able to mail over 400,000 Home Energy Efficiency Surveys to residential customers, with a response rate of 7.9%. The surveys helped the program bring in over 7,000 MWh and 3.4 MW. HEA also continued its mailings of customized Home Energy Reports to customers; (1) Mailing Wave 2 and Wave 3 of the Reports were delivered to more than 230,000 customers and helped the program bring in over 18,000 MWh and over 4 MW, (2) Mailing Wave 4, which was new in 2016, reached more than 250,000 customers and brought in over 11,000 MWh and over 3 MW.

Altogether, the HEA program engaged over 800,000 customers and achieved energy savings of over 37,000 MWh and over 10 MW.

D. Home Energy Advisor (HEA) Program

In 2016 SCE's Savings By Design (SBD) team was very successful in 2016. The year culminated a nearly four-year period of diligence, managing customer projects from application to completed construction. 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	35,526,667 kWh	40,232,912 kWh	**112%**
kW	7,300 kW	8,366 kW	**113%**

Additional contributing factors to SCE's success were operational improvements, addition 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. Commercial Direct Install Program

In 2016, the Commercial Direct Install program achieved energy savings of 9,362 kW and 33,606,982 kWh. The success of the program was a result of continuing its successful marketing plans that promote collaboration and serving customers using a district approach, which allows for broad coverage by audit and construction teams in larger geographic areas. The program also implemented a new policy of accepting national store chains that meet program eligibility requirements as participants in the program, which drove up program activity. SCE's Account Managers' relationship with the national store chains helped bridge the gap between existing Commercial Direct Install contractors and the contacts from the national store chains. In addition, the program added LED High Bay / Low Bay measures with co-pays in the fourth quarter of 2016, again leading to increased program activity.

Section 2: Emission Reductions

Table 2 [2]

Table 2
Environmental Impacts (Gross)

Annual Results[2,3]	Annual tons of CO2 avoided	Lifecycle tons of CO2 avoided	Annual tons of NOx avoided	Lifecycle tons of NOx avoided	Annual tons of SOx avoided[1]	Lifecycle tons of SOx avoided[1]	Annual tons of PM10 avoided	Lifecycle tons of PM10 avoided
2016 Portfolio Targets [4]	**233,523**	**2,551,045**	**21**	**251**	**N/A**	**N/A**	**16**	**174**
SCE	~~335,695~~ 329,629	~~3,088,896~~ 3,072,019	43	~~396~~ 394	N/A	N/A	23	~~212~~ 211
2016 Total								

[1] The avoided SOX reductions are not calculated in the cost effectiveness tool (CET.) It was determined that none of the IOUs uses coal power on the margin and the energy efficiency savings have impact on the margin only.
[2] Environmental impacts do not include any results associated with Energy Savings Assistance and Codes & Standards Programs.
[3] All calculations based on gross reductions.
[4] SCE's Compliance Advice Letter 3149-E, filed February 10, 2015 and approved by the Commission on May 5, 2015 establishes SCE's electric emission reduction targets for the program year 2015.

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 2016 portfolio of EE programs. These results are shown in Table 2 above.

[2] 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.

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

1. The environmental benefits (annual and lifecycle 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 (CO_2) costs, increased by marginal energy losses for each time of use (TOU) period. E3 estimated the emissions avoided-cost streams by multiplying the costs per pollutant (on a yearly basis) by the emission rate (per hour of the year). The emissions costs vary by voltage level, hour, and year.

3. The NOx costs ($/MWh) are based on California offset prices generators must pay for NOx emissions, and the estimated emission rate of NOx at the implied heat rate of the market price. The NOx cost per MWh of energy saved at the customer site is increased by the incremental energy losses in each TOU period between the end use and the bulk system. In Period 1, when the forward market prices of electricity are based on NYMEX forward market prices, the assumption is that these prices already include the cost of NOx emissions, so this value is equal to zero in Period 1.

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

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

The environmental benefits utilized in the cost-effectiveness analysis of the programs included in this document are only applicable to EE program reporting. The factors utilized in the development of these environmental benefits were agreed upon specifically to reflect an appropriate and approximate value for the reduced energy savings due to EE programs. As such,

these environmental benefits should not be used in any other context and should also be reviewed for future use in EE program planning and evaluation.

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

These numbers are consistent with the current developments in the greenhouse gas proceeding currently pending before the Commission, R.06-04-009[3] (or its successor proceeding).

[3] 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.

Section 3: Expenditures

Table 3 [4]

Please see EE Stats for the table, current reporting requirements does not permit a screen capture of the table to fit in this report format. The Excel document on EE Stats is entitled, "SCE Annual Excel."

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

At of the end of 2016, over 26.8 percent of SCE's 2013-2015 EE funding was procured through a competitive bid solicitation.

[4] 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.

Section 4: Cost-Effectiveness

Table 4 [5]

Table 4
Cost Effectiveness (Net)

Annual Results[2]	Total Cost to Billpayers (TRC)	Total Savings to Billpayers (TRC)	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)
	~~$688,513,369~~	~~$1,244,538,719~~	~~$556,025,350~~	~~1.81~~	~~$278,973,514~~				
SCE 2016	$688,441,920	$1,238,273,479	$549,831,559	1.80	$280,607,439	~~4.46~~ 4.41		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.

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

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

The Program Administrator Cost (PAC) Test measures the net benefits of a program as a resource versus the total program costs, including both the program incentive and program administration costs. The PAC Net Benefits amount is the result of subtracting the Total PAC costs from the Total Resource Benefits, Net (RBn). The Total Resource Net Benefit is a measure of the total resource benefits from a measure or program, as derived by multiplying the energy

[5] 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.

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 2016 programs. These tables provide energy savings and program costs associated with activity in 2016.

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.2.3.0, 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.2.3.0, 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 2016. 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 2016 programs. The measure-level savings information used to calculate the 2016 program results are based upon estimates contained in READI v2.3.0. If READI v2.3.0 does not contain an estimate, SCE's energy and capacity savings are documented in SCE's workpapers 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.2.3.0, 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.2.3.0, 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.2.3.0 for ex ante incremental measure cost values, as required by the Commission. If READI v.2.3.0 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 2016. 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 that are 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 2016 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 that are 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, are consistent with 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 and D.14-04-046.

Section 5: Bill Payer Impacts

Table 5 [6]

A			B	C
Table 5				
Ratepayer Impacts				
2016	**Electric Average Rate (Res and Non-Res) $/kwh**	**Gas Average Rate (Core and Non-Core) $/therm**	**Average First Year Bill Savings ($)**	**Average Lifecylce Bill Savings ($)**
SCE	$0.15	$0.00	~~$105.12~~ $103.47	~~$937.90~~ $930.87

[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] 2016 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 2016, SCE was authorized to collect $333 million (D.15-01-023) in rates to implement approved EE programs. Customer bills included the authorized collection on January 1, 2016, 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 2016.

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.

[6] 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 2016 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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Section 6: Savings by End-Use

Table 6 [7]

Table 6

Annual Savings By End-Use 2016 Only

	GWH	% of Total	MW	% of Total	MMTh = 1,000,000 therms	% of Total
Residential						
Appliances	9	0.63%	2	0.81%	-	0.00%
Consumer Electronics	1	0.07%	0	0.07%	-	0.00%
Cooking Appliances	-	0.00%	-	0.00%	-	0.00%
HVAC	8	0.56%	7	2.36%	-	0.00%
Lighting	214	14.48%	23	7.86%	-	0.00%
Pool Pump	13	0.89%	3	1.04%	-	0.00%
Refrigeration	-	0.00%	-	0.00%	-	0.00%
Water Heating	0	0.00%	0	0.00%	-	0.00%
Other	48	3.27%	20	7.01%	-	0.00%
Nonresidential						
HVAC	~~102~~ 92	6.23%	~~23~~ 21	7.29%	-	0.00%
Lighting	194	13.15%	40	14.07%	-	0.00%
Office	2	0.13%	0	0.05%	-	0.00%
Process	47	3.16%	6	2.23%	-	0.00%
Refrigeration	21	1.41%	3	0.94%	-	0.00%
Water Heating	-	0.00%	-	0.00%	-	0.00%
Other	46	3.10%	9	3.16%	-	0.00%
Low Income Energy Efficiency	27	1.86%	4	1.54%	-	0.00%
Codes & Standardss Energy Savings	754	51.06%	**148**	51.56%	-	**0.00%**
SCE ANNUAL PORTFOLIO SAVINGS (2016)	~~1,487~~ 1,477	**100%**	~~288~~ 286	**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 2016 results, by end use, of SCE's portfolio of EE programs.

The 2016 Energy Savings Assistance Program relies on the most up-to-date evaluation data in order to determine the program's effectiveness. Primarily, SCE relies upon the Impact Evaluation of the 2011 Energy Savings Assistance Program Impact Evaluation Report, and other sources as described in Attachment A-2 of SCE's Testimony in Support of Application for Approval of Low Income Programs and Budgets for Program Years 2012-2014, filed May 16,

[7] 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.

2011. Both contain the latest and best available information for the energy savings and demand reduction associated with low-income measures for this program cycle. These sources stemming from vetted and approved EM&V studies developed a robust set of information that SCE relied upon to report the energy savings and demand reduction associated with its Low-Income programs.

Section 7: Commitments

Table 7 [8]

Table 7
Commitments

Commitments Made in the Past with Expected Implementation after December 2010-2012				
	Committed Funds [1]	Expected Energy Savings		
2010-2012[1]	$	GWH	MW	MMth
SCE Total	**$ 0**	**0.0**	**0.0**	**0.00**

Commitments Made in the Past Year with Expected Implementation after December 2015				
	Committed Funds[2]	Expected Energy Savings		
2013-2015[2]	$	GWH	MW	MMth
SCE Total	**$ 0**	**0.0**	**0.0**	**0.00**

Commitments Made in the Past Year with Expected Implementation after December 2016				
	Committed Funds [3]	Expected Energy Savings		
2016[3]	$	GWH	MW	MMth
SCE Total	**$ 33,901,623**	**183**	**31**	**0**

[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 Guidence Document and EE decision (D.15-10-025).
[3] Committed funds are associated with the 2016 program year. These funds are reserved or encumbered for future work permitted per the EESTATS CPUC Guidence Document and EE decision (D.15-10-025).

A. List of Programs with 2016 Commitments

The following programs had commitments that will be installed in 2016 and beyond:

- Residential New Construction
- Commercial Calculated Incentives Program
- Commercial Direct Install Program
- Commercial Deemed Incentives Program
- Savings by Design
- Industrial Calculated Energy Efficiency Program

[8] 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.

- Industrial Deemed Energy Efficiency Program
- Agriculture Calculated Energy Efficiency Program
- Agriculture Deemed Energy Efficiency Program
- Emerging Technologies Program
- City of Long Beach Energy Leader Partnership
- City of Redlands Energy Leader Partnership (merged with SBREP)
- City of Santa Ana Energy Leader Partnership (merged with OCC)
- City of Simi Valley Energy Leader Partnership
- Gateway Cities Energy Leader Partnership
- Community Energy Leader Partnership
- Desert Cities Energy Leader Partnership
- Orange County Cities Energy Leader Partnership
- San Gabriel Valley Energy Leader Partnership
- San Joaquin Valley Energy Leader Partnership
- South Bay Energy Leader Partnership
- South Santa Barbara County Energy Leader Partnership
- Ventura County Energy Leader Partnership
- Western Riverside Energy Leader Partnership
- High Desert Regional Partnership (formerly City of Adelanto Energy Leader Partnership)
- West Side Energy Leader Partnership
- California Community Colleges Energy Efficiency Partnership
- California Dept. of Corrections and Rehabilitation EE Partnership
- County of Los Angeles Energy Efficiency Partnership
- County of Riverside Energy Efficiency Partnership
- County of San Bernardino Energy Efficiency Partnership
- State of California Energy Efficiency Partnership
- UC/CSU Energy Efficiency Partnership.

In 2016, these programs secured commitments of over $33 million, over 183 gigawatt-hours of energy savings, and over 31 megawatts in demand reduction, as shown in Table 9 above.

B. Explanation of How Commitments Are Calculated [9]

In 2016, SCE actively enrolled customers into EE programs, which encourage customers' decisions 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

[9] Committed funds represent incentive amounts only.

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.

Section 8: Shareholder Performance Incentives

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 2016 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 2016 ESPI awards claims will be submitted for approval to the Commission on September 1 of the following year. Therefore, there is no information on earnings presented in this report for the 2016 period.