

# 2016 Joint Annual Report

## Workforce Education & Training



Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDGE), and Southern California Gas Company (SoCalGas), collectively the Investor Owned Utilities or IOUs, submit this Statewide Workforce Education and Training (WE&T) Program update in compliance with the California Public Utilities Commission (CPUC) Decision (D) 09- 09-047, pages 221-222.

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*“The classes at the Energy Innovation Center are great for my home improvement business. I have learned a lot about installing energy-efficient technologies and making homes and buildings as sustainable as possible.”*

Home Performance Contractor

*“Since I started in the industry 30 years ago IHACI has consistently provided me with opportunities to take my business to the next level. They serve as an interface with lawmakers to raise the standards of the industry in a way that creates the most benefit to homeowners as well as reputable hard working contractors.”*

HVAC Contractor and participant in an IHACI Gas Heating Module

Seminars

1253

Tool Loan Transactions

1357

Outreach

708

EE Consultations

899

## Workforce Education & Training

The Workforce Education and Training (WE&T) Program contributes to the investor-owned utilities' (IOUs') energy efficiency goals by empowering customers and market actors with the knowledge to make energy reduction decisions. WE&T's primary target audience includes market actors who design, build, maintain, and operate buildings and building systems—engineers, technicians, building operators, designers, contractors, etc. Additionally, WE&T supports K-Post-secondary teachers who are training future generations of the energy workforce by providing them energy efficiency, sustainability, and green career awareness teaching materials and resources. Because these market actors have the potential to shape a building's energy use, WE&T teaches them how to recognize energy savings and GHG-reduction opportunities, and then provides them skills, tools, and resources to act upon those opportunities.

In 2016, the investor-owned utilities (IOUs)—Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), Southern California Edison (SCE), and Southern California Gas Company (SoCalGas)—engaged with a diverse set of subject matter experts, stakeholders, professional organizations, government agencies, trade organizations, and education institutions across three primary areas to promote energy savings opportunities through WE&T.

**Collaborating** *Leveraging the strengths of the IOUs and other organizations to best serve our mutual audiences*

**Demonstrating Outcomes** *Moving beyond counting students and classes to outcomes such as changing how people do their jobs to improve building performance*

**Evolving WE&T** *Reshaping WE&T to adapt to diverse and dynamic technical, stakeholder, and customer needs and requirements*

This Joint Annual Report summarizes some of WE&T's accomplishments in 2016 around these three areas of emphasis as part of meeting filed goals and supporting the California energy efficiency workforce.

### 2016 Goals Achievement

		Classes	EE Consultations	Tool Loan Transactions	Outreach
PG&E	Total	290	441	722	123
	Goal	260	180	820	92
SCE	Total	497	118	122	111
	Goal	290	N/A	N/A	N/A
SoCalGas	Total	167	229	N/A	104
	Goal	125	220	N/A	40
SDG&E	Total	299	111	513	370
	Goal	120	100	100	356



# I. Collaborating

The IOUs are one of many organizations that have a responsibility and interest in supporting California's energy efficiency workforce. In 2016, the IOUs continued to support ongoing collaborations while initiating new programs with organizations, including union and non-union training institutions, community colleges, professional organizations, and industry groups. The IOUs are thankful for the collaborative spirit each organization brought to the table to address common barriers and interests for developing California's current and future energy workforce.



*Skyline College Environmental Science & Geography students*

*Two out of six student groups directly used what they learned from Energize Colleges in their group term project presentations. Students analyzed different lighting fixtures to advise future upgrades in Pacific Heights, and another group related their efforts to introduce biodegradable cafeteria utensils as a way to reduce the carbon footprint of the college. Each group presented quantitative data from measurements they learned from Energize Colleges. I am really impressed how the information was used right away to enhance their semester assignments.*

**Professor, Skyline College Faculty**

# I. Collaborating *Technical Experts*

## *Carpenters Train-the-Trainer*

Building upon a statewide collaboration initiated in 2015, the IOUs and the Southwest Carpenters Training Fund (SWCTF) worked on helping SWCTF carpenters construct energy efficient building shells. As part of their mission to build high quality buildings, SWCTF identified a need to train their journeymen and instructors on advanced framing techniques, on conducting blower door tests, and on using infrared cameras to check the quality and air tightness of their building shells. In 2016, the IOUs provided the carpenters a customized two-day training on Enclosure Performance and Diagnostics. This collaboration with the carpenters continues into 2017 to train additional trainers and to educate carpenters on new Title 24 code requirements. This team effort connected WE&T's energy efficiency training with a trade's desire to upskill its journeyman and trainers on energy efficiency best practices. 2016 allowed both organizations to move towards reshaping the SWCTF's training program to include energy efficiency topics that SWCTF found important for its audience.

## *Collaborations in the HVAC Sector*

In 2016, IOU WE&T and HVAC program staff collaborated with the Western HVAC Performance Alliance (WHPA) to develop and implement a WE&T strategy to address identified workforce training needs throughout the HVAC sector. The IOU working team has a goal of designing, developing, and implementing training programs aligned with California's long term strategic energy efficiency goals for HVAC Quality Installation and Quality Maintenance (QI/QM). In 2016, the working group focused on developing scalable installation, maintenance, and sales training for HVAC technicians; integrating findings from WHPA reports and recommendations into existing curriculum; and piloting new approaches through existing online education providers to enhance core education engagement and participation. Through the HVACRedu "Partner Pathways" effort, we targeted community colleges and other career technical education (CTE) institutions in Southern California by providing them enhanced hybrid online/on-demand and in-class offerings, resulting in over 800 student course completions and 160 NATE [North American Technician Excellence] Core exams passed.



*HVAC technicians learn how to install and adjust drive belts, and check refrigerant levels for rooftop package units in an HVAC Quality Maintenance hands-on workshop*



# I. Collaborating *Core Education*

## **Community Colleges: City College/CalCERTS**

SDG&E collaborated with CalCERTS, Inc. to develop and implement an Energy Compliance Training for HVAC Contractors for the Center for Applied Competitive Technologies at San Diego City College. CalCERTS and SDG&E delivered a multi-phased energy code training program to the City College's Air Conditioning, Refrigeration, and Environmental Control Technology (AIRE) instructors. Instructors learned about the Title 24 energy code. In a train-the-trainer fashion, the instructors then taught the course material to local nonresidential HVAC contractors and professionals.

## **Community Colleges: Skyline College**

The statewide Energize Colleges Education and Internship programs kicked off in March 2016 and secured long-term commitments from college campus faculty and operations staff to provide resources (funding, staffing, administrative support) for program activities to continue at the campuses with reduced IOU support in future years. In 2016, ten California community colleges and UC/CSUs across the four IOUs' service territories found value in the Energize Colleges program and stepped up to commit to providing resources to sustain the programs that the IOUs initiated.

In 2016, working with Skyline College Professors in the Geology and Biology departments, Energize Colleges team members helped to integrate an energy auditing module into their "Introduction to Environmental Science and Environmental Earth Science" courses, which include a sustainability tour and campus energy audit. This module broadens academic pathways by providing relevant project-based learning. Not only is the Energize Colleges team sharing information with other partner campuses online, a Skyline campus Fellow also collaborated with two other colleges—College of San Mateo and Cañada College—to transfer ideas and provide resources by scoping and placing student interns at these district campuses.

*I am interning at Carl's Jr. I've been working with their maintenance team where I have been able to use the knowledge I gained at school and to apply it in the field. I've been troubleshooting and repairing air conditioning and refrigeration equipment and much more at many of their buildings throughout the desert making them more cost efficient. I have learned a lot working with the internal techs, and this has been a great opportunity for me to advance in the field I've been studying towards.*

**Energize Colleges Participant, College of the Desert**

# I. Collaborating *Market Actors*

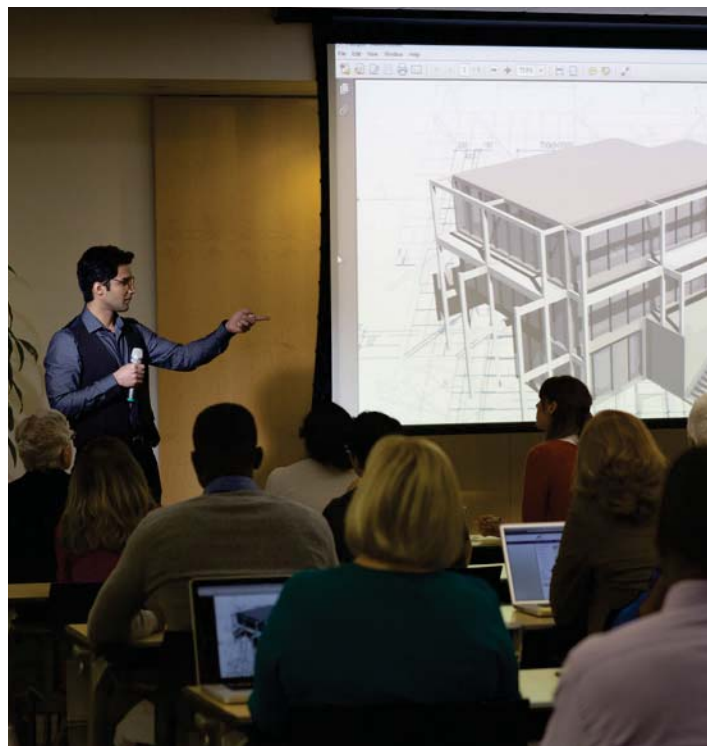
## ***High Performance Building Operations Professionals (HPBOP)***

SCE and PG&E partnered with Laney College in Oakland to launch the High Performance Building Operations Professionals (HPBOP) project. This effort, inspired by existing building operations curriculum and proposed by the California Community Colleges Chancellor's Office, targets critical knowledge and skills gaps in building operators and stationary engineers. The HPBOP curriculum focuses on commercial building systems operations and automation, advanced energy monitoring and management techniques, codes and standards, and emerging technologies. In 2016, the HPBOP team completed the initial phases of curriculum development, conducted an industry needs assessment and gap analysis, convened a comprehensive stakeholder group to inform curriculum development, developed the instructional packages, and prepared to deliver a pilot training program.



## ***American Institute of Architects***

Architects are the design professionals chiefly responsible for the design of the building enclosure along with the construction details for the enclosure. The building enclosure is one of the single most important factors that shape the heating and cooling loads of buildings. In 2016, IOU WE&T Program staff collaborated with the American Institute of Architects (AIA) to deliver educational seminars on zero net energy and energy efficiency code compliance to architects and designers, to survey top administrators and faculty members at accredited architecture schools to identify ways the IOUs could support energy efficiency and zero net energy education, and to develop annual design awards programs requirements based on modeled performance data. Requiring modeled energy performance as part of the AIA California Council and AIA San Francisco design awards is a step towards market transformation that recognizes 'good design' as incorporating beauty, functionality, and low-energy use.



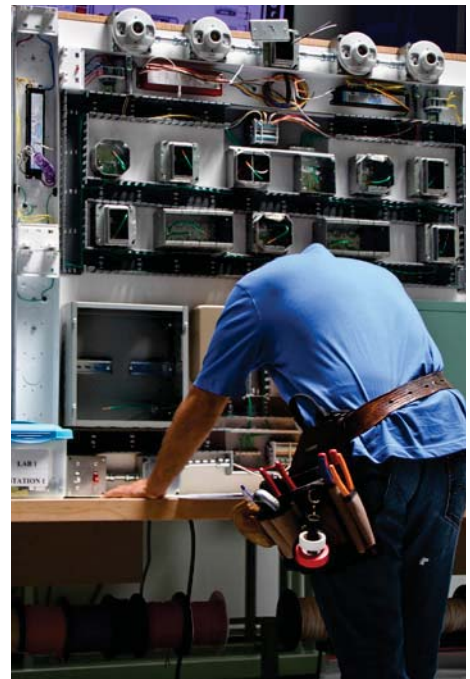
# I. Collaborating *Trades Training*

## ***Collaborating with Industry***

SoCal Gas collaborated with a water heating distributor at their Orange County facility to offer quarterly in-depth energy efficiency training on premium tankless water heating systems. 2016 marked the third year of this collaboration. The training consists of eight-hour courses, with a certificate of completion. Participants have included licensed contractors, contractor employees, and apprentices, with approximately 75 enrolled among four sessions in 2016. Installers made up the majority of the attendees. Other building professionals that participated in the program included energy consultants, HVAC technicians, plumbers, general contractors, engineers and builders. The collaboration represents the type of value-added relationship and model, in helping to develop the needed competencies of a well-trained and appropriately skilled workforce to educate customers, and install new and advancing technology.

## ***California Advanced Lighting Controls Training Program (CALCTP)***

In 2016, WE&T continued to deliver California Advanced Lighting Controls Training Program (CALCTP) training, issuing just under 1,300 certifications across all of the California IOUs. The CALCTP training program provides electricians, contractors, and acceptance test technicians the knowledge and technical skills necessary to properly install and commission advanced lighting control systems while adhering to mandatory code compliance, with the ultimate goal of reducing energy consumption and support California's energy efficiency goals. To date, CALCTP Acceptance Test Technicians have completed over 7,000 commercial projects.



*The IOUs continue to deliver the various CALCTP certification tracks, including the Systems, Technician Acceptance, and Employer Technician Acceptance Certification programs.*



## II. Demonstrating Outcomes

The IOUs are moving toward developing goals and metrics based more on outcomes, as opposed to outputs such as number of classes, number of tool loan transactions, and number of students trained. The outcomes the IOUs would like to see include knowledge gain, changes to workplace practice (changing how people go about doing their jobs), and transformation of other organizations' training programs as it relates to energy efficiency. These types of outcomes-based metrics are a step in the direction of longer-term outcomes such as energy savings. In 2016, the IOUs agreed to these outcomes and included them in their 2018-2025 Energy Efficiency Business Plans. Below are examples of WE&T programs that were in alignment with one or more of those outcomes described above.

*I've been able to complete several certifications that have allowed me to accelerate career development that would otherwise be very costly.*

Project Manager, Consulting Firm

*High school students' understanding of what environmental stewardship means and their commitment to it has increased many times, and their understanding of how to tie that with future career goals in green/clean technology has expanded in a way that I don't know would have been possible without participating in the Green 360 program.*

High School Teacher Testimonial

## II. Demonstrating Outcomes

# Skills Based

### **Commercial Food Service**

In 2016, the four California IOU foodservice centers collaborated to educate students and professionals at several levels of the commercial foodservice industry. Each center utilizes high-tech foodservice equipment to train foodservice operators on the advantages of high-efficiency, high-performance appliances with the goal of changing the way that these operators make equipment purchasing decisions. Islands Restaurant Group is an example of a restaurant chain that decided to purchase efficient equipment after working directly with the foodservice centers. The centers also trained culinary students and their teachers in programs that ranged from high school to community college to university. Rebecca Yager, a professor at Sacramento State University and the Chief of Dietary Services for the California Correctional Health Care Services, uses the training she received to teach her students good management skills and to save energy in her 40,000 square-foot commercial kitchen.



### **Existing Building Commissioning (EBCx) Workshop**

PG&E's Existing Building Commissioning (EBCx) Workshop Series is an example of a course that requires that students apply as many of the knowledge and skills they learn in the classroom at their workplace or at a building that they have preselected. By design, this course assures changes to workplace practice, at least during the time that students are enrolled in the course. EBCx meets fourteen times in twelve months, and requires that students pass a technical entrance exam, ensuring that all students have a high level of technical expertise and will be able to engage in advanced technical topics. PG&E has been offering this class for 12 years with each class consisting of approximately 20 professionals, including engineers, commissioning agents, building operators, and energy managers.

### **Mobile Integrated Building Energy Science Training (MI-BEST)**

The Mobile Integrated Building Energy Science Training (MI-BEST) series of advanced Home Energy Rating System (HERS) Rater training offerings provides the building professional an opportunity to learn and practice advanced techniques that otherwise might require years of experience and troubleshooting. This hands-on series enhances professional skill sets for HERS Raters in the use of performance-based equipment. The MI-BEST series provides students multiple building scenarios to enhance learning, and integrates lecture material into an active hands-on environment. In 2016, SCE and PG&E both collaborated with IOU EE Program implementers to deliver the 5-day MI-BEST curriculum.



## II. Demonstrating Outcomes

### 2016 K-12 Program Highlights

K-12

132,323 students

62% in Disadvantaged Communities

**1,027 schools**

Post Secondary

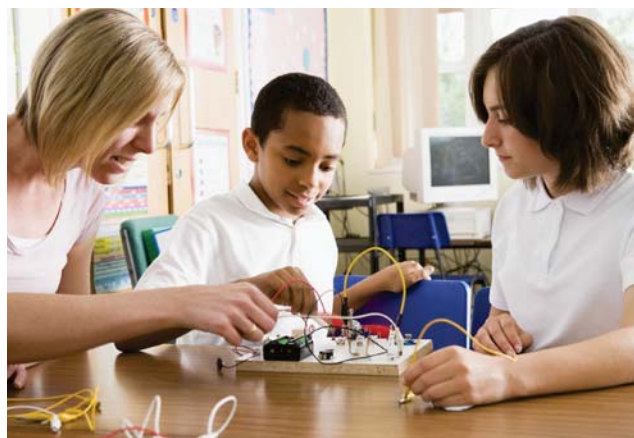
**10 Campuses**

### Supporting K-8 Teachers and Students

WE&T supports K-8 students' green career pathways through EE, DR, DG education and hands-on project-based learning that inspires students to pursue green careers, to educate others, and to take action to create a more sustainable world.

Teachers and students learn to value energy and to promote sustainable energy use in their homes, schools, and communities. In 2016, the IOUs improved how we serve the K-8 audience by developing and launching the "PEAK Ambassador" training—an online "train-the-trainer" program. Educators have access to program materials, including videos, webinars, lab and lesson support, and access to green career professionals. Leveraging partnerships with educational stakeholders, including County Offices of Education, "PEAK Ambassador" was designed and implemented to provide sustained services for educators and students in geographically hard-to-reach IOU service areas.

In 2016, the IOUs leveraged the K-8 PEAK program to further expand reach into underserved populations through increased collaboration. PEAK continued its collaboration with Bay Area Community Resources (BACR), a regional non-profit agency that provides services to children and families in seven counties throughout the San Francisco Bay, to implement the Out-of-School Time Energy Program (OSTEP) to over 30 of its afterschool sites. Project Access, a non-profit organization that provides on-site education and employment services to residents of low-income housing communities, implemented OSTEP in 19 sites in Southern California in 2016. These collaborations provide tangible opportunities for increased access and expanding services to these communities.





### III. Evolving WE&T

To support the current and future energy efficiency workforce, the WE&T Program must remain adaptive and responsive to market, customer, stakeholder, and industry needs. In 2016, the WE&T Program leveraged multiple stakeholder engagement opportunities, aligning with the 2018-2025 Energy Efficiency Business Plan process, to engage a comprehensive group of industry stakeholders, to discuss how IOU WE&T Programs can best intervene, and to reinforce the IOUs' role within a diverse matrix of WE&T stakeholders and service providers across California.

*“The SEI Solar Certificate provides excellent guidance for preparing students for careers in the solar industry. The background content provides enough information to make me an expert in energy and sustainability concepts. The activities and projects are engaging for my students and support them in building technical skills they can apply to the energy industry.”*

Teacher at Century Center for Economic Opportunity (CCEO)

# III. Evolving Workforce Education & Training

## *Inclusion Studies*

With stakeholder input, the IOUs arrived at a working definition of “disadvantaged worker” that the WE&T program could use for program planning. This definition fulfills the needs for the WE&T program and respects the privacy (economic status, ethnicity, gender, civic records, etc.) of WE&T program participants who are not always participating in WE&T offerings as customers, but rather as market actors who will be doing energy efficiency work for a wide range utility customers. As part of our efforts to better understand how we could better serve disadvantaged workers and vocational organizations that serve disadvantaged workers, we conducted studies to document the dynamic landscape of relevant organizations, online data reporting systems to track workforce data, and possible career pathways for disadvantaged workers. The results and findings from these efforts informed the 2018-2025 Energy Efficiency Business Plan, and will be used for future program development and implementation. In addition, IOU teams evaluated the impacts associated with implementing targeted hiring goals, prevailing wage and wage floors in the IOUs’ Resource Programs.

## *First Source Language*

In 2016, the IOUs developed and adopted “first source” language into some of their energy efficiency or Energy Savings Assistance (ESA) contracts. The first source language encourages vendors with whom the IOUs have a direct contracting relationship to notify local workforce development agencies that serve disadvantaged communities about any local job opportunities that are created as a result of the contract with the IOU. First source language was brought up in past stakeholder meetings as important to disadvantaged workers and is one of several ways that the IOUs support disadvantaged workers and communities. The IOUs will continue to look for opportunities to adopt first source contract language into other EE contracts.

## *K-Post-Secondary: Connections*

Since 2012, the IOUs have provided energy awareness and green career pathways, across all grade levels from K-12 to post-secondary. Program offerings have evolved to align with the recommendations from process and impact evaluations, stakeholder input, and lessons learned. In 2015 the IOUs began a redesign of program offerings through an open request for proposal (RFP) process. The IOUs evaluated and chose vendors that could best educate the incoming EE workforce and their instructors. Program enhancements included standardizing offerings across the state, increasing cost-effectiveness, increasing number of teachers and students, expanding school participation, increasing in-kind staff resources, and continuing to focus on disadvantaged communities.

Statewide IOU efforts to provide career and higher education readiness to students in disadvantaged communities with barriers to high school completion and employment include the Energize Schools program partnership with John Muir Schools, Youth Build, and Conservation Corps. Energize Schools, which offers sustainability project-based curriculum, teacher training, and student-led action projects to 9-12 teachers and students, began offering a Solar Certificate program to students in 2016. Support offered to teachers and students include Certificate curriculum that fulfills the California Career and Technical Education (CTE) Model Standards, instructional planning support, teacher training, and direct instructional support. These types of programs and collaborations are part of making a connection between high school and careers and post-secondary education.



## IV. Looking Ahead

In early 2017, the IOUs filed their 2018-2025 Energy Efficiency Business Plans. The Business Plans provide an overview of how the IOUs will structure their EE Programs. We encourage the reader to refer to the WE&T sections of the business plans for more information on WE&T program structure and direction. Upon approval of the Business Plans, the IOUs will develop Implementation Plans that will provide more details on metrics, areas of focus, and strategic collaborations. With the energy efficiency goals that the State of California has set for itself, collaboration across sectors, organizations, building trades, and IOU territories will be important. The IOU WE&T team looks forward to ongoing and new collaborations with organizations that have the same vision of a highly skilled California energy workforce.

*“Thanks again for your support and thanks to everyone in ItsaboutQ that made it possible for me to achieve all 4 specialties in NATE [North American Technician Excellence], it changed my life. I’ve been hired, I’m involved in SCE’s HVAC Optimization program, and I’ve become a valuable employee for my company.”*

HVAC Technician and participant in HVACRedu online and in-class offerings

*“Today I accepted a position...as a residential auditor/surveyor...I have been wanting to make a career move for some time, and several years ago started taking classes at the PEC [PG&E Pacific Energy Center]...The high quality and breadth of classes that you...offer provided me with the training and expertise I needed to qualify for this new position. Thank you.”*

PG&E WE&T program participant