Ronald van der Leeden
Director
Regulatory Affairs

555 W. Fifth Street, GT14D6
Los Angeles, CA 90013-1011
Tel: 213.244.2009
Fax: 213.244.4957
RvanderLeeden@semprautilities.com

August 1, 2018

Advice No. 5335
(Southern California Gas Company – U 904 G)

Advice 4001-G/5348-E
(Pacific Gas and Electric Company – U 39 M)

Advice 3835-E
(Southern California Edison Company – U 338 E)

Advice 1-E
(Tri-County Regional Energy Network)

Public Utilities Commission of the State of California

Subject: 2019 Joint Cooperation Memorandum (JCM) of SoCalGas, PG&E, SCE, and 3C-REN Pursuant to Decision (D.) 18-05-041

Purpose

Southern California Gas Company (SoCalGas), on behalf of Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), and Tri-County Regional Energy Network (3C-REN) hereby submits to the California Public Utilities Commission (Commission) the 2019 JCM, as shown in Attachment A, pursuant to Ordering Paragraph (OP) 38 of D.18-05-041.

Background

On June 5, 2018, the Commission issued D.18-05-041 which adopted the Energy Efficiency Business Plans of Investor-Owned Utilities (IOUs) and Non-IOU Program Administrators (PAs) for the years between 2018 and 2025. D.18-05-041 acknowledged the potential overlaps between IOU PAs and non-IOU PAs and directed PAs with overlapping service areas to submit annual JCMs that show how the PAs would avoid or minimize duplication for programs that address a common sector in overlapping service territories. Specifically, OP 38 of D.18-05-041 directed the IOU PAs and Non-IOU PAs to submit their first annual JCMs for approval via Tier

2 advice letters no later than August 1, 2018, noting that the IOU PAs and Non-IOU PAs shall:

(1) summarize all the programs they intend to run and indicate which programs may overlap;

(2) describe how each will work with the other so that customers are informed of all options and not steered simply to their own programs; and

(3) describe how each will ensure customers are also aware of the others' programs, where that administrator does not have a similar offering.

2019 Joint Cooperation Memo

Attachment A of this Advice Letter (AL) contains the 2019 JCM between SoCalGas, PG&E, SCE, and 3C-REN. The JCM provides (1) a summary of all the programs 3C-REN intends to run and indicates which programs may overlap with SoCalGas, PG&E, and SCE; (2) provides a summary of the coordination efforts between 3C-REN and SoCalGas, PG&E and SCE; (3) provides a summary of the IOU PAs 2019 comparable program offering, if applicable (Appendix A); and (4) provides details regarding 3C-RENs' program compliance with D.12-11-015.

The Joint PAs make note that the budgets and programs outlined in this memo are the best estimates of 2019 offerings at the time of submittal and are not assumed to be approved. Programs and budgets will be reviewed and approved as part of the Annual Budget Advice Letter (ABAL).

Protest

Anyone may protest this AL to the Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received within 20 days of the date of this AL, which is August 21, 2018. The address for mailing or delivering a protest to the Commission is given below.

CPUC Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

A copy of the protest should also be sent via e-mail to the attention of the Energy Division Tariff Unit (EDTariffUnit@cpuc.ca.gov). A copy of the protest should also be sent via both e-mail and facsimile to the address shown below on the same date it is mailed or delivered to the Commission.

For SoCalGas: Attn: Ray B. Ortiz
Tariff Manager - GT14D6
555 West Fifth Street
Los Angeles, CA 90013-1011
Facsimile No.: (213) 244-4957
E-mail: ROrtiz@SempraUtilities.com

For PG&E: Erik Jacobson
Director - Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000
San Francisco, CA 94177
Facsimile No.: (415) 973-3582
E-mail: PGETarrifs@pge.com

For SCE: Gary A. Stern, Ph.D.
Managing Director – Statewide Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, CA 91770
Telephone No.: (626) 302-9645
Facsimile No.: (626) 302-6396
E-mail: AdviceTariffManager@sce.com

And

Laura Genao
Managing Director, State Regulatory Affairs
c/o Karyn Gansecki
Southern California Edison Company
601 Van Ness Avenue, Suite 2030
San Francisco, CA 94102
Facsimile No.: (415) 929-5544
E-mail: Karyn.Gansecki@sce.com

For 3C-REN: Susan Hughes
Senior Deputy Executive Officer
Ventura County
800 S. Victoria Avenue
Ventura, CA 93009
Telephone No.: (805) 654-3836
Facsimile No.: (805) 654-5106
E-mail: susan.hughes@ventura.org

Effective Date

SoCalGas believes that this submittal is subject to Energy Division disposition and should be classified as Tier 2 (effective after staff approval) pursuant to General Order (GO) 96-B. Therefore, SoCalGas respectfully requests that this submittal be approved on August 31, 2018, which is 30 calendar days from the date submitted.

Notice

A copy of this AL is being sent to SoCalGas' GO 96-B service list and the Commission's service list in R.13-11-005 and A.17-01-013. Address change requests to the GO 96-B service list should be directed by e-mail to tariffs@socalgas.com or call 213-244-2837. For changes to all other service lists, please contact the Commission's Process Office at 415-703-2021 or by e-mail at process_office@cpuc.ca.gov.

_____

Ronald van der Leeden[1]
Director - Regulatory Affairs

Attachments

[1] SCE, PG&E and 3C-REN have authorized SoCalGas to sign and submit this advice letter on their behalf.

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER SUBMITTAL SUMMARY
ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No. **SOUTHERN CALIFORNIA GAS COMPANY (U 904G)**

Utility type:
☒ ELC ☒ GAS
☐ PLC ☐ HEAT ☐ WATER

Contact Person: Ray B. Ortiz
Phone #: (213) 244-3837
E-mail: ROrtiz@semprautilities.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Submitted/ Received Stamp by CPUC)

Advice Letter (AL) #: 5335, et al.

Subject of AL: 2019 Joint Cooperation Memorandum (JCM) of SoCalGas, PG&E, SCE, and 3C-REN Pursuant to Decision (D.) 18-05-041

Keywords (choose from CPUC listing): Energy Efficiency

AL type: ☐ Monthly ☐ Quarterly ☒ Annual ☐ One-Time ☐ Other

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #:
D.18-05-041

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL[1]: N/A

Does AL request confidential treatment? If so, provide explanation: No

Resolution Required? ☐ Yes ☒ No

Tier Designation: ☐ 1 ☒ 2 ☐ 3

Requested effective date: 8/31/18

No. of tariff sheets: 0

Estimated system annual revenue effect: (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Ave.,
San Francisco, CA 94102
EDTariffUnit@cpuc.ca.gov

Southern California Gas Company
Attention: Ray B. Ortiz
555 West 5th Street, GT14D6
Los Angeles, CA 90013-1011
ROrtiz@semprautilities.com
Tariffs@socalgas.com

[1] Discuss in AL if more space is needed.

ATTACHMENT A

Advice No. 5335, et al.

SoCalGas, PG&E, SCE, and 3C-REN
2019 Joint Cooperation Memorandum

(Appendix A - IOU(s) Portfolio Summary of Programs Offered for 2019)
(Appendix B - IOU Workforce Education and Training Class List)

ATTACHMENT A

SoCalGas, PG&E, SCE, AND 3C-REN
2019 JOINT COOPERATION MEMORANDUM

Table of Contents

I. 3C-REN PORTFOLIO SUMMARY OF PROGRAMS OFFERED FOR 2019

Table 1. 3C-REN Summary of programs

3C-REN Program Unique ID	Sector	Estimated Annual Budget[1]	Eligible Measures
3C-REN WE&T (3C-WET-001)	WE&T	$1,270,776	N/A
3C-REN C&S (3C-CC-001)	Codes and Standards	$1,796,749	N/A
3C-REN RES DI (3C-R-001)	Residential	$2,896,875	LED lighting, air sealing, insulation, HVAC measures, water flow controls, smart thermostat, power strip, plug load feedback device, duct system servicing, appliances, pool pumps, and water heating measures.[2]

II. SUMMARY AND COORDINATION OF 3C-REN AND SoCalGas, SCE, AND PG&E PROGRAMS OFFERED FOR 2019 THAT ARE COMPARABLE

A. 3C-REN Workforce, Education, and Training (WE&T) Program (3C-CC-001)

The 3C-REN proposes a cross-cutting WE&T program designed to fill gaps in current investor-owned utilities[3] (IOU) offerings for the 3C-REN territory, as the region is far removed from IOU training & resource hubs. The current IOU training and education programs require substantial travel to energy centers outside of the Tri-County area and are often not designed to meet the needs of local building professionals. The 3C-REN program will offer career pathways and enrichment by providing access to in-person trainings, mentorship opportunities and cross promotion of IOU workforce trainings, including hard-to-reach (HTR) workers and those in identified disadvantaged communities (DACs).

[1] Actual budget information will be provided in 3C-REN's Energy Efficiency Annual Budget Advice Letter filing on September 4, 2018.

[2] Please note that this is a preliminary list of measure types, and that the final measures will be provided in the program Implementation Plan.

[3] For the purposes of this Joint Cooperation Memo, the IOUs consist of SoCalGas, SCE and PG&E.

Building professionals living and working in the 3C-REN territory face unique challenges given the dispersed nature of communities within the Tri-County Central Coast Region. The region, and its building professional workforce, have historically struggled to fill key positions in energy efficiency, including the retrofit market and energy code compliant new construction. The 3C-REN WE&T activities will address these challenges through collaboration with existing providers, programs, apprenticeship-style learning, targeted management, technical trainings for building professionals, and integrated resources for design and compliance professionals.

The 3C-REN territory has two primary needs for training and education in addition to local, in-person mentorship:

- Technical Code Compliance, Home Performance and zero net energy (ZNE);
- "Soft Skills" Training for better communications, sales and marketing training and business management.

The 3C-REN will leverage established contractor and program relationships to provide technical trainings, Energy Advisor in-field job and installation mentoring, construction firm specific trainings and provide certification opportunities. The 3C-REN's partnerships and Residential Energy Advisor service provide a direct connection to the workforce, leverage and improve the existing labor force and provide apprenticeship-style trainings with real-time experience that business owners value most. This will set up a network of building professionals and connection to the workforce seeking training and career development.

The 3C-REN will apply a holistic approach to the market with highly targeted training events, using apprenticeship and mentoring style models to enhance the workforce within the 3C-REN territory. Workforce training will be real world reinforced while simultaneously influencing direct energy savings. As a result of a stronger workforce, building departments will increase efficiency and efficacy with existing resources.

The program budget for 3C-REN WE&T, 3C-WET-001 $1,270,776.

The program targets local building professionals needing more in-depth training, such as contractors, HVAC, engineers, architects, designers, certified energy managers, local jurisdictions' building & safety department staff, lighting professionals, real estate professionals, raters, including professionals in DACs and HTR areas, as well as other key market actors.

The 3C-REN's WE&T program is non-resource and will serve to support 3C-REN and IOU programs in the region by training the workforce that can deliver resource programs.

1. Comparable SoCalGas, SCE and/or PG&E Programs

Table 2: WE&T Program Comparison

WE&T	3C-REN	PG&E	SCE	SoCalGas
Non-Resource Program Name	3C-REN WE&T	PG&E WE&T Integrated Energy Efficiency Training (IEET) [4]	SCE WE&T IEET[5]	SoCalGas WE&T IEET [6]
Eligible Measures	N/A	N/A	N/A	N/A
Estimated 2019 Budget[7]	$1,270,776	$8,564,820	$4,480,729	$2,548,697
Target Audience	Local building professionals needing more in-depth training, such as contractors, HVAC, engineers, architects, designers, certified energy managers, local jurisdictions' building & safety department staff, lighting professionals, real estate professionals, raters, and professionals in DACs and HTR areas, as well as other key market actors.	Any person who designs, builds, maintains, plan checks, inspects, and/or operates buildings including engineers, architects, contractors, lighting designers, HVAC technicians, real estate professionals, building operators, facility managers, energy consultants, plans examiners, building inspectors, and more. Additionally, we support other organizations' instructors who are also training a similar audience.	Workforce needing technical residential, multi-family, and/or small business trainings at Energy Centers or online via simulcast or webinar.	Workforce related education and training to occupations supporting resource program sectors. Training will be conducted at Energy Center, alternative site locations and distribution channels in collaboration as appropriate with non-IOU sources, feasible for reaching target audiences.

[4] The C&S Compliance Improvement subprogram is also a comparable program. More information on this program is listed in Section B.
[5] The C&S Compliance Improvement subprogram is also a comparable program. More information on this program is listed in Section B.
[6] The C&S Compliance Improvement subprogram is also a comparable program. More information on this program is listed in Section B.
[7] Actual budget information will be provided in 3C-REN's 2019 Energy Efficiency Annual Budget Advice Letter filing on September 4, 2018.

Pacific Gas & Electric

The PG&E WE&T IEET subprogram (formerly Centergies) offers hundreds of technical workforce trainings per year with the goal of equipping a California workforce with the tools, resources, and skills to meet the State's climate goals. Appendix A includes a categorized list of the residential, multi-family, and/or small business trainings conducted in 2017 and 2018 to date as an illustration of our potential 2019 offerings in the three areas that appear of greatest interest to the 3C-REN—residential; multi-family, and small/medium business. Appendix A also includes a full list of approximately 250 WE&T training offerings in the same period.

Some of the classes listed in Appendix A are restricted to PG&E's physical Energy Centers in Stockton, San Ramon for food service, or San Francisco, due to the need to use large teaching props or laboratories. However, the majority of classes in Appendix A can be offered at off-site locations and/or via online simulcast or webinar, especially if a local organization will assist with marketing and outreach to ensure good attendance from the appropriate target audience, assuming that the instructor is willing and able to travel. PG&E's WE&T program also has an online learning platform, many of which are focused on residential construction and contractors. See Appendix A for a list of on-demand classes. Section B below also includes more information on additional Codes and Standards training provided by the IOUs.

PG&E also has a tool lending library with thousands of energy diagnostic tools available to borrow at no-cost. This offering addresses an up-front cost barrier faced by many small businesses and energy consultants. Tools are available to borrow at our Stockton and San Francisco Energy Centers. PG&E can ship the tool anywhere in California if the customer or 3C-REN covers shipping costs.

The PG&E WE&T team does not offer soft skills training such as interviewing skills, resume writing, etc. PG&E will coordinate with organizations that offer soft skills training as part of the Statewide Career and Workforce Readiness (CWR) program in 2019 (See Section 3 below).

PG&E WE&T does not offer the certifications listed in the 3C-REN Business Plan – BPI, HERS, or NATE; however, PG&E does support these certifications by providing classes that prepare students to take the tests and complete them successfully. Examples include PG&E's IHACI NATE Series, an 8-part class that prepare technicians to take the test. IHACI is an approved NATE testing proctor. Another example is PG&E's Combustion Safety and Depressurization class that prepares workers to take the BPI examination.

Southern California Edison

SCE WE&T Integrate Energy Education Training Program – [SCE-13-SW-010A]

The SCE Workforce WE&T Integrate Energy Education Training program (formerly Centergies), offer resources to help shape the future energy workforce through occupational, employer and technology focused workshops and seminars, along with workplace-based hands-on technical training. These programs aim to provide pathways and training for certifications and credentials in energy-related industries.

In addition to the trainings offered, the Foodservice Technology Center conducts standards-based equipment testing and evaluation that enhance commercialization of emerging energy efficient technologies and programs. These services are delivered with technical integrity and scientific rigor in order to ensure our partners stay competitive and maintain cost effectiveness.

The Energy Centers provide a host of other value-added customer programs and services such as the Tool Lending Library, tours, and on-site energy audits at no-cost to the customer.

Southern California Gas Company

SCG3729 - SoCalGas WE&T Integrated Energy Efficiency Training (IEET)

The SoCalGas WE&T Integrated Energy Efficiency Training (IEET) subprogram (formerly Centergies) will offer both technical and foodservice workforce trainings that can leverage 3C-REN local contacts to inform and equip workforce talent with skills to assist in meeting the State's energy and climate goals. Appendix A includes a list of trainings completed in 2017

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 Post-secondary institution who are training future generations of the energy workforce by providing them energy efficiency, sustainability, and green career awareness 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.

2. Coordination Protocol between Programs

The goal of coordination between 3C-REN and the IOU WE&T programs, including Local Government Partnerships[8], is to ensure that ratepayer funds deliver resources efficiently and effectively across the shared territories. With that in mind, the IOUs and 3C-REN will approach coordination with the goal of offering transparency through regular communication, efficiency through a collaborative approach to any shared resources, and support for the success of programs across the service area.

3C-REN aims to provide coverage not currently being provided by the IOUs, as well as services targeting hard-to-reach markets that may complement existing IOU resources. To ensure 3C-REN can meet these eligibility categories, the IOUs will provide 3C-REN with their list of available WE&T trainings including those in development stages. Whenever feasible, 3C-REN will leverage existing IOU curriculum and training by communicating training needs via email or in regular coordination meetings with IOU partners. A clear chain of communication and identified contacts will be exchanged for each program and/or sub-program.

IOUs will provide their list of trainings and trainings-in-development to 3C-REN on a quarterly basis and will include the following information:

- Class name(s)
- Description(s)
- Instructor name(s)
- Whether IOUs owns content (as opposed to licensing it)
- Mode of access and location (ex: in-person, training center/city, online)
- Class schedule (if one exists)

Once 3C-REN reviews this list, 3C-REN will determine which existing offerings are to be leveraged and coordinate with the IOUs to deliver these resources. If 3C-REN determines there is a training gap, 3C-REN will develop additional training resources and communicate that to the IOUs, working to avoid duplication by leveraging any existing resources. The IOUs and 3C-REN will administer a post-course evaluation to course participants to assess the quality of the courses.

[8] Local Government Partnership Programs in 3C-REN; Ventura County Regional Energy Alliance, San Luis Obispo County Energy Watch, North Santa Barbara Energy Watch Partnership and with South County Energy Efficiency Partnership in Santa Barbara.

3. Coordination between Statewide (SW) program(s)

With the change to a single statewide administrator for the Career and Workforce Readiness (CWR) and Career Connections subprograms in WE&T, and that administrator being PG&E, the 3C-REN proposes to leverage the coordination protocol described above to include any statewide considerations. The 3C-REN program does not include a traditional K-12 student component, so coordination on the Connections sub-program is likely not needed. PG&E will engage the 3C-REN after a vendor is secured for the CWR subprogram (likely late 2019 or early 2020) to discuss a coordination strategy.

B. 3C-REN CODES AND STANDARDS (C&S) PROGRAM 3C-CS-001

The 3C-REN proposes a cross-cutting C&S program designed to fill gaps in current IOU offerings for the 3C-REN territory. The 3C-REN program will offer local, person-to-person trainings and mentorship opportunities, as well as counter and on-call expert assistance for codes and standards. In addition to coordinating with the IOUs to leverage existing Statewide C&S resources, for classroom and online trainings, the 3C-REN will establish a Code Coach offering to run concurrent to and alongside other training efforts.

Building departments in the Central Coast Region will receive building performance support and mentoring for plan review and field compliance. All design-side stakeholders, from the architect to field inspector and from the mechanical engineer to the plan checker, will be encouraged to attend trainings. The Code Coach approach, having local counter-to-counter and on-call experts for the region, will foster an environment where stakeholders have a deeper understanding of building performance and interrelated concerns. The goal is to ensure consistency throughout the Central Coast Region, providing the workforce with a more stable business climate and known code compliance resources.

The program budget for 3C-REN C&S, 3C-CS-001 shall be $1,796,749.

The target audience is all construction design-side stakeholders, including building departments, architects, field inspectors, mechanical engineers, and plan checkers. This is a non-resource program.

1. Comparable SoCalGas, SCE and/or PG&E Programs

The IOU Compliance Improvement subprogram targets actors within the building and appliance energy code supply chains to maintain comprehensive statewide compliance with energy codes and appliance standards, such as: manufacturers, distributors, retailers, architects, energy consultants, contractors, plans examiners, building inspectors, etc. Whereas the Energy Commission is responsible for implementing state policy by establishing new codes and standards, others (architects, energy consultants, mechanical engineers, IOUs, builders, contractors, etc.) are responsible for interpreting the code and completing compliance forms and building officials (CALBO) are responsible for enforcing the code. Building codes and appliance standards can be difficult to understand and time consuming to implement so some industry actors fail to comply with regulatory requirements.

Compliance improvement program needs are determined through a performance-based solutions approach to identify training, tools, resources and outreach necessary to narrow the gap between actual and desired performance, and principals of adult learning theory are employed to improve knowledge swings during training and increase long-term retention. Multiple training modalities are used to maximize student participation. One consistent curriculum is developed by the compliance improvement program and delivered statewide by a team of subject matter experts.

Table 3: C&S Program Comparison

C&S	3C-REN	PG&E	SCE	SoCalGas
Non-Resource Program Name	3C-REN C&S	Statewide C&S Compliance Improvement Subprogram	Statewide C&S Compliance Improvement Subprogram	Statewide C&S Compliance Improvement Subprogram
Eligible Measures	N/A	N/A	N/A	N/A
Estimated 2019 Budget[9]	$1,796,749	$4,044,129	$1,382,984	$251,207
Target Audience	All design-side stakeholders	All stakeholders impacted by the energy code	All stakeholders impacted by the energy code	All stakeholders impacted by the energy code

[9] Actual budget information will be provided in the Program Administrator's 2019 Energy Efficiency Annual Budget Advice Letter filing on September 4, 2018.

2. Coordination Protocol between programs

The same coordination protocol as mentioned above for WE&T applies to Codes and Standards classroom and online trainings. Again, the goal of coordination between 3C-REN and utility programs is to ensure that ratepayer funds deliver resources efficiently and effectively across the shared territories. With that in mind, the IOUs and 3C-REN will approach coordination with the goal of offering transparency through regular communication, efficiency through a collaborative approach to any shared resources, and support for the success of programs across the service area.

3C-REN aims to provide coverage not currently being provided by the IOUs, as well as services targeting hard-to-reach markets that may complement existing IOU resources. The majority of 3C-REN's activities are related to the Energy Code Coach who will conduct outreach to local building departments and market actors by offering on-demand, local, in-person and customized technical support, which will not require regular IOU coordination.

For other programs where 3C-REN is filling in a gap in IOU programs, the utilities will provide 3C-REN with their list of available Codes and Standards trainings including those in development stages. Whenever feasible, 3C-REN will leverage existing IOU curriculum and training by communicating training needs via email or in regular coordination meetings with IOU partners. A clear chain of communication and identified contacts will be exchanged for each program and/or sub-program.

IOUs will provide their list trainings to 3C-REN on a quarterly basis and will include the following information:

- Class name(s)
- Description(s)
- Instructor name(s)
- Whether IOUs owns content (as opposed to licensing it)
- Mode of access and location (ex: in-person, training center/city, online)
- Class schedule (if one exists)

Once 3C-REN reviews this list, 3C-REN will determine which existing offerings are to be leveraged and coordinate with the IOUs to deliver these resources. If 3C-REN determines there is a training gap, 3C-REN will develop additional training resources and communicate that to the IOUs, working to avoid duplication by leveraging any existing resources.

The IOUs will make the 3C-REN aware of resources available as courses are scheduled for delivery and new job aides (Energy Code Ace "resources") are

developed. A portion of the Statewide C&S Team's training schedule is set at the beginning of the year while the rest remains flexible since most courses are offered upon request as a result of the team's outreach efforts. All offerings are posted on the Energy Code Ace website training page as courses are scheduled.

3. Coordination between SW program(s)

The majority of 3C-REN's C&S activities are related to the Energy Code Coach who will conduct outreach to local building departments and market actors by offering on-demand, local, in-person and customized technical support, which will not require regular statewide coordination. However, the Code Coach may provide referrals to customers who will benefit from statewide programs.

There is an extensive list of classes offered by the Statewide Codes and Standards team. The statewide administrator will provide their list of trainings to 3C-REN on a quarterly basis and will include the following information:

- Class name(s)
- Description(s)
- Instructor name(s)
- Whether IOUs owns content (as opposed to licensing it)
- Mode of access and location (ex: in-person, training center/city, online)
- Class schedule (if one exists)

Once 3C-REN reviews this list, 3C-REN will determine which existing offerings are to be leveraged and coordinate with the statewide administrator to deliver these resources. If 3C-REN determines there is a training gap, 3C-REN will develop additional training resources and communicate that to the statewide administrator, working to avoid duplication by leveraging any existing resources.

Should the need to coordinate efforts arise, 3C-REN will follow similar protocols as defined under the coordination protocol between programs. Specifically, 3C-REN will work with the statewide administrator to identify appropriate program contacts, confirm existing resources, and collaboratively determine if resources should be jointly offered or if 3C-REN should build upon statewide resources.

C. 3C-REN RESIDENTIAL DIRECT INSTALL PROGRAM 3C-R-001

The 3C-REN proposed a residential direct install (RES DI) program designed to fill a gap in current IOU offerings for the 3C-REN territory, as the region is far removed from IOU training & resources hubs and experiences significant market confusion. The 3C-REN Region is served by three different IOUs – PG&E to the north, SCE

to south, SCG in all three counties – with overlapping electrical services in Santa Barbara and Ventura. This increased coverage has not resulted in a higher level of service, but instead led to increased confusion due to different programs, requirements and providers. The 3C-REN program will deliver a direct install (DI) program that targets hard-to-reach (HTR) residential customers, including single family and multifamily, renters and owners, and Disadvantaged Communities (DACs) in Ventura, Santa Barbara and San Luis Obispo Counties, offering a single, unified program to regional residents.

The program will provide energy and behavior change education, installation of simple energy saving measures to build customers trust and interest and deliver a pathway to deeper savings by offering co-pay options for more substantial upgrades. 3C-REN will partner with local non-profits (e.g. Community Action Partnerships, or CAPs), who currently deliver the Energy Savings Assistance (ESA), Middle Income Direct Install (MIDI), and Low-Income Home Energy Assistance Programs (LIHEAP) to leverage their experience and infrastructure to provide 3C-REN program services to a broader audience than they currently serve.

Qualifying customers will receive an in-home visit from a trained assessor who will collect information on the home, provide consumer education. and install DI measures. Education will focus on behavioral changes and easy actions the customer can take to reduce energy use. The program will employ digital education tools such as energy education videos that customers can watch while DI measures are being installed to reduce time spent in the home. Assessors will also cross-promote utility bill management tools (e.g. Green Button) and demand response programs (e.g. SCE Summer Rate Program). Additionally, assessors will provide initial information on co-pay options for more substantial upgrades.

A WE&T and C&S overlay is included in this program as 3C-REN will work with local non-profit low-income providers to help build their staffing capacity and provide training, as well as code coaching for permitted projects. Some projects may also be used as hands-on, in the field training opportunities that will result in increased quality assurance. Partnering with local non-profit and low-income service providers also provides an opportunity to create career pathways for disadvantaged workers as many of the crew members and contractors live in the DACs that they serve.

The program budget for 3C-REN RES DI, (3C-R-001) shall be $2,896,875.

The 3C-REN Residential DI program will target hard-to-reach (HTR) residential customers, including single-family and multifamily, renters and owners, and moderate-income families not currently be served by, nor meet the criteria of current ESA, LIHEAP, or MIDI in Ventura, Santa Barbara and San Luis Obispo Counties.

This resource program will include measure types including lighting, air sealing, insulation, HVAC, water flow controls, smart thermostat, power strip, plug load feedback device, duct system servicing, appliances, pool pumps, and water heating measures.[10] 3C-REN is currently engaging IOUs and organizations that contract DI services to identify additional measures beyond those offered by ESA, MIDI, and LIHEAP that have potential to enhance service and savings, as well as overcome any administrative barriers that may inhibit successful delivery. Single measures will be allowed. Savings will be deemed per measure.

1. Comparable SoCalGas, SCE and/or PG&E Programs

Table 4: RES DI Program Comparison

DI	3C-REN	PG&E	SCE	SoCalGas
Resource Program Name	3C-R-001 Residential Direct Install	PGE210011 – Moderate Income Direct Install (MIDI) Program	SCEG-13-SW-001G - Residential Direct Install (formerly Energy Upgrade California – MIDI)	SCG9705 - SoCalGas MIDI Program
Eligible Measures	LED lighting, air sealing, insulation, HVAC measures, water flow controls, smart thermostat, power strip, plug load feedback device, duct system servicing, appliances, pool pumps,	LED lighting, water savings measures, HVAC tune-ups and efficiency retrofits, advanced power strips, and smart thermostats	• HVAC Measures (Efficient Fan Control, Brushless Fan Motor, Air Flow Adjustment, Condenser Coil Cleaning, Refrigerant Charge Adjustment, Duct Test and Seal, Window Evaporative Cooler) • Variable Speed Pool Pump • Residential Smart (Communicating) Thermostat	• Energy Education • Attic Insulation • Attic Insulation – R13 – Knee Wall • Exhaust Venting (Kitchen/Bath) – cut opening with vent (Done in conjunction with attic insulation) • Vent – Eave (Done in conjunction

[10] Please note that this is a preliminary list of measure types, and that the final measures will be provided in the program Implementation Plan.

DI	3C-REN	PG&E	SCE	SoCalGas
	and water heating measures.[11]			with attic insulation) • Duct Repair – (Done in conjunction with attic insulation) • Duct Testing • Duct Sealing • Duct Board Installation • Low Flow Kitchen Faucet Aerator • Low Flow Bathroom Faucet Aerator • Low Flow Showerhead • Low Flow Handheld Showerhead • Showerhead adaptor • Shower Diverter Valve (in conjunction with Low Flow Showerhead) • Thermostatic Shower Valve • Smart Thermostat • Natural Gas Appliance Testing (NGAT) (done in conjunction with Duct Sealing)
Estimated 2019 Budget[12]	$2,896,875	$3,000,000	$12,635,284	$2,000,000

[11] Please note that this is a preliminary list of measure types, and that the final measures will be provided in the program Implementation Plan.

[12] Actual budget information will be provided in the Program Administrator's 2019 Energy Efficiency Annual Budget Advice Letter filing on September 4, 2018.

DI	3C-REN	PG&E	SCE	SoCalGas
Target Audience	Will target hard-to-reach (HTR) residential customers, including single-family and multifamily, renters and owners, and moderate-income families not currently being served by, nor meet the criteria of current ESA, LIHEAP, or MIDI in Ventura, Santa Barbara and San Luis Obispo Counties.	The MIDI program serves moderate income and disadvantaged and/or hard-to-reach communities across the PG&E service territory. Eligible customers include those with incomes under 400% of the federal poverty level, renters and lessors, customers whose primary language is other than English, and customers residing outside of the San Francisco and Sacramento Metropolitan regions.	Residential single-family home customers within SCE's service territory	Mainstream, market rate homeowners. MIDI program in the Central Valley, incomes (201 to 300% of the federal poverty guidelines) just above the Energy Savings Assistance (ESA) program requirements.

Pacific Gas & Electric

PGE210011 – Moderate Income Direct Install (MIDI) Program

The MIDI program targets hard-to-reach and moderate income residential customers. Program outreach conducted both independently as well as through integration with the ESA Program to serve those customers who do not qualify for ESA because the customer's income level falls above the income guidelines or because the customer cannot produce the appropriate, ESA required documentation.

Through the MIDI program, the ESA Energy Efficiency Services ("EES") Contractors, and other approved contractors will serve these hard-to-reach and moderate income customers in order to avoid a missed opportunity to provide

energy efficiency services. MIDI customers will be offered an energy assessment, energy education, and low or no-cost installation of measures.

Southern California Edison

SCE Residential Direct Install (formerly Energy Upgrade California – Middle Income Direct Install [MIDI]) – [SCE-13-SW-001G]

The Residential Direct Install program targets single-family residential customers. The program allows customers to realize the value of energy efficiency through a variety of no-cost products and services to meet individual customer needs and enable continuous energy management. The services offered through the Residential Direct Install program are leveraged by various Water District agencies that deploy water conservation program offerings to deliver a comprehensive water energy nexus solution.

Target marketing is performed in select areas to create customer awareness and engagement. Customers are provided with education on the measures installed in their homes, other measures that could further improve their energy savings, and a general understanding about the importance of saving energy and the large impact everyday behavior has on conservation.

Southern California Gas Company

SoCalGas Middle Income Direct Install Program – Energy Upgrade California (SCG 3705)

The Middle Income Direct Install (MIDI) program is an extension of SoCalGas Energy Upgrade California (EUC) Program (SCG 3705) is a direct install program for customers whose income falls between 201% and 300% (changes pending) of the federal poverty guidelines. The Program works collaboratively with the ESA Program. The Whole Building Program traditionally requires significant financial contributions by customers who wish to participate. MIDI closes this financial gap by first installing no-cost measures thereby reducing the total amount of money a customer would need to invest in their property in order to participate in the Single Family SF/ Multifamily MF HUP Program. The MIDI Pilot encourages residential owners/property managers of SF and MF properties to install comprehensive EE improvements.

2. Coordination Protocol between Programs

As described for previous programs, the IOUs and 3C-REN will approach coordination with the goal of offering transparency through regular communication, efficiency through a collaborative approach to any shared resources, and support for the success of programs across the service area.

For its residential DI program, 3C-REN and the IOUs will communicate via email or in regular coordination meetings. A clear chain of communication and identified contacts will be exchanged for each program.

During program design and launch 3C-REN will review IOU program materials to identify potential coordination opportunities for Direct Install, including participation criteria, eligibility and measures. The IOUs will make the 3C-REN aware of resources available. 3C-REN will communicate with the program contact for any identified potential overlap or other area of potential coordination.

The IOUs will make the 3C-REN aware of programs and resources available. 3C-REN will determine whether resources, such as for low and moderate-income families, should be jointly offered or if the 3C-REN will build upon IOU resources to offer independently. This will assist with market penetration and afford both the IOU and 3C-REN cross promotion and continuity of services.

There may be instances where a customer may contact 3C-REN for resources, and 3C-REN may identify that the customer would be best served by an IOU program. 3C-REN and the IOUs will establish a protocol for customer handoff should either program identify a referral for another organization's resources. The handoff protocol should minimize the number of customer touchpoints to maximize the potential for program participation. Ideally, 3C-REN will be able to provide a "warm" or immediate handoff to the IOUs while the customer is actively engaged by email/phone, so that the customer experiences a seamless service offering between 3C-REN and the IOUs.

3. Coordination between SW program (s)

The 3C-REN residential DI program offering is not substantially similar to any statewide program and regular coordination to avoid duplication is deemed unnecessary. However, there are some portions of the program that may allow for and require coordination among programs. In particular, 3C-REN will provide referrals to statewide financing programs to program participants when appropriate. 3C-REN will follow similar established coordination protocols for coordination with utility programs to ensure coordination with statewide programs.

III. 3C-REN PROGRAM COMPLIANCE WITH D.12-11-015

A. 3C-REN UNDERTAKING ACTIVITIES THAT UTILITIES CANNOT OR DO NOT INTEND TO UNDERTAKE.

Although the IOUs do offer C&S and WE&T resources, the IOUs are not currently delivering localized, hands-on services in the 3C-REN service area. The majority of the IOU in-person trainings are offered at IOU training facilities, which are not located in 3C-REN service area. As noted in Decision (D.) 18-05-041 "3C-REN's proposed activities for WE&T and code compliance have value in terms of the significant distance of its service area to the IOUs' training centers."[13]

For WE&T, the 3C-REN program will offer regional, on-the-ground resources to address this gap. As noted in the 3C-REN Business Plan, "the current IOU training and education programs require substantial travel to energy centers outside of the area and are often not designed to meet the needs of a residential home performance workforce." Specifically, the 3C-REN program will help build career pathways by providing access to in-person trainings and mentorships, including HTR workers and those in identified DACs. This will include local Energy Advisor services for in-field training to build capabilities and on-the-job skills, a service not offered by the IOUs. Separately, 3C-REN will offer in-person training on technical and soft skills, a service not offered locally by the IOUs.

For C&S, the 3C-REN will establish a regional Code Coach offering to run concurrent to and alongside other training efforts. This approach will be more hands-on and locally relevant than existing IOU resources. Building departments in the Central Coast Region will receive building performance support and mentoring for plan review and field compliance. All design-side stakeholders, from the architect to field inspector and from the mechanical engineer to the plan checker, will be encouraged to attend trainings. The Code Coach approach, having local counter-to-counter and on-call experts for the region, will foster an environment where stakeholders have a deeper understanding of building performance and interrelated concerns.

[13] D.18-05-41, Finding of Fact 63.

B. 3C-REN UNDERTAKING PILOTS ACTIVITIES WHERE THERE IS NO CURRENT UTILITY UNDERTAKING, AND WHERE THERE IS A POTENTIAL FOR SCALABILITY TO A BROADER GEOGRAPHIC REACH, IF SUCESSFUL.

At this time, 3C-REN is not proposing a program using this threshold criteria for compliance with D.12-11-015. Instead, 3C-REN is proposing programs that both fill in gaps to IOU services and that target HTR markets.

C. 3C-REN UNDERTAKING PILOT ACTIVITIES IN HARD TO REACH MARKETS, WHETHER OR NOT THERE IS A CURRENT UTILITY PROGRAM THAT MAY OVERLAP.

As noted in Decision (D.) 18-05-041, the CPUC intends to "authorize 3C-REN's proposed business plan activities for residential direct install programs that target hard-to-reach customers."[14] Through its residential program, the 3C-REN program will deliver a DI program that targets hard-to-reach residential customers, including single family and multifamily, renters and owners, and DACs in Ventura, Santa Barbara and San Luis Obispo Counties. As noted in the Business Plan, "reported IOU residential savings in the Tri-Counties is not substantial" and "could be due the hard to reach elements on the geographic area and lack of ability to effectively reach customers consistently."

3C-REN aims to address this hard-to-reach market through its intervention strategies of "Strategy 1. Build trust and interest in energy savings over time," and "Strategy 2. Apply neighborhood approaches to achieve scale in reach and savings. Under the first strategy, activities will include offering a direct install program targeting hard-to-reach customers, as well as simple upgrade packages offered for cost to streamline easy installation and adoption of deeper retrofits in hard-to-reach customers. Under the second strategy, 3C-REN will deploy a neighborhood-based approach to engage hard-to-reach customers and integrate workforce development opportunities to build skills and community buy-in.

As noted in the Business Plan, "the 3C-REN intends to offer services to all residents in the three counties, however, the hard to reach populations of moderate income and rural areas will be targeted in marketing and outreach, as well as in program design." However, there may be instances where a customer may contact 3C-REN, but the customer would be best served by an IOU program. 3C-REN and the IOUs will establish a protocol for customer handoff.

[14] D.18-05-41, Conclusion of Law 54.

Table 5. 3C-REN CROSS-CUTTING & RESIDENTIAL D. 12-11-015 Compliance, by program

D.12-11-015 Threshold Criteria that apply for each program	Comparable IOU Program if applicable	1. Activities that utilities cannot or do not intend to undertake.	2. Pilot activities where there is no current offering, and where there is potential for scalability to a broader geographic reach, if successful.	3. Pilot activities in hard to reach markets, whether or not there is a current utility program that may overlap.
3C-REN WE&T 3C-WET-001	PG&E Integrated Energy Efficiency Training (IEET) SCE WE&T IEET (SCE-13-SW-010A) SoCalGas WE&T IEET (SCG 3729)	Strategy 3. Establish local, targeted training for building professionals. • Local Energy Advisor for in-field training to build capabilities and on-the-job skills • In-person training, hosted locally, on technical and soft skills		
3C-REN C&S 3C-CS-001	Statewide C&S Compliance Improvement Subprogram	Strategy 4. Provide Regional assistance to Building Departments and Jurisdictions to help comply and adjust to Codes and future updates. • Local Energy Code Coach service to provide ongoing technical training for building departments		

3C-REN Residential DI 3C-R-001	PG&E Moderate Income Direct Install Program (PGE210011) SoCalGas EUC – SoCalGas Middle Income Direct Install (SCG 3702) SCE Residential Direct Install (Formerly Energy Upgrade California – MIDI) (SCE-13-SW-001G)			Strategy 1. Build trust and interest in deeper energy savings over time. • Offer Direct Install program targeting hard-to-reach customers • Develop simple upgrade packages to streamline and offer easy installation and adoption of deeper retrofits Strategy 2. Employ neighborhood approaches to achieve scale in reach and savings. • Integrate workforce development into neighborhood programs to build skills and community buy-in

APPENDIX A - IOU(s) PORTFOLIO SUMMARY OF PROGRAMS OFFERED FOR 2019

For information on IOUs portfolio of programs, please refer to the California Energy Data and Reporting System https://cedars.sound-data.com/programs/list/.

Table 1. PG&E Summary of Comparable Programs

IOU Program Unique ID	Sector	Annual Budget	Eligible Measures
PG&E Integrated Energy Education Training Program (formerly Centergies) **[PGE21071]**	Cross-cutting: WE&T	$8,564,820	Not applicable. Non-resource program
PG&E Compliance Improvement Program **[PGE21053]**	Cross Cutting: Codes & Standards	$4,044,129	Not applicable. Non-resource program
PG&E Energy Fitness (Middle Income Direct Install) **[PGE210113]**	Residential	$3,000,000	LED lighting, water savings measures, HVAC tune-ups and efficiency retrofits, advanced power strips, and smart thermostats

Table 2. SCE Summary of Comparable Programs

IOU Program Unique ID	Sector	Annual Budget	Eligible Measures
SCE WE&T Integrate Energy Education Training Program (formerly Centergies) **[SCE-13-SW-010A]**	Cross-cutting: WE&T	$4,480,729	Not applicable. Non-resource program
SCE C&S – Compliance Improvement **[SCE-13-SW-008C]**	Cross Cutting: Codes & Standards	$1,382,984	Not applicable. Non-resource program
SCE Residential Direct Install Program **[SCE-13-SW-001G]**	Residential	$12,635,284	HVAC Measures • Efficient Fan Control • Brushless Fan Motor • Air Flow Adjustment • Condenser Coil Cleaning • Refrigerant Charge Adjustment

			• Duct Test and Seal • Window Evaporative Cooler Variable Speed Pool Pump Residential Smart (Communicating) Thermostat

Table 3. SoCalGas Summary of Comparable programs

IOU Program Unique ID	Sector	Annual Budget[15]	Eligible Measures
SCG3729 - SoCalGas WE&T Integrated Energy Efficiency Training (IEET)	Cross Cutting	$2,548,697	Not applicable.
SCG3726 – C&S – Compliance Enhancement	Cross Cutting	$ 251,207	Not applicable.
SCG 3705 - SoCalGas Middle Income Direct Install Program	Residential	$2,000,000	• Energy Education • Attic Insulation • Attic Insulation – R13 – Knee Wall • Exhaust Venting (Kitchen/Bath) – cut opening with vent (Done in conjunction with attic insulation) • Vent – Eave (Done in conjunction with attic insulation) • Duct Repair – (Done in conjunction with attic insulation) • Duct Testing • Duct Sealing • Duct Board Installation • Low Flow Kitchen Faucet Aerator • Low Flow Bathroom Faucet Aerator • Low Flow Showerhead • Low Flow Handheld Showerhead • Showerhead adaptor

[15] Actual budget information will be provided in the Program Administrator's 2019 Energy Efficiency Annual Budget Advice Letter filing on September 4, 2018.

			• Shower Diverter Valve (in conjunction with Low Flow Showerhead) • Thermostatic Shower Valve • Smart Thermostat • Natural Gas Appliance Testing (NGAT) (done in conjunction with Duct Sealing)

Appendix B –IOU Workforce Education and Training Class List

PG&E Workforce Education and Training (WE&T) Class List

1. Classes in Alignment with 3C-REN Focus Areas, 2017 and 2018-to-date

The classes listed below are a subset of all PG&E trainings offered from January 1, 2017 to June 30, 2018. These trainings are aligned with 3C REN's business plan, which emphasized the need for residential, multi-family, and small-medium business trainings. The classes are organized into four categories—Building Envelope; Codes and Standards; HVAC- Residential; and Other, which includes zero net energy (ZNE), Renewables, Energy Simulation Software, and Water Efficiency.

A. Building Envelope
1. Advanced Framing for Energy and Resource Efficiency
2. Advanced Framing Saves Energy, Material and Labor: Rebuilding for Greater Comfort and Affordability
3. Air Sealing and Insulating Existing Homes
4. Air Sealing for an Efficient New Home
5. Air Sealing to Achieve Zero Net Energy - New Techniques and Applications
6. Building Science Principles for High Performance Residential Building Enclosures
7. Continuous Exterior Insulation & Moisture Management: Applied Building Science for Residential Building Enclosures
8. High Performance Crawl Spaces: A Practical Approach to Air Sealing and Insulating
9. High Performance Enclosures: Air Tight, Well-Insulated, Properly Ventilated - Rebuilding for Comfort, Efficiency, and Affordability
10. How to Design and Build High Performance Walls and Roofs
11. Thermal By-Pass, Quality Insulation Installation, Advanced Building Envelope - MI-BEST Series 5
12. Window Selection for New and Existing Homes

B. Codes and Standards
13. 2019 Title 24: Where We're Headed with the Residential Standards - (In-Person and Webinar)
14. Title 24 Proper Procedures for Charging Air Conditioners and Heat Pumps
15. Please see attached Energy Code Ace Standards Essentials Courses handout for list of courses offered statewide by the C&S Compliance Improvement Subprogram

C. HVAC/R
16. ACCA Manual D - Duct Design
17. ACCA Manual J - Equipment Sizing and Selection
18. Advanced ACCA Manual D
19. Air Conditioning and Heat Pump Refrigeration Module by IHACI: Sessions 1-4
20. Balanced Ventilation for High Performance Homes
21. Electric Module by IHACI: Sessions 1 - 2
22. Hands-on Blower Door Duct Testing and Combustion Appliance Safety for Laney College

23. HVAC/R New Hire Module by IHACI: Sessions 1 - 4
24. NATE Training Series by IHACI: Sessions 1-8
25. Optimizing Residential HVAC System Performance
26. Refrigerant Charge Verification - MI-BEST Series 3
27. Residential Heat Pumps: Quality Design and Installation
28. Residential Heating, Ventilation, and Air Conditioning (HVAC): Small Heat Pumps and Small Furnaces for High Efficiency and More Affordability

D. Other (Including ZNE, Renewables, Simulations, Water Efficiency)
29. ZNE: 2020 Is Just Around the Corner!
30. Best Practice Designs for Cost Effective Approaches to ZNE Commercial Building Enclosures
31. Design Thinking for Zero Net Energy - Rebuilding for Comfort, Efficiency, and Affordability
32. Solar PV: Technology and Valuation
33. Heat Pumps: Residential Applications and Comparison with Solar Energy Systems
34. CBECC-Res: Under the Hood
35. EnergyPro 7 Software for 2016 Title 24 Residential Compliance: Introduction Session & Intermediate/Advanced Session
36. Water Heaters Efficiency
37. Water, Energy and Time Efficient Hot Water Systems for New Homes - Rebuilding for Comfort, Efficiency, and Affordability
38. Electric Heat Pumps for Domestic Space and Water Heating: Applications and Considerations
39. CSD Engineering M&V Training
40. Air Flow Measures and Static Pressure - MI-BEST Series 2
41. Building Envelope and Duct Testing - MI-BEST Series 1
42. Building Pressures and Ventilation Verification - MI-BEST Series 4
43. Commissioning Residential Building Enclosures (In Person and Simulcast)
44. National Association of Realtors (NAR) Green Certification Workshop
45. Residential CEA Exam Preparation Workshop

2. **Full List of PG&E Classes, 2017 and 2018-to-date**

PG&E hosted the following classes between January 1, 2017 and June 30, 2018. Many were offered multiple times according to demand. PG&E offers internet or simulcast participation options for remote attendees in most circumstances unless the hands-on nature of the class prevents virtual instruction.

1. 0-10V Dimming: Technology, Techniques & Applications
2. 2016 Title 24 Part 6 Essentials - Nonresidential Standards Essentials for Architects
3. 2016 Title 24 Part 6 Essentials: Standards & Technology for Nonresidential Lighting
4. 2017 Food Service Forecast
5. 2018 Foodservice Forecast Seminar
6. 2019 Title 24: Where Were Headed with the Nonresidential Standards - Webinar
7. 2019 Title 24: Where Were Headed with the Residential Standards - Webinar
8. A Class for Control Freaks: Getting the Most from your Building Automation System
9. ACCA Manual D - Duct Design
10. ACCA Manual J - Equipment Sizing and Selection

11. Advanced ACCA Manual D
12. Advanced Framing for Energy and Resource Efficiency
13. Advanced Framing Saves Energy, Material and Labor Rebuilding for Greater Comfort and Affordability
14. Advanced Lighting Control Systems Case Studies
15. Advanced Lighting Control Systems: Hands-On Workshop
16. Advanced OpenStudio
17. Air Conditioning and Heat Pump Refrigeration Module by IHACI: Sessions 1-4
18. Air Distribution Module by IHACI: Sessions 1-4
19. Air Flow Measures and Static Pressure - MI-BEST Series 2
20. Air Sealing and Insulating Existing Homes
21. Air Sealing for an Efficient New Home
22. Air Sealing to Achieve Zero Net Energy - New Techniques and Applications
23. Airside Economizer: Design, Performance, and Commissioning
24. Airside Economizers: Design, Performance, and Commissioning
25. Allergens & Gluten Free: What You Need to Know
26. An Overview of the Commissioning Process for New and Existing Buildings
27. Annual Water Conservation Showcase
28. Applying State of the Art Commercial Kitchen Ventilation Technologies for Comfort and Performance
29. ASHRAE Guideline 36 Best of Class Sequences and Companion Functional Performance Tests for HVAC Systems
30. Balanced Ventilation for High Performance Homes
31. Basic Excel for Energy Auditors
32. Basic of Solar Electric Systems
33. Basics of Photovoltaic (PV) Systems for Grid-Tied Applications
34. Best Practice Designs For Cost Effective Approaches to ZNE Commercial Building Enclosures
35. Best Practices for Industrial Lighting
36. Best Practices for Lighting Audits
37. Best Practices for Lighting Retrofits
38. Best Practices for Outdoor Lighting
39. Best Practices in Residential Hot Water Heater Systems
40. BPI Combustion Safety and Depressurization
41. BPI Overview of Combustion Safety Testing
42. Build a Better Burger
43. Building Enclosures: Continuous Exterior Insulation, Thermal Continuity, and High R-Value Walls
44. Building Envelope and Duct Testing - MI-BEST Series 1
45. Building Pressures and Ventilation Verification - MI-BEST Series 4
46. Building Science Principles and Practice for Nonresidential Enclosures
47. Building Science Principles for High Performance Nonresidential Building Enclosures
48. Building Science Principles for High Performance Residential Building Enclosures
49. CALCTP Systems Course
50. Calculating Lighting Solutions
51. California Building Energy Code Compliance (CBECC-COM) Software for the 2016 Title 24 Energy Code Introduction and Simplified Geometry
52. California Department of Public Health, Food and Drug Branch
53. Cancelled: Heating Hot Water and Steam Systems: Design, Performance, and Commissioning
54. CBECC-Res: Under the Hood

55. Charles Eley: Design Professional's Guide to Zero Net Energy Buildings
56. Chilled and Condenser Water Systems: Design, Performance, and Commissioning Issues
57. CKV Diagnosis & Prevention
58. Clearing the Air on Kitchen Ventilation
59. Collaborative Partnering: How Teams Use this Structured Process to Manage Risk, Resolve Issues and Achieve Exceptional Outcomes on Projects
60. Combustion Safety and Depressurization
61. Commercial Food Service: LEED Loads and NZE
62. Commercial HVAC/R Introduction Module by IHACI: Sessions 1-4
63. Commercial Package Unit Advanced Diagnostics
64. Commercial PV Systems: Key Concepts and Best Practices in Design, Commissioning and Maintenance
65. Commercial Quality Maintenance and Installation of Economizers
66. Commissioning Residential Building Enclosures
67. Contemporary Ways to Design with Daylight
68. Continuous Exterior Insulation & Moisture Management: Applied Building Science for Residential Building Enclosures
69. Control Systems: Design, Performance, and Commissioning
70. Cooking with Combi: Better Tasting Food, Fast
71. CRAF Eden ROP Class
72. CSD Engineering M&V Training
73. Daylight Metrics - An Overview for Designers and Building Professionals
74. Demand Control Ventilation (DCV) and Variable Speed Fans
75. Design Health and Sustainability into Operations Webinar with Stanford and the Culinary Institute of America
76. Design High Efficiency Hot Water Systems for Commercial Foodservice
77. Design Thinking for Zero Net Energy - Rebuilding for Comfort, Efficiency, and Affordability
78. DIVA-for-Rhino Software Training: Computer Daylighting Analysis
79. DLC Advanced Lighting Control Systems Training
80. Electric Heat Pumps for Domestic Space and Water Heating: Applications and Considerations
81. Electric Heat Pumps for Domestic Space Heating: Applications and Considerations
82. Electric Module by IHACI: Sessions 1-4
83. ElumTools for Revit Software Training: Lighting Documentation and Simulation
84. Energy Audit Report Writing Workshop: Conveying Value to Customers
85. Energy Audit Skills: Tools, Data collection Techniques, & Calculations
86. Energy Audit Tool Kit Training
87. Energy Auditing Techniques for Small & Medium Commercial Facilities (3 Day Class)
88. Energy Efficiency for Data Centers: New Construction and Retrofit
89. Energy Efficient Design and Control of Chilled Water Plants
90. Energy Efficient Design and Retrofit of Laboratory Buildings
91. Energy Plus EMS Controls
92. Energy Plus for Energy Modeling Practitioners
93. Energy Plus for Energy Modeling Practitioners (2 Day Class)
94. Energy Storage Systems
95. EnergyPro 7 Software for 2016 Title 24 Nonresidential Compliance - Intermediate/Advanced
96. EnergyPro 7 Software for 2016 Title 24 Nonresidential Compliance - Introduction
97. EnergyPro 7 Software for 2016 Title 24 Residential Compliance - Intermediate/Advanced
98. EnergyPro 7 Software for 2016 Title 24 Residential Compliance - Introduction

99. Evaluating and Selecting Luminaires
100. Exhaust Hood Air Balance Training
101. Existing Building Commissioning Workshop Series
102. Fans, Ductwork, and Air Handling Components: Design, Performance, and Commissioning
103. Farm to Fork: Greener Restaurants
104. Farmer John's Class
105. Fast Track for Transitioning to Food Trucks
106. Financing Energy Projects
107. Financing Fundamentals for Energy Projects
108. Food Safety & Preventative Maintenance for Commercial Kitchens
109. Foodservice in Motion: Food Truck to Brick & Mortar
110. Gas Heating Module by IHACI: Session 1
111. Gas Heating Module by IHACI: Session 2
112. Graphic Representation of Data: Making Charts that Matter
113. Hands On Advanced Lighting Controls
114. Hands-on Blower Door Duct Testing and Combustion Appliance Safety for Laney College
115. Heat Pumps: Residential Applications and Comparison with Solar Energy Systems
116. Heating & Cooling Load Calculations and HVAC Equipment Sizing Using IESVE Software
117. Heating Hot Water and Steam Systems: Design, Performance, and Commissioning
118. Herspring Gibbs Training
119. High Dynamic Range Imaging for Assessing Human Visual Comfort and Evaluating Energy Efficiency Opportunities
120. High Performance Crawl Spaces: A Practical Approach to Air Sealing and Insulating
121. High Performance Enclosures: Air Tight, Well-Insulated, Properly Ventilated - Rebuilding for Comfort, Efficiency, and Affordability
122. Hot Water Design for Commercial Kitchens
123. How to Design and Build High Performance Walls and Roofs
124. How to Prepare a Control Intent Narrative (CIN) and Sequence of Operations (SOO) for Advanced Lighting Controls
125. How to Prepare a Lighting Control Intent Narrative and Sequence of Operations for Advanced Lighting Control Systems
126. How to Write the Owners Project Requirements (OPR) and Basis of Design (BOD) for Building Enclosure
127. How to Write the Owner's Project Requirements (OPR) and Basis of Design (BOD) for Lighting and Advanced Lighting Controls
128. HVAC Fundamentals: New Ideas for Novices (2 Day Class)
129. HVAC/R New Hire Module by IHACI: Sessions 1-4
130. IESVE Software Training for 2016 Title 24 Compliance for Nonresidential Buildings
131. Innovators Evening Lecture Series - CxI (Commissioning Investigations): Uncovering Energy Waste, Operational Issues and Other Offenses
132. Innovators Evening Lecture Series - What I Learned On My Summer Vacation; Crossing the US by Bicycle for Climate Action
133. Innovators Evening Lecture Series: WRNS Studio - Finding the Story Line with Clients for ZNE
134. Innovators Evening Lecture Series: Carbon Lighthouse - Buildings Matter: Tackling Climate Change through Efficiency Production
135. Innovators Evening Lecture Series: David Baker Architects - At the Frontiers of Sustainable Urban Housing
136. Innovators Evening Lecture Series: Larry Strain - Buildings and the Time Value of Carbon

137. Innovators Evening Lecture Series: Mary Ann Piette, The Future of Demand Response and Customer Load Flexibility
138. Innovators Evening Lecture Series: Meeting the Challenge of Integrating Electric Lighting and Daylighting in a High-rise Courthouse
139. Innovators Evening Lecture Series: Project Drawdown - A Comprehensive Plan to Reverse Global Warming
140. Innovators Evening Lecture Series: SERA and Cutler Anderson Architects Create a Landmark Federal Building in Downtown Portland
141. Innovators Evening Lecture Series: Solar + Storage for Resiliency
142. Inspecting Photovoltaic (PV) Systems for Code Compliance
143. Integrated Design for Projects of All Sizes and All Delivery Methods Case Studies of Successful Projects
144. Integrated Design Process: Overcoming Design and Management Challenges
145. Integrated Design Process: Project Goals and Metrics How to Establish Them, Assess Success and Keep on Track Through the Design Process
146. Integrated Design: Mastering the Project Management Process
147. Introduction Automation of Buildings and Industrial Facilities using PLCs
148. Lighting Basics
149. Lighting Controls: How Occupant Behavior Impacts Building Energy Performance and ZNE
150. Lighting for Commercial Foodservice
151. Lighting for Commercial Foodservice Seminar
152. Lighting Fundamentals
153. LIGHTING WELL: Implementing the WELL Building Standard
154. LightStanza Software Advanced Training
155. LightStanza Software Basic Training
156. Logic Diagrams and Control Sequences
157. Manitowoc Service School Class
158. Mastering the Craft of Sustainable Brewing
159. Mastering the Project Management Process
160. McDonald's Operational Best Practices Training
161. Microgrids: Basic Applications, Technologies, Value and Economics
162. Mission College Training
163. Model Water Efficient Landscape Ordinance (MWELO) and the New Normal for California Landscaping
164. Mr. Food Safety
165. Mr. Food Safety Class
166. NATE HVAC/R Support by IHACI: Sessions 1-4
167. NATE Training Series by IHACI: Sessions 1-8
168. National Association of Realtors (NAR) Green Certification Workshop
169. OpenStudio Launch Pad
170. Optimizing Residential HVAC System Performance
171. Passive Building - A Path to Zero: Principles, Standards & Local Case Study
172. Performance Foodservice Sales and Vendor Showcase
173. PG&E Rates and Tariffs: Essential Information for Energy Projects
174. Photovoltaic (PV) Site Analysis and System Sizing
175. Photovoltaic PV Site Analysis and System Sizing
176. Plug Load Workshop: The measurement and management of miscellaneous loads

177. Power, Energy and Therms: Fundamental Concepts, Monitoring Techniques and Load Disaggregation
178. Pro Reps West Amana Event
179. Programmable Logic Controllers (PLC) LEVELs 1-6: Industrial and Automated Controls (2-Day)
180. Pumps and Piping Systems: Design, Performance, and Commissioning
181. Pumps: Design, Performance, and Commissioning Issues
182. Putting Health and Wellbeing Research Findings into Practice
183. Putting the Kitchen of the Future to the Test
184. Putting the Kitchen of the Future to the Test
185. PV + Batteries: Integrating Storage with Grid-Tied Photovoltaic Systems
186. Radiant Cooling and Heating Systems for Large Commercial Buildings
187. RCx101: Identifying and Assessing Common Retro-Cx Opportunities
188. Reduce Downtime with an Equipment Care Plan
189. Refrigerant Charge Verification - MI-BEST Series 3
190. Residential CEA Exam Preparation Workshop
191. Residential Heat Pumps: Quality Design and Installation
192. Residential Heating, Ventilation, and Air Conditioning (HVAC): Small Heat Pumps and Small Furnaces for High Efficiency and More Affordability
193. Resilient Design for Buildings, Cities and Regions
194. Sacramento State University Training
195. San Francisco Environment Training
196. Savings By Design Energy Modeling Using EnergyPro Software
197. Savings By Design Energy Modeling Using IESVE Software
198. Setting Up a New Restaurant
199. Solar Jobs Fair 2017
200. Solar PV: Technology and Valuation
201. Solar Water Heating Advanced Commercial Systems
202. Solar Water Heating Systems
203. Southern Pride Seminar
204. Sustainability Beyond the Plate - Intro to Energy Efficiency
205. Sustainability Beyond the Plate - National Energy Education Development [NEED]
206. Sustainable Savings: How Buying the Right Equipment Can Save Water, Energy and Money Now and in the Future
207. System Diagram Workshop
208. The Kitchen Tune-Up: Look Under Your Restaurant's Hood for Energy & Water Savings
209. The Promise of Progress for Lighting and the Return to Design: Adapting to Change
210. The Science and Application of Circadian Lighting
211. Thermal By-Pass, Quality Insulation Installation, Advanced Building Envelope - MI-BEST Series 5
212. Title 24 Duct Installation Standards and Diagnostic Testing
213. Title 24 Part 6 Essentials - Mechanical and Electrical
214. Title 24 Part 6 Essentials - Nonresidential Standards Essentials for Architects
215. Title 24 Part 6 Essentials - Nonresidential Standards for Energy Consultants
216. Title 24 Part 6 Essentials - Nonresidential Standards for Plans Examiners and Building Inspectors
217. Title 24 Part 6 Essentials - Nonresidential Standards for Small Commercial AC Quality Installation Contractors
218. Title 24 Part 6 Essentials - Residential Standards for AC Quality Installation Contractors
219. Title 24 Part 6 Essentials - Residential Standards for Energy Consultants
220. Title 24 Part 6 Essentials - Residential Standards for Plans Examiners and Building Inspectors

221. Title 24 Part 6 Essentials - Residential Standards for Plans Examiners and Building Inspectors - Train the Trainers
222. Title 24 Part 6 Essentials - Standards and Technology for Office Lighting
223. Title 24 Part 6 Essentials - Standards and Technology for Residential Lighting
224. Title 24 Part 6 Essentials - Standards and Technology for Retail Lighting
225. Title 24 Proper Procedures for Charging Air Conditioners and Heat Pumps
226. Title 24: Where We're Headed with the 2016 Nonresidential Standards
227. Title 24: Where We're Headed with the 2016 Residential Standards
228. Togo's Training
229. Tools and Resources for Successfully doing Business with PG&E
230. True Service School Class
231. Understanding and Applying the M&V Concepts and Options of the International Performance Measurement and Verification Protocol (IPMVP)
232. Using Building Energy Simulation
233. Variable Air Volume (VAV) Systems: Design, Performance, and Commissioning
234. Variable Speed Drives (VSDs): Design, Performance, and Commissioning
235. Wasting Away: Food Waste Reduction for Restaurants
236. Water Audit Basics for Small to Medium Size Businesses
237. Water Efficiency for Food Service Training
238. Water Heaters Efficiency
239. Water Heaters: Their Evolution and How to Make the Right Choice for the Customer
240. Water, Energy and Time Efficient Hot Water Systems for New Homes - Rebuilding for Comfort, Efficiency, and Affordability
241. WE&T Operations Planning Meeting
242. What You Don't Know You Don't Know About Hot Water Systems
243. What You Need To Know Before NRA
244. What's in the Water?
245. Wind Energy + Storage for Commercial and Agricultural Applications
246. Window Selection for New and Existing Homes
247. Zero Net Energy Buildings and Beyond: Balancing Building and Grid Objectives
248. ZNE: 2020 Is Just Around The Corner!

SCE Workforce Education and Training (WE&T) Class List

3. Classes in Alignment with 3C-REN Focus Areas, 2017 and 2018-to-date

The classes listed below are a subset of all SCE trainings offered from January 1, 2017 to June 30, 2018. These trainings are aligned with 3C REN's business plan, which emphasized the need for residential, multi-family, and small-medium business trainings. The classes are organized into four categories—Codes and Standards; HVAC- Residential; and Other, which includes zero net energy (ZNE), Renewables, Sustainability, and Pumps and Water Delivery.

A. Codes & Standards
46. 2016 Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors
47. 2016 Title 24 Part 6 Essentials: Nonresidential Standards - Plans Examiners & Building Inspectors
48. Title 24 Part 6 Essentials: Residential Standards for Plans Examiners & Building Inspectors
49. Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors

50. Title 24: Where We're Headed with the 2016 Standards
51. Beginning EnergyPro 7 Nonresidential
52. Beginning EnergyPro 7 Residential
53. Advanced EnergyPro 7 Nonresidential
54. Advanced EnergyPro 7 Residential
55. HERS Advanced Rater Training Program: 2016 Title 24 Part 6 Residential Overview
56. 2016 Title 24 Part 6 Essentials - Nonresidential Standards for Small Commercial AC Quality Installation Contractors
57. 2016 Title 24 Part 6 Essentials - Residential Standards for AC Quality Installation Contractors
58. Title 24: Where We're Headed with the 2016 Standards- Irwindale
59. IES-VE Software Training for 2016 Title 24 Compliance for Nonresidential Buildings
60. Introduction to CBECC-Com Energy Modeling Software for Nonresidential Buildings using Simplified Geometry
61. Title 24: Where We're Headed with the 2019 Standards
62. HERS Advanced Rater Training Program: Building Energy Science I
63. HERS Advanced Rater Training Program: Building Energy Science II
64. IHACI: CA 2016 Title 24 Module Part 1
65. IHACI: CA 2016 Title 24 Module Part 2
66. CALGreen Title 24 Part 11
67. Office Lighting: Title 24 and Technology Update
68. Residential Lighting: Title 24 and Technology Update
69. 2016 Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors
70. 2016 Title 24 Part 6 Essentials: Nonresidential Standards - Plans Examiners & Building Inspectors
71. Title 24 Part 6 Essentials: Residential Standards for Plans Examiners & Building Inspectors
72. Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors

B. HVAC/R Systems & Technologies
73. Basic Heating, Ventilating and Air Conditioning (HVAC)
74. Residential and Light Commercial HVAC
75. IHACI: (CAQI/QM/QS) Gas Heating Module Part 1- Practical Fundamentals and Theory of Gas Heating
76. IHACI: (CAQI/QM/QS) Electrical Module Part 1 - Practical Fundamentals and Theory of HVAC/R Systems
77. IHACI: AC/HP Refrigeration Module Part 1 - Practical Fundamentals and Theory of the Refrigeration Circuit
78. HERS Advanced Rater Training Program: Manual J, D & S
79. IHACI: NATE Certification Training Series - Part 1 -2 (Core, Gas Heating, Air Conditioners & Heat Pumps, & Air Distribution)
80. IHACI: CA 2016 Title 24 Module Part 1 - 2
81. IHACI: (CAQI/QM/QS) Electrical Module Part 1 -4
82. IHACI: AC/HP Refrigeration Module Part 1 - 4
83. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class
84. IHACI: (CAQI/QM/QS) Air Distribution Module Part 1 - 4
85. IHACI (CAQI/QM/QS) System Performance Module: Class 1 - 4
86. HERS Advanced Rater Training Program: HVAC System Airflow Analysis

87. HERS Advanced Rater Training Program: Hands-on Refrigerant Charge Measurement
88. HERS Advanced Rater Training Program: Quality Installation - High Efficiency Gas Furnace

C. Other (Including ZNE, Renewables, Sustainability, Pumps & Water Delivery, Water Efficiency)

89. SCE Pump Efficiency Testing & Best Practices for Water Operators
90. Outage Communication for Water Customers
91. Time-Of-Use Rates & Money Saving Strategies for Water Customers
92. California Friendly Landscape Training
93. Cooling Towers: Water- Energy Savings Opportunities
94. Pump Testing and Improving Your Pumping Plant Efficiency
95. Water Flush Deep Well Turbine Pump, Coliform in Wells, and Liners
96. LEED® Green Associate: Taking the First Step in Green Building Using LEED
97. GPro: Green Professional Building Skills Training - Fundamentals of Building Green
98. Zero Energy Accelerator Course with ILFI: Introduction
99. Zero Energy Accelerator Course with ILFI: Advanced (Residential)
100. HERS Advanced Rater Training Program: Building Energy Science I
101. HERS Advanced Rater Training Program: Building Energy Science II
102. Understanding California's High Performance Attics and Wall Requirements
103. Building Integrated Photovoltaics
104. Smart Inverter Setting Requirements Workshop (Webinar)
105. HERS Advanced Rater Training Program: Advanced Solar
106. All Things Renewable

4. **Full List of SCE Classes, 2017 and 2018-to-date**

1. SCE hosted the following classes between January 1, 2017 and June 30, 2018. Many were offered multiple times according to demand. 2016 Title 24 Part 6 Essentials - Nonresidential Standards for Small Commercial AC Quality Installation Contractors
2. 2016 Title 24 Part 6 Essentials - Residential Standards for AC Quality Installation Contractors
3. 2016 Title 24 Part 6 Essentials: Nonresidential Standards - Plans Examiners & Building Inspectors
4. 2016 Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors
5. 2018 Foodservice Forecast -Step into the Future
6. 24th Annual Water Conference General Session
7. Advanced EnergyPro 7 Nonresidential
8. Advanced EnergyPro 7 Residential
9. Advanced Lighting Control Systems for Specifiers
10. Advanced Power Quality
11. All Things Renewable *Updated for 2017*
12. Automatic Daylighting Controls Acceptance Testing For: Designers, Engineers, Architects, and Contractors (New Class)
13. Basic Heating, Ventilating and Air Conditioning (HVAC)
14. Basics of LED Technology
15. Beginning EnergyPro 7 Residential
16. Beginning EnergyPro 7 Nonresidential

17. Benchmarking Energy Use in Commercial Buildings
18. Beyond Efficient Lamps
19. Build A Better Burger
20. Building Integrated Photovoltaics
21. CALGreen Title 24 Part 11
22. California Advanced Lighting Controls Training Program AT Technician: Lighting Acceptance Test Technician Certification Course - 2 Day Workshop
23. California Advanced Lighting Controls Training Program AT Technician: Lighting Acceptance Test Technician Certification Course - Day 2 of 2
24. California Advanced Lighting Controls Training Program AT Technician: Lighting Acceptance Test Technician Certification Course - Day 2 of 2 Workshop
25. California Advanced Lighting Controls Training Program (CALCTP) Systems - (2 Day)
26. California Advanced Lighting Controls Training Program (CALCTP) Systems - (2 Day) DAY 2 OF 2
27. California Friendly Landscape Training
28. CKV Check Up - Diagnosis & Prevention
29. Commercial and Industrial HVAC PM and Troubleshoot
30. Cooling Towers: Water- Energy Savings Opportunities
31. Daylighting For Buildings
32. Demand Response and Institutional Tuning Lighting Controls Acceptance Testing For: Designers, Engineers, Architects, and Contractors (New Class)
33. Demand Response: Gain an Edge on Power Costs
34. Emergency Lighting: Codes, Circuits, Controls & Calculations
35. Energy Management Systems (EMS)
36. Enhanced Retrocommissioning (ERCx)
37. From Candles to LEDs - Getting to the Point
38. From Fluorescent to Induction - An Area of Lamp Efficiency
39. Fundamentals of Electricity and Energy Efficiency
40. GPro: Green Professional Building Skills Training - Fundamentals of Building Green
41. Grounding and Bonding
42. HERS Advanced Rater Training Program: 2016 Title 24 Part 6 Residential Overview
43. HERS Advanced Rater Training Program: Advanced Solar
44. HERS Advanced Rater Training Program: Building Energy Science I
45. HERS Advanced Rater Training Program: Building Energy Science II
46. HERS Advanced Rater Training Program: Hands-on Refrigerant Charge Measurement
47. HERS Advanced Rater Training Program: HVAC System Airflow Analysis
48. HERS Advanced Rater Training Program: Manual D
49. HERS Advanced Rater Training Program: Manual J
50. HERS Advanced Rater Training Program: Manual S
51. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class
52. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class (Day 2 of 5)

53. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class (Day 3 of 5)
54. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class (Day 4 of 5)
55. HERS Advanced Rater Training Program: Mobile Integrated Building Energy Science Training (MI-BEST) 5-Day Class (Day 5 of 5)
56. HERS Advanced Rater Training Program: Quality Installation - High Efficiency Gas Furnace
57. Hot Rebates and Cool Savings for Foodservice
58. HVAC Control Basics
59. IES-VE Software Training for 2016 Title 24 Compliance for Nonresidential Buildings
60. IHACI (CAQI/QM/QS) System Performance Module: Class 1 - Thermodynamics: Heat In Motion
61. IHACI (CAQI/QM/QS) System Performance Module: Class 2 - A Sub-System of the Building
62. IHACI (CAQI/QM/QS) System Performance Module: Class 3 - Heating System: Comfort with Energy Efficiency
63. IHACI (CAQI/QM/QS) System Performance Module: Class 4 - Cooling System: Comfort with Energy Efficiency
64. IHACI: (CAQI/QM/QS) Air Distribution Module Part 1 - Practical Fundamentals and Physical Properties of Air
65. IHACI: (CAQI/QM/QS) Air Distribution Module Part 2 - Practical Fundamentals and Theory of Proper Air Distribution Design
66. IHACI: (CAQI/QM/QS) Air Distribution Module Part 3 - Fundamental Theory and Techniques of Air Side Design and Installation
67. IHACI: (CAQI/QM/QS) Air Distribution Module Part 4 - Advanced Theory and Techniques of Air Side Design and Installation
68. IHACI: (CAQI/QM/QS) Electrical Module Part 1 - Practical Fundamentals and Theory of HVAC/R Systems
69. IHACI: (CAQI/QM/QS) Electrical Module Part 2 - Essential HVAC/R System Motor Theory for the Field Technician
70. IHACI: (CAQI/QM/QS) Electrical Module Part 3 - Different Electrical Components Found in the HVAC/R Industry
71. IHACI: (CAQI/QM/QS) Electrical Module Part 4 - Electrical Schematics: A Roadmap to Diagnosing a HVAC/R System
72. IHACI: (CAQI/QM/QS) Gas Heating Module Part 1- Practical Fundamentals and Theory of Gas Heating
73. IHACI: (CAQI/QM/QS) Gas Heating Module Part 2- Quality Installation, Maintenance, and Service of Gas Heating Systems
74. IHACI: AC/HP Refrigeration Module Part 1 - Practical Fundamentals and Theory of the Refrigeration Circuit
75. IHACI: AC/HP Refrigeration Module Part 2 - CAQI of Air Conditioning and Heat Pump Systems
76. IHACI: AC/HP Refrigeration Module Part 3 - CAQM of Air Conditioning and Heat Pump Systems
77. IHACI: AC/HP Refrigeration Module Part 4 - CAQS of Air Conditioning and Heat Pump Systems
78. IHACI: CA 2016 Title 24 Module Part 1

79. IHACI: CA 2016 Title 24 Module Part 2
80. IHACI: Chiller Module Part 1 - Fundamental Theory & Basic Operation of Commercial Chillers
81. IHACI: Chiller Module Part 2 - Installation, Operation and Service Practices of Commercial Chillers
82. IHACI: Commercial HVAC/R Introduction Module Part 1 - Why, What, and How of Properly Operating HVAC Systems
83. IHACI: Commercial HVAC/R Introduction Module Part 2 - HVAC Systems for Single Story Commercial Buildings
84. IHACI: Commercial HVAC/R Introduction Module Part 3 - Complex HVAC Systems for Commercial Buildings
85. IHACI: Commercial HVAC/R Introduction Module Part 4 - Built-up HVAC Systems for Commercial Buildings
86. IHACI: Cooling Tower Module Part 1 - Fundamental Theory & Basic Operation of Commercial Cooling Towers
87. IHACI: Cooling Tower Module Part 2 - Installation, Operation and Service Practices of Commercial Cooling Towers
88. IHACI: NATE Certification Training Series - Air Conditioners and Heat Pumps: Part 1 (Introduction)
89. IHACI: NATE Certification Training Series - Air Conditioners and Heat Pumps: Part 2 (Installation & Service)
90. IHACI: NATE Certification Training Series - Air Distribution: Part 1 (Introduction)
91. IHACI: NATE Certification Training Series - Air Distribution: Part 2 (Installation & Service)
92. IHACI: NATE Certification Training Series - Core: Part 1 (General Skills)
93. IHACI: NATE Certification Training Series - Core: Part 2 (Electrical Skills)
94. IHACI: NATE Certification Training Series - Gas Heating: Part 1 (Introduction)
95. IHACI: NATE Certification Training Series - Gas Heating: Part 2 (Installation & Service)
96. Integrating Photovoltaics Into the Building
97. Introduction to CBECC-Com Energy Modeling Software for Nonresidential Buildings using Simplified Geometry
98. Introduction to Lighting
99. Introduction to Programmable Logic Controllers: Energy Efficiency Applications
100. Kitchen Tune Up: Look under your Restaurant's Hood for Energy & Water Savings
101. LEED® Green Associate: Taking the First Step in Green Building Using LEED
102. Building Operator Certification - Level 1
103. Lighting Control Strategies and Devices
104. Lighting for Commercial Food Service
105. Office Lighting: Title 24 and Technology Update
106. Outage Communication for Water Customers - 1:00 PM - 2:00 PM
107. Outage Communication for Water Customers - 2:15 PM - 3:15 PM
108. PLC LEVEL 1: Industrial Electricity and Automated Controls (2-Day Workshop)
109. PLC LEVEL 2: Industrial Electricity and Automated Controls (2-Day Workshop)
110. PLC LEVEL 3: Industrial Electricity and Automated Controls (2-day class)

111. PLC LEVEL 4: Industrial Electricity and Automated Controls (2-day class)
112. PLC LEVEL 6: Industrial Electricity and Automated Controls (2-Day Workshop)
113. Power Quality 101
114. Practical Lighting Controls Acceptance Testing For: Designers, Engineers, Architects, and Contractors
115. Practical Lighting Controls Acceptance Testing For: Designers, Engineers, Architects, and Contractors (New Class)
116. Pump Testing and Improving Your Pumping Plant Efficiency
117. Residential and Light Commercial HVAC
118. Residential Lighting: Title 24 and Technology Update
119. SCE Pump Efficiency Testing & Best Practices for Water Operators
120. Shut-Off and Outdoor Lighting Controls Acceptance Testing For: Designers, Engineers, Architects, and Contractors (New Class)
121. Smart Inverter Setting Requirements Workshop (Webinar)
122. The Phenomenal LED (New Class)
123. Time-Of-Use Rates & Money Saving Strategies for Water Customers
124. Title 24 Part 6 Essentials: Residential Standards - Plans Examiners & Building Inspectors
125. Title 24 Part 6 Essentials: Residential Standards for Plans Examiners & Building Inspectors
126. Title 24: Where We're Headed with the 2016 Standards
127. Title 24: Where We're Headed with the 2019 Standards
128. Understanding California's High-Performance Attics and Wall Requirements
129. Variable Refrigerant Flow and Ductless Systems - Design and Application
130. Water Flush Deep Well Turbine Pump, Coliform in Wells, and Liners
131. Zero Energy Accelerator Course with ILFI: Advanced (Residential)
132. Zero Energy Accelerator Course with ILFI: Introduction

SoCalGas Workforce Education and Training (WE&T) Class List

1. Classes in Alignment with 3C-REN Focus Areas, 2017 and 2018-to-date

The classes listed below are a list of SoCalGas' trainings offered from January 1, 2017 to June 30, 2018. These trainings are aligned with 3C REN's business plan, which emphasized the need for residential, multi-family, and small-medium business trainings.

1. City of LA Code Training
2. Building Operator Certification (BOC) Class #1005 – Indoor Environmental Quality
3. IHACI - (CAQI/CAQM/CAQS) Natural Gas Heating Module Part 1 (ERC)
4. IHACI - (CAQI/CAQM/CAQS) Natural Gas Heating Module Part 2 (ERC)
5. IHACI - (CAQI/CAQM/CAQS) Natural Gas Heating Module Part 2 (ERC)
6. IHACI - (CAQI/CAQM/CAQS) Natural Gas Heating Module Part 2 (Chatsworth)
7. Navien NPE Premium Condensing Tankless Gas Water Heater Training (Irvine, CA)

8. Building Science: Best Practice Designs For Cost-Effective Approaches to ZNE Commercial Buildings
9. Restaurant Management Workshop
10. IHACI - (CAQI/CAQM/CAQS) Electrical Module Part 1 (ERC)
11. Understanding Boiler Basics
12. IHACI - (CAQI/CAQM/CAQS) Electrical Module Part 2 (ERC)
13. Building Operator Certification (BOC) Class #1006- Common Opportunities for Low-Cost Operational Improvement
14. IHACI - (CAQI/CAQM/CAQS) Electrical Module Part 3 (ERC)
15. IHACI - (CAQI/CAQM/CAQS) Electrical Module Part 4 (ERC)
16. Boiler Water Treatment for Energy Efficiency
17. IHACI - (CAQI/CAQM/CAQS) HVAC/R New Hire & Safety Module Part 1 (Chatsworth)
18. IHACI - (CAQI/CAQM/CAQS) HVAC/R New Hire & Safety Module Part 2 (Chatsworth)
19. Beyond the Flame: Maintenance 101
20. IHACI - (CAQI/CAQM/CAQS) HVAC/R New Hire & Safety Module Part 3 (Chatsworth)
21. 2017 SoCalGas/SCE LGP Program Kickoff Workshop
22. California's New 2016 Title 24 Standards
23. IHACI - (CAQI/CAQM/CAQS) HVAC/R New Hire & Safety Module Part 4 (Chatsworth)
24. Building Operator Certification (BOC) Class #1008- Operation & Maintenance Practices for Sustainable Buildings
25. IHACI - (CAQI/CAQM/CAQS) AC & Heat Pump Refrigeration Module Part 1 (ERC)
26. Flex Your Savings With Flexible Menus
27. IHACI - (CAQI/CAQM/CAQS) AC & Heat Pump Refrigeration Module Part 2 (ERC)
28. CA Friendly Landscape Book Signing
29. IHACI - (CAQI/CAQM/CAQS) AC & Heat Pump Refrigeration Module Part 3 (ERC)
30. IHACI - (CAQI/CAQM/CAQS) AC & Heat Pump Refrigeration Module Part 4 (ERC)
31. LA Steam Operator's License Training 3 Day Seminar Series: Part 1
32. LA Steam Operator's License Training 3 Day Seminar Series: Part 2
33. LA Steam Operator's License Training 3 Day Seminar Series: Part 3
34. LA Steam Operator's License Training 3 Day Seminar Series: Part 4 Steam Turbines
35. Energy Smart Landscapes Series: Session 1: Irrigation: Designing and Maintaining an Efficient System
36. IHACI - (CAQI/CAQM/CAQS) Air Distribution Module Part 1 (ERC)
37. IHACI - (CAQI/CAQM/CAQS) Air Distribution Module Part 2 (ERC)
38. IHACI - (CAQI/CAQM/CAQS) Air Distribution Module Part 3 (ERC)
39. IHACI - (CAQI/CAQM/CAQS) Air Distribution Module Part 4 (ERC)
40. Navien NPE Premium Condensing Tankless Gas Water Heater Training (Irvine, CA)
41. Bake It Until You Make It
42. Well and Pump Engineering - Gaining Efficiencies Through Technology
43. BROAD Chiller Operator & Safety Seminar (Attendance by Invitation Only)
44. IHACI - NATE HVAC/R Support Training, Part 1 (Four-Night Class) (Chatsworth) *** NEW CLASS***

45. IHACI - NATE HVAC/R Support Training, Part 2 (Four-Night Class) (Chatsworth) ***NEW CLASS***
46. IHACI - NATE HVAC/R Support Training, Part 3 (Four-Night Class) (Chatsworth) ***NEW CLASS***
47. IHACI - NATE HVAC/R Support Training, Part 4 NATE Certificate Exam (Chatsworth) ***NEW CLASS***
48. Nutrition Labeling and Allergens: What You Need to Know
49. Distributed Energy Resources (DG/CHP) A Clean & Efficient Way to Reduce Costs While Increasing Reliability
50. IHACI - (CAQI/CAQM/CAQS) System Diagnostics Part 1 (ERC)
51. IHACI - (CAQI/CAQM/CAQS) System Diagnostics Part 2 (ERC)
52. Cooling Tower Design & Operation
53. IHACI - (CAQI/CAQM/CAQS) System Diagnostics Part 3 (ERC)
54. IHACI - (CAQI/CAQM/CAQS) System Diagnostics Part 4 (ERC)
55. Cooling Tower Water Treatment Management for Energy Conservation
56. IHACI - Commercial HVAC/R Introduction Module (Four-Night Class) Part 1 (ERC) *NEW CLASS*
57. IHACI - Commercial HVAC/R Introduction Module (Four-Night Class) Part 2 (ERC) *NEW CLASS*
58. IHACI - Commercial HVAC/R Introduction Module (Four-Night Class) Part 3 (ERC) *NEW CLASS*
59. IHACI - Commercial HVAC/R Introduction Module (Four-Night Class) Part 4 (ERC) *NEW CLASS*
60. Save the Waste with Innovative Technology
61. Energy Smart Landscapes Series: Session 2: Storm Water: Managing Landscapes that Slow, Stop and Clean Storm Water and Runoff
62. 2016 Title 24 Part 6 Essentials: Residential Standards Plans Examiners & Building Inspectors
63. EnergyPro 7 Software for 2016 Title 24 Residential Compliance - Introduction
64. EnergyPro 7 Software for 2016 Title 24 Residential Compliance - Intermediate/Advanced
65. EnergyPro 7 Software for 2016 Title 24 Nonresidential Compliance - Introduction
66. EnergyPro 7 Software for 2016 Title 24 Nonresidential Compliance - Intermediate/Advanced
67. Fast Track for Transitioning Food Trucks
68. 2016 Title 24 Part 6 Essentials: Non - Residential Standards Plans Examiners & Building Inspectors
69. California's New 2016 Title 24 Standards
70. Mastering the Craft of Sustainable Brewing
71. Navien NPE Premium Condensing Tankless Gas Water Heater Training (Irvine, CA)
72. Natural Gas Engines Seminar
73. Building Operator Certification (BOC) - 1001A
74. Building Operator Certification (BOC) - 1001B
75. IHACI - NATE Training Class 1, CORE: General Skills (ERC)
76. Pizza Trends you Knead to Know
77. IHACI - NATE Training Class 2, CORE: Electrical (ERC)
78. IHACI - NATE Training Class 3, Gas Heating: Part 1 (ERC)
79. IHACI - NATE Training Class 4, Gas Heating: Part 2 (ERC)
80. Understanding Boiler Basics

81. IHACI - NATE Training Class 1, Core: General Skills (Chatsworth)
82. Building Operator Certification (BOC) - 1007
83. IHACI - NATE Training Class 2, Core: Electrical Skills (Chatsworth)
84. Food Safety Checklist: 2017 & Beyond
85. IHACI - NATE Training Class 3, Gas Heating: Part 1 (Chatsworth)
86. Energy Smart Landscapes Series: Session 3: Public Health: Designing and Maintaining Landscapes that Improve Public Well-being
87. IHACI - NATE Training Class 4, Gas Heating: Part 2 (Chatsworth)
88. Boiler Water Treatment for Energy Efficiency
89. IHACI - NATE Training Class 5, AC & Heat Pumps: Part 1 (ERC)
90. IHACI - NATE Training Class 6, AC & Heat Pumps: Part 2 (ERC)
91. Building Operator Certification (BOC) - 1002
92. IHACI - NATE Training Class 7, Air Distribution: Part 1 (ERC)
93. IHACI - NATE Training Class 8, Air Distribution: Part 2 (ERC)
94. Advanced Cooling Tower Water Treatment for Energy Conservation
95. IHACI - NATE: CERTIFICATION EXAM (ERC)
96. IHACI - NATE Training Class 5, AC & Heat Pumps: Part 1 (Chatsworth)
97. Building Operator Certification (BOC) - 1003
98. IHACI - NATE Training Class 6, AC & Heat Pumps: Part 2 (Chatsworth)
99. IHACI - NATE Training Class 7, Air Distribution: Part 1 (Chatsworth)
100. IHACI - NATE Training Class 8, Air Distribution: Part 2 (Chatsworth)
101. IHACI - NATE: CERTIFICATION EXAM (Chatsworth)
102. Steam System Fundamentals for Safety & Efficiency (*NEW SEMINAR*)
103. Building Operator Certification (BOC) - 1004
104. Clearing the Air Kitchen Ventilation Efficiency
105. LA Steam Operator's License Training 3 Day Seminar Series (Day 1)
106. LA Steam Operator's License Training 3 Day Seminar Series (DAY 2)
107. LA Steam Operator's License Training 3 Day Seminar Series (DAY 3)
108. LA Steam Operator's License - (Steam Turbine - Day 3 - Session 4)
109. Broad Absorption Chiller Operation & Safety
110. Building Operator Certification (BOC) - 1005
111. A Taste of Culture
112. Energy Smart Landscapes Series: Session 4: Creating Landscapes that Create Livable Environments
113. Design & Construction of High Performance Walls & Roofs (*NEW SEMINAR*)
114. Building Operator Certification (BOC) - 1006