

ATTACHMENT A

**3C-REN, SoCalGas, SCE, AND PG&E
2023 JOINT COOPERATION MEMORANDUM**

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I. 3C-REN PORTFOLIO SUMMARY OF PROGRAMS OFFERED FOR 2023

Table 1. 3C-REN Summary of Programs

3C-REN Program Unique ID	Sector	Approved Annual Budget	Eligible Measures
3C-REN WE&T (TCR-WET-001)	Cross-cutting	\$1,910,021	N/A
3C-REN C&S (TCR-CS-001)	C&S	\$1,884,021	N/A
3C-REN RES (TCR-Res-002 and TCR-Res-003)	Residential	\$8,380,011	Air sealing, insulation, HVAC measures, water flow controls, smart thermostat, power strip, duct system servicing, appliances, HVAC servicing, and water heating measures. ¹

II. SUMMARY AND COORDINATION OF 3C-REN AND IOU(s) SoCalGas, SCE, AND PG&E PROGRAMS OFFERED FOR 2023 THAT ARE COMPARABLE

A. 3C-REN WE&T Program [TCR-WET-001]

The 3C-REN will continue to offer a cross-cutting WE&T program designed to fill gaps in current investor-owned utilities² (IOU) offerings for the 3C-REN territory. The 3C-REN Building Performance Training program offers career pathways and enrichment by providing access to in-person, on-demand, and on-line trainings; mentorship opportunities; and cross promotion of IOU workforce trainings, engaging hard-to-reach (HTR) workers and those in identified disadvantaged communities (DACs).

Building professionals living and working in the 3C-REN territory face unique challenges given the dispersed nature of communities within the Tri-County 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

¹ This is a preliminary list of measure types; final measures are provided in the program Implementation Plan.

² For the purposes of this Joint Cooperation Memorandum, the IOUs consist of SoCalGas, SCE and PG&E.

address these challenges through collaboration with existing providers and programs; apprenticeship-style learning; targeted management, technical and soft-skill trainings for building professionals; and integrated resources for design and compliance professionals.

The 3C-REN territory is in need of high-performance buildings (i.e., energy efficient and resilient buildings) and a workforce of building professionals able to:

- Market, design, build, and retrofit buildings for high performance;
- Learn about, install, and maintain new technologies essential for high performance;
- Grow customer demand for energy efficiency (EE) by communicating the value of high-performance buildings; and
- Access local training and services customized to address the challenges above.

The 3C-REN delivers technical and soft skill trainings and certifications focused on high performance buildings. The program supports building professionals and those seeking career pathways in residential and commercial design, construction, and related industries. Trainings are delivered locally and designed to meet the unique needs of the Tri-County region.

The 3C-REN WE&T program has a goal to expand its partnerships to develop local career pathway options in building performance. This will be done by talking to career pathway programs established in the Tri-County area and identifying opportunities for collaboration and cross promotion. The program seeks to expand its engagement with career pathway stakeholders, such as community colleges, high schools, and workforce investment boards.

The 3C-REN applies 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. 3C-REN's workforce training program goes beyond the classroom setting and skills are reinforced with real world on-the-job applications, while simultaneously influencing direct energy savings. As a result of a stronger workforce skills base, building professionals will increase efficiency and efficacy with existing resources.

The program budget for 3C-REN WE&T, TCR-WET-001, is \$1,190,021.

The program targets local public and private building professionals needing more in-depth training, such as: contractors, HVAC technicians, 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, and educational institutions (e.g. community colleges, universities, adult ed, trade schools, & K-12), as well as other key market actors. The program leverages relationships with industry such as architectural and contractor associations to ensure broad engagement.

The 3C-REN's WE&T program is non-resource and serves to support 3C-REN and IOU programs in the region by training the workforce that can deliver resource programs and meet code. The program is designed to be complementary to IOU programs and to fill gaps in existing IOU programs while integrating with C&S compliance support.

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 Building Performance Training	PG&E WE&T Integrated Energy Education & Training (IEET) ³	SCE WE&T Integrated Energy Efficiency Training (IEET) ⁴	SoCalGas WE&T Integrated Energy Education Training (IEET)
Eligible Measures	N/A	N/A	N/A	N/A
2023 Budget	\$1,910,021	\$8,155,242	\$8,840,814	\$4,350,000

³ The C&S Compliance Improvement subprogram is also a comparable program. More information on this program is listed in Section B

⁴ The C&S Compliance Improvement subprogram is also a comparable program. More information on this program is listed in Section B

WE&T	3C-REN	PG&E	SCE	SoCalGas
Target Audience	Locally licensed public and private 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, entry-level workers, students, and professionals in DACs and HTR areas, and educational institutions, 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, this program supports other organizations' instructors who are training a similar audience.	Workers who are in or are pursuing occupations in the energy efficiency and other related professional fields that provide the technical capabilities that are needed to support the attainment of CAs and IOU Energy Saving and sustainability targets	Workers in, or pursuing careers and occupations in energy efficiency, gaining and providing professional and technical capabilities, specifically useful for achieving CA-IOU energy savings targets. 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.

Pacific Gas and Electric Company

PG&E WE&T Integrated Energy Education Training (IEET) - [PG&E21071]

The PG&E WE&T IEET subprogram 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 B includes a categorized list of the residential, multi-family, and/or small business trainings conducted in 2021 and 2022 scheduled to date as an illustration of our potential 2023 offerings in the three areas that appear of greatest interest to the 3C-REN. Appendix B also includes a full list of the in-person, simulcast, webinar classes and on-demand classes in the same period.

Some of the classes listed in Appendix B are restricted to PG&E's Energy Training Center (ETC) in Stockton, the Food Service Technology Center (FSTC) in San Ramon, or other specific locations due to the need to use large teaching

props or laboratories. However, the majority of classes 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. A class being offered at other locations is also dependent on the instructor being willing and able to travel. PG&E's WE&T program also has an online on-demand learning platform, where many classes are focused on residential construction and contractors. See Appendix B for a list of on-demand classes. Appendix B also includes more information on additional C&S training provided by the IOUs.

PG&E has a Tool Lending Library (TLL) with thousands of energy diagnostic tools available to borrow at no-cost to the borrower for short-term (~ 2 weeks) loans. The TLL addresses an up-front cost barrier faced by many small businesses and energy consultants. Once local health ordinances allow, tools will be available from the ETC in Stockton or from San Ramon. PG&E can also ship tools anywhere in California if the borrower 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. A third-party implementer will coordinate with organizations that offer soft skills training as part of the statewide Career and Workforce Readiness (CWR) program launched in late 2021 (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 supports 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 prepares 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 Integrated Energy Education & Training Program – [SCE-13-SW-010A]

The SCE WE&T Integrated Energy Education & Training Program (IEET) offers resources and training programs that are aimed at shaping the current and future energy workforce through a series of occupational, employer, and technology-focused workshops and seminars, combined with workplace-based and hands-on technical training. This program aims to provide pathways to and training for certifications and credentials in energy efficiency-related industries

that also support California's clean energy objectives. Appendix B includes a list of trainings offered or scheduled for 2021 as an example of potential offerings for 2023.

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 to ensure our partners stay competitive and maintain cost effectiveness.

The Energy Centers provide additional value-added customer programs and services such as the Tool Lending Library, tours, all of which are available at no-cost to the customer.

Southern California Gas Company

SoCalGas WE&T Integrated Energy Education Training (IEET) – [SCG3729]

The SoCalGas WE&T Integrated Energy Education Training (IEET) subprogram (formerly Centergies) offers 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 B includes a non-comprehensive list of expected trainings for 2023.

The 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. Because these market actors have the potential to shape a building's energy use, WE&T teaches them how to recognize energy savings and balanced energy solutions to address GHG-reduction, and then provides them skills, tools, and resources to act upon those opportunities. Additionally, WE&T supports post-secondary institutions that are training future generations of the energy workforce by providing them energy efficiency, sustainability, and green career awareness classes, internships, materials and resources.

2. Coordination Protocol Between Programs

The goal of coordination between 3C-REN and the IOU WE&T programs, is to ensure that ratepayer funds deliver resources efficiently and effectively across the shared territories. 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. The IOUs and 3C-REN will meet regularly to coordinate the WE&T and C&S programs.

3C-REN aims to provide workforce, education, and training not currently being provided by the IOUs within the 3C-REN territory, 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 ensure their current list of scheduled WE&T trainings are available in their respective website for 3C-REN to use or provide 3C-REN with their list of scheduled WE&T trainings. 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 to 3C-REN on a quarterly basis, and 3C-REN will provide a similar list to the four IOUs. The list of trainings 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) and URL for class calendar(s)

Each IOU and 3C-REN shall distribute this quarterly list of classes to the appropriate internal staff and/or consultant(s).

Additionally, a standing agenda item at the quarterly meeting will be to discuss the topics of trainings in development, even if only at a high level. This will reduce the potential of duplication of efforts.

Once 3C-REN reviews this list, 3C-REN will determine which of the IOUs' existing offerings should 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.

3. Coordination Between Statewide (SW) Program(s)

Working with PG&E as the statewide administrator for the Career and Workforce Readiness (CWR) and Career Connections (CC) WE&T subprograms, 3C-REN will leverage the coordination protocol described above to include any statewide considerations. The 3C-REN program is expanding and will include a career exploration series and would coordinate with the Career Connection sub-program team. The CWR implementer will be responsible for the design, implementation, and geographic distribution of the CWR program. Once the CWR implementer is under contract, PG&E will provide 3C-REN with the implementer's contact information.

B. 3C-REN C&S PROGRAM [TCR-CS-001]

The 3C-REN will continue to offer a cross-cutting C&S program designed to fill gaps in current IOU offerings for the 3C-REN territory. The 3C-REN C&S Energy Code Connect program offers local, in-person and on-line person-to-person trainings; Regional Forums; an Energy Codes Coach service that provides in-person, over the phone, texting, and online expert assistance for energy codes and green building standards; and a reach code support services in the northern portion of the 3C-REN territory (PG&E) that provides technical assistance and public outreach coordination similar to what SCE is offering in the lower half of the 3C-REN territory with Franklin Energy as a subcontractor. The use of Franklin Energy for this work was intentional and aids in offering a contiguous service without interruption throughout the territory. 3C-REN has had conversations with the SCE and PG&E Codes and Standards team to ensure the service is complimentary and not duplicative.

Through this program and its suite of services, public and private sector building professionals in the Tri-County region receive Energy Code and California Green Building Standards training and support for plan review and field compliance. All design and construction stakeholders, from architects to building inspectors and from mechanical engineers to plans examiners, are encouraged to attend these trainings. The Energy Codes Coach service, having local in-person and on-call experts for the region, fosters an environment where stakeholders have a deeper understanding of building performance, code compliance, and interrelated building practices. The goal is to increase comprehension, compliance, and enforcement of the Energy Code and Green Building Standards throughout the Tri-County region, providing the workforce with a more stable business climate and known code compliance resources. Lastly, the reach code

support service is designed to help jurisdictions develop and implement building codes that go beyond the current California energy code (Title 24, Part 6). This service will deliver support to jurisdictions in the northern Santa Barbara County and San Luis Obispo County with Franklin Energy as the implementer. 3C-REN will focus on these jurisdictions because SCE already delivers reach code support with Franklin Energy as an implementer in southern Santa Barbara County and Ventura County.

The program budget for 3C-REN C&S, TCR-CS-001 is \$1,884,021

The target audience is all public and private sector building professionals including construction and design-side stakeholders, architects and designers, building departments, contractors, architects, field inspectors, mechanical engineers, plans examiners checkers, and other stakeholders impacted by energy code. This is a non-resource program.

1. Comparable SCE and/or PG&E Programs

The IOU Compliance Improvement subprogram⁵ (of which Energy Code Ace is a key component) 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 California 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 while jurisdictions' building departments are responsible for enforcing the code. Building codes and appliance standards can be difficult to understand and time consuming to implement, therefore some industry actors fail to comply with regulatory requirements fully.

Compliance improvement program needs are determined through a performance-based solution 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. With a few exceptions, a consistent curriculum, featured on EnergyCodeAce.com, is developed by the compliance improvement program and delivered statewide by a team of subject

⁵ Note: The Compliance Improvement subprogram is administered statewide by PG&E, SCE, and SDG&E

matter experts.

The Reach Codes Subprogram, implemented by PG&E, SDG&E, and SCE, responds directly to California’s policy goal to significantly reduce greenhouse gas emissions and helps jurisdictions throughout the state leverage their unique authority to adopt ordinances that require increased efficiency and performance beyond the state’s minimum requirements. In addition to differentiating the jurisdiction as an efficiency leader, local energy ordinances accelerate the adoption of new equipment, technologies, code compliance, and energy-savings strategies to help pave the way for future code cycles. The subprogram experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy reach codes. These include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process. The Reach Codes subprogram is a resource available to any local jurisdiction located throughout the state of California, regardless of who their energy providers are.

As mentioned, SCE also offers reach code support for jurisdictions with Franklin Energy as the implementer. This service is exclusive to SCE’s territory which includes southern Santa Barbara County and Ventura County.

Table 3: C&S Program Comparison

C&S	3C-REN	PG&E	SCE	SoCalGas
Non-Resource Program Name	3C-REN C&S Energy Code Connect	Statewide C&S Compliance Improvement Subprogram Statewide C&S Reach Codes Subprogram	Statewide C&S Compliance Improvement Subprogram Statewide C&S Reach Codes Subprogram	N/A
Eligible Measures	N/A	N/A	N/A	N/A
2023 Budget	\$1,884,021	Compliance Improvement: \$ 5,297,606 Reach Codes: \$2,074,846	Compliance Improvement: \$3,051,711 Reach Codes: \$1,379,860	N/A

C&S	3C-REN	PG&E	SCE	SoCalGas
Target Audience	All stakeholders impacted by energy code	Compliance Improvement: All stakeholders impacted by the energy code Reach Codes: Jurisdiction staff that develop energy ordinances; other market actors involved in the process	All stakeholders impacted by the energy code	N/A

2. Coordination Protocol between programs

The same coordination protocol as mentioned above for WE&T applies to C&S classroom and online trainings. Again, the goal of coordination between 3C-REN and the IOUs 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. The IOUs and 3C-REN will meet regularly to coordinate the WE&T and C&S programs.

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 Energy Code Connect program activities are related to offering Energy Code and Green Building Standards trainings, Regional Forums, and the Energy Codes Coach service. This is also applicable for reach code support services in the PGE territory covered by 3C-REN. 3C-REN will deliver reach code support services to interested jurisdictions in northern Santa Barbara County and San Luis Obispo County while directing jurisdictions in southern Santa Barbara County and Ventura County to SCE and Franklin Energy for similar services.

The IOUs will provide 3C-REN with their respective lists of available C&S 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 the IOU. A clear chain

of communication and identified contacts will be exchanged for each program and/or sub-program.

IOUs' Compliance Improvement team representative will provide a list of trainings to 3C-REN on a quarterly basis and will include the following information:

- Class name(s)
- Description(s)
- Instructor name(s)
- Course length time
- Mode of access and location (ex: in-person, training center/city, online)
- Class schedule (if one exists)
- Course agenda

Additionally, a standing agenda item at the quarterly meeting will be to discuss the topics of trainings in development, even if only at a high level. This will reduce the potential for duplication of efforts.

Once 3C-REN reviews this list, 3C-REN will determine which existing offerings should be leveraged and coordinate with the IOUs to deliver these resources. 3C-REN will develop a calendar with potential dates, of when these offerings can be delivered to various audiences in the Tri-County region. This calendar will be shared with the IOU's and scheduled based on the availability and resource requirements. When 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" or "tools") 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.

3C-REN and the IOUs will plan to meet quarterly on reach codes, with the option of combining with the Compliance Improvement meeting for efficiency as needed. The IOUs will make the 3C-REN aware of Reach Code subprogram cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools. The IOUs will invite the 3C-REN to statewide Reach Codes meetings where other RENs are included. The Reach

Code subprogram representatives will provide updates to the 3C-REN on relevant reach codes activities, at check-in meetings when reach codes are on the agenda or in ad hoc meetings as needed. The 3C-REN will reciprocate with updates on regional progress in supporting jurisdictions interested in developing energy ordinance and direct customers to IOU subprogram work products when they can be utilized in lieu of duplicating efforts.⁶

3. Coordination Between Compliance Improvement Subprogram(s)

As noted above, in addition to training offerings and Regional Forums, 3C-REN's C&S activities are also related to the Energy Codes Coach service which will refer customers who may benefit from statewide programs.

There is an extensive list of classes offered by the C&S team. The IOU Compliance Improvement team representative will provide their list of trainings to 3C-REN per the protocol listed above.

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 local IOU administrators to identify appropriate program contacts, confirm existing resources, share existing resources, and collaboratively determine if resources should be jointly offered or if 3C-REN should build upon resources.

C. 3C-REN Residential Home Energy Savings Multifamily [TCR-Res-002] and Single Family NMEC [TCR-Res-003]

3C-REN will continue to target hard-to-reach (HTR) single-family residential customers in Ventura, Santa Barbara and San Luis Obispo Counties but will shift from direct install to a pay-for-performance model. The program will deliver incentives based on metered savings, using a population Normalized Metered Energy Consumption (NMEC) Measurement and Verification (M&V) approach. The program implementer, Recurve, will deliver energy upgrades utilizing a network of energy efficiency installers (aggregators) who will be paid incentives based on the metered savings achieved with their installations.

The aggregators will work directly with single-family residents to sell and install EE measures. The aggregators will be paid incentives based on the metered savings following the EE upgrades, allowing for flexibility in the measures offered and customer acquisition strategy not seen in prescriptive programs. The aggregators can offer a suite of measures that generate kWh, kW, and Therm

⁶ Example: Cost Effectiveness Explorer tool, <https://explorer.localenergycodes.com>

savings, which could include lighting, HVAC, water heaters, insulation, smart thermostats, water heater controls, storage, etc. The program will not have a list of eligible measures, but rather allow for customized solutions. The flexibility of the approach will allow aggregators to work directly with customers to meet their needs in designing a scope of work that leads to metered energy savings.

HTR customers will be prioritized in this program through an incentive design that pays more for the energy savings of HTR customers; the program will create the market forces to drive implementers to deliver comprehensive energy upgrades to those that need it most. Additionally, the program will seek to enlist local contractors as aggregators to support local economic growth and recognizing that local people are most connected to the target HTR customers. Efforts to engage the local workforce will also be aligned with 3C-REN's WET program goals.

The PAs are exploring the potential for the IOUs to provide both program participant and non-program participant data which 3C-REN views as integral to program delivery and calculating savings, identify HTR customers, determine eligibility, and create comparison groups. The PAs are in the process of investigating whether and what confidential data the IOUs are authorized and enabled to provide to 3C-REN and its third-party implementer for this program.

The program budget for 3C-REN Residential Home Energy Savings Single Family NMEC in 2023 will be \$4,949,974

In addition to serving single-family customers, 3C-REN launched its Multifamily Home Energy Savings program in October 2021. The program serves hard-to-reach (HTR) multi-family building owners, renters, and Disadvantaged Communities (DACs) in Ventura, Santa Barbara and San Luis Obispo Counties.

The program is a multi-measure, whole-building energy efficiency rebate program marketed to multifamily property owners and managers with the intent that the investments in multifamily properties will benefit both the manager/owner and the residents of the properties who often pay the energy bills directly.

Multifamily properties with five or more units are eligible to participate. The program includes site assessments, technical assistance, and a rebate structure that is based on the number of units in the complex. To qualify for the rebates, the project scope of work must achieve a minimum of 0.25MT CO₂e savings per apartment unit. The incentive structure also includes enhanced incentives for underserved properties, and adders for higher performance measures, such as

heat pumps.

To participate in the program, property owners/managers (participants) can sign up on the 3C-REN website. Marketing efforts to drive participants to sign up will include events, calls, emails, etc. Following sign up, participants will work with a Technical Assistant (TA) to conduct an energy assessment to identify energy upgrades and associated GHG savings predictions and develop a project scope. Once the scope has been developed (that meets the GHG savings requirements), a rebate will be reserved for the participant. The participant is responsible for implementing the project scope. It is expected that participants will work with contractors that they already have relationships with, or to review quotes from other area contractors. Although the responsibility lies with the participant to implement the project scope, the TA will provide assistance throughout the bid process and construction of the project. Technical assistance will also include support in identifying financing and accessing additional incentives beyond those offered in this program. Once construction is completed, the TA will verify the project and process incentive payments, which are paid directly to the participant.

The project scopes for each property will vary based on energy assessments, but can include whole building, common area, and in-unit measures. The program does not provide a prescriptive list of eligible measures but will allow energy-saving upgrades for domestic hot water, HVAC, building envelope, appliances, and lighting.

The 2023 program budget for 3C-REN Residential Home Energy Savings Multifamily will be \$3,430,037

The total budget for 3C-REN Residential Programs in 2023 will be \$8,380,011

1. Comparable IOU Programs

Table 4: RES DI Program Comparison

DI	3C-REN	SCE		PG&E		SoCalGas
Resource Program Name	TCR-Res-002 and TCR- RES -003 -Home Energy Savings Program	SCE_3P_2020RCI_004 Willdan Multifamily Energy Efficiency Program (MFEETP)	SCE-13-SW-001G SCE Residential Direct Install Program	PGE Pay For Performance Programs: 1) Comfortable Home Rebates (PGE_Res_001a) 2) Home Intel (PGE_Res_001b),	PGE_Res_003 Multifamily Energy Savings Program (MESP)	SCG3861 – Residential – Community Language Efficiency Outreach SCG3883 – ResACE- Residential Advanced Clean Energy Program SCG3885 – Residential – Manufactured Mobile Homes

DI	3C-REN	SCE		PG&E		SoCalGas
<p>Eligible Measures</p>	<p>The Multifamily Home Energy Savings program offers site-specific measures that achieve energy savings both in-unit and in common areas.</p> <p>The Single Family Home Energy Savings program's population NMEC design pays incentives for any project that achieves metered kWh or therm savings. Therefore, there is not a measure list associated with the program; envelope, HVAC, lighting, water heating, and other measures may all be part a project.</p>	<p>The program offers deemed, customized calculated, and NMEC-based site-specific approach measures for energy-saving equipment for both common and in-unit areas of multifamily properties; end uses include HVAC and Lighting, and Water Heating, , Pool pump, High efficiency kitchen appliances, Showerheads and Faucets and Energy Management Technologies.</p>	<p>Fan Controller, Duct Seal, Smart Thermostat, Brushless Fan Motor, Faucet Aerators and Efficient Showerhead.</p>	<p>Customers across PG&E territory are eligible who have 12 month energy data:</p> <ol style="list-style-type: none"> 1) Comfortable Home Rebates: Home maintenance and upgrade program focused on Heating, cooling, water heating, insulation, duct work, air sealing, lighting, and pool pumps. Cost varies depending on measures selected, rebates from \$585 to \$3,500 depending on measures selected and CEC Climate Zone 2) Home Intel: No cost to customer, In-depth analysis of home's energy use, customized behavioral recommendations and energy coaches to help customers. Includes monthly energy efficiency progress report. 	<p>PG&E's Multifamily Energy Savings Program includes a direct install program option for multifamily properties within PG&E's service territory. Eligible measures include Low flow and thermostatic showerheads, Low flow sink/lavatory aerators, Smart Thermostats, Hot water pipe Insulation, Refrigerators and freezers, High efficiency furnaces, and common area Energy Star clothes washers, and NGAT testing where applicable.</p>	<p>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, 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).</p>

DI	3C-REN	SCE		PG&E		SoCalGas
2023 Budget	\$8,380,011	\$19,595,052	\$15,124,543	\$4,903,644 PGE_Res_001b: Home Intel - \$1,906,631	\$5,063,137	\$7,466,511
Target Audience	Will target hard-to-reach (HTR) residential customers, including single-family, multifamily renters and owners, and moderate-income families not currently being served by, nor meeting the criteria of current ESA and LIHEAP in Ventura, Santa Barbara and San Luis Obispo Counties.	All multifamily customer (small, medium and large) segments of the residential sector across SCE's service territory including hard-to-reach (HTR) customers and/or those in disadvantaged communities (DACs). Property owners and managers of existing multifamily properties. The program targets all levels of multifamily buildings (i.e., low-income).	Residential single-family home customers within SCE's service territory.	Single Family Residential with 12 months energy use data, within PG&E's service territory. Some Multifamily customers may be eligible for the Home Intel program. Some 2-4 unit buildings may be eligible for Comfortable Home Rebates. Home Intel and Home Energy Rewards are no-cost to customers and therefore customers of all incomes, above ESA eligibility, can be supported by these programs.	MESP has a target audience of all types of multifamily buildings that have 5 or more units. MESP has HTR and DAC goals	Mainstream, market rate homeowners.

Southern California Edison

SCE-13-SW-001G - SCE Residential Direct Installation Program (RES DI)

The RES DI 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. Additionally, the services offered through the RES DI 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.

The program is integrated with the Demand Response (DR) Smart Energy Program (SEP) to deliver an Integrated Demand Side Management (IDSM) offering. Smart Thermostat installations performed under Res DI are leveraged to enroll eligible customers in SEP.

SCE_3P_2020RCI_004 - Willdan Multifamily Energy Efficiency Program (MFEPP)

SCE has contracted with Willdan Energy Solutions (Third-Party) to develop, implement, and offer this Energy Efficiency (EE) Program to SCE customers. This Third-Party program provides comprehensive EE for all multifamily (MF) customer segments of the residential sector across SCE's service territory. This program seeks to influence a significant increase in the adoption of EE technology and/or measures among the end-users of this market sector using the Deemed, Custom Calculated and Normalized Metered Energy Consumption approaches. The Program offers a consolidated approach that includes segment-specific marketing, technical assistance, technologies, whole-facility opportunities, financing, and measurement and verification (M&V).

The program goes beyond basic EE to include Demand Response (DR), energy management technologies and fully Integrated Demand-Side Management (IDSM) solutions. IDSM and electrification upgrades are offered to customers, excluding any storage technology. This approach minimizes the barriers for

customer participation.

This program will offer a single point of contact (SPOC) and a significant share of program services will be provided through Channel Partners, Trade Pros, Installers, and community-based organization (CBO) networks. The program's primary objective is to meet SCE's business plan goals and achieve deeper savings through comprehensive energy management solutions. An additional objective is to increase EE adoption rates by targeting MF residential sub-segments including hard-to-reach (HTR) customers and/or those in disadvantaged communities (DACs). An integrated team with extensive MF experience will develop tailored responses that align with SCE's objectives and draws on existing customer relationships with property owners to increase the number of completed projects.

Southern California Gas Company

SCG 3861 Community Language Efficiency Outreach (CLEO)

The CLEO program is a highly targeted residential EE Marketing, Education and Outreach (ME&O) and Direct Install (DI) program specifically targeted to the Vietnamese, Indian, Chinese Korean, Hispanic and African American (VICK-HA) speaking customers of SoCalGas. The CLEO has a unique, 100% in-language strategy which serves a key role in overcoming the English as a second language market barrier and targets hard-to-reach, low- and medium-income customers. The CLEO markets SoCalGas programs and offers energy efficiency education and training and participates in community events, where customers are encouraged to fill up energy efficiency surveys and sign up for direct install of EE measures. The CLEO's marketing efforts encourage and create participation in SoCalGas energy efficiency programs. The CLEO also targets SoCalGas customers in other Southern California Power Producers Association (SCPPA) municipal cities.

SCG3883 Residential Advanced Clean Energy Program

SoCalGas Residential Advanced Clean Energy Program is a comprehensive advanced clean energy solution for single-family customers. The advanced clean energy path begins with the delivery of cost-effective therm-rich direct install measures that transitions to an advanced clean energy opportunity for the single-family customer that can be financed by outside sources. The Residential Advanced Clean Energy Program leverages IOU electric, municipal electric, and local agency clean energy single-family opportunities offering, in addition to

natural gas clean energy, electric, and carbon emission reduction clean energy solutions.

SCG 3885 Manufactured Homes Program

The Manufactured Homes Program provides no- and low-cost energy-efficiency improvements and replacement appliances to SoCalGas customers living in mobile or manufactured homes. Qualifying manufactured home customers will be provided with energy conservation evaluations, installations of low-flow showerheads and faucet aerators and natural gas energy efficiency improvements, such as duct test and seal of HVAC systems and smart thermostats all at no cost. In addition to the no-cost energy-efficiency improvements, the program also provides incentives and financing to upgrade and replace inefficient gas appliances with advanced energy-efficiency technologies. These include high efficiency furnaces, high efficiency storage water heaters, and tankless water heaters. This program is currently available to residents of Fresno, Kern, Kings, San Luis Obispo, Santa Barbara, Tulare, and Ventura (CA) Counties

Pacific Gas and Electric Company

PGE_Res_001a, PGE_Res_001b, Pay for Performance (P4P) Programs (Comfortable Home Rebates, Home Intel)

Customers across PG&E territory who have 12 months of energy data are eligible to participate in PG&E's P4P programs, among other eligibility criteria. Under the Comfortable Home Rebates program, home maintenance and upgrades are focused on heating, cooling, water heating, insulation, duct work, air sealing, lighting, and pool pumps. Costs vary depending on measures selected by the customers and rebates vary between \$585 and \$3,500 depending on measures selected and CEC Climate Zone. Through the Home Intel program, there is no cost to customer. Energy coaches provide an in-depth analysis of a home's energy use and customized behavioral recommendations help customers. Customers receive a monthly energy efficiency progress report.

PG&E_Res_003 Multifamily Energy Savings Program

PG&E's Multifamily Energy Savings Program (MESP) is a third-party implemented program by TRC Solutions to serve multifamily properties of units five or greater within PG&E's service territory. MESP offers energy efficiency upgrade services to multifamily buildings through deemed and custom projects

as well as a direct install delivery channel. The direct install component offers multifamily properties low-cost/no-cost measures. Participation in the direct install track may serve as a springboard to a property participating in deemed or custom upgrade projects.

TRC began MESP ramp up activities following CPUC approval of the contract in October 2020, following the completion of the first wave of PG&E's third-party, multi-sector solicitations. MESP aims to serve multifamily customers, inclusive of smaller properties and underserved regions that will most benefit from property upgrades.

2. Coordination Protocol Between Programs

As described for previous programs, the IOUs and 3C-REN 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 programs, 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. 3C-REN and the IOUs have also developed a protocol to verify customer eligibility to prevent "double dipping" and will use this protocol going forward.

The IOUs will make the 3C-REN aware of programs and resources available for multifamily and single family residential programs. The IOUs will provide written notice once advice letters have been filed and implementation plans have been uploaded to CEDARS of any new program similar to 3C-REN's residential programs. 3C-REN will determine whether resources, such as those for low and moderate- income families, should be jointly offered or if the 3C-REN will build upon IOU resources to offer such programs 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 have established a protocol for customer handoff should either program identify a referral opportunity for another organization's resources. The handoff protocol minimizes 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 or third-party implementer 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 program offerings are not substantially similar to any statewide programs and therefore the parties to this JCM have determined that regular coordination to avoid duplication is 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 trainings are offered virtually or at IOU training facilities, which are not located in 3C-REN service area. As noted in 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.”⁷

For WE&T, the 3C-REN program offers 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 helps build career pathways by providing access to in-person trainings and mentorships, including HTR workers and those in identified DACs. This includes 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 offers in-person training on technical and soft skills, a service not offered locally by the IOUs.

For C&S, the 3C-REN established a regional Energy Code Coach offering service to run concurrent to and alongside other training efforts. This approach provides

⁷ D.18-05-41, Finding of Fact 63

hands-on and locally relevant resources. Building departments professionals in the Region 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, are encouraged to attend trainings. The Code Coach approach, having local counter-to-counter and on-call experts for the region, fosters an environment where stakeholders have a deeper understanding of building performance and interrelated concerns.

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 D.18-05-041, the CPUC intends to “authorize 3C-REN’s proposed business plan activities for residential programs that target hard to reach customers.”⁸ Through its residential programs, 3C-REN 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.

3C-REN addresses 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 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 deploys 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, “3C-REN intends to offer services to all residents in the three counties, however, the hard to reach populations of

⁸ D.18-05-41, Conclusion of Law 54

moderate income and rural areas will be targeted in marketing and outreach, as well as in program design.” 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 established and use a protocol for customer handoff, as described above.

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.
<p>3C-REN WE&T</p> <p>TCR-WET-001</p>	<p>PG&E Integrated Energy Education & Training (IEET)</p> <p>SCE WE&T IEET (SCE-13-SW-010A)</p> <p>SoCalGas WE&T Integrated Energy Efficiency Training (SCG3729).</p>	<p>Strategy 3. Establish local, targeted training for building professionals.</p> <ul style="list-style-type: none"> • 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. 		
<p>3C-REN C&S</p> <p>TCR-CS-001</p>	<p>Statewide C&S Compliance Improvement Subprogram</p> <p>Statewide C&S Reach Codes Subprogram</p>	<p>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</p>		

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.
<p>3C-REN Residential</p> <p>TCR-Res-002 and TCR-Res-003</p>	<p>SoCalGas Residential Energy Efficiency Program (SCG3702)</p> <p>SoCalGas Home Upgrade Program (SCG3705)</p> <p>SoCalGas RES ACE (SCG 3820)</p> <p>SCE RES DI (Formerly Energy Upgrade California – MIDI) (SCE-13- SW-001G)</p> <p>SCE Willdan Multifamily Energy Efficiency Program (MFEEP) (SCE_3P_2020RCI_004)</p> <p>PG&E Multifamily Energy Savings Program (MESP) (PGE_Res_003)</p> <p>PG&E Pay for Performance (P4P) Programs (PGE_Res_001a, PGE_Res_001b)</p>			<p>Strategy 1. Build trust and interest in deeper energy savings over time.</p> <ul style="list-style-type: none"> • Offer a programs targeting hard- to-reach customers • Develop simple upgrade packages to streamline and offer easy installation and adoption of deeper retrofits <p>Strategy 2. Employ neighborhood approaches to achieve scale in reach and savings.</p> <ul style="list-style-type: none"> • Integrate workforce development into neighborhood programs to build skills and community buy- in

IV. DATA SHARING PROTOCOL

The IOUs have data governance and protection obligations for sharing any customer data. Before the IOUs share data that they are authorized to share by applicable law and/or tariff for double-dip check purposes or to support a 3C-REN program, the following minimum data security and privacy protocols need to be completed:

- The party seeking customer data has a contract with the County of Ventura on behalf of 3C-REN or with the lead contractor for a 3C-REN program that includes acceptable privacy and data protection and liability provisions.
- The party seeking data has executed a Non-disclosure Agreement (NDA) with the IOU.
- The party seeking data has completed an IOU's Third-Party Security Review (TSR) and TSR renewals.

For avoidance of doubt, these requirements are non-exhaustive, and the parties will develop additional protocols.

APPENDIX A - IOU(s) PORTFOLIO SUMMARY OF PROGRAMS OFFERED FOR 2023

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 [PGE21071]	Cross-cutting: WE&T	\$8,155,242	Not applicable. Non-resource program
PG&E Compliance Improvement Program [PGE21053]	Cross Cutting: C&S	\$5,297,606	Not applicable. Non-resource program
PG&E Reach Codes Program [PGE21054]	Cross Cutting: C&S	\$2,074,846	Not applicable. Non-resource program
PG&E Multifamily Energy Savings Program (MESP) [PGE_Res_003]	Residential	\$5,063,137	Low flow and thermostatic showerheads, Low flow sink/lavatory aerators, Smart Thermostats, Hot water pipe Insulation, Refrigerators and freezers, High efficiency furnaces, and common area Energy Star clothes washers, and NGAT testing where applicable.
PG&E Pay for Performance (P4P) Programs [PGE_Res_001a, PGE_Res_001b]	Residential	\$4,903,644 ⁹	This program claims savings through NMEC methodology and not deemed measures. However, the current measures are: behavioral, LEDs, Low flow sink/lavatory aerators, smart thermostats, Heating, cooling, water heating, insulation, duct work, air sealing, lighting, and pool pumps.

⁹ This total reflects the combined 2021 ABAL program budgets of three PG&E Residential P4P programs: Comfortable Home Rebates (\$3,478,918), Home Intel (\$667,404), Home Energy Rewards (\$757,322)The 2022 budget will be provided in the 2022-2023 BBAL.

Table 2. SCE Summary of Comparable Programs

IOU Program Unique ID	Sector	Annual Budget ¹⁰	Eligible Measures
SCE WE&T Integrated Energy Education & Training Program (formerly Centergies) [SCE-13-SW-010A]	Cross-cutting: WE&T	\$8,840,814	Not applicable. Non-resource program
SCE C&S – Compliance Improvement [SCE-13-SW-008C]	Cross Cutting: C&S	\$3,051,711	Not applicable. Non-resource program
SCE C&S – Reach Codes	Cross Cutting: C&S	\$1,379,860	Not applicable. Non-resource program
SCE Residential Direct Install [SCE-13-SW-001G]	Residential	\$15,124,543	Fan Controller, Duct Seal, Smart Thermostat, Brushless Fan Motor, Faucet Aerators and Efficient Showerhead.
SCE Willdan Multifamily Energy Efficiency Program (MFEEP) (SCE_3P_2020RCI_004)	Residential	\$19,595,052	The program offers deemed, customized calculated, and NMEC-based site-specific approach measures for energy- saving equipment for both common and in-unit areas of multifamily properties; end uses include HVAC and Lighting, and Water Heating, Pool pump, High efficiency kitchen appliances, Showerheads and Faucets and Energy Management Technologies.

¹⁰ 2023 Budgets are based on approved 2022-2023 Annual Budget Advice Letter (ABAL) filings (SCE AL 4633-E).

Table 3. SoCalGas Summary of Comparable programs

IOU Program Unique ID	Sector	Annual Budget	Eligible Measures
SCG3729 – WE&T-Integrated Energy Education Training (IEET)	Cross Cutting	\$4,350,000	Not applicable.
<p>SCG3702 – RES-Residential Energy Efficiency Program</p> <p>SCG3705 – RES-Home Upgrade Program</p> <p>SCG3764 – RES-LivingWise</p> <p>SCG3861 – RES-Community Language Efficiency Outreach-Direct Install</p> <p>SCG3883 – RES-Residential Advanced Clean Energy</p> <p>SCG3885 – RES-Manufactured Home Program (Staples)</p> <p>SCG3888 – RES-Multi Family Space and Water Heating Controls</p> <p>SCG3889 – RES-Multifamily Energy Alliance</p>	Residential	\$35,580,979	<p>The residential programs listed encompasses various delivery channels and measures. These programs can have integrated direct install, co-pay, rebates, education, and whole building attached to these programs. For example, SCG 3705, uses approved a CEC software to create a whole building incentive program towards multifamily buildings. Listed below are some of the measures that are used by SCG’s contractors.</p> <ul style="list-style-type: none"> • Smart Thermostat (installation & setup) • Duct Sealing and Testing • Water Heater Pipe Wrap • Low-flow Showerheads • Faucet Aerators • Tub Spout & Thermostatic Shut-off Showerhead • Thermostatic Shower Valves • Premium High Efficiency Toilets • Smart Irrigation Water Controller with Weather-Based Capabilities • Smart Hose Bib with Weather-Based Capabilities • High Efficiency Furnaces • Tankless Water Heaters • Fireplace Inserts • Education • Insulation

APPENDIX B - WORKFORCE, EDUCATION, AND TRAINING CLASS LIST

Classes in Alignment with 3C-REN Focus Areas, Full Class List and On-demand Class List

PG&E Full Class List

Building Envelope	
1.	Advanced Framing for Energy and Resource Efficiency
2.	Air Sealing and Insulating Existing Homes: Addressing Air Leakage and Thermal Performance in Ceilings without Attics
3.	Air Sealing and Insulating Existing Homes: Addressing Common Hazards During Energy Upgrades
4.	Air Sealing and Insulating Existing Homes: Air Leakage Control for Interstitial Cavities
5.	Air Sealing and Insulating Existing Homes: Attic Ventilation for Efficiency, Access, and Wildfire Safety
6.	Air Sealing and Insulating Existing Homes: Creating Continuity in Ceiling Air Barrier
7.	Air Sealing and Insulating Existing Homes: Developing a Work Scope for Attic Efficiency Upgrades
8.	Air Sealing and Insulating Existing Homes: Improving the Thermal Performance of Attic Knee Walls
9.	Air Sealing and Insulating Existing Homes: Interpreting and Prioritizing Infrared and Blower Door Results
10.	Air Sealing and Insulating Existing Homes: Recessed Fixtures in Vented Attics
11.	Air Sealing and Insulating Existing Homes: Ventilation Terminations and the Enclosure
12.	Air Sealing Strategies for Zero Net Energy Homes
13.	Air Sealing with Low VOC Materials
14.	Balanced Ventilation for Better Health, Comfort, and Energy Efficiency: IAQ, OAQ, Ventilation and Filtration
15.	Balanced Ventilation for Better Health, Comfort, and Energy Efficiency: System Types, Install Strategies, Duct Design and Critical Details
16.	Basics of Photovoltaic (PV) & Energy Storage Systems (ESS) for Grid-Tied Applications (2-Part)
17.	Building Envelope Commissioning Case Studies (Previously Recorded)
18.	Building Science 1.0: Overview and Introduction to Control Layers
19.	Building Science 2.1: Introduction to Heat Transfer
20.	Building Science 2.2: Airtightness and Air Barriers
21.	Building Science 2.3: Understanding and Limiting Thermal Bridging
22.	Building Science 2.4: Introduction to Continuous Insulation and Cladding Attachment
23.	Building Science 2.5: Introduction to Windows, Curtain Walls, Window Walls and Shading Design
24.	Building Science 2.6: Introduction to Moisture and Buildings
25.	Building Science 2.7: Understanding the Psychrometrics of Condensation
26.	Building Science 2.8: Introduction to the Control of Rain and Groundwater Penetration
27.	Carbon Free Homes: Features, Benefits, Valuation
28.	Design Tools, Methods and Case Studies on the Design of High-Performance Facades - (Previously Recorded)
29.	Enclosure Systems and Materials: Architectural Precast
30.	Enclosure Systems and Materials: Portland Cement Plaster on Framed Walls
31.	Enclosure Systems and Materials: Unitized Curtainwall
32.	Energy Efficiency and Solar For Homeowners

33.	Energy Resiliency for Homes (Previously recorded)
34.	Energy Savings through Process Improvement and Optimization
35.	Home Electrification Retrofits Without Upsizing the Electric Panel - (Previously Recorded)
36.	Home Energy Series: Session 2: Home Systems: Understanding Your Home's Building Enclosure and its Major Systems
37.	How to Design and Build High-Performance Attics
38.	How to Design and Build High-Performance Walls
39.	How to Plan and Build Multifamily Passive House for Less
40.	Introduction to Passive House Trades
41.	Introduction to the Passive House Standard
42.	Modular Construction & Panelized Facades
43.	Retrofitting Crawlspace: Air Barrier and Thermal Barrier Alignment in Crawlspace
44.	Retrofitting Crawlspace: Air Sealing and Insulating Crawlspace Subfloors
45.	Retrofitting Crawlspace: Installing Ground Cover for Vapor, Air, and Thermal Control
46.	Retrofitting Crawlspace: Insulation Systems for Stem Walls
47.	Retrofitting Crawlspace: Prepping Crawlspace for Moisture Management and Efficiency
48.	Retrofitting Crawlspace: Updating Foundation Vents for Efficiency, Rodent Control, and Wildfire Safety
49.	Retrofitting Homes for Electrification and Decarbonization
50.	Selling High Performance Homes: How Realtors Earn Stellar Referrals While Boosting Profits -
51.	Window Installation Procedures to Provide Real World Performance and Prevent Water Intrusion
52.	Window Selection for New and Existing Homes
Energy Code and Standards	
53.	The Architecture 2030 ZERO Code and California (Previously Recorded)
54.	The Quest for Performance and California Code Commissioning Requirements (Previously Recorded)
55.	Title 24 (2019): Where We're Headed With the Residential Standards
56.	Title 24 Documentation for Architects: EUI, 2030 Goals, and Getting the Most from Consultants (Previously Recorded)
HVAC/R	
57.	3D Residential HVAC Design (No CAD Required) (2-Part)
58.	ACCA CCA Dry Climate Nonresidential Manual N, CS, and QD Series with Wright soft (3-Part)
59.	ACCA Manual D Part 1, Duct Design
60.	ACCA Manual D Part 2, Duct Design with WrightSoft
61.	ACCA Manual H, Residential Heat Pump, Design and Installation
62.	ACCA Manual J and S
63.	ACCA Manual J and S, Equipment Selection & Sizing
64.	ACCA Manual J Mobile-Cool Calc
65.	ACCA Manual J Mobile-Wrightsoft
66.	Advanced HVAC Control Approaches for Variable-Air-Volume Systems (Previously Recorded)
67.	Airflow Testing and Diagnostics Live Online (2-Part)
68.	Basic Heating, Ventilating, & Air Conditioning
69.	Case Studies for Residential Electrification Retrofits

70.	COVID-19 Series, Session 1: Human Health & the Built Environment in the Endemic Era
71.	COVID-19 Series, Session 3: The Role of HVAC Systems - (Previously Recorded)
72.	Ductless Mini Split Design, Installation, & Performance
73.	Electric Heat Pumps for Space Heating and Cooling
74.	Electric Heat Pumps for Water Heating
75.	Gas Heating CAQI/QM/QS
76.	Heat Pump Technologies for Space Conditioning and Water Heating
77.	Heat Pump Water Heater Retrofit - Energy Cost Estimator: Overview and Demonstration (Previously Recorded)
78.	Heat Pumps in Retrofit Construction - Space Conditioning and Water Heating
79.	Heating Hot Water and Steam Systems: Design, Performance, and Commissioning (2-Part)
80.	HVAC - Chilled Water Systems (4-Part)
81.	HVAC Fundamentals: New Ideas for Novices (2 Day Class)
82.	HVAC Heat Pump Retrofit - Energy Cost Estimator: Overview and Demonstration (Previously Recorded)
83.	HVAC System Testing for Energy Efficiency (3-Part)
84.	IHACI: AC-HP Refrigeration Module (4-Part)
85.	IHACI: Air Distribution Module (4-Part)
86.	IHACI: Electrical Module (4-Part)
87.	IHACI: Gas Heating CAQI/QM/QS (2-Part)
88.	IHACI: NATE AC-HP Refrigeration & Air Distribution Training (4-Part)
89.	IHACI: NATE Core & Gas Heating Training (4-Part)
90.	IHACI: NATE HVAC-R New Hire (4-Part)
91.	IHACI: NATE HVAC-R Support Training (4-Part)
92.	IHACI: System Diagnostics Module (4-Part)
93.	Implementing Heat Pumps Water Heaters in Replacement Scenarios: Why They Make Sense
94.	Intro to Residential HVAC Design in 3D
95.	Kicking Carbon Out of Buildings - Design for Decarbonized Building
96.	NATE HVAC-R New Hire (4-Part)
97.	NATE HVAC-R Support Training (4-Part)
98.	Noninvasive Refrigerant Charge Testing and Low GWP Refrigerants
99.	Optimizing Residential Forced-Air HVAC Systems: Airflow for Comfort and Efficiency
100.	Optimizing Residential Forced-Air HVAC Systems: Load Calculations, Equipment Selection and Layout
101.	Optimizing Residential Forced-Air HVAC Systems: Low-Loss Duct Systems
102.	Overcoming Installation Challenges for Heat Pump Water Heater Retrofits
103.	Overcoming Installation Challenges for Heat Pumps in HVAC Retrofits
104.	Packaged Terminal Heat Pumps: Benefits and Best Practices
105.	Selling Heat Pumps for HVAC Retrofits System Efficiencies, Costs, and Why They're Ideal for California
Other: Integrated Building Design, Renewable Energy, Software, Water and Energy	
106.	2020 WCS: Analysis of MWEL0: Is It Working? (Previously Recorded) Water Conservation Showcase

107.	2020 WCS: Emerging Technologies in the Water Sector (Previously Recorded) Water Conservation Showcase
108.	2020 WCS: How to Build Your Career in the Water Industry (Previously Recorded) Water Conservation Showcase
109.	2020 WCS: Laundry to Landscape (Previously Recorded) Water Conservation Showcase
110.	2020 WCS: New California Conservation Framework (Previously Recorded) Water Conservation Showcase
111.	2020 WCS: Plant Talk (Previously Recorded) Water Conservation Showcase
112.	2020 WCS: Qualified Water Efficient Landscaper (QWEL) Certification Program (Previously Recorded) Water Conservation Showcase
113.	2020 WCS: Stormwater Bioretention Systems (Previously Recorded) Water Conservation Showcase
114.	2020 WCS: The California State of Onsite Water Reuse (Previously Recorded) Water Conservation Showcase
115.	2020 WCS: Water and Energy Nexus: Applications and Outcomes (Previously Recorded) Water Conservation Showcase
116.	2020 WCS: Watersheds as Engagement Tool (Previously Recorded) Water Conservation Showcase
117.	2020 WCS: Workshop - Smart Controllers - Wi-Fi Controllers - Secrets to Success (Previously Recorded) Water Conservation Showcase
118.	2021 WCS: Climate Positive Landscape Design: Going Beyond Neutral (Previously recorded)
119.	2021 WCS: Connecting with Nature through Citizen Science (Previous Recording)
120.	2021 WCS: Plant Talk #2 (Previously Recorded)
121.	2021 WCS: Trends in Water Use, Efficiency Technologies, and Conservation Priorities (Previously Recorded)
122.	2021 WCS: Water/Energy Interactions: Covid-19 and Other Factors Impacting the Water/Energy Nexus (Previously Recorded)
123.	2021 WCS: Watershed Stewardship from Snowflake to the Bay (Previously Recorded)
124.	Ag Irrigation Technology Virtual Field Day
125.	Ag Tech Day-Innovations in Ag Irrigation Technology Demonstration and Showcase
126.	Ag. Power Quality Workshop (Previously Recorded)
127.	Basic Excel for Energy Professionals
128.	Basics of Solar Electric Systems
129.	Carbon Sequestration in the Landscape Series: #1 Nurture Soil to Sequester Carbon (Previously Recorded)
130.	Carbon Sequestration in the Landscape Series: #2 Protect Water & Air Quality to Reduce Emissions (Previously Recorded)
131.	Carbon Sequestration in the Landscape Series: #3 Save Water for Climate Resilience (Previously Recorded)
132.	Carbon Sequestration in the Landscape Series: #4 - Act Local to Mitigate Climate Change (Previously Recorded)
133.	Carbon Sequestration in the Landscape Series: #5 - Conserve Energy to Reduce GHG's (Previously Recorded)
134.	Carbon Sequestration in the Landscape Series: #6 - Reduce Waste to Reduce Greenhouse Gas Emissions (Previously Recorded)
135.	Carbon Sequestration in the Landscape Series: #7 - Carbon Sequestration to Mitigate Climate Change (Previously Recorded)
136.	Carbon Sequestration in the Landscape Series: #8 - Protect Habitat for Climate Resilience (Previously Recorded)
137.	Clean Energy Homes: Key Systems & Energy Modeling

138.	Cost-Effective Approaches for Energy Efficient Remodels
139.	Decarbonizing the Built Environment Day (2-Part)
140.	Electric Vehicle Chargers: Design and Installation Strategies for New and Existing Homes - (Previously Recorded)
141.	Electric Vehicles (EVs): What you need to know
142.	Electric Vehicles (EVs): What you need to know - 2022
143.	Electrification for Small Houses: ADU-s, Tiny Homes, and Manufactured Homes
144.	Flowmeters: You need to measure water to manage water!
145.	Getting a Multi-Condition Pump Efficiency Test
146.	Getting Your Deep Well and Booster Pump on a Single Smart Meter Tested
147.	Graphic Representation of Data: Making Charts that Matter
148.	High-Efficiency Laundry Dryers for All-Electric Homes (Previously Recorded)
149.	Home Energy Series: Session 3: Home Energy: Creating Your Whole Home- Based Solar Strategy
150.	How to Get Started with an EE Survey
151.	How To Interpret Pump Efficiency Results and Track Pump Performance
152.	Inspecting Photovoltaic (PV) & Energy Storage Systems (ESS) for Code Compliance (2-Part)
153.	Inspecting Photovoltaic (PV) Systems for Code Compliance (2-Part)
154.	Integrated Design for Non-Residential and Multi-Unit Residential: Projects of All Sizes and Delivery Methods
155.	Integrated Thinking: Early Stage Building Science for Enclosure & Mechanical Systems
156.	Latest Information on California Water Regulations: SGMA and ILRP
157.	Lawn Conversion Workshop
158.	Mechanical Rooms: Strategies for Electrification Retrofits in Homes
159.	Model Water Efficient Landscape Ordinance (MWELo) and the New Normal for California Landscaping (Previously Recorded)
160.	MWELo Enforcement Workshop for Local Agencies
161.	Novel Energy and Water Use Tracking Technology in Agriculture
162.	Pathways to a Zero Net Energy Home
163.	Plant Talk #3 (Previously Recorded)
164.	Photovoltaic (PV) Site & Energy Storage Systems (ESS) Analysis and System Sizing (2-Part)
165.	Plant Talk IV
166.	Practical Efficient Hot Water Delivery: Structured Plumbing Applied in Retrofit and New Construction
167.	Pump Tester Training
168.	PV + Batteries: Integrating Storage with Grid-Tied Photovoltaic Systems (3-Part)
169.	SGMA Updates - Water Infrastructure in California
170.	Solar PV: Technology and Valuation
171.	Spring Irrigation System Field Maintenance
172.	Surviving Drought An example on the Fresno State Farm for Better Water Management
173.	VFDs for Pumping Applications
174.	Water Audit Basics for Small to Medium Size Businesses

PG&E On-Demand Class List

1. 2020 WCS: Watersheds as Engagement Tool (Previously Recorded) Water Conservation Showcase
2. 2020 WCS: Analysis of MWEL0: Is It Working? (Previously Recorded) Water Conservation Showcase
3. 2020 WCS: Emerging Technologies in the Water Sector (Previously Recorded) Water Conservation Showcase
4. 2020 WCS: How to Build Your Career in the Water Industry (Previously Recorded) Water Conservation Showcase
5. 2020 WCS: Laundry to Landscape (Previously Recorded) Water Conservation Showcase
6. 2020 WCS: New California Conservation Framework (Previously Recorded) Water Conservation Showcase
7. 2020 WCS: Plant Talk #1 (Previously Recorded) Water Conservation Showcase
8. 2020 WCS: Qualified Water Efficient Landscaper (QWEL) Certification Program (Previously Recorded) Water Conservation Showcase
9. 2020 WCS: Stormwater Bioretention Systems (Previously Recorded) Water Conservation Showcase
10. 2020 WCS: The California State of Onsite Water Reuse (Previously Recorded) Water Conservation Showcase
11. 2020 WCS: Water and Energy Nexus: Applications and Outcomes (Previously Recorded) Water Conservation Showcase
12. 2020 WCS: Workshop - Smart Controllers - Wi-Fi Controllers - Secrets to Success (Previously Recorded) Water Conservation Showcase
13. 2021 WCS: Water Efficiency Standards: National and California Legislative Update (Previously Recorded)
14. 2021 WCS: Water Equity: Collaboration, Capacity Building and Capital (Previously Recorded)
15. 2021 WCS: Climate Positive Landscape Design: Going Beyond Neutral (Previously recorded)
16. 2021 WCS: Connecting with Nature through Citizen Science (Previous Recording)
17. 2021 WCS: Plant Talk #2 (Previously Recorded)
18. 2021 WCS: Trends in Water Use, Efficiency Technologies, and Conservation Priorities (Previously Recorded)
19. 2021 WCS: Water/Energy Interactions: Covid-19 and Other Factors Impacting the Water/Energy Nexus (Previously Recorded)
20. 2021 WCS: Watershed Stewardship from Snowflake to the Bay (Previously Recorded)
21. ADR 101: Understanding Automated Demand Response (Previously Recorded)
22. ADR 102: Automated Demand Response Deep Dive (Previously Recorded)
23. Advanced HVAC Control Approaches for Variable-Air-Volume Systems (Previously Recorded)
24. Affordable and Sustainable Multi-Family Housing: Strategies and Case Studies (Previously Recorded)
25. Ag. Industrial Refrigeration Systems Efficiency (Previously Recorded)
26. Ag. Power Quality Workshop (Previously Recorded)
27. Air Tight Buildings
28. Air-Sealing for an Efficient New Home
29. At the Frontiers of Sustainable Urban Housing (Previously Recorded)
30. Attic-Roof Insulation and Air Sealing

31. Automation, EMS Systems, and PLCs
32. Basics of Solar Electric Systems
33. Best Practices in Residential Water Heating
34. Blower Door Testing
35. Building Envelope Commissioning Case Studies (Previously Recorded)
36. Building Envelope Retrofit Strategies
37. Building Science 1.0: Overview and Introduction to Control Layers
38. Building Science 2.1: Introduction to Heat Transfer
39. Building Science 2.2: Airtightness and Air Barriers
40. Building Science 2.3: Understanding and Limiting Thermal Bridging
41. Building Science 2.4: Introduction to Continuous Insulation and Cladding Attachment
42. Building Science 2.5: Introduction to Windows, Curtain Walls, Window Walls and Shading Design
43. Building Science 2.6: Introduction to Moisture and Buildings
44. Building Science 2.7: Understanding the Psychrometrics of Condensation
45. Building Science 2.8: Introduction to the Control of Rain and Groundwater Penetration
46. California Greenin': How the Golden State Became An Environmental Leader (Previously Recorded)
47. Carbon Sequestration in the Landscape Series: #1 Nurture Soil to Sequester Carbon (Previously Recorded)
48. Carbon Sequestration in the Landscape Series: #2 Protect Water & Air Quality to Reduce Emissions (Previously Recorded)
49. Carbon Sequestration in the Landscape Series: #3 Save Water for Climate Resilience (Previously Recorded)
50. Carbon Sequestration in the Landscape Series: #4 - Act Local to Mitigate Climate Change (Previously Recorded)
51. Carbon Sequestration in the Landscape Series: #5 - Conserve Energy to Reduce GHG's (Previously Recorded)
52. Carbon Sequestration in the Landscape Series: #6 - Reduce Waste to Reduce Greenhouse Gas Emissions (Previously Recorded)
53. Carbon Sequestration in the Landscape Series: #7 - Carbon Sequestration to Mitigate Climate Change (Previously Recorded)
54. Carbon Sequestration in the Landscape Series: #8 - Protect Habitat for Climate Resilience (Previously Recorded)
55. Case Studies for Residential Electrification Retrofits - (Previously Recorded)
56. Combination Ovens, the Key to the Energy-Effective Kitchen of the Future (Previously Recorded) CEW Attendance
57. Combustion Safety and Efficiency
58. COVID-19 Series, Session 1: Human Health & the Built Environment in the Endemic Era - (Previously Recorded)
59. COVID-19 Series, Session 3: The Role of HVAC Systems - (Previously Recorded)
60. Deep Energy Retrofits
61. Design Professional's Guide to Zero Net Energy Buildings (Previously Recorded)
62. Design Strategies for New Buildings
63. Design Tools, Methods and Case Studies on the Design of High-Performance Facades - (Previously Recorded)
64. Designing Commercial Spaces with Modern Ceiling Fans
65. Designing for Light and Health - What You Need to Know (Previously Recorded)
66. Electric Vehicle Chargers: Design and Installation Strategies for New and Existing Homes - (Previously Recorded)
67. Electric Vehicles (EVs): What you need to know

68. Electric Vehicles (EVs): What you need to know - 2022
69. Emerging Smart Building Technology & Enhanced Building Performance (Previously Recorded)
70. Energy Audit Bootcamp Day 1 (Previously Recorded)
71. Energy Audit Bootcamp Day 2 (Previously Recorded)
72. Energy Efficiency 101 for Culinary Students: Mission College
73. Energy Efficiency and Storage Opportunities for PG&E Hospitality Customers - (Previously Recorded)
74. Energy Math
75. Energy Resiliency for Homes (Previously recorded)
76. Energy Resiliency for Non-Residential Facilities (Previously Recorded)
77. Fault Detection and Diagnostics Demo Series: Buildings IoT onPoint (Previously Recorded)
78. Fault Detection and Diagnostics Demo Series: ClimaCheck's ClimaCheck Online (Previously Recorded)
79. Fault Detection and Diagnostics Demo Series: Clockworks Analytics' FDD Platform (Previously Recorded)
80. Fault Detection and Diagnostics Demo Series: Ezenics' FDD Platform (Previously Recorded)
81. Full Scale Induction for Commercial Kitchens (Previously Recorded) CEW Attendance
82. Grid-Interactive Efficient Buildings (Previously Recorded)
83. Heat Pump Technologies for Space Conditioning and Water Heating
84. Heat Pump Water Heater Retrofit - Energy Cost Estimator: Overview and Demonstration (Previously Recorded)
85. Heat Recovery Dishmachines and Heat Pump Water Heaters: The Hidden Keys to a Zero Net Carbon Kitchen (Previously Recorded) CEW Attendance
86. High-Efficiency Laundry Dryers for All-Electric Homes (Previously Recorded)
87. Home Electrification Retrofits Without Upsizing the Electric Panel - (Previously Recorded)
88. Home Heating and Cooling Basics
89. How to Use Energy Efficient Countertop Equipment to Increase Production (Previously Recorded) CEW Attendance
90. How to Use the Common App
91. HVAC Heat Pump Retrofit - Energy Cost Estimator: Overview and Demonstration (Previously Recorded)
92. Induction Cooking and Holding - Energy Efficiency and Performance for Commercial Kitchens
93. Induction Cooking and Holding - Energy Efficiency and Performance for Residential Kitchens
94. Induction Woks - Types, Uses, Performance and Efficiency in Mandarin - (Previously Recorded)
95. Kitchen Makeover: Replacement Equipment to Boost Profits and Cut Carbon (Previously Recorded) CEW Attendance
96. Low-Cost Hot Water System Retrofits (Previously Recorded) CEW Attendance
97. Model Water Efficient Landscape Ordinance (MWELO) and the New Normal for California Landscaping 2020 (Previously Recorded)
98. Model Water Efficient Landscape Ordinance (MWELO) and the New Normal for California Landscaping 2021- (Previously Recorded)
99. Needs, Wants and Expectations: A Panel Discussion on Building Commissioning (Cx) Services (Previously recorded)
100. New Developments in Fault Detection and Diagnostics (Previously Recorded)

101. NMEC 1: Measurement and Verification (M&V) and Normalized Metered Energy Consumption (Previously Recorded)
102. NMEC 10: Normalized Metered Energy Consumption: Calculator Demonstrations 8: Bill Koran's ECAM - 2.25.2021 (Previously Recorded)
103. NMEC 2: Normalized Metered Energy Consumption 2 Calculator Demonstrations (Previously Recorded)
104. NMEC 3: Normalized Metered Energy Consumption: Calculator Demonstrations 1: kW Engineering's nmecr - 01.21.2021 (Previously Recorded)
105. NMEC 4: Normalized Metered Energy Consumption: Calculator Demonstrations 2: Recurve's Resource Planner, Fleet Manager and Flex Ledger - 01.28.2021 (Previously Recorded)
106. NMEC 5: Normalized Metered Energy Consumption: Calculator Demonstrations 3: Cascade Energy's Energy Sensei Platform - 02.02.2021 (Previously Recorded)
107. NMEC 6: Normalized Metered Energy Consumption: Calculator Demonstrations 4: AESC's Praxis - 02.04.2021 (Previously Recorded)
108. NMEC 7: Normalized Metered Energy Consumption: Calculator Demonstrations 5: Evergreen's AMICS Tool - 2.10.2021 (Previously Recorded)
109. NMEC 8: Normalized Metered Energy Consumption (NMEC) Calculator Demonstrations 6: Enpira's Building Portfolios - 2.16.2021 (Previously Recorded)
110. NMEC 9: Normalized Metered Energy Consumption: Calculator Demonstrations 5: EnergyRM's Insights, DeltaMeter and Transactions- 2.23.2021 (Previously Recorded)
111. Optimizing Kitchen Ventilation and Restaurant HVAC for Maximum Health and Safety and Minimum Cost-to-Operate (Previously Recorded) CEW Attendance
112. Plant Talk #3 (Previously Recorded)
113. Plant Talk #4 (Previously Recorded)
114. Plant Talk #5 (Previously Recorded)
115. Public Safety Power Shutoffs and PG&E Demand Response: 2021 Updates for Hospitality Customers (Previously Recorded)
116. RCx101: Identifying and Assessing Common Retro-Cx Opportunities (Previously Recorded 5/5/21)
117. RCx101: Identifying and Assessing Common Retro-Cx Opportunities (Previously recorded)
118. Recent Insights on Building Science Research from UC Berkeley's Center for the Built Environment - (Previously Recorded)
119. Re-designing Good Design: High-performance Architecture for a Low-carbon World (Previously Recorded)
120. Residential Energy Auditing
121. Restaurant Rebound - Operating an Energy Efficient Kitchen (Previously Recorded) CEW Attendance
122. Specifying Efficient Equipment for Production Kitchens (Previously Recorded) CEW Attendance
123. Symposium on Research and Design Practice Related to Window Views (Previously Recorded)
124. Testing Range Tops: Anatomy of a Test Method and Range Performance Comparisons - (Previously Recorded) CEW Attendance
125. The Architecture 2030 ZERO Code and California (Previously Recorded)
126. The Benefits and Challenges of R290 as a Refrigerant (Previously Recorded) CEW Attendance
127. The Quest for Performance and California Code Commissioning Requirements (Previously Recorded)
128. Title 24 (2019): Where We're Headed With the Nonresidential Standards

- 129. Title 24 (2019): Where We're Headed With the Residential Standards
- 130. Title 24 Documentation for Architects: EUI, 2030 Goals, and Getting the Most from Consultants (Previously Recorded)
- 131. Using Building Energy Simulation
- 132. Using Energy Efficiency to Decarbonize Commercial Kitchens (Previously Recorded)CEW Attendance
- 133. Using Personal Comfort Devices to Save Energy and Improve Comfort (Previously Recorded)
- 134. Where are we with Integrating Lighting and Whole Building Controls? (Previously Recorded)
- 135. Window Selection and Replacement
- 136. Zero Net Energy Introduction & Project Showcase

SCE Full Class List:

1. 2019 Title 24 Requirements for Non-Residential Lighting (WEBCAST)
2. 2019 Title 24 Requirements for Non-Residential Lighting (WEBCAST)
3. 2019 Title 24 Requirements for Non-Residential Lighting (WEBCAST)
4. 2019 Title 24 Requirements for Non-Residential Lighting (WEBCAST) for AIA Chapters
5. 2019 Title 24 Requirements for Residential Lighting (WEBCAST)
6. 2019 Title 24 Requirements for Residential Lighting (WEBCAST)
7. 2019 Title 24 Requirements for Residential Lighting (WEBCAST)
8. 2019/2022 Title 24 Requirements for Non-Residential Lighting (Webcast)
9. 2019/2022 Title 24 Requirements for Residential Lighting (Webcast)
10. 3D Residential HVAC Design (No CAD Required) - Part 1 (WEBCAST)
11. 3D Residential HVAC Design (No CAD Required) - Part 2 (WEBCAST)
12. A Class for Control Freaks: Getting the Most from your Building Automation System (Webcast)
13. ACCA Manual H, Residential Heat Pump, Design and Installation (WEBCAST)
14. ACCA Manual J and S, Equipment Selection & Sizing (WEBCAST)
15. Accessory Dwelling Units (ADU) and the California Energy Code for AIA Chapters (Webcast)
16. ADR 101: Understanding Automated Demand Response
17. ADR 102: Automated Demand Response Deep Dive
18. Advanced Concepts in Designing and Retrofitting Energy Efficient Data Centers
19. Advanced Energy Management Strategies Part 1
20. Advanced Energy Management Strategies Part 2
21. Advanced EnergyPro 8 Non-Residential (WEBCAST)
22. Advanced EnergyPro 8 Non-Residential (WEBCAST)
23. Advanced EnergyPro 8 Non-Residential (WEBCAST)
24. Advanced EnergyPro 8 Non-Residential (WEBCAST)
25. Advanced EnergyPro 8 Residential (WEBCAST)
26. Advanced EnergyPro 8 Residential (WEBCAST)
27. Advanced EnergyPro 8 Residential (WEBCAST)
28. Advanced EnergyPro 8 Residential (WEBCAST)
29. Advanced Framing for Energy and Resource Efficiency
30. Advanced Lighting Control Systems: No Longer Relays & Occ Sensors (WEBCAST)
31. Advanced Lighting Control Systems: No Longer Relays & Occ Sensors (Webcast)
32. Advanced Lighting Control Systems: No Longer Relays & Occ Sensors (Webcast)
33. Advanced Lighting Control Systems: No Longer Relays & Occupant Sensors (WEBCAST)
34. Ag Irrigation Technology Virtual Field Day - 3 hours Nitrogen Management Self-Certification CEUs/ 3 hours of Certified Crop Advisor CEUs
35. Air Sealing and Insulating Existing Homes: Addressing Common Hazards During Energy Upgrades (WEBCAST)
36. Air Sealing and Insulating Existing Homes: Creating Continuity in Ceiling Air Barrier (WEBCAST)
37. Air Sealing and Insulating Existing Homes: Interpreting and Prioritizing Infrared and Blower Door Results (WEBCAST)
38. Air Sealing and Insulating Existing Homes: Recessed Fixtures in Vented Attics (WEBCAST)
39. Balanced Ventilation for Better Health, Comfort, and Energy Efficiency: IAQ, OAQ, Ventilation and Filtration (WEBCAST)
40. Balanced Ventilation for Better Health, Comfort, and Energy Efficiency: System Types,

- Install Strategies, Duct Design and Critical Details (WEBCAST)
41. Basic Heating, Ventilating and Air Conditioning (HVAC) (WEBCAST)
 42. Basic Heating, Ventilating and Air Conditioning (HVAC) (WEBCAST)
 43. Basic Heating, Ventilating and Air Conditioning (HVAC) (WEBCAST)
 44. Basic Heating, Ventilating and Air Conditioning (HVAC) (WEBCAST)
 45. Basic Pump Efficiency
 46. Basic Pump Efficiency in English (Webcast)
 47. Basic Pump Efficiency Translated to Hmong (WEBCAST)
 48. Basic Pump Efficiency Translated to Spanish (Webcast)
 49. Basics of Photovoltaic (PV) & Energy Storage Systems (ESS) for Grid-Tied Applications (Part 1)
 50. Basics of Photovoltaic (PV) & Energy Storage Systems (ESS) for Grid-Tied Applications (Part 2)
 51. Beginning EnergyPro 8 Non-Residential (WEBCAST)
 52. Beginning EnergyPro 8 Non-Residential (WEBCAST)
 53. Beginning EnergyPro 8 Non-Residential (WEBCAST)
 54. Beginning EnergyPro 8 Non-Residential (Webcast)
 55. Beginning EnergyPro 8 Residential (WEBCAST)
 56. Beginning EnergyPro 8 Residential (WEBCAST)
 57. Beginning EnergyPro 8 Residential (WEBCAST)
 58. Beginning EnergyPro 8 Residential (WEBCAST)
 59. Calculating Photometric Lighting Solutions - Learning Units: BOC 3.5
 60. CALGreen Title 24 Part 11 (WEBCAST)
 61. CALGreen Title 24 Part 11 with 2021 Updates (WEBCAST)
 62. CALGreen Title 24 Part 11 with 2021 Updates (WEBCAST)
 63. California Energy Wise Foodservice – Frontier
 64. California Energy Wise Foodservice – Frontier
 65. California Energy Wise Foodservice – Frontier
 66. California Energy Wise Foodservice – Frontier
 67. California Energy Wise Foodservice – Frontier
 68. California Energy Wise Foodservice – Frontier
 69. California Energy Wise Foodservice – Frontier
 70. California Energy Wise Foodservice – Frontier
 71. California Energy Wise Foodservice – Frontier
 72. California Energy Wise Foodservice – Frontier
 73. California Energy Wise Foodservice – Frontier
 74. California Energy Wise Foodservice – Frontier (Webcast)
 75. California's Title 24 Energy Code: What, Why and Where is it Going? (Webcast)
 76. Carbon Free Homes: Features, Benefits, Valuation (WEBCAST)
 77. Carbon Free Homes: Features, Benefits, Valuation (Webcast)
 78. Case Studies for Calculating Lighting Solutions - Learning Units 3.5 AIA-HSW / 3.5 BOC
 79. Central Heat Pump Water Heaters (HPWHs): Engineering Deep Dive Part 1 of 2 (WEBCAST)
 80. Central Heat Pump Water Heaters (HPWHs): Engineering Deep Dive Part 2 of 2 (WEBCAST)
 81. Central Heat Pump Water Heating Systems for Clinical and Hospital Settings (WEBCAST)
 82. Central Heat Pump Water Heating Systems for Clinical and Hospital Settings (WEBCAST)
 83. Central Heat Pump Water Heating Systems for Multifamily Buildings (WEBCAST)

84. Central Heat Pump Water Heating Systems for Multifamily Buildings (WEBCAST)
85. Clean Energy Homes: Key Systems & Energy Modeling (WEBCAST)
86. Clean Energy Homes: Key Systems & Energy Modeling (WEBCAST)
87. Clean Energy Homes: Key Systems & Energy Modeling (Webcast)
88. Clean Energy Homes: Key Systems & Energy Modeling (WEBCAST)
89. Clean Energy Homes: Key Systems & Energy Modeling Santa Monica
90. Commercial & Multifamily Heat Pump Water Heating Engineering and Design Deep Dive (Part 1 of 2) (WEBCAST)
91. Commercial & Multifamily Heat Pump Water Heating Engineering and Design Deep Dive (Part 2 of 2) (WEBCAST)
92. Commercial HVAC Bootcamp Part 1 of 6 (WEBCAST)
93. Commercial HVAC Bootcamp Part 2 of 6 (WEBCAST)
94. Commercial HVAC Bootcamp Part 3 of 6 (WEBCAST)
95. Commercial HVAC Bootcamp Part 4 of 6 (WEBCAST)
96. Commercial HVAC Bootcamp Part 5 of 6 (WEBCAST)
97. Commercial HVAC Bootcamp Part 6 of 6 (WEBCAST)
98. Commercial Quality Maintenance and Installation of Economizers (Part 2 of 2) (WEBCAST)
99. Commercial Quality Maintenance and Installation of Economizers Part 1 Learning Units: NATE – 3 credits / BOC – 2 credits
100. CoolSave - Saving Energy in Grocery Refrigeration (WEBCAST)
101. Daylighting Metrics (WEBCAST)
102. Decarbonizing the Built Environment Day 1 (WEBCAST)
103. Decarbonizing the Built Environment Day 2 (WEBCAST)
104. Demand Control Ventilation (DCV) and Variable Speed Fans Non-Residential (WEBCAST)
105. Demand Control Ventilation (DCV) and Variable Speed Fans Non-Residential (WEBCAST)
106. (WEBCAST)
107. Designing for Light and Health - What You Need to Know (WEBCAST)
108. Direct Digital Controls (DDC) Bootcamp Part 1 of 6 (WEBCAST)
109. Direct Digital Controls (DDC) Bootcamp Part 2 of 6 (WEBCAST)
110. Direct Digital Controls (DDC) Bootcamp Part 3 of 6 (WEBCAST)
111. Direct Digital Controls (DDC) Bootcamp Part 4 of 6 (WEBCAST)
112. Direct Digital Controls (DDC) Bootcamp Part 5 of 6 (WEBCAST)
113. Direct Digital Controls (DDC) Bootcamp Part 6 of 6 (WEBCAST)
114. Don't Touch That Thermostat
115. Ductless Mini Split Design, Installation, & Performance (WEBCAST)
116. Ductless Mini Split Design, Installation, & Performance (WEBCAST)
117. Electric Vehicle Chargers: Design and Installation Strategies for New and Existing Homes (Webcast)
118. Embodied Carbon vs. Operational Carbon: The Lesser of the Two Evils (Webcast)
119. Emergency Lighting and Power Systems: Codes, Circuits, Controls and Calculations (WEBCAST)
120. Emergency Lighting and Power Systems: Codes, Circuits, Controls and Calculations (WEBCAST)
121. Emergency Lighting and Power Systems: Codes, Circuits, Controls and Calculations (WEBCAST)
122. Enclosure Systems and Materials: Architectural Precast
123. Enclosure Systems and Materials: Portland Cement Plaster on Framed Walls

- (WEBCAST)
124. Enclosure Systems and Materials: Unitized Curtainwall (WEBCAST)
 125. Energy and Financial Calculations for Lighting Retrofits
 126. Energy and Financial Calculations for Lighting Retrofits (Webcast)
 127. Energy Auditing Bootcamp Part 1
 128. Energy Auditing Bootcamp Part 2
 129. Energy Auditing Techniques for Small & Medium Commercial Facilities - Day 1 of 3 (Webcast)
 130. Energy Auditing Techniques for Small & Medium Commercial Facilities - Day 2 of 3 (Webcast)
 131. Energy Auditing Techniques for Small & Medium Commercial Facilities - Day 3 of 3 (Webcast)
 132. Energy Auditing Techniques for Small & Medium Commercial Facilities (3-Day Class)
 133. Energy Auditing Techniques for Small & Medium Commercial Facilities (Day 2 of 3)
 134. Energy Auditing Techniques for Small & Medium Commercial Facilities (Day 3 of 3)
 135. Energy Efficiency and Solar for Homeowners
 136. Energy Efficient Design and Control of Chilled Water Plants (WEBCAST)
 137. Energy Efficient Design and Retrofit of Laboratory Buildings (WEBCAST)
 138. Energy Impact from ASHRAE COVID-19 HVAC Recommendations (WEBCAST)
 139. Energy Management Systems (EMS) Part 1 of 2 (WEBCAST)
 140. Energy Management Systems (EMS) Part 2 of 2 (WEBCAST)
 141. Energy Resiliency for Homes
 142. Energy Resiliency for Non-Residential Facilities
 143. Energy Savings Through Process Improvement and Optimization
 144. Evaluating and Selecting Luminaires -WEBINAR
 145. Evaluating and Selecting Luminaires Workshop (Webcast)
 146. Evaluating and Selecting Luminaires Workshop -WEBINAR
 147. Evaluating Pump Efficiency Results with Pump Curves
 148. Evaluating Pump Efficiency Results with Pump Curves (WEBCAST)
 149. Exploring Ventless Technologies: High Tech Equipment for the Modular Kitchen (Webcast)
 150. Exterior Insulation and Designing and Building High Performance Walls (Webcast)
 151. Field Data Collection for Lighting Audits and Retrofits
 152. Field Data Collection for Lighting Audits and Retrofits (Webcast)
 153. Flowmeters: You Need to Measure Water to Manage Water! (Webcast)
 154. Full-Scale Induction for Commercial Kitchens (Webcast)
 155. Fundamental Concepts in Operating and Retrofitting Energy Efficient Data Centers
 156. Green Building: Hype or Help? (Webcast)
 157. Heat Pumps in Retrofit Construction - Space Conditioning and Water Heating (WEBCAST)
 158. Heat Pumps in Retrofit Construction - Space Conditioning and Water Heating (WEBCAST)
 159. Heat Pumps in Retrofit Construction - Space Conditioning and Water Heating (WEBCAST) for SoCal REN
 160. Heat Recovery Dishmachines and Heat Pump Water Heaters: The Hidden Keys to a Zero Net Carbon Kitchen (Webcast)

161. High Performance Chilled Water Plant Design Workshop
162. High Performance Homes: Valuation 2 (Webcast)
163. High Performance Homes: Valuation 2 (Webcast)
164. Home Performance for Solar Professionals (Webcast)
165. Horticulture and Indoor Agricultural Lighting (Webcast)
166. How to Design and Build High-Performance Walls
167. How to Get Started with an EE Survey (Webcast)
168. How to Interpret Pump Efficiency Results & Tracking Pump Performance
169. How to Interpret Pump Efficiency Results & Tracking Pump Performance (Webcast)
170. How to Use Energy Efficient Countertop Equipment to Increase Production (Webcast)
171. IAQ - How to Prepare Your Commercial HVAC for Pandemics/Wildfires (WEBCAST)
172. IAQ - How to Prepare Your Commercial HVAC for Pandemics/Wildfires (WEBCAST)
173. Identifying Existing Lighting Technologies - Knowing What to Replace and How - Learning Units: 3.5 AIA - HSW
174. IHACI NATE AC/HP & Air Distribution Training Part 1 (WEBCAST)
175. IHACI NATE AC/HP & Air Distribution Training Part 2 (WEBCAST)
176. IHACI NATE AC/HP & Air Distribution Training Part 4 (WEBCAST)
177. IHACI NATE Core & Gas Heating Training Part 1 (WEBCAST)
178. IHACI NATE Core & Gas Heating Training Part 2 (WEBCAST)
179. IHACI NATE Core & Gas Heating Training Part 3 (WEBCAST)
180. IHACI NATE Core & Gas Heating Training Part 4 (WEBCAST)
181. IHACI Non-Res ATE Acceptance Testing Employer Training Part 1 (WEBCAST)
182. IHACI Non-Res ATE Acceptance Testing Employer Training Part 2 (WEBCAST)
183. IHACI Non-Res ATT Acceptance Testing Technician Training Part 1 (Webcast)
184. IHACI Non-Res ATT Acceptance Testing Technician Training Part 2 (Webcast)
185. IHACI: (CAQI/QM/QS) AC/HP Refrigeration Part 1 - Practical Fundamentals and Theory of the Refrigeration Circuit (WEBCAST)
186. IHACI: (CAQI/QM/QS) AC/HP Refrigeration Part 2 - CAQI of Air Conditioning and Heat Pump Systems (WEBCAST)
187. IHACI: (CAQI/QM/QS) AC/HP Refrigeration Part 3 - CAQM of Air Conditioning and Heat Pump Systems (WEBCAST)
188. IHACI: (CAQI/QM/QS) AC/HP Refrigeration Part 4 - CAQS of Air Conditioning and Heat Pump Systems (WEBCAST)
189. IHACI: (CAQI/QM/QS) Air Distribution Module Part 1 - Practical Fundamentals and Physical Properties of Air (WEBCAST)
190. IHACI: (CAQI/QM/QS) Air Distribution Module Part 1 - Practical Fundamentals and Physical Properties of Air (Webcast)
191. IHACI: (CAQI/QM/QS) Air Distribution Module Part 2 - Practical Fundamentals and Theory of Proper Air Distribution Design (WEBCAST)
192. IHACI: (CAQI/QM/QS) Air Distribution Module Part 2 - Practical Fundamentals and Theory of Proper Air Distribution Design (WEBCAST)
193. IHACI: (CAQI/QM/QS) Air Distribution Module Part 3 - Fundamental Theory and Techniques of Air Side Design and Installation (WEBCAST)
194. IHACI: (CAQI/QM/QS) Air Distribution Module Part 3 - Practical Fundamental Theory and Techniques of Air Side Design and Installation (WEBCAST)
195. IHACI: (CAQI/QM/QS) Air Distribution Module Part 4 - Advanced Theory and Techniques of Air Side Design and Installation (WEBCAST)

196. IHACI: (CAQI/QM/QS) Air Distribution Module Part 4- Advanced Theory and Techniques of Air Side Design and Installation (WEBCAST)
197. IHACI: (CAQI/QM/QS) Electrical Module Part 1 - Practical Fundamentals and Theory of HVAC/R Systems (WEBCAST)
198. IHACI: (CAQI/QM/QS) Electrical Module Part 2 - Essential HVAC/R System Motor Theory for the Field Technician (WEBCAST)
199. IHACI: (CAQI/QM/QS) Electrical Module Part 3 - Different Electrical Components Found in the HVAC/R Industry (WEBCAST)
200. IHACI: (CAQI/QM/QS) Electrical Module Part 4 - Electrical Schematics: A Roadmap to Diagnosing a HVAC/R System (WEBCAST)
201. IHACI: (CAQI/QM/QS) Gas Heating Module Part 1- Practical Fundamentals and Theory of Gas Heating (WEBCAST)
202. IHACI: (CAQI/QM/QS) Gas Heating Module Part 2- Quality Installation, Maintenance, and Service of Gas Heating Systems (WEBCAST)
203. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 1 - Practical Fundamentals, Theory, Methodology and Mind-set of True System Diagnostics (WEBCAST)
204. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 1 - Practical Fundamentals, Theory, Methodology and Mind-set of True System Diagnostics (WEBCAST)
205. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 2 - Essential Field Techniques Required to Investigate the HVAC/R System (WEBCAST)
206. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 2 - Essential Field Techniques Required to Investigate the HVAC/R System (WEBCAST)
207. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 3 - Evaluating, Analyzing and Ultimately Identifying the Root Causes of the HVAC/R System (WEBCAST)
208. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 3 - Evaluating, Analyzing and Ultimately Identifying the Root Causes(s) of the HVAC/R System(WEBCAST)
209. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 4 - Accurate Elimination and Verification of the Root Causes(s) of the HVAC/R System (WEBCAST)
210. IHACI: (CAQI/QM/QS) HVAC System Diagnostics Part 4 - Accurate Elimination and Verification of the Root Causes(s) of the HVAC/R System (WEBCAST)
211. IHACI: (CAQI/QM/QS) System Performance Module Part 1 - Thermodynamics: Heat In Motion (WEBCAST)
212. IHACI: (CAQI/QM/QS) System Performance Module Part 2 - A Sub-System of the Building (WEBCAST)
213. IHACI: (CAQI/QM/QS) System Performance Module Part 3 - Heating System: Comfort with Energy Efficiency (WEBCAST)
214. IHACI: (CAQI/QM/QS) System Performance Module Part 4 - Cooling System: Comfort with Energy Efficiency (WEBCAST)
215. IHACI: AC/HP Refrigeration Module Part 1 - Practical Fundamentals and Theory of the Refrigeration Circuit (WEBCAST)
216. IHACI: AC/HP Refrigeration Module Part 2 - CAQI of Air Conditioning and Heat Pump Systems (WEBCAST)
217. IHACI: AC/HP Refrigeration Module Part 3 - CAQM of Air Conditioning and Heat Pump Systems (WEBCAST)
218. IHACI: AC/HP Refrigeration Module Part 4 - CAQS of Air Conditioning and Heat Pump Systems (WEBCAST)
219. IHACI: Boiler Module Part 1 - Fundamental Theory & Basic Operation of Commercial Boiler Systems (WEBCAST)
220. IHACI: Boiler Module Part 2 - Installation, Operation and Service Practices of

- Commercial Boiler Systems (WEBCAST)
221. IHACI: CA 2019 Title 24 Module Part 1 (WEBCAST)
 222. IHACI: CA 2019 Title 24 Module Part 2 (WEBCAST)
 223. IHACI: Chiller Module Part 1 - Fundamental Theory & Basic Operation of Commercial Chillers (WEBCAST)
 224. IHACI: Chiller Module Part 2 - Installation, Operation and Service Practices of Commercial Chillers (WEBCAST)
 225. IHACI: Commercial Refrigeration Module Part 1 - Fundamental Theory and Basic Operation of Commercial Refrigeration Systems (WEBCAST)
 226. IHACI: Commercial Refrigeration Module Part 2 - Installation, Operation and Service Practices of Commercial Refrigeration Systems (WEBCAST)
 227. IHACI: Cooling Tower Module Part 1 – Fundamental Theory & Basic Operation of Commercial Cooling Towers (WEBCAST)
 228. IHACI: Cooling Tower Module Part 2 – Installation, Operation and Service Practices of Commercial Cooling Towers (WEBCAST)
 229. IHACI: HVAC/R New Hire Module Part 1 (WEBCAST)
 230. IHACI: HVAC/R New Hire Module Part 2 (WEBCAST)
 231. IHACI: HVAC/R New Hire Module Part 3 (WEBCAST)
 232. IHACI: HVAC/R New Hire Module Part 4 (WEBCAST)
 233. IHACI: NATE AC/HP & Air Distribution Training Part 3 (WEBCAST)
 234. IHACI: NATE Certification Training Series - Air Conditioners and Heat Pumps: Part 1 (Introduction) (WEBCAST)
 235. IHACI: NATE Certification Training Series - Air Conditioners and Heat Pumps: Part 2 (Installation & Service) (WEBCAST)
 236. IHACI: NATE Certification Training Series - Air Distribution: Part 1 (Introduction) (WEBCAST)
 237. IHACI: NATE Certification Training Series - Air Distribution: Part 2 (Installation & Service) (WEBCAST)
 238. IHACI: NATE Certification Training Series - Core: Part 1 (General Skills) (WEBCAST)
 239. IHACI: NATE Certification Training Series - Core: Part 2 (Electrical Skills) (WEBCAST)
 240. IHACI: NATE Certification Training Series - Gas Heating: Part 1 (Introduction) (WEBCAST)
 241. IHACI: NATE Certification Training Series - Gas Heating: Part 2 (Installation & Service) (WEBCAST)
 242. IHACI: NATE HVAC/R Support Training Module Part 1 (WEBCAST)
 243. IHACI: NATE HVAC/R Support Training Module Part 2 (WEBCAST)
 244. IHACI: NATE HVAC/R Support Training Module Part 3 (WEBCAST)
 245. IHACI: NATE HVAC/R Support Training Module Part 4 (WEBCAST)
 246. Induction Woks - Types, Uses, Performance and Efficiency
 247. Industrial Lighting Workshop – WEBINAR
 248. Industrial Lighting Workshop – WEBINAR
 249. Industrial Lighting Workshop (Webcast)
 250. Inspecting Photovoltaic (PV) Systems for Code Compliance Part 1 of 2
 251. Inspecting Photovoltaic (PV) Systems for Code Compliance Part 2 of 2
 252. Integrated Thinking: Early Stage Building Science for Enclosure & Mechanical Systems (Webcast)
 253. Integrating Building Performance Simulation into the Design Process (Webcast)
 254. Intro to Hands-On Lighting Controls (WEBCAST)
 255. Intro to Residential HVAC Design in 3D (WEBCAST)

- 256. Intro to Supermarket CO2 Systems (WEBCAST)
- 257. Introduction to Passive House Trades (Webcast)
- 258. Introduction to Programmable Logic Controllers: Energy Efficiency Applications (WEBINAR)
- 259. Introduction to Programmable Logic Controllers: Energy Efficiency Applications (WEBINAR)
- 260. Introduction to the Passive House Standard
- 261. Irrigation Scheduling: How Long Should I Run My Pump?- Learning Units: 2 BOC
- 262. Irrigation System Field Maintenance - Learning Units: Nitrogen Management Plan self certificaion 2 Hours/ CCA CEUs 2 Hours
- 263. It'sAboutQ Online HVAC/R Training
- 264. It'sAboutQ Online HVAC/R Training
- 265. It'sAboutQ Online HVAC/R Training
- 266. It'sAboutQ Online HVAC/R Training
- 267. Let SCE help Make You Ready for Fleet Electrification (Webcast)
- 268. Lighting Fundamentals - Part 1: Terminology, Vision and Color
- 269. Lighting Fundamentals Part 2: Light Sources, Luminaires and Controls
- 270. Lighting Fundamentals Part 3: Design Process, Light Measurement, Codes & Standards
- 271. Low GWP (A2L) Refrigerants Part 1 - Introduction (WEBCAST)
- 272. Low GWP (A2L) Refrigerants Part 2 – Application (WEBCAST)
- 273. Low-Cost Hot Water System Retrofits for Commercial Food Service
- 274. Manitowoc Ice Machine Service Training (WEBCAST)
- 275. Multifamily Electrification: Introduction
- 276. Multifamily Electrification: Retrofit Applications and Electrical Assessments (WEBCAST)
- 277. Multifamily Electrification: Space Conditioning and Water Heating (WEBCAST)
- 278. Multifamily Electrification: Space Conditioning Deep Dive & Emerging Technologies (WEBCAST)
- 279. Municipal Pump and Well Efficiency with an Emphasis on Variable Frequency Drives
- 280. MWELo Enforcement Workshop for Local Agencies (Webcast)
- 281. Navigating Lighting Design Decisions
- 282. Navigating SCE Programs, Rates, and Services - What you really need to know (Webcast)
- 283. NCI: Airflow Testing & Diagnostics Live Online Day 1 of 2 (WEBCAST)
- 284. NCI: Airflow Testing & Diagnostics Live Online Day 1 of 2 (WEBCAST)
- 285. NCI: Airflow Testing & Diagnostics Live Online Day 1 of 2 (WEBCAST)
- 286. NCI: Airflow Testing & Diagnostics Live Online Day 1 of 2 (WEBCAST)
- 287. NCI: Airflow Testing & Diagnostics Live Online Day 2 of 2 (WEBCAST)
- 288. NCI: Airflow Testing & Diagnostics Live Online Day 2 of 2 (WEBCAST)
- 289. NCI: Airflow Testing & Diagnostics Live Online Day 2 of 2 (WEBCAST)
- 290. NCI: Airflow Testing & Diagnostics Live Online Day 2 of 2 (WEBCAST)
- 291. NCI: Carbon Monoxide & Combustion Recertification Live Online Day 1 of 2 (WEBCAST)
- 292. NCI: Carbon Monoxide & Combustion Recertification Live Online Day 2 of 2 (WEBCAST)
- 293. NCI: Combustion Performance and Carbon Monoxide Safety Certification Program Part 1 - CO Safety Testing & Diagnostics
- 294. NCI: Combustion Performance and Carbon Monoxide Safety Certification

- Program Part 1 - CO Safety Testing & Diagnostics
295. NCI: Combustion Performance and Carbon Monoxide Safety Certification
Program Part 2 - Combustion Performance & Diagnostics
296. NCI: Combustion Performance and Carbon Monoxide Safety Certification
Program Part 2 - Combustion Performance & Diagnostics
297. NCI: Combustion Performance and Carbon Monoxide Safety Certification
Program Part 3 - CO/Combustion Review & Certification
298. NCI: Combustion Performance and Carbon Monoxide Safety Certification
Program Part 3 - CO/Combustion Review & Certification
299. NCI: Commercial Air Balancing Certification Program Part 1 - The Key Elements
of Air Balancing
300. NCI: Commercial Air Balancing Certification Program Part 1 - The Key Elements
of Air Balancing
301. NCI: Commercial Air Balancing Certification Program Part 1 - The Key Elements
of Air Balancing
302. NCI: Commercial Air Balancing Certification Program Part 2 - Balancing
Principles, Techniques and Reporting
303. NCI: Commercial Air Balancing Certification Program Part 2 - Balancing
Principles, Techniques and Reporting
304. NCI: Commercial Air Balancing Certification Program Part 2 - Balancing
Principles, Techniques and Reporting
305. NCI: Commercial Air Balancing Certification Program Part 3 - Economizers &
Kitchen Exhaust Systems: Certification Exam
306. NCI: Commercial Air Balancing Certification Program Part 3 - Economizers &
Kitchen Exhaust Systems: Certification Exam
307. NCI: Commercial Air Balancing Certification Program Part 3 - Economizers &
Kitchen Exhaust Systems: Certification Exam
308. NCI: Commercial System Performance Certification Program Part 1 - The Key
Elements of HVAC System Performance
309. NCI: Commercial System Performance Certification Program Part 2 - Measure,
Diagnose and Improve Poor Performance
310. NCI: Commercial System Performance Live Online Certification Program – Day
1 of 4 Day Series (WEBCAST)
311. NCI: Commercial System Performance Live Online Certification Program – Day
1 of 4 Day Series (WEBCAST)
312. NCI: Commercial System Performance Live Online Certification Program – Day
2 of 4 Day Series (WEBCAST)
313. NCI: Commercial System Performance Live Online Certification Program – Day
2 of 4 Day Series (WEBCAST)
314. NCI: Commercial System Performance Live Online Certification Program – Day
3 of 4 Day Series (WEBCAST)
315. NCI: Commercial System Performance Live Online Certification Program – Day
3 of 4 Day Series (WEBCAST)
316. NCI: Commercial System Performance Live Online Certification Program – Day
4 of 4 Day Series (WEBCAST)
317. NCI: Commercial System Performance Live Online Certification Program – Day
4 of 4 Day Series (WEBCAST)
318. NCI: Duct System Optimization Certification Program Part 1 - Introduction to Air
Distribution Upgrade
319. NCI: Duct System Optimization Certification Program Part 2 - Optimize the Duct
System: Certification Exam

320. NCI: Duct System Optimization Live Online Certification Program – Day 1 of 4 Day Series (WEBCAST)
321. NCI: Duct System Optimization Live Online Certification Program – Day 1 of 4 Day Series (WEBCAST)
322. NCI: Duct System Optimization Live Online Certification Program – Day 2 of 4 Day Series (WEBCAST)
323. NCI: Duct System Optimization Live Online Certification Program – Day 2 of 4 Day Series (WEBCAST)
324. NCI: Duct System Optimization Live Online Certification Program – Day 3 of 4 Day Series (WEBCAST)
325. NCI: Duct System Optimization Live Online Certification Program – Day 3 of 4 Day Series (WEBCAST)
326. NCI: Duct System Optimization Live Online Certification Program – Day 4 of 4 Day Series (WEBCAST)
327. NCI: Duct System Optimization Live Online Certification Program – Day 4 of 4 Day Series (WEBCAST)
328. NCI: Explore HVAC Field Performance Live Online (WEBCAST)
329. NCI: HVAC Field Training (Adelanto)
330. NCI: HVAC Field Training (Anaheim)
331. NCI: HVAC Field Training (Buena Park)
332. NCI: HVAC Field Training (Chino)
333. NCI: HVAC Field Training (Corona)
334. NCI: HVAC Field Training (Corona)
335. NCI: HVAC Field Training (Fullerton)
336. NCI: HVAC Field Training (Los Alamitos)
337. NCI: HVAC Field Training (Mission Viejo)
338. NCI: HVAC Field Training (San Bernardino)
339. NCI: HVAC Field Training (Santa Ana)
340. NCI: HVAC Field Training P-1 (Chino)
341. NCI: HVAC Field Training P-1 (San Bernardino)
342. NCI: HVAC Field Training P-2 (Chino)
343. NCI: HVAC Field Training P-2 (San Bernardino)
344. NCI: Improve Economizer Performance & Meet Today's Ventilation Standards – Live Online Certification Program Day 1 of 4 (WEBCAST)
345. NCI: Improve Economizer Performance & Meet Today's Ventilation Standards – Live Online Certification Program Day 2 of 4 (WEBCAST)
346. NCI: Improve Economizer Performance & Meet Today's Ventilation Standards – Live Online Certification Program Day 3 of 4 (WEBCAST)
347. NCI: Improve Economizer Performance & Meet Today's Ventilation Standards – Live Online Certification Program Day 4 of 4 (WEBCAST)
348. NCI: Introduction to Hydronic Testing, Adjusting, & Balancing Certification Program Part 1 – Hydronics Overview
349. NCI: Introduction to Hydronic Testing, Adjusting, & Balancing Certification Program Part 2 – Testing, Balancing, Reporting
350. NCI: Performance-Based Selling Live Online - Day 1 of 4 Day Series (WEBCAST)
351. NCI: Performance-Based Selling Live Online - Day 1 of 4 Day Series (WEBCAST)
352. NCI: Performance-Based Selling Live Online - Day 2 of 4 Day Series (WEBCAST)
353. NCI: Performance-Based Selling Live Online - Day 2 of 4 Day Series

- (WEBCAST)
354. NCI: Performance-Based Selling Live Online - Day 3 of 4 Day Series
(WEBCAST)
355. NCI: Performance-Based Selling Live Online - Day 3 of 4 Day Series
(WEBCAST)
356. NCI: Performance-Based Selling Live Online - Day 4 of 4 Day Series
(WEBCAST)
357. NCI: Performance-Based Selling Live Online - Day 4 of 4 Day Series
(WEBCAST)
358. NCI: Refrigerant-Side Performance Certification Program Part 1 – Equipment Performance of the Air & Refrigerant-Side
359. NCI: Refrigerant-Side Performance Certification Program Part 2 – Refrigerant-Side Basics, Diagnostics, and Opportunities
360. NCI: Refrigerant-Side Performance Live Online Certification Program Day 1 of 4
(WEBCAST)
361. NCI: Refrigerant-Side Performance Live Online Certification Program Day 2 of 4
(WEBCAST)
362. NCI: Refrigerant-Side Performance Live Online Certification Program Day 3 of 4
(WEBCAST)
363. NCI: Refrigerant-Side Performance Live Online Certification Program Day 4 of 4
(WEBCAST)
364. NCI: Residential Air Balancing Certification Training - Testing & Balancing Residential Systems
365. NCI: Residential Air Balancing Certification Training - Testing & Balancing Residential Systems
366. NCI: Residential Air Balancing Live Online Certification Program Day 1 of 2
(WEBCAST)
367. NCI: Residential Air Balancing Live Online Certification Program Day 2 of 2
(WEBCAST)
368. NCI: Residential HVAC System Performance Certification Program Part 1 – The Key Elements of HVAC System Performance
369. NCI: Residential HVAC System Performance Certification Program Part 2 – Measure, Diagnose and Improve Poor System Performance
370. NCI: Residential System Performance Live Online Certification Program – Day 1 of 4 Day Series (WEBCAST)
371. NCI: Residential System Performance Live Online Certification Program – Day 2 of 4 Day Series (WEBCAST)
372. NCI: Residential System Performance Live Online Certification Program – Day 3 of 4 Day Series (WEBCAST)
373. NCI: Residential System Performance Live Online Certification Program – Day 4 of 4 Day Series (WEBCAST)
374. NCI: Test & Certify Ventilation Systems and Economizers – Certification Program Part 1
375. NCI: Test & Certify Ventilation Systems and Economizers – Certification Program Part 2
376. NCI: Test & Certify Ventilation Systems and Economizers– Certification Program Part 1
377. NCI: Test & Certify Ventilation Systems and Economizers– Certification Program Part 2
378. Optimizing Kitchen Ventilation and Restaurant HVAC for Maximum Health and Safety and Minimum Cost-to-Operate

- 379. Optimizing Kitchen Ventilation and Restaurant HVAC for Maximum Health and Safety and Minimum Cost-to-Operate (WEBCAST)
- 380. Optimizing Residential Forced-Air HVAC Systems: Airflow for Comfort and Efficiency (WEBCAST)
- 381. Optimizing Residential Forced-Air HVAC Systems: Low-Loss Duct Systems (WEBCAST)
- 382. Orosi H.S. Engineering Automation & Technology
- 383. Orosi H.S. Introduction to Programmable Logic Controllers: Part 1
- 384. Orosi H.S. Introduction to Programmable Logic Controllers: Part 2
- 385. Orosi H.S. PLC LEVEL 1, Part 1
- 386. Orosi H.S. PLC LEVEL 1: Part 2
- 387. Orosi H.S. PLC LEVEL 1: Part 3
- 388. Orosi H.S. PLC LEVEL 2: Part 1
- 389. Orosi H.S. PLC LEVEL 2: Part 2
- 390. Orosi H.S. PLC LEVEL 2: Part 3
- 391. Orosi H.S. PLC LEVEL 3: Part 1
- 392. Orosi H.S. PLC LEVEL 3: Part 2
- 393. Orosi H.S. PLC LEVEL 3: Part 3
- 394. Orosi H.S. PLC LEVEL 4: Part 1
- 395. Orosi H.S. PLC LEVEL 4: Part 2
- 396. Orosi H.S. PLC LEVEL 4: Part 3
- 397. Outdoor Lighting Workshop – (WEBCAST)
- 398. Outdoor Lighting Workshop – (WEBCAST)
- 399. Outdoor Lighting Workshop – (Webcast)
- 400. Outdoor Lighting Workshop – (Webcast)
- 401. Overcoming Installation Challenges for Heat Pump Water Heater Retrofits (WEBCAST)
- 402. Overcoming Installation Challenges for Heat Pumps in HVAC Retrofits (WEBCAST)
- 403. Packaging Your Lighting Recommendations
- 404. Pathways to a Zero Net Energy Home
- 405. Phenomenal LED
- 406. Phenomenal LED (WEBCAST)
- 407. Phenomenal LED 3 Hours BRE/ DRE Continuing Education Units
- 408. Photovoltaic (PV) Site & Energy Storage Systems (ESS) Analysis and System Sizing Day 1 - Learning Units: NABCEP 2
- 409. Photovoltaic (PV) Site & Energy Storage Systems (ESS) Analysis and System Sizing Day 2 - NABCEP 2 Learning Units
- 410. Preparation for Lighting Controls Success - Using an OPR (Owner's Project Requirements), a BOD (Basis of Design) and a SOO (Sequence of Operations)
- 411. Pump and Well Efficiency for Potable Water Systems
- 412. Pump Efficiency Testing & Determining OPE
- 413. Pump Efficiency Testing and Determining OPE (Webcast)
- 414. Pump Efficiency Testing and Determining OPE (Webinar)
- 415. PV + Batteries: Integrating Storage with Grid-Tied Photovoltaic Systems (Part 2 of 2)
- 416. PV + Batteries: Integrating Storage with Grid-Tied Photovoltaic Systems Part 1 of 2
- 417. Radiant Cooling and Heating Systems for Large Commercial Buildings (WEBCAST)
- 418. Remote Well and Pump Monitoring using the Smart Meter

- 419. Residential Energy Efficient Lighting
- 420. Residential Lighting Controls
- 421. Restaurant Rebound - Operating an Energy Efficient Kitchen
- 422. Retrofitting Homes for Electrification and Decarbonization
- 423. SCE 2021 Annual Water Conference (Online Only Event) (WEBCAST)
- 424. Selecting Fresh Air Ventilation Systems & Fundamentals of Indoor Air Quality
(Webcast)
- 425. Selecting Retrofit or Replacement Lighting (WEBCAST)
- 426. Selling High Performance Homes (Webcast)
- 427. Selling High Performance Homes (Webinar)
- 428. Solar and Energy Storage for Small Businesses (Webcast)
- 429. Solar PV: Technology and Valuation (Webcast)
- 430. Street Lighting 101: Getting Started with the Basics (Webcast)
- 431. The Benefits and Challenges of R290 as a Refrigerant
- 432. The Practical Guide to All-Electric, Lower Cost Multi-Family Buildings with
Electric-Vehicle Charging (WEBCAST)
- 433. The Practical Guide to All-Electric, Lower Cost Multi-Family Buildings with
Electric-Vehicle Charging (WEBCAST)
- 434. The Practical Guide to All-Electric, Lower Cost Multi-Family Buildings with
Electric-Vehicle Charging (WEBCAST) for AIA Chapters
- 435. The Worlds of 0-10V, DALI and DMX Dimming (Webcast)
- 436. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 437. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 438. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 439. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 440. Thousands of Hours of Accredited HVAC/R Programs & Courses
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- 442. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 443. Thousands of Hours of Accredited HVAC/R Programs & Courses
- 444. Title 24 Part 6 Energy Code for SoCalREN (WEBCAST)
- 445. Title 24: What's New in the 2022 Nonresidential Energy Code (WEBCAST)
- 446. Title 24: What's New in the 2022 Nonresidential Energy Code (WEBCAST)
- 447. Title 24: What's New in the 2022 Residential Energy Code (WEBCAST)
- 448. Title 24: What's New in the 2022 Residential Energy Code (WEBCAST)
- 449. Title 24: What's New in the 2022 Residential Energy Code (WEBCAST)
- 450. Title 24: Where We're Headed with the 2019 Standards
- 451. Title 24: Where We're Headed with the 2019 Standards (WEBCAST)
- 452. Title 24: Where We're Headed with the 2019 Standards (WEBCAST)
- 453. Title 24: Where We're Headed with the 2019 Standards (WEBCAST)
- 454. TRANSFORMERS: Turning Existing Buildings "Green" (Webcast)
- 455. Transport Energy: Motors, Fans, and Pumps (Webcast)
- 456. Troubleshooting Commercial Refrigeration Part 1 of 2 (WEBCAST)
- 457. Troubleshooting Commercial Refrigeration Part 2 of 2 (WEBCAST)
- 458. Understanding a Pump Efficiency Test
- 459. Using Soil Moisture Sensors to Inform Irrigation Strategies (Webcast)
- 460. Variable Frequency Drives (VFDs) for Pumping Application
- 461. Variable Speed Drives for Agricultural Applications
- 462. VFDs for Ag Irrigation Applications (Webcast)
- 463. VFDs for Pumping Applications (WEBCAST)
- 464. VRF/VRV Install & Service Training (WEBCAST)
- 465. Welcome to Facility Management (WEBCAST)

- 466. Window Installation Procedures to Provide Real World Performance & Prevent Water Intrusion
- 467. Window Installation Procedures to Provide Real World Performance and Prevent Water Intrusion (Webcast)
- 468. Window Selection for New and Existing Homes
- 469. Window Selection for New and Existing Homes (WEBCAST)
- 470. Working with High Glide Refrigerants (WEBCAST)

SoCalGas Prospective Class List:

- IHACI - NATE HVAC/R Support Training – 4 Part Series
- IHACI - Gas Heating Module – 2 Part Series
- IHACI - System Diagnostics Module – 4 Part Series
- IHACI - System Performance Module – 4 Part Series
- IHACI - Air Distribution Module – 4 Part Series
- IHACI - Chiller Module – 2 Part Series
- IHACI - Commercial Cooling Tower Module – 2 Part Series
- NATE Core & Gas Heating Training – 4 Part Series
- NATE AC/HP Refrigeration & Air Distribution Training – 4 Part Series
- NATE Certification Examination
- EnergyPro 9 Software - Residential (Introduction)
- EnergyPro 9 Software - Residential (Advanced)
- EnergyPro 9 Software – Non-Residential (Introduction)
- EnergyPro 9 Software – Non-Residential (Advanced)
- Title 24 - Codes & Standards (Non-Advocacy – Education on Implemented C&S only)
- Manual J – WEBINAR
- Manual S – WEBINAR
- Manual D- WEBINAR
- HVAC Airflow - WEBINAR
- HVAC System Performance Testing PLUS – WEBINAR
- EPA 608 Certification Test Preparation - WEBINAR
- HVAC Airflow – WEBINAR
- 2019 California Residential Code PLUS Intro to 2022 -Webinar
- Refrigerant Charge Basics, for Home Energy Raters and Contractors
- 2022 Residential HVAC System Performance Testing PLUS
- Preventative Maintenance for Commercial Foodservice Equipment
- 2022 Foodservice Industry Outlook
- Culinary Spotlight: Cooking Techniques with Plant-Based Foods
- Preventative Maintenance for Foodservice Facilities
- Garland XHP Foodservice Live Demo Presentation
- Water Conservation in the Kitchen
- Culinary Spotlight: Asian American Pacific Islander Cuisine
- Culinary Comeback: SoCalGas California Community College Symposium
- Commercial Kitchen Ventilation for Safe and Efficient Operation
- Foodservice 2022 Energy Efficiency Programs and Services
- Advanced Water Heating for Foodservice Facilities
- Culinary Spotlight: African American Cuisine
- IAPMO Natural Gas Foodservice Equipment Installer Certification
- Best Practices in Food Safety Operations
- Culinary Spotlight: Hispanic Cuisine
- Foodservice Expo
- Advanced Ventilation: 100% Outdoor Air Handlers for HVAC/CKV systems
- Commercial Kitchen Water Heating Best Practices