



2021 Annual Report

TRI-COUNTY REGIONAL ENERGY NETWORK • SAN LUIS OBISPO • SANTA BARBARA • VENTURA



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Executive Summary



About 3C-REN

3C-REN (Tri-County Regional Energy Network) is a collaboration between the three counties of San Luis Obispo, Santa Barbara and Ventura, in the California Central Coast region. The tri-county region represents a diverse service area that is geographically isolated from utility hubs and has pockets of rural and disadvantaged communities as well as large, underserved Spanish-speaking populations. After several years of experience and cooperative administration of energy and sustainability programs, the tri-county local governments formed 3C-REN, led by the County of Ventura, to better leverage resources in the design and delivery of effective programs on a regional level.

In Decision 16-08-019, the California Public Utilities Commission (“CPUC” or “Commission”) provided guidance for Energy Efficiency (“EE”) Rolling Portfolio Business Plan (“BP”) filings and included consideration of the formation of new Regional Energy Networks (“RENS”). Since filing 3C-REN’s business plan to serve stakeholders within Southern California Edison’s (“SCE’s”), Southern California Gas’ (“SoCalGas”), and Pacific Gas and Electric’s (“PG&E’s”) service territories, 3C-REN remains intent to deliver programs that meet CPUC criteria as indicated by Decision 12-11-015 in the formation and implementation of programs; filling gaps that the investor-owned utilities (“IOUs”) are not serving; developing programs for hard-to-reach markets; and piloting new approaches to programs that have the potential to scale and offer innovative avenues to energy savings.

In Decision 14-10-046 the Commission authorized funding for EE programs until 2025. In 2015 the Commission issued Decision 15-10-028 approving the mechanics for the EE rolling portfolio and outlining the business plan application process. On January 23, 2017 3C-REN filed a motion for approval of its rolling portfolio business plan and budget proposal. Decisions 15-10-028 and 18-05-041 provided the requirements of the Annual Budget Advice Letter (“ABAL”) and directed Program Administrators to file ABALs. In Decision 19-05-019 the Commission directed the ABALs going forward to include the results of the Program Administrator Cost (PAC) and the Ratepayer Impact Measure (RIM) test and cost-effectiveness estimates.

On July 3, 2020 the Assigned Commissioner and Administrative Law Judges’ Amended Scoping Ruling Addressing Impacts of COVID-19 directed program administrators to file ABALs for program year 2021 on September 1, 2020 and notified all PAs that new portfolio filings would be required by September 1, 2021. D.21-05-031 Assessment of Energy Efficiency Potential and Goals and Modification of Portfolio Approval and Oversight Process then updated the timing for the new portfolio filing to occur February 15, 2022² and provided comprehensive guidance to address various policy issues and inform the new portfolio filings. This decision addressed topics including potential and goals metrics; portfolio segmentation; cost-effectiveness requirements and

¹ See D.16-08-019 page 10.

² D.21-05-031 at 51.

budget limitations; portfolio process; interim/transition process; AB 841 interface with the portfolio process; and additional policy guidance such as the treatment of refrigerants.

To inform future program efforts and prepare for the new portfolio filing, in 2021 3C-REN staff participated in a strategic planning exercise with the goal of better serving Hard-to-Reach (HTR) and disadvantaged communities. The team aligned on four shared bold steps to guide 3C-REN's work:

1. Increase access to 3C-REN programs and services.
2. Provide value to trainees that can be easily communicated to employers.
3. Develop partnerships that meet the needs of both 3C-REN and local stakeholders.
4. Low-cost, comprehensive upgrades for HTR customers.

3C-REN also conducted meaningful stakeholder engagement prior to and during the development of its new portfolio filing to ensure its proposed programs would continue to be informed by and designed for the needs of communities in the tri-county region. This stakeholder engagement process included a survey to gather input on 3C-REN program creation and funding allocation, and a series of listening sessions. Divided into nine individual meetings, the listening sessions allowed the team to learn more about tri-county stakeholder interests and ideas for the new business plan, while helping to build longer-term relationships. Listening session invitees included the twenty-five cities and three counties in the region (City Managers, Sustainability Directors, etc.), community-based organizations, regional agencies, industry and more.

Guided by its strategic framework and stakeholder input, 3C-REN developed its new portfolio filing to meet the requirements of D.21-05-031. This included the use of the new Total System Benefit (TSB) metric; the segmentation of programs based on primary purposes of resource acquisition, market support, and equity; and zero-based funding proposals justifying budget expenses based on needs and costs. On March 4, 2022, 3C-REN filed Application 22-03-004 for approval of its 2024-2031 Strategic Business Plan, 2024-2027 Portfolio Plan, and Budget, with supporting Testimony in compliance with D.21-05-031.³

In its current portfolio, 3C-REN offers energy saving opportunities for households including single family residents and multifamily property owners, with an emphasis on underserved communities. For industry, 3C-REN offers capacity-building services including workforce training and technical code support. Serving both public and private sector professionals, 3C-REN responds to the needs of the local building industry. Together, 3C-REN's residential and industry programs support energy-efficient, resilient, and healthy buildings throughout the tri-county region. These efforts help reduce energy use, strengthen local job markets, and support climate goals.

³ Note that the February 15, 2022 filing date from D.21-05-031 was extended to March 4, 2022 upon request by SoCalGas on behalf of itself and other PAs.



We need to shift to HIGH PERFORMANCE

- Low/zero-carbon fuel sources
- Low/zero embodied carbon
- High efficiency
- Lowest-possible technology footprints
- Grid-friendly timing of energy use
- Built-in resiliency

HT years!

Continuous Insulation - Sample

Ingredients

1. Stud w/ cavity insulation
2. Sheathing
3. Membrane
4. RIGID INSULATION
5. Exterior Finish

Screenshots of online trainings | 2021

Building Performance Training Summary (WE&T Sector)

Building Performance Training (BPT) is tailored for current and prospective building professionals—providing expert instruction, technical trainings, soft skills development and certifications on the latest energy efficiency methods and measures.

In 2021, the program achieved the following key accomplishments: hosted a total of 54 events reaching over 1,100 total attendees (over 600 unique individual attendees), a tripling of total attendees since 2019; hosted 5 training events for a Back-to-Work Construction Tech Program serving unemployed individuals; delivered a training for English as a second language students; delivered a 4-part training series for cannabis cultivators, a unique new group of stakeholders with high energy consumption; expansion of certification opportunities through the Certified Passive House Designer/Consultant series; hosted a workshop focused on strategies to engage

younger audiences and those entering the workforce, and associated development plans for a new training series focused on high performance fundamentals. Continued increases in participation numbers and repeat attendees in 2021 reinforced a demand for local training.

Looking ahead to 2022, 3C-REN will continue to survey and evaluate trainings. BPT continues to assess instructor performance to increase training quality and identify training gaps. Additionally, 3C-REN will continue to broaden the types of audiences and industries engaged in the program through targeted outreach, new partnership development, and new course offerings. Increased outreach in Santa Barbara and Ventura Counties will continue to be a priority, especially within disadvantaged communities.



Case Study on Model Energy Code Compliance Documents for ADUs | 2021

C-REN CODE COACH VALUATION: INITIAL RESULTS

REN's Energy Code Coaches evaluated Ventura County's pre-approved ADU construction documents for three sample floor plans using the criteria established in the Building Performance Model. Each climate zone, floor plan, and orientation led to meet the 2019 energy code as follows:

CLIMATE ZONE 06	CLIMATE ZONE 06 with a Tankless Gas WH
-9%	-6%
CLIMATE ZONE 09	CLIMATE ZONE 16
-50%	-70%

Based on these results, changes needed to be made in order to meet Energy Code requirements. Starting with Climate Zone 06 (the most restrictive of the three zones), 3C-REN's Energy Code Coaches implemented the following changes:

- Targeted 23 SHGC or lower on the windows
- Moved the heat pump water heater into the conditioned envelope
- Added HERS-verified GFI and pipe insulation on all lines

In these new requirements, the design packages for Zone 06 passed inspection by an average of 2%. Climate Zones 09 and 16 required more substantial efficiency upgrades beyond the changes that passed in Climate Zone 06.

After numerous iterations, 3C-REN's Code Coaches landed on a design package that met or exceeded 2019 Title 24 requirements in all three climate zones.

www.3C-REN.org

FINAL DESIGN PACKAGES

Title 24 reports may be used for all-electric or mixed fuel production depending on the dryer and cooking appliance locations. None of the models provided included a gas water heater but one could be swapped in and still comply in most rate zones and orientations.

TITLE 24, COMPLIANT PACKAGE

Climate Zone	6	9	16	
AVERAGE COMPLIANCE	700	75%	75%	4%
DIU SIZE (SF)	900	27%	9%	6%
	1200	20%	8%	9%

HERS G1, Draft Pipe Insulation, VCHP Mandatory

WALL 2x4 16" o.c. R-15 2x6 16" o.c. R-19

DOOR R-38 Uninsulated Attc. R-38 at ceiling Ventilated Attc with R-19 in Rafter

LAB Uninsulated R-10 48" down barrier

WINDOWS (E)/SHGC 30/23 0.25/0.15 0.25/0.40

MVAC 1-ton Ductless HP with VCHP Compliance

VENTILATION Continuous Bathroom Exhaust Fans - Default

HW Rheem PROPHD located in Conditioned Space

RECIRCULATION None

TV SIZE Standard Size

Value indicates maximum; lower values are acceptable.

Floor plan floorplans include 700 sq. ft., 900 sq. ft. and 1,200 sq. ft.

www.3C-REN.org

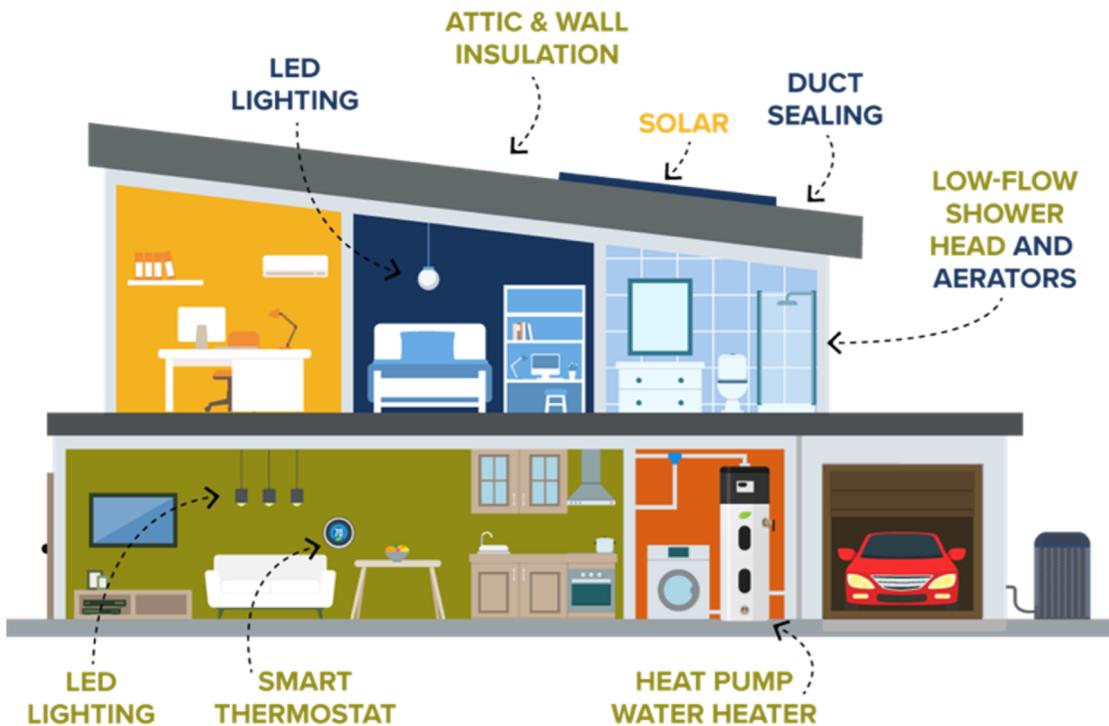
Energy Code Connect Summary (C&S Sector)

Energy Code Connect (ECC) provides trainings, forums and technical code support for public and private sector building professionals. In 2021, ECC offered three core services: training events, regional forums, and the Energy Code Coach.

ECC continued to deliver relevant and valuable training and forum events and continued to offer and fine tune the Energy Code Coach service. In 2021, ECC held 25 training events (up from 18 in 2020) for 395 attendees (up from 261 in 2020), delivered 3 regional forums, and fielded 84 Energy Code Coach inquiries. One inquiry from the County of Ventura Department of Buildings led to the completion of energy code-compliant sample construction documents for farmworker and/or ADU housing, and

the publishing of an associated case study. Training highlights include CF-1R training for County of San Luis Obispo Department of Building Staff, and launch of a new test prep and certification series for Certified Energy Analysts to grow energy modeling capacity in the tri-county region.

In 2022, the ECC team will emphasize training, resources and technical support available to help the tri-county workforce prepare for the upcoming energy code cycle update. A return to in-person training and regional forums is hoped for if they can be safely held. The ECC program will also offer a reach code support service to all cities in the northern portion of the 3C-REN territory, and advocate for the use of IOU and CCA programs in the southern portion of the territory.



Home Energy Savings Summary (Residential Sector)

Home Energy Savings (HES) provides energy efficiency upgrades and services to residents throughout San Luis Obispo, Santa Barbara, and Ventura Counties. In 2021, 3C-REN operated two versions of the program: HES for single family homes operated for the full duration of 2021, and HES for multifamily dwellings was launched in October of 2021.

HES for single family homes launched in March of 2020, in parallel with COVID-19 shutdowns. The program operated until December of 2021, when it was closed due to limited energy-saving potential resulting from a reduction in measures with claimable savings and challenges with the program model. In 2021, the program completed a total of 776 projects (581 direct install; 195 co-pay projects). In the summer of 2021 3C-REN conducted an RFP process to select an implementer for the new iteration of the single family program.

In the fall of 2021, 3C-REN launched a multifamily program offering technical assistance and incentives to multifamily property owners to conduct energy efficiency upgrades and adopt advanced technologies. The program emphasizes whole building, comprehensive upgrades with enhanced incentives available for hard-to-reach customers and measures that significantly reduce GHG emissions. By the end of 2021, the multifamily program had 14 properties with a combined total of 1,178 units in the project pipeline receiving technical assistance.

Looking ahead to 2022, HES will grow the new multifamily program and launch a new program to serve single family homes (and dwellings with up to 4 units). The single family program will employ an innovative program model to overcome barriers encountered in the prior program.

For any questions regarding 3C-REN feel free to contact Alejandra Téllez at 805-654-3835 or at alejandra.tellez@ventura.org

2021 Energy Efficiency Programs Overview

Building Performance Training

Program Description

Program Need

The tri-county region has set ambitious energy and climate goals that will partially be achieved through “high performance buildings” (HPBs) — energy efficient and resilient buildings that reduce energy use, lower emissions and address climate change. Challengingly, consumer and labor demand for HPBs is not increasing at the rate required to meet these goals. Without consumer demand or policy mandates, the industry has not developed the skills or capacity required for HPB development. Therefore, the workforce must be sufficiently trained to recognize and communicate the value of HPBs, which can drive greater consumer and market demand. The relative geographic isolation of the region has historically been a barrier to accessing training. Consequently, there is a lack of training opportunities for workers to gain the knowledge and skills to properly design and build affordable HPBs.

Program Detail

WHAT

Through Building Performance Training (BPT), workers receive technical and soft skill training and certifications focused on HPBs. Example training topics include creating an effective building envelope, ventilation basics, heat pump technology, Passive House, and sales skills to market energy efficient buildings.

WHO

The program targets local, private sector building professionals, such as contractors, HVAC technicians, engineers, architects, designers, certified energy managers, real estate professionals, and cannabis cultivators. Public sector building department staff engage in the BPT program as well but are more heavily engaged in the ECC program. Training is offered to professionals in disadvantaged communities (DACs) and hard-to-reach (HTR) areas, as well as individuals interested in joining the energy efficiency workforce.

Program Solution

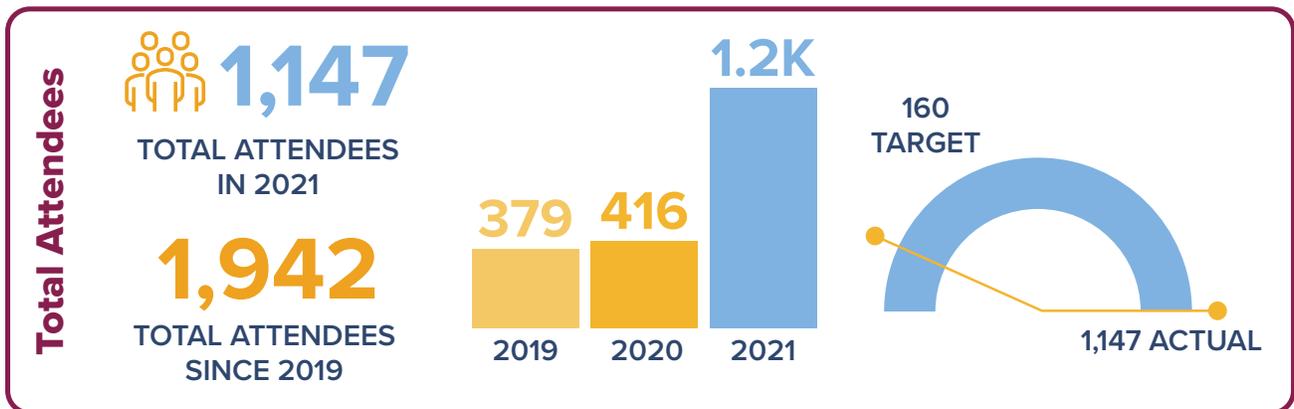
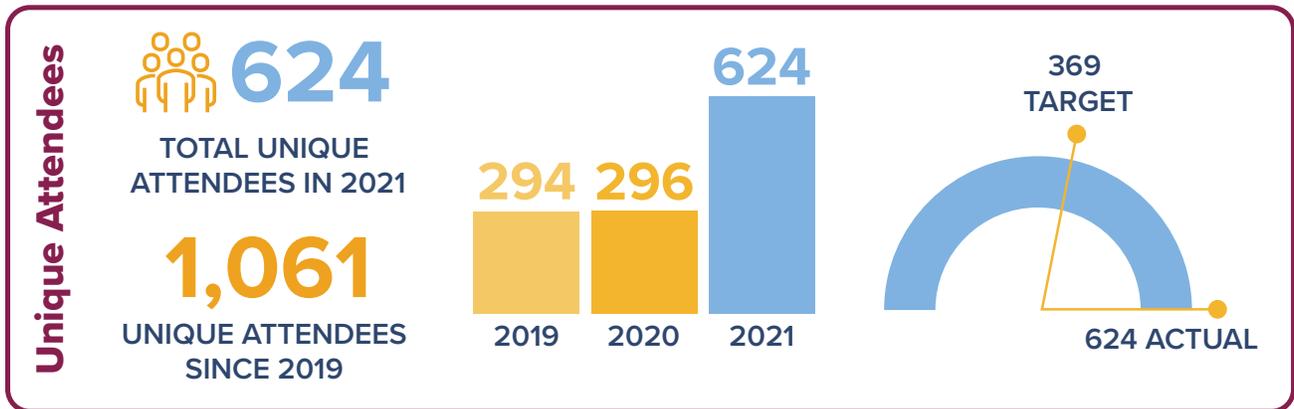
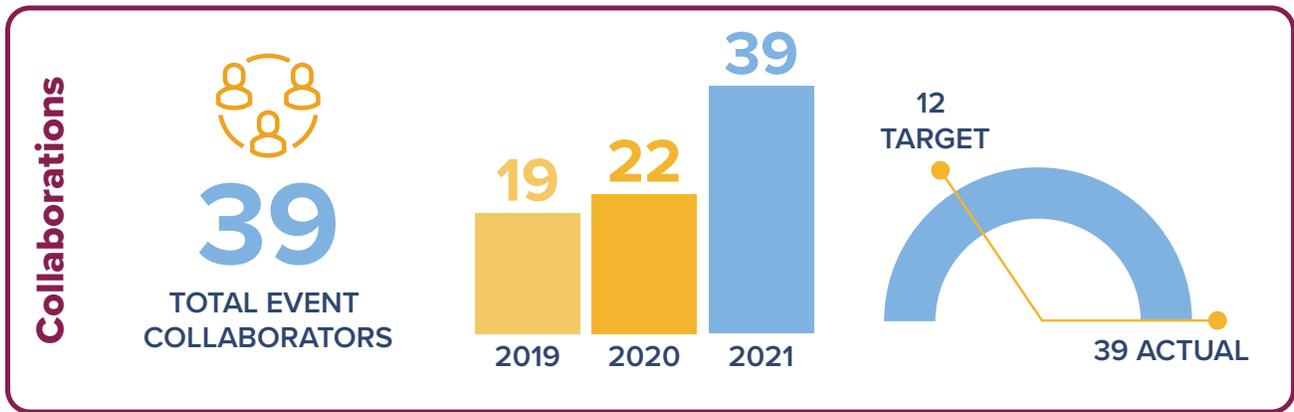
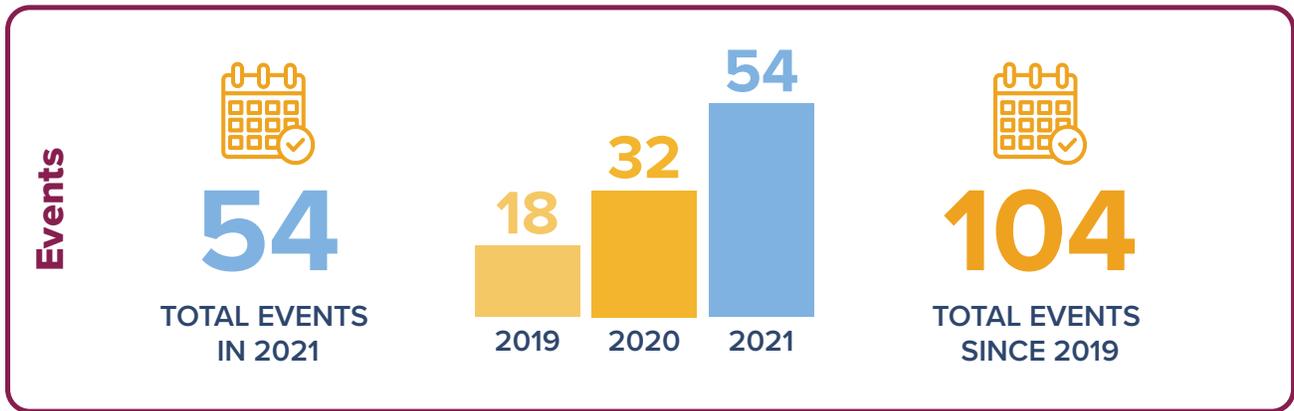
3C-REN’s WE&T program, *Building Performance Training (BPT)*, is designed to support achievement of the region’s energy and climate goals by establishing a thriving and local workforce that possess the knowledge and skills to design, build, retrofit and sell high performance buildings (HPBs). The program does this by delivering local training events that enable our workforce to develop the skills essential for creating and communicating about HPBs. Clear career pathways will be developed by the program to enable people of all backgrounds to join the industry.

BPT partners with educational institutions, like community colleges, and seasoned industry experts to deliver trainings and customize course content. The program leverages relationships with industry conveners, such as architectural and contractor associations, to ensure broad engagement.

HOW

In-person trainings were delivered locally in each county to address the unique challenges of the tri-county region where geographic isolation limits proximity to career advancement opportunities. Due to the COVID-19 pandemic, nearly all BPT events were offered virtually in 2021 and marketed to local participants, but in-person learning will resume when safe to offer enhanced hands-on learning opportunities to remote communities across the tri-county region. Smaller training events may have 5 – 10 attendees, allowing students to engage with instructors by asking questions and discussing application of course content to real-world projects. Larger training events may have 40+ students, allowing instructors to deliver the latest industry knowledge and practices to a larger number of attendees. Participants are surveyed after each event and feedback is used to evaluate participant satisfaction and improve upon future events.

Snapshot of Program Performance and Major Accomplishments



Program Performance and Major Accomplishments

In 2021, the BPT program built upon its foundation of course offerings, expanded into new topics and audiences, and increased the frequency of events. With the first full year of program delivery completed in 2020, the team enhanced the program in 2021 by testing out innovations and catering topics to new audiences, explaining the robust growth in events and participation.

Program Implementation

PARTNERS

Events were held in partnership with training providers, industry associations, non-profit organizations, educational institutions and more. Architectural associations continued to be key partners, appreciative of locally-informed content provided directly to their membership, and conduits to contractors. Partners supported 3C-REN's delivery of courses in several ways: as trainers, guest speakers, advising in the development of course selection, and as marketing partners distributing event announcements. Presentations were conducted at forums, conferences, and board meetings to help 3C-REN understand partner goals, communicate 3C-REN program values, and to learn how 3C-REN's work can better support partner efforts.

MARKETING & OUTREACH

Events are marketed via weekly outreach emails to an expanded distribution list and targeted emails for events that require additional promotion. 3C-REN's distribution list grew substantially in 2021 and unsubscribes are rare. Communications have an average open rate of 30% and average click rate of 4%. A quarterly course calendar is distributed to key partners such as architectural associations, contractor associations, supply houses, and green building councils. Digital advertising and search engine optimization continued in 2021, along with a direct mail campaign. In-person outreach supplements digital outreach, with outreach contractor Eklund Properties attending in-person conferences and networking events, and making office visits to local contractors on behalf of 3C-REN.

3C-REN Events
May 2021

Spring Events in Full Bloom

Up Next: [Electrification for Realtors](#), [Energy Code 101](#), and [Pathways to Achieving ZNE](#).



During [Electrification for Realtors](#), Simone Dadsetan and John Shipman (Franklin Energy) will share the benefits of electrification, why it is important, and the role real estate professionals play in California's electrification path.

We encourage all building professionals to attend our newest event -- [Energy Code 101](#) with instructors Russell Bayba (Franklin Energy) and Jennifer Rennick (In Balance Green Consulting) -- for an introduction or refresher on the energy code, how to navigate it, and to ask your code questions.

On May 18th Terry Nordbye (Air Sealing Solutions) will present [Pathways to Achieving Zero Net Energy \(ZNE\) in Residential Dwellings](#). This entry-level course will empower homeowners, contractors, and designers to take on ZNE projects, learn the materials required for a ZNE building, and how to achieve ZNE within your budget and over time.

Continue to stay on top of the all-electric trend during [Higher Performance Building on the Central Coast -- All-Electric Construction, Part 1](#). Jennifer Rennick and Mike Horgan (In Balance Green Consulting) will cover why heat pumps are becoming the preferred system for space heating and cooling. [Part 2](#) of this event will specifically cover heat pump water heaters and other electric appliances.

Course Spotlight:

Energy Code 101

[Register Now](#)

Description:

The energy code can be complicated and confusing. This 90 minute introductory course will provide a concise explanation of why the energy code was created, why it is relevant today, and where the code is going.

This course will help to breakdown the energy code into digestible pieces and demystify confusing sections.

REPORTING

Several key documents and software platforms (including a Salesforce database) enable successful program delivery. Software platforms are integrated to streamline management of event schedules, registration, virtual event links, communication with attendees and post-event reporting. Additionally, staff follow a thorough event checklist for each event, acting as quality assurance to the software automation processes. All attendance data is manually reviewed by staff and checked off in Salesforce for monitoring of program performance and reporting. Program dashboards are used to track program progress and visualize key metrics such as the total number of participants and collaborations.

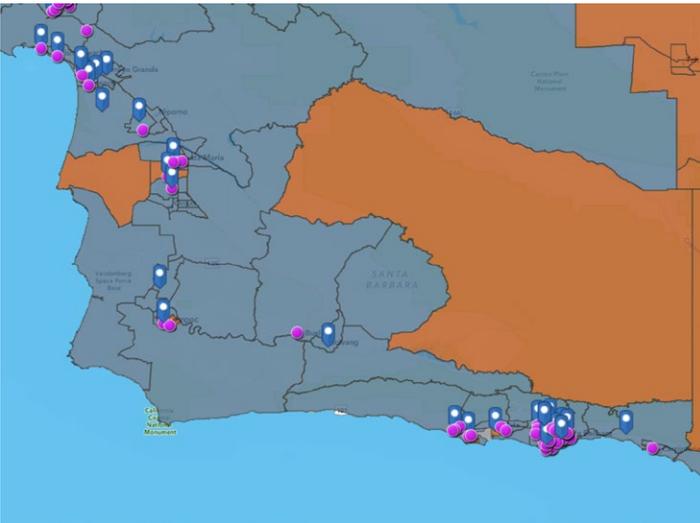
San Luis Obispo County Attendees

(purple dots reflect BPT attendees; blue ECC)



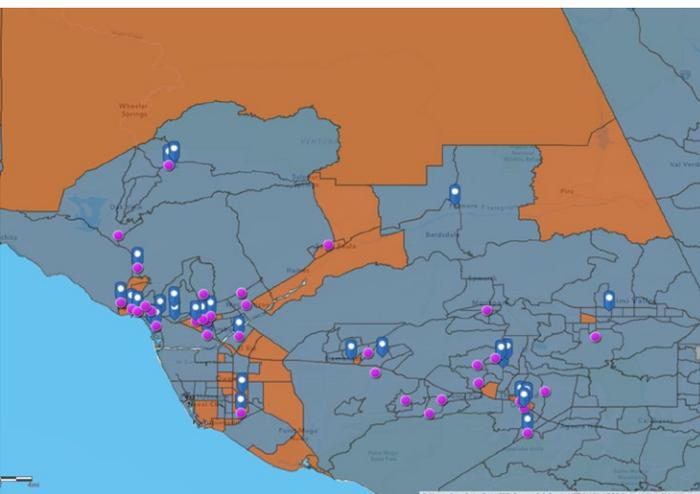
Santa Barbara County Attendees

(purple dots reflect BPT attendees; blue ECC)



Ventura County Attendees

(purple dots reflect BPT attendees; blue ECC)



Event Partners

- 19six Architects
- AIA California Central Coast
- AIA Santa Barbara
- AIA Ventura County
- Air Sealing Solutions LLC
- AjO
- Argus Controls
- CARP Growers
- CCT, Inc.
- Central Coast Agriculture, Inc.
- Central Coast Climate Collaborative
- Ceres Greenhouse Solutions
- CMP Appraisals
- Community Environmental Council
- County of San Luis Obispo
- Cuesta College
- Design AVenues LLC
- Eklund Properties
- Energy Conservation Consultants
- Franklin Energy
- Frontier Energy, Inc.
- Hayward Lumber
- In Balance Green Consulting
- Inspired ADU's
- North American Passive House Network (NAPHN)
- Passive House California
- Resource Innovation Institute
- RRM Design Group
- Santa Barbara City College
- Small Planet Supply
- SoCal Gas
- South Central Coast Regional Consortium (SCCRC)
- Southern California Edison
- Svensson
- TECH Clean California
- USGBC Central Coast Green Building Council (C4)
- Ventura County Library
- Ventura County Regional Energy Alliance
- Willdan

2021 Highlights

Below are several key accomplishments and innovations that distinguished 2021 from the past 1.5 years of program delivery, since BPT launched mid-2019.

GUEST SPEAKER TRAINING SERIES WITH SANTA BARBARA CITY COLLEGE (SBCC):

In February of 2021, 3C-REN connected with SBCC's School of Extended Learning regarding their Construction Technology training classes. 3C-REN via BPT offered to arrange a guest speaker training series for the program. This Back-to-Work Construction Tech program was well-aligned to 3C-REN's work as it focused on creating career awareness opportunities to people who were out of work due to the pandemic.

TRAINING TOPICS AND SPEAKERS FOR SBCC PARTNERSHIP

- Green Careers 101: Erica Helson and Jordan Garbayo, 3C-REN
- High Performance Building: Jay Gentry, CCT, Inc. and Passive House California
- Ventilation 101: Albert Rooks, Small Planet Supply
- Building & Safety Careers: Lauren Burrus, County of San Luis Obispo
- Green Careers 101 for ESL: Javier Saucedo, 3C-REN

3C-REN instructors joined classes on four different occasions and engaged nearly 70 attendees. The engagement was warmly welcomed and reinforced when 3C-REN was invited back a fifth time to speak to 36 English as a second language students on green construction career opportunities. This presentation was done in English and Spanish by instructor Javier Saucedo. In 2022, BPT intends to use this effort as a model to replicate region-wide in schools.

CERTIFIED PASSIVE HOUSE DESIGNER/CONSULTANT TRAINING COURSE

Early 2021 carried a Passive House theme with several introductory courses offered, followed by the 8-session Certified Passive House Designer/Consultant training course. The intention was to bring something new to the region that would add tangible value to the work of local design professionals by partnering with Passive House Network (formerly NAPHN). The series is a pre-requisite to certification. All courses were delivered at no-cost to participants.

The designation "Designer" is reserved for architects, engineers and similarly specialized building professionals. The "Consultants" designation is for non-specialized professionals and others. The classes focus on Passive House principles and economics, with an in-depth look at enclosure insulation and thermal bridging, enclosure airtightness and windows, ventilation, heating, cooling, dehumidification, domestic hot water, and using the Passive House Planning Package (PHPP) to model and calculate building energy balance.

Twenty-two students attended, primarily architects who are now fluent in Passive House design and can implement its principles into their own work. Attendees may sign up for the exam on their own to earn the official designation.

WORKSHOP: HIGH PERFORMANCE FUNDAMENTALS (HPF)

Throughout 2021 the BPT team worked closely with an education consultant, Ann Edminster of Design AVenues, to identify priority audiences that have a large influence on building outcomes and evaluate the knowledge gap between the current workforce and the knowledge required to meet the demand for high performance buildings and the growing building electrification movement.

PRIORITY AUDIENCES WHO IMPACT BUILDING OUTCOMES

- General and trade contractors
- Public agency staff
- Design professionals
- Spanish-speaking and entry-level workers



3C-REN staff and partners at HPF workshop

In November of 2021, BPT staff and 15 regional and state-wide high performance practitioners workshopped the High Performance Fundamentals series in a day-long intensive. The team focused on core issues present in developing effective, transformative education opportunities for tri-county professionals and outlined a training series that would result in high performance career development opportunities for participants. Target audiences will include entry-level workers, both young people and career-changers, with a common baseline of building science knowledge and skills to prepare for a range of high performance occupations. The goal is to launch in 2022.

TRAINING SERIES: HIGHER PERFORMANCE BUILDING ON THE CENTRAL COAST

3C-REN is dedicated to a continued understanding of the energy efficiency workforce on the Central Coast to grow, diversify, and upskill the region's workers. To this end, 3C-REN in partnership with In Balance Green Consulting established the Higher Performance Building on the Central Coast series. This series began by looking at strategies for designing and building for safety, health, and cost savings on the Central Coast while moving to decarbonize construction. Collaboration with local architectural associations across the Central Coast brought in an established cohort that completed the series, while also keeping the series open to attendees who were not able to participate in all sessions.

TRAINING SERIES: EFFICIENT YIELDS TRI-COUNTY FOR CANNABIS CULTIVATORS

The agricultural sector is core the tri-county region, and the latest crop to cultivate a home in the region is energy-intensive cannabis. In line with County imposed energy conservation plans and upcoming Title 24 changes that will apply to resource-intensive cannabis cultivation, the BPT team sought a partnership with the Resource Innovation Institute (RII), a growing leader in the controlled environment agricultural industry, to provide a training series and online classroom dedicated to energy efficient cannabis production in greenhouse, indoor, and outdoor cultivation operations.

Each module focuses on topics such as resource benchmarking, net zero cannabis, automation and controls best practices, Title 24 compliance, and water efficiency and productivity. Training is relevant to utility and government representatives as well as cultivators and their design and construction partners. The 4-part series began in October of 2021 and will continue into 2022.

Opportunities in 2022 and Beyond

BPT's focal points for 2022 will be the continuation of core programming for existing building professionals and established networks, expansion of services to younger audiences, advancement of the High Performance Fundamentals (HPF) initiative, and offering a week-long and hands-on Certified Passive House Tradesperson bootcamp.

For core programming, BPT will continue to train the workforce that has the biggest impact on the energy efficiency of buildings: designers, contractors, engineers, public agency staff and real estate professionals. The focus will be on offering diverse and quality content for a growing network of professionals in the tri-county region. Continued delivery of learning units will support ongoing participation from design and code professionals. Extra outreach will be required for contractors who do not require continuing education credits.

Expanding focus to younger audiences and the HPF series will lay the foundations for career pathways; feeders into BPT core training courses. Younger audiences will be reached through high schools, colleges and trade schools to familiarize students with career opportunities in the trades relevant to energy efficiency. Schools in Disadvantaged Communities (DACs) and underserved communities will be initially prioritized, along with schools where existing relationships exist.

ENERGY CODE CONNECT

Program Description

Program Need

The Energy Code and California Green Building Standards included in the California Code of Regulations (Title 24, Part 6 and Part 11 respectively) are designed to support energy efficiency and green building practices that reduce energy waste while improving human and environmental health. To address climate change, reducing or eliminating emissions from buildings is essential. Strict energy and green building codes can lower energy use and emissions, but only with a high level of compliance.

Compliance is difficult for several reasons:

- **Low & Inconsistent Comprehension:** Codes are complex and updated every 3 years
- **Real & Perceived Costs:** The value proposition of energy efficient buildings is different and poorly understood
- **Lackluster Enforcement:** Competing priorities and limited resources mean codes often go unenforced

Program Detail

WHAT

ECC offers a comprehensive suite of services to simplify the energy code and help improve compliance:

Energy Code Coach: Helps building professionals navigate California’s ever-changing and complex Energy Code. Code experts provide prompt and personalized support online, over the phone, over the counter, or in the field. Coaches provide local professionals with code citations and other resources to support compliance and enforcement.

Regional Forums: Focused on energy and green building codes and related policies and technologies, forums convene professionals from both sides of the building counter, as well as residents. Events are educational, with subject matter experts speaking to the latest developments in the state’s energy efficiency landscape, but also interactive, fostering shared understanding as the industry works towards common goals. Networking is key to create relationships and harbor ideation for the region.

Program Solution

Energy Code Connect (ECC) aims to establish the tri-county region as a leader in California Energy Code and Green Building Standards compliance and enforcement. Through education and technical support, professionals in both the public and private sectors are equipped with the knowledge and training to increase comprehension, compliance, and enforcement of California’s energy and green building codes (Title 24 Part 6 and Part 11 respectively). ECC focuses on three services: Energy Code Coach, regional forums, and training events.

Training: Educational events increase overall comprehension, leading to enhanced compliance and enforcement of codes and standards across the territory for both public and private sector building professionals. Course content is curated to address the needs and knowledge deficits identified by regional stakeholders, and curriculum is refreshed to reflect the most up-to-date information on California’s energy codes and green building standards.

WHO

A hallmark of the ECC program is its focus on both public and private sector professionals—supporting enforcement on one side, compliance on the other, and overall comprehension across the board. While the ECC program caters more to the public sector, engaging the private sector in ECC is still essential.

Given the array of professions that touch the energy code in the design and construction of new and existing buildings, ECC offers services to: building officials, plan examiners, inspectors, architects, engineers, electricians, plumbers, and more. Ideal participation in the ECC program involves use of the Energy Code Coach service in addition to attendance at training events and forums.

HOW

The Energy Code Coach is implemented by Franklin Energy, with onsite local support from In Balance Green Consulting and Central Coast Energy Compliance. Requests for support from the Energy Code Coach are submitted through an online form or by calling the Energy Code Coach hotline. Franklin Energy staff responds to inquiries within 24 hours and follows up with the customer to clarify or answer questions. Depending on the nature of the request, code coaches will answer by phone, email, text, or offer in-person support at the counter or in the field.

Regional forums use keynotes, panelists, breakout discussions, and networking to share the latest information and best practices related to energy code and policy. Topics may range from code updates to balancing affordability and sustainability to tactics for conveying the value of energy codes to what the movements towards electrification mean. Attendees leave with enhanced knowledge and new connections to peers in both the public and private sectors. In 2021, like 2020, the COVID-19 pandemic continued to require virtual forums.

Energy Code Connect training events follow the same processes as BPT events and are therefore not discussed again here.

ECC Partners

Association for Energy Affordability
Bluepoint Planning
Building Decarbonization Coalition
CalCERTS, Inc.
California Association of Building Energy Consultants (CABEC)
CHEERS
Electrify My Home
Energy Code Ace
Franklin Energy
Frontier Energy, Inc.
In Balance Green Consulting
Peoples' Self-Help Housing Corporation
Solarponics Inc.
TRC Companies
CK Builders
American Council for an Energy-Efficient Economy
Hayward Score
Redwood Energy
Sol Haus Design
California Energy Commission
Smart Share Housing Solutions
County of Ventura Building Department

Snapshot of Program Performance and Major Accomplishments

Energy Code Coach



39%

JURISDICTIONS USING
CODE COACH IN 2021



84

INQUIRIES
IN 2021



43

ORGANIZATIONS USING
CODE COACH IN 2021

Regional Forums



3

FORUMS IN 2021



36%

TRI-COUNTY
JURISDICTIONS WITH
STAFF ATTENDING IN 2021



221

ATTENDEES

117

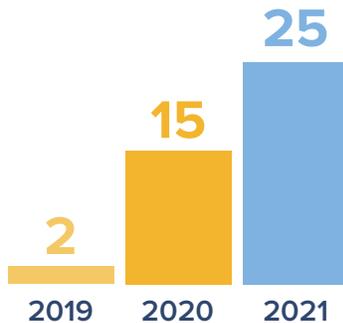
ORGANIZATIONS
REPRESENTED BY ALL
ATTENDEES IN 2021

Training Events



25

TOTAL EVENTS
IN 2021



42

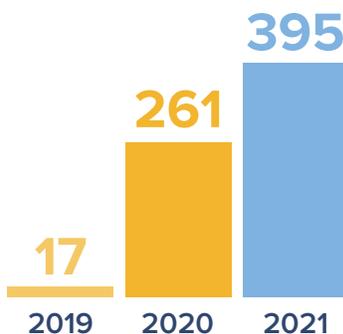
TOTAL EVENTS
SINCE 2019

Training Attendees



395

TOTAL EVENTS
ATTENDEES IN 2021



673

TOTAL ATTENDEES
SINCE 2019

Program Performance and Major Accomplishments

In 2021, uptake of services climbed in the virtual environment. The Energy Code Coach Service answered 84 inquiries, increasing more than 35% over 2020. Deeper partnerships with jurisdictions were built through the Energy Code Coach, especially in the Counties of San Luis Obispo and Ventura. Partners Franklin Energy and In Balance Green Consulting developed several new energy code focused courses. Both the total number of events (28) and total event attendees (616, including trainings and forums) climbed from 2020. Despite COVID-19 restrictions, creative networking opportunities at regional forums drew consistent participation with an average of 74 attendees per forum. The majority of events in 2021 were offered virtually with the exception of Certified Energy Analyst (CEA) exams. Participants of all services shared positive feedback, reinforcing the need and value of these services.

Program Implementation

PARTNERS

ECC continued to work with its primary implementation partners from Franklin Energy and In Balance Green Consulting for both Energy Code Coach and training services. Other program partners include instructional providers and a diversity of guest speakers that engage in regional forums as subject matter experts for each topic. Several key stakeholders also contribute to program success. ECC engaged with the California Energy Commission (CEC) through bi-monthly coordination calls and via the energy code cycle update to share local perspective from the tri-county region. ECC and CEC brought Mechanical Acceptance Testing training to both local ICC Chapters in the region as well as effectively shared resources to customers across the territory. 3C-REN Energy Code Coaches also directed customers to Energy Code Ace (ECA) resources and staff coordinated with the ECA team as needed. ECC partnered with California Association of Building Energy Consultants (CABEC) to offer a training series featured in the 2021 highlights section. Lastly, public sector staff at building departments also continued to be key partners and participants.

MARKETING & OUTREACH

As many jurisdictions and businesses started to open across the territory, Energy Code Coaches were able to begin in person visits. “Roadshows” where ECC staff met with city and county building departments to share about the program and offer support were an effective outreach strategy. While not all 28 city and county building departments were able to meet, several did, including the Counties of Ventura, the City of San Luis Obispo, and others. These meetings encourage use of the service from public sector staff and allow ECC to better understand jurisdiction needs when it comes to energy code enforcement. The County of Ventura meeting led to deep engagement and a case study covered later in this section. For training and forums, ECC follows the same marketing and outreach strategies as BPT, with additional personalized outreach for forums depending on the topic and associated target audiences.

REPORTING

ECC uses the same software and processes as BPT for tracking and reporting on training events and forums. The same Salesforce database is used to track and report on Energy Code Coach data. Looking beyond routine program data, in 2021, the Energy Code Coach conducted a survey to existing users of the service to evaluate its value. Customers were asked to rank their experience and share why they chose their ranking. Below are a few comments provided by customers.

“Excellent service.”

“I got the answers I needed from the coaches that I could not find anywhere else in my research.”

“Every time I needed support it was there within a day.”

“Solved my problem right away and everyone won that was involved in the project. GREAT outcome.”

2021 Highlights

Below are several key accomplishments and innovations from the Energy Code Connect program in 2021.

FOCUS ON ACCESSORY DWELLING UNITS (ADUS): TRAINING, FORUM AND CASE STUDIES

Questions fielded through the Energy Code Coach offer insight into the needs of local building practitioners. After the first full year of the service in 2020, user data was evaluated and ADUs emerged as a frequent topic. In response, ECC developed a new training module: ADUs and the 2019 Energy Code. The curriculum was delivered in March and November of 2021. Also in 2021, ECC held a regional forum with an emphasis on ADUs and unconventional housing types. As California's housing needs increase and communities increasingly turn to more affordable housing types like ADUs and tiny homes, questions arise about how energy codes and green building standards apply to these structures. The forum was well-attended by 60+ participants who were able to ask questions directly to a panel of experts.

The theme of ADUs emerged again in conversation with the County of Ventura Chief Building Official who expressed a need for sample compliance documentation for pre-engineered accessory dwelling unit plans typically used for agricultural housing. There were three different sized units in three different climate zones requiring compliance documentation for the Energy Code. The Energy Code Coach developed the calculations for each variation in all orientations in order to facilitate a streamlined compliance and permitting process for the County. 3C-REN developed a case study on the project which can be found at 3C-REN.org.



San Luis Obispo ADU Case Study

Overview, Context, and Justification

Summary. The tri-county region is seeing an increase in ADUs, tiny homes, prefabricated homes, and other nontraditional housing elements. Recognizing this growth, 3C-REN (Tri-County Regional Energy Network) offers resources related to the application of the energy code and green building standards to these alternative housing elements. The following case study was developed from an interview with a local resident and property owner in San Luis Obispo who recently built his own, all-electric ADU.



Why? In considering building an ADU, Eric realized an opportunity to maximize the beneficial use of his property while adding to the property's value and helping the City meet its need for relatively affordable housing in downtown.

Who? Eric is a resident and property owner in the City of San Luis Obispo. His 11,000 square foot R2 lot in the Old Town District hosts three residential single-family buildings with four total units. Previously, Eric's lot was effectively at maximum density until new legislation enabled the addition of an ADU.

What? Eric's interest in building an all-electric, high performance ADU on his property originated at a local Tiny House Expo. He began researching the energy code and various models of small, functional spaces. Deciding that a high performance ADU designed for long-term living and rental was the right fit for his property, he found and purchased blueprints online which matched the size of the unit he wanted to construct.

TRICOUNTY REGIONAL ENERGY NETWORK SAN LUIS OBISPO • SANTA BARBARA • VENTURA

www.3C-REN.org

A case study featuring a local ADU constructed in San Luis Obispo County was developed as an added resource to enhance the forum.



CASE STUDY

MODEL ENERGY CODE COMPLIANCE DOCUMENTS FOR ACCESSORY DWELLING UNITS (ADUs)

In 2021, 3C-REN's Energy Code Coaches worked with Ventura County Building Department engineers to create pre-approved ADU construction documents for three sample floor plans for farmworker housing units. The County's goal was to develop Title 24-compliant plans that could help reduce design and construction costs for ADUs. 3C-REN Energy Code Coach used the performance method and included specifications to meet 2019 Title 24, Part 6 requirements across multiple climate zones and orientations.



CEA SERIES

ECC has developed a strong relationship with CABEC, as the ECC program manager is a CABEC board member. With a limited number of Certified Energy Analysts (CEAs) in the tri-county region, ECC partnered with CABEC to create a training series designed to generate interest in CEA career pathways and provide the technical knowledge required to pass CEA exams. The first event, The Value of Becoming a Certified Energy Analyst, conveyed the importance of accurate analysis and documentation to ensure energy saving goals set by the State are achieved through compliance with the Energy Code (Title 24, Part 6). Next residential and non-residential exam preparatory courses were held. In culmination, ECC partnered to host CEA exams locally in San Luis Obispo and Ventura Counties. ECC aims to hold this series annually to build up a pipeline of qualified CEAs to serve the tri-county region.

ECC training demystifies the energy and green building codes and brings clarity to building professionals in the region. In 2021, 25 training events were held.

ECC Training Events in 2021:

- Energy Code 101
- Residential Accessory Dwelling Units
- CalCerts HERS Registry Training
- CF-1R Training for Building Departments
- Electrification for the 2019 Energy Code
- ACCA Manuals J, D, and S Report Overview
- Nonresidential Tenant Improvement Requirements
- Heat Pump Water Heaters and the Energy Code – New Construction and Existing
- Quality Insulation for Contractors
- Residential Alterations
- Residential Additions
- What Energy Consultants Need to Know About HERS Features
- What Energy Consultants Need to Know About Quality Insulation Installation (QII)
- CalGreen Building Standards Requirements
- Nonresidential Title 24 Part 6 for Designers
- **Benefits of Becoming a CEA**
- **Residential CEA Exam Prep**
- **Nonresidential CEA Exam Prep**
- **CEA Exams (Ventura and SLO)**
- Residential Top 10 Energy Code
- Energy Code and Commissioning

REGIONAL FORUMS

Regional forums continue to serve as a crucial avenue to convene local stakeholders and share the latest energy policy information. The following is a list of forums held in 2021:

March 11th – Entering the Electrification Frontier: The Tri-County Market for Heat Pump Water Heaters

Description: California is investing \$400 million dollars in the electrification market with the expectation for substantial market demand for electrifying water heating with heat pump water heaters (HPWHs) over the next five years. In the tri-county residential sector, water heating is the largest user of natural gas and HPWHs present a huge market opportunity for building professionals – especially contractors, distributors, and manufacturers. During this event, attendees will gain real-world understanding of how HPWHs work, their benefits, energy code requirements, market barriers, and the funding and resources available. Attendees will also hear case studies and learn about installation best practices in the region.

Number of Attendees: 106

June 15th – Improving Indoor Air Quality Through Better Buildings

Description: With threats to indoor air quality from wildfires, viruses, and greenhouse gas emissions, the demand for health-focused building retrofits is greater than ever before. Energy efficiency can act as a tool to decrease indoor air pollution related to combustion, leaky windows, and poor ventilation. During this event, attendees will hear from public health and energy experts about harnessing the nexus between healthy indoor air quality and building better buildings. 3C-REN will provide an overview of energy code requirements, access to funding, and resources, and opportunities for training for building professionals. Forum attendees will also hear about health-focused indoor air quality in practice, highlighting how local projects in the tri-county region have minimized the effects of poor indoor air quality.

Number of Attendees: 51

REGIONAL FORUMS



3C-REN's Regional Forums provide a unique opportunity to gain firsthand knowledge about the critical energy issues facing our industry. Each forum takes a fresh look at an emerging topic and features a panel of experts with real-world experience who are ready to answer your questions.

Connect with fellow professionals to swap ideas and build your network! Regional forums are always free, and many offer continuing education credits.

Our most recent forum:

What is the Big Deal About Heat Pumps and Electrification?

March 30, 2022 @ 5:30 pm to 6:30 pm

Calling all homeowners and renters in the tri-county! Learn how you can implement affordable energy efficiency and electrification upgrades for a healthier, climate-friendly home. In this community webinar, attendees will learn about the value of electrification for their homes and how new technologies can help improve home health and comfort.

There will be special focus on heating and cooling systems that utilize heat-pump technologies. Speakers will highlight the challenges and opportunities created by energy efficiency and electrification through case studies, testimonials, and state incentives.

[Learn more](#)

Past forums:

November 4th – Exploring Energy Efficiency's Role In Densification and Affordability

Description: The tri-county region has begun addressing the increasing need for livable space by constructing accessory dwelling units (ADUs), tiny homes, prefabricated homes, and other nontraditional housing elements to accommodate housing needs and affordability. How will area building professionals handle the growing need for energy efficiency in these dynamic housing types? The current energy code and future iterations provide streamlined compliance for housing project development. In this forum, attendees will learn about energy code requirements, zoning, and permitting for nontraditional housing projects. Speakers will highlight housing market impacts and strategies for improving comfort and efficiency in various building types.

Number of Attendees: 64

Virtual forums made use of breakout rooms to allow attendees to network. Virtual presenter “Meet & Greet” after several forums enabled participants to more deeply engage on the topics and build local connections, while also bringing state and national expertise to the tri-county region.

Surveyed forum participants provided valuable feedback about the events. The Regional Forums have received several insightful responses to the question “How will you apply what you learned from the forum to your work?” Below are a few example responses:

It was a great event and it was encouraging to see so many manufacturers and contractors in attendance!

I will be able to use the resources provided during the forum in my residential energy efficiency work.

Giving more attention to energy use and IAQ during plan reviews. Urging owners/architects to address energy and IAQ instead of just structural and aesthetic issue during major remodels.

Specific information and examples will help me with my advocacy for all electric, net zero, passive house construction... and for energy efficiency actions in general.

I will look for ways I can elevate and apply the interdependence of health, improved indoor air quality, and electrification in disadvantaged communities. I will look for more ways to publicize the resources learned during the forum.

Opportunities in 2022 and Beyond

With the first full two years of program delivery now complete, the ECC program will continue to build on early successes and expand into new areas. The biggest shift in 2022 will be the launch of reach code support services. This addition will help round out ECC's already robust program resources. As jurisdictions are increasingly interested in pursuing reach codes to support climate action plans are due to constituent pressure, staff have expressed interest to 3C-REN in greater support to explore and enact reach codes. ECC's reach code services will supplement existing reach code services available through SCE in the southern portion of 3C-REN's territory, and fill gaps in the northern parts of the tri-county region served by PG&E. There will be no overlap or duplication in this service.

Adoption of the next energy code cycle will begin in 2023. The training calendar for 2022 will have a large emphasis on preparation for the new code cycle. Stakeholders have expressed the need for succinct and accessible information, so courses will be delivered in one- to two-hour segments, broken out by residential and non-residential topic areas. Curriculum will highlight the key changes from the current code cycle to the upcoming cycle, while also providing the context for why the code is changing and how this aligns with state goals. Completed training will be added to 3C-REN's On-Demand training page so that it is accessible for participants at any time, and available for newcomers looking to prepare for the code update.

The Energy Code Coach will also be prepared to answer more complex code update questions as projects look to determine if they will be filing for permits in 2022 or 2023. Additionally, staff are working on more sophisticated analysis of Energy Code Coach data to better understand local sticking points when it comes to the application of the energy code, and resources that can address those needs. As in years past, increased outreach efforts will be focused in Ventura and Santa Barbara Counties to balance out the strong uptake seen in San Luis Obispo County and diversify participation across the region.

When safe to return to in-person events, staff are still interested in holding a forum that takes the form of a building materials and technologies expo to increase knowledge of how materials and technology can increase code compliance. With the energy efficiency landscape evolving at a rapid pace, 3C-REN still believes it's important that professionals in the region be exposed to innovations in building material science and technology that support code compliance. This topic was originally planned for 2020, then 2021, but was again postponed as it is best suited for in-person delivery.

HOME ENERGY SAVINGS

Program Description

Program Need

Most of the homes in the tri-county region were built prior to the existence of the California energy code. As a result, homes use more energy, cost more, and are less comfortable, while the cost for improving home energy efficiency is often prohibitive for residents. Historically, residential energy efficiency programs have either been too prescriptive and required expensive, whole-home retrofits, or been limited to low-income households. This has made necessary energy improvements to Central Coast housing stock inaccessible to a large portion of the population.

Program Detail

WHAT

Home Energy Savings (HES) provides energy efficiency programs for single family and multifamily properties.

The single family program in 2021 provided free direct install energy efficiency measures, and offered higher energy saving measures at a reduced cost to participating homeowners and renters throughout the tri-counties. Examples of the free direct install measures included smart power strips and smart thermostats, while co-pay measures included higher energy-saving items and services such as EnergyStar refrigerators, HVAC tune-ups, and heat pump water heaters. As a supplement to installing energy efficient equipment in homes, customers received education on additional energy saving behaviors they can implement at home. This program closed at the end of 2021, with plans to re-launch service under a new model in 2022.

The multifamily program, which launched in fall of 2021, is a multi-measure rebate program that provides no-cost technical assistance and incentives to multifamily property owners for making energy efficiency improvements to a property. Any upgrades that achieve greenhouse gas savings qualify for the program, and upgrades can be made in both common areas and in-unit. Enhanced incentives are available for underserved properties. The technical assistance includes services such as an energy bill analysis, support developing a project scope, and identifying other incentive programs to help make projects more affordable.

Program Solution

By offering a menu of both free and reduced-cost energy efficiency measures, historically underserved residents in the tri-county region will get to enjoy the financial, health and comfort benefits that accompany them. The ability for customers to select only the upgrades needed or wanted will allow for ease of participation and encourage deeper energy savings.

WHO

The programs target Hard-to-Reach (HTR) homeowners, renters and owners of underserved multifamily buildings. For residential customers, HTR criteria include geographic location (Santa Barbara and San Luis Obispo Counties and designated disadvantaged communities in Ventura County), a language other than English primarily spoken in the home, income, and housing type. HTR eligibility depends on meeting two or more of those criteria. For the multifamily program, a property is considered underserved if it has less than 100 units, is deed restricted or naturally occurring affordable housing, or is located in an AB 1550 low-income or SB 535 disadvantaged community.

HOW

Single Family

A variety of marketing and outreach strategies were employed to promote the single family program in 2021 including targeted ads and collaborations with other organizations working in our target communities. Due to COVID restrictions, program outreach did not include presentations at community events, but program information was shared in a variety of virtual events.

Interested customers who contacted the program were screened for eligibility, and scheduled for a site visit, during which, no-cost direct install measures were installed. An assessment of the home was also completed, and information on additional opportunities for co-pay upgrades was presented to the customer.

In response to fluctuating restrictions in place due to COVID-19, the program continued to offer virtual home assessments and self-install packages to HES participants to provide them immediate energy savings, continue engaging and educating the public, and to raise awareness of HES program resources. Once safety protocols were developed and put in place, in-person assessments and installations resumed.

Multifamily

The multifamily program's first few months of operation have largely been focused on outreach, strategy development and lead acquisition. Through a number of initial marketing and outreach efforts—a launch webinar, workshops, and targeted campaigns—property owners and managers were introduced to the program and resources it provides.

Interested customers enter the program by filling out an interest form on the website, and have an initial intake call with a Technical Assistant to discuss the property and project in more detail. If a project is a good fit for the program, an initial site assessment is conducted to confirm site conditions and identify energy efficiency opportunities. Once a scope is finalized, the rebate is reserved and installation begins.

After installation is complete, a post-installation site visit is conducted to verify the work done. Finally, the rebate is sent directly to the property owner.

Snapshot of Program Performance and Major Accomplishments

		2020	2021
Projects & Incentives	 DIRECT INSTALL PROJECTS	284	546
	 CO-PAY PROJECTS	2	195
	 MEASURES INSTALLED (UNITS)	3,457	76,416
	 INCENTIVES DISTRIBUTED	\$119,495	\$449,837

		2020	2021
Energy Savings	 KWh SAVED	19,556	931,792
	KW SAVED	0	18
	THERMS SAVED	2,269	9,572



Program Performance and Major Accomplishments

SINGLE FAMILY

Changing guidance and staff availability related to COVID-19 throughout 2021 required the program to remain nimble and creative in its implementation and delivery. In 2020, the program excelled at serving low-income customers. Throughout the first half of 2021, the program worked to expand that reach, develop strategies for reaching Spanish-speaking populations, and increase uptake in co-pay measures. Due to changes made throughout the year, including the removal of LED lighting as a measure, and the planned phase out of a number of other popular measures, 3C-REN made the decision that a direct install program was no longer a sustainable model, and closed out the program at the end of 2021.

MULTIFAMILY

Using the success of the People's Self-Help Housing project as a model, 3C-REN put out an RFP for implementation services for its Multifamily program in February 2021, and contracted with the Association of Energy Affordability (AEA) in June. The team spent the summer finalizing program design components, requirements for customer validation to prevent double-dipping, building out infrastructure, and preparing for program launch in October 2021.

The next page shows a visual summary of high level program achievements.

Program Implementation

SINGLE FAMILY

In late 2020, the Home Energy Savings program was brought on as a partner in a comprehensive energy efficiency upgrade project on three farmworker housing complexes in north Santa Barbara County. Work commenced in early 2021 on a total of 197 units, for which 3C-REN provided attic insulation, smart thermostats and power strips, LED lighting, and heat pump water heaters. The energy efficiency portion of the project was completed in May 2021.

During a time when in-person outreach was limited, identifying a large-scale project was an appealing strategy to serve a large number of customers at once. 3C-REN, in coordination with program implementer CAPSLO, developed a strategy to seek out owners and managers of affordable housing units that would be eligible for the program, and had upgrade or rehab projects planned that 3C-REN could

help incorporate energy efficiency into. Through June 2021, the program conducted outreach to property owners, completed the farmworker housing project, and continued to serve traditional customers with direct install measures.

With relaxed COVID-19 restrictions, HES was able to resume in-person assessments and installations. Because of this, HES was able to partner with the newly-launched Santa Barbara Clean Energy (SBCE); the City of Santa Barbara's new community choice energy provider. SBCE customers who participated in HES were eligible to receive a free Flume water monitoring device from SBCE. On the day of the partnership's announcement, over 240 requests were received.

Even with the ability to conduct more one-on-one and in-person outreach and education, customers were primarily interested in the direct install projects. With the elimination of several direct install measures the program offered, for which there would no longer be claimable energy savings, and lower than anticipated uptake on higher energy saving co-pay projects, 3C-REN did not see a viable path forward with the direct install program model. In total for the year, the program completed 581 direct install projects and 195 co-pay projects, for a combined total of 776 projects. Note that some locations received both direct install and co-pay upgrades.

MULTIFAMILY

Leading up to, and following the program's launch in October 2021, Multifamily Home Energy Savings (MHES) conducted outreach to several key stakeholder groups, including housing authorities, property owners and managers, housing and development staff at municipalities throughout the tri-county region, and other affordable housing providers. The initial focus of the program was to introduce the program and resources it provides. Staff held meetings with a variety of stakeholders, and presented at a number of workshops, trainings or industry meetings.

In the first two and a half months of operation, the program received 17 leads. By the end of 2021, the multifamily program had 14 properties with a combined total of 1,178 units in the project pipeline receiving technical assistance, and had conducted 8 initial site assessments. As the program moves into its first full year of operation, MHES will expand its outreach efforts, focus on building relationships with multifamily property owners and managers throughout the region, and building up the project pipeline.

3C-REN staff worked with the multifamily implementation team led by the AEA, and supported by Frontier Energy and Community Environmental Council. Through weekly and/or bi-weekly meetings and calls, progress towards goals on outreach efforts, projects and savings, upcoming opportunities, details of what upgrades customers are interested in, or changes that need to be made are discussed.



CAPSLO staff prepare for installation of heat pump water heaters at farmworker housing complex in Santa Barbara County.

2021 Highlights

Below are several key accomplishments and innovations from the Home Energy Savings program in 2021.

Farmworker Housing Upgrade

In October of 2020, HES joined the People's Self-Help Housing (PSHH) and the Association for Energy Affordability (AEA) in a large-scale collaborative energy efficiency upgrade of farmworker housing. The project leveraged several incentive programs including Energy Savings Assistance (ESA), Low Income Weatherization Program (LIWP), and 3C-REN's Home Energy Savings program.

In addition to installing energy efficiency measures such as LED lighting, attic insulation, smart power strips and thermostats, HES installed a total of 197 heat pump water heaters, making this project responsible for the vast majority of heat pump installs in the tri-county region. The project also provided a significant training opportunity in the tri-county region to workers on heat pump water heater installation.

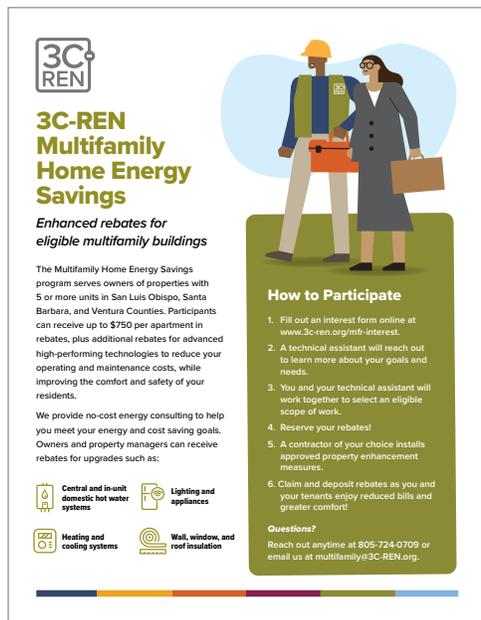
The conversion from gas storage water heaters to heat pump water heaters will result in significant greenhouse gas emissions reductions, and in order to offset the increase in electricity use due to the conversion, solar PV is also being installed through the LIWP program. This will ultimately result in lower utility bills for residents.



Multifamily Program Launch

In June 2021, 3C-REN contracted with the AEA to provide implementation services for the Multifamily program. Over the next four months, program design details were finalized, and outreach to key stakeholders was conducted in preparation for launch.

The Multifamily Home Energy Savings (MHES) program officially launched in mid-October 2021. MHES held a public webinar in which 45 people attended. Following the launch, the program received an influx of initial leads. Through the remainder of the year, the program conducted eight initial site assessments, continued to conduct program outreach, and worked on a marketing strategy for the upcoming year.



Promotional material for the new Multifamily Home Energy Savings program

Single Family Request for Proposals (RFP)

After making the decision to sunset the direct install Home Energy Savings program for single family residents, staff quickly pivoted to explore alternative program models that held the promise of greater energy savings. Through extensive research, review of other single family programs, and interviews with key stakeholders, the HES team crafted an RFP that sought an innovative program model that would depart from the conventional direct install model. Multiple promising applications were received and

several interviews with potential implementers were held. Ultimately, one applicant was selected to re-launch a new version of the single family program. The population NMEC program model is vastly different from the original program model, from the way it engages contractors to the way it is communicated to potential customers. Staff hold hope that this revamped program will deliver substantially greater energy savings and emissions reductions.

Opportunities in 2022 and Beyond

Looking forward to 2022, a major focus will be the re-launch of the single family program. 3C-REN has selected an implementer for the program and plans to serve customers through a population NMEC style offering, with highest incentives for HTR households. HES will continue to ramp up the new multifamily program and looks to serve around 1650 units throughout the tri-county region.

Both the single family and multifamily HES programs will also leverage partnerships with the Switch Is On and Bright Action for homeowner and renter education and engagement. 3C-REN can utilize educational materials created by the Switch Is On to help inform 3C-REN customers about high-performance technologies available through our programs. Similarly, the Bright Action platform is a great resource for residents to learn about and take every-day actions to reduce energy use and improve the environment. To reach Spanish-speakers, 3C-REN will partner with the Promotores program to train “promoters” who are connected with their local communities. These promotores will receive training from 3C-REN on the Home Energy Savings program that they can then share with their neighbors.

Marketing and outreach of both single and multifamily offerings will be a core focus in 2022, developing new marketing materials, revising the program website, and using other marketing tools to raise awareness about the program. In parallel, program processes and systems will be refined to ensure smooth program delivery as leads and projects increase in quantity. Salesforce will continue to be the primary data collection and reporting tool used by staff to keep an eye on program forecasts as plans are made for 2022.

Energy Savings

In 2021, 3C-REN administered one resource program. The Single Family Home Energy Savings Program delivered the following energy savings in 2021.

Table 1: Net Energy Savings

Electric and Gas Savings and Demand Reduction	Annual kWh Savings	Lifecycle kWh Savings	Peak Demand kW Savings	Annual Therms Savings	Lifecycle Therms Savings
Home Energy Savings	931,791.58	8,974,065.74	18.45	9,540.02	101,754.73
Total Portfolio Savings	931,791.58	8,974,065.74	18.45	9,540.02	101,754.73

Savings by End Use

3C-REN's Single Family Home Energy Savings Program delivered the following savings by end use in 2021.

Table 2: Savings by End Use

End-Use Category	kWh	% of Total	kW	% of Total	Therms	% of Total
Appliance or Plug Load	71,094.01	7.63%	1.029	5.58%	-0.26	0%
Building Envelope	1,556.67	0.17%	0.000	0.00%	1,083.76	11%
HVAC	4,385.23	0.47%	0	0.00%	4,982.61	52%
Lighting	0	0.00%	0	0.00%	0	0%
Service and Domestic Hot Water	854,755.67	91.73%	17.42	94.42%	3,473.92	36%
Annual Portfolio Savings	931,791.58	100%	18.45	100%	9,540.02	100%

Environmental Impacts

Environmental impacts are shown below. These results are generated by the Commission-approved Cost Effectiveness Tool (CET). The CET is designed to calculate energy efficiency program cost-effectiveness.

Table 3: 3C-REN Environmental Impacts

Annual CO2 avoided (tons)	Lifecycle CO2 avoided (tons)	Annual NOx avoided (tons)	Lifecycle NOx avoided (tons)	Annual PM10 avoided (tons)	Lifecycle PM10 avoided (tons)
235.48	2,592.62	412.80	4,398.14	(7.37)	14.45

Expenditures

Table 4: 3C-REN 2021 Budget

Program	2021 Budget
Residential	\$5,914,078
Codes and Standards	\$1,404,181
WE&T	\$1,280,298
Program Subtotal	\$8,598,557
EM&V (3C-REN only)	\$98,310
Total 3C-REN 2020 Budget	\$8,696,867

Table 5: 2021 Actuals

Programs	Admin	Direct Implementation	Incentives & Rebates	Marketing & Outreach	Total
Residential DI	\$88,974.90	\$1,137,469.34	\$345,171.07	\$70,478.00	\$1,642,093.31
C&S	\$95,719.38	\$855,790.58	-	\$73,212.60	\$1,024,722.56
WE&T	\$86,692.46	\$894,370.58	-	\$63,919.25	\$1,044,982.29
Program Subtotal	\$271,386.74	\$2,887,630.50	\$345,171.07	\$207,609.85	\$3,711,798.16
EM&V (3C-REN only)					\$0.00
Total 3C-REN Expenditures	\$271,386.74	\$2,887,630.50	\$345,171.07	\$207,609.85	\$3,711,798.16

Cost Effectiveness

While the RENs are subject to limitations on the programs that can be offered, (i.e. programs that the IOUs do not plan to offer or programs that fill in the gaps of IOU services, and serving hard-to-reach markets), RENs are not subject to the same cost-effectiveness test as IOUs. However, 3C-REN still works toward delivering cost-effective programs.

Metrics D.18-05-041

Value Metrics

As submitted in 3C-REN's 2021 Annual Budget Advice Letter, 3C-REN proposed the following value metrics as required in D.19-12-021.

- **Diversity, Equity and Inclusion.** Execute program design, procurement, delivery and participant targeting to deliver diverse, equitable, and inclusive participation across the tri-county region.
- **Service.** Serve tri-county residents not otherwise served by existing ratepayer-funded programs.
- **Climate Action.** Support tri-county member agencies in meeting climate goals.
- **Economic Impact.** Positively impact the economic development of the tri-county region through its built environment and workforce.

The metrics and indicators shown below demonstrate progress toward fulfilling these values through 3C-REN activities, while tracking toward specific 3C-REN goals as outlined in the 2018 Business Plan.

Metric: Percentage of event 3C-REN attendees considered disadvantaged workers

- Programs: Codes and Standards, WE&T
- Target: Percentage of disadvantaged worker attendees over total number of 3C-REN attendees; timeline to be determined after 2021 baseline established
- Baseline: Reported in 2021 reporting
- Methodology: From 3C-REN C&S and WE&T events, collect address data from attendees. Map address data for those in areas 50% below AMI as a proxy for participant income data. Calculate the number of attendees considered disadvantaged workers over the total number of attendees.
- Outcomes: WE&T, 30%; C&S, 29%

Indicator: Number of jobs and economic value, inclusive of job creation at counties

- Programs: Codes and Standards, WE&T
- Target: N/A
- Baseline: Reported in 2020 reporting
- Methodology: Administer a survey annually, using the same questions each year. The questions asked will align with the indicator.
- Outcomes: 75% of surveyed attendees reported 3C-REN trainings improved the economic value of their companies

Metric: Number of tri-county member jurisdictions receiving annual 3C-REN data that informs member jurisdictions achievements toward climate action plans GHG emission reduction goals

- Program: Residential
- Target: Target and timeline to be determined after 2020 baseline established
- Baseline: Reported in 2020 reporting
- Methodology: Share a report that provides jurisdiction-specific estimated GHG emission reductions from 3C-REN programs. Provide to jurisdictions with GHG emission reduction goals to inform Climate Action and Adaptation Plans (CAAP).
- Outcomes: 13 jurisdictions

3C-REN has proposed refinements to its Vision and Goals in its 2024-2031 Strategic Business Plan, and may propose other refinements in future Business Plan filings. As 3C-REN's Vision and Goals mature, so will its unique values and thus its value metrics.

Equity and Market Support Segment Metrics

To further support the creation and tracking of program metrics across PAs, 3C-REN also participated in the 2021 California Energy Efficiency Coordinating Committee (CAEECC) Equity and Market Support Metrics Working Groups. Through these discussions, 3C-REN played an important role in crafting and defining appropriate market segmentation categorization among California EE Programs, as well as the guidelines through which appropriate Market Support and Equity metrics are set. Through participation in these working groups, 3C-REN is better positioned to accurately determine and collect meaningful metrics across market segments

Residential Direct Install: Home Energy Savings

For energy savings and environmental impacts metrics see referenced tables.

Table 1: Net Energy Savings	29
Table 2: Savings by End Use	29
Table 3: 3C-REN Environmental Impacts	30

Workforce Education & Training: Building Performance Training

3C-REN continued to provide workforce training opportunities in 2021. The following required metrics were tracked for the BPT (WE&T) program:

- Number of collaborations: 39
- Number of participants: 1147
- Percent of participation relative to eligible target population: 4.91%*
- Percent of participants that meet the definition of disadvantaged worker: 1.28%**

* Total eligible population for tri-county region estimated to be 12,771 workers. This estimate is based on 321,000 energy efficiency jobs for the state of California cited in a report from the Advanced Energy Economy Institute (AEEI), and the percentage of California's population that is accounted for in the tri-county region. The unique BPT attendee count for 2021 was 624.

** DAC zip codes in the tri-county region include 93033, 93030, 93001. Event registration requires a home zip code when participants register to attend 3C-REN events. Percentage of participants is based on a unique event attendee count, meaning a person who attends multiple 3C-REN events is only counted once.

In addition to above required metrics, 3C-REN also compiled additional performance information:

- Number of organizations represented by BPT participants: 280
- Number of jurisdictions represented by BPT participants: 12
- Percentage of jurisdictions represented by BPT participants: 42.9%
- Number of training providers: 9

Codes & Standards: Energy Code Connect

3C-REN continued to provide energy code support in 2021. The following required metrics were tracked for the ECC (C&S) program:

Participation in Energy Policy Forums

3C-REN held three energy policy forums in 2021:

- Number of jurisdictions with staff participation in an energy policy forum: 10
- Percent of jurisdictions with staff participation in an energy policy forum: 35.71%

In addition to the above indicators, 3C-REN also compiled additional performance information:

- Total number of energy policy forum participants: 221

Energy Policy Technical Assistance

3C-REN launched the Energy Code Coach service for the tri-county region in 2020 and began its second year of program delivery in 2021:

- Number of jurisdictions with staff receiving energy policy technical assistance: 11
- Percent of jurisdictions with staff receiving energy policy technical assistance: 39.29%
- Number of buildings receiving enhanced code compliance support: 84

In addition to above required indicators, 3C-REN also compiled additional performance information:

- Total number of organizations receiving energy policy technical assistance: 43

Training Events

While 3C-REN does not report on statewide training metrics, 3C-REN did compile performance information for training events held under the Energy Code Connect program:

- Total number of codes and standards training events: 25
- Total number of participants attending codes and standards training events: 395

Codes and Standards Activities

3C-REN's Codes and Standards activities include energy code training events, energy policy forums, and technical assistance through the Energy Code Coach. The indicators below represent the combined achievements of these activities:

- Total number of organizations directly engaged in Codes and Standards activities: 223

Commitments

3C-REN made no commitments in 2021 for expected implementation in 2022. The Single Family Home Energy Savings program (TCR-Res-001) completed all installations prior to program close-out at the end of 2021.

Joint Cooperation Memos

The following joint cooperation memos (JCMs) are attached separately:

- 3C-REN, SoCalGas, SCE, AND PG&E 2023 JOINT COOPERATION MEMORANDUM
- SoCalREN, 3C-REN, SCE, SoCalGas, and I-REN 2023 Joint Cooperation Memorandum

These JCMs are available on 3C-REN's website at: www.3c-ren.org/regulatory-documents.