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Assessment of Regional Energy Networks

CPUC Contract Group B: Deliverable 22B Year 2 Study

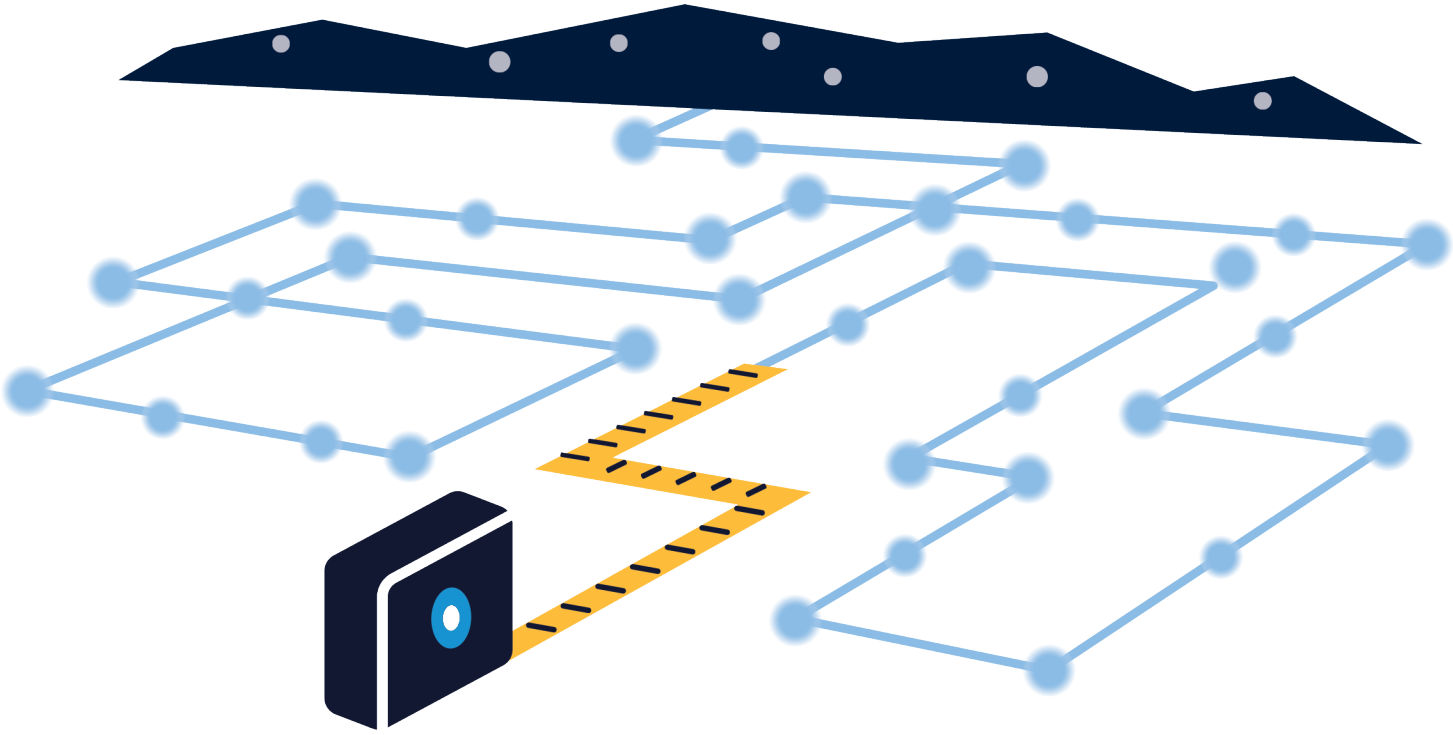

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Table of Contents

Table of Tables

Table of Figures

Abstract

The Regional Energy Networks (RENs), which are organized at the local/regional government level, offer energy efficiency (EE) program offerings to the residents and businesses in their service territories. RENs coordinate with other Program Administrators (PAs), including Investor-Owned Utilities (IOUs) and Community Choice Aggregators (CCAs), to fill gaps in available program offerings, pilot new activities, and target hard-to-reach customer segments.

The main objectives of this evaluation were to 1) examine the degree of overlap and cooperation between PY2021 REN EE programs and the programs of other PAs; 2) assess each REN's development of value metrics as reported in their 2021 annual budget advice letters (used to demonstrate their unique value and to measure the benefits to their customers overtime); and 3) continue the three-year examination of the benefits of REN non-resource activities, with a focus on 2018 and 2019 Workforce, Education and Training (WE&T) efforts in this Year 2 evaluation.

The evaluation team employed several research methods to conduct this evaluation, including a review of formal documentation, analysis of primary and secondary data provided by the RENs, and in-depth interviews. We also examined REN materials used to develop their unique value metrics, as well as WE&T course program records for all 2018 and 2019 WE&T activities and any planned 2020 WE&T activities.

While the joint cooperation memo process effectively articulates differences among program offerings by geographically overlapping PAs, risks to mitigate are as follows: 1) confidentiality rules preclude IOUs from mentioning overlaps with new third-party programs; 2) newly approved PAs will complicate coordination efforts; 3) the current process does not consider duplicative overlapping non-PA programs. Moreover, the CPUC should address the current asymmetry between the subordinance of existing REN programs and the primacy of IOU programs to clarify a hierarchy of existing programs prior to the launch of new programs by any current or future PA. Once baselines are finalized, we propose an evaluability assessment of unique REN value metrics and data collection protocols. During PY 2018 and 2019 SoCalREN, BayREN, and 3C-REN offered a combined 84 training courses that were delivered a total of 250 times, including repeat offerings to new audiences. In all, 3,554 people attended REN-sponsored training efforts.

1. Executive Summary

The Opinion Dynamics evaluation team, with Tierra Resource Consultants as its sub-contractor, is pleased to present to the California Public Utilities Commission (CPUC) this Assessment of California's Regional Energy Networks (RENs), as part of the Year 2 Efficiency Program Oversight and Evaluation of the Group B Sectors. This study is referred to as Deliverable 22-B in the Group B Contract between the CPUC and Opinion Dynamics. The RENs, which are organized at the local/regional government level, offer energy efficiency (EE) program offerings to the residents and businesses in their service territories. RENs coordinate with other Program Administrators (PAs), including Investor-Owned Utilities (IOUs) and Community Choice Aggregators (CCAs), to fill gaps in available program offerings, pilot new activities, and target hard-to-reach customer segments.

1.1 REN Overview and Study Purpose

The main objectives of this evaluation were to 1) examine the degree of overlap and cooperation between REN EE programs and the programs of other PAs; 2) assess each REN's development of value metrics,[1] which demonstrate their unique value and can be used to measure the benefits to their customers overtime; and 3) continue the three-year examination of the benefits of REN non-resource [2] activities, with a focus on Workforce, Education and Training (WE&T) efforts in this Year 2 evaluation.

At the outset of this research, the CPUC and the evaluation team agreed to focus the second year of this study on RENs that offered ratepayer-funded EE programs to customers during the 2018 and 2019 program years. This included the Bay Area Regional Energy Network (BayREN) which serves the nine counties of the San Francisco Bay Area; the Southern California Regional Energy Network (SoCalREN) whose service territory includes 12 counties in the Southern and Central California areas, and the Tri-County Regional Energy Network (3C-REN) which serves the counties of San Luis Obispo, Santa Barbara and Ventura.

1.2 Overview of Evaluation Approach

The evaluation team employed several methods to conduct this evaluation, including review of formal documentation, analysis of primary and secondary data provided by the RENs, and in-depth interviews. Initial efforts reviewed Joint Cooperation Memos[3] (JCMs); Annual Budget Advice Letters (ABALs) and associated files used by the RENs and IOUs to document their coordination and collaboration processes. We also examined materials representing REN research and/or planning efforts used to develop their unique value metrics; and

[1] In the discussion section of D.19-12-021 and in informal discussions with CPUC staff, the CPUC requested that RENs demonstrate to the CPUC the unique value that they are providing. Specifically, on page 30/31 the Decision states that "Existing or prospective RENs will be required to show how their program offerings supplement those of overlapping REN, utility, and CCA program administrators or implementers. […] The RENs shall also propose savings goals and metrics associated with their unique value, as well as a methodology for measuring progress toward their metrics, in their business plans and ABALs."

[2] The CPUC defines a non-resource program as one that is not directly responsible for attributed energy savings but that supports the EE portfolio through activities, such as marketing or improved access to training and education. This study broadens the focus from non-resource programs to non-resource activities since oftentimes PAs engage in discrete actions, as opposed to formally defined programs, that are meant to promote participation in their resource offerings. These activities, in and of themselves, do not directly produce energy savings, but do contribute to better outcomes and energy savings in resource programs.

[3] D.18-05-041 directed the Regional Energy Networks and Investor-Owned Utilities to file annual Joint Cooperation Memos to provide assurance that their Business Plans are implemented pursuant to D.15-10-028 andD.16-08-019 and that the REN programs are in compliance with the program directives articulated in D.12-11-015, D.16-08-019 and D.19-12-021. JCMs are publicly posted on the California Energy Efficiency Coordinating Committee's website.

we analyzed WE&T course and attendee details, curricula, training materials and other WE&T program documentation for all 2018 and 2019 WE&T activities and any planned 2020 WE&T activities.

The research team also conducted three distinct rounds of in-depth interviews with BayREN, SoCalREN, 3C-REN; their primary program implementers;[4] and the IOUs. The first round of interviews was conducted with the RENs and their program implementers. It covered the RENs efforts to create metrics for measuring and demonstrating the unique value they provide. The second round of interviews gathered perspectives from representatives of the RENs and the IOUs to help the evaluation team to understand the process of drafting and enacting the JCMs to avoid program overlap throughout the year. The third round of interviews focused on REN WE&T training activities and included conversations with the RENs and with representative training instructors. In-depth interview guides that were approved by the CPUC are provided for reference in Appendix A.

1.3 Key Findings and Recommendations

This subsection provides findings and recommendations from the research and evaluation activities conducted in the Year 2 Assessment. Note that not all findings have an associated recommendation.

Findings Related to the Joint Cooperative Memos

Finding #1: The evaluation team finds that the JCMs clearly articulate which programs are comparable and that the memos do an adequate job of explaining the key differences among comparable program offerings offered by other geographically overlapping PAs. None of the PAs raised concerns about programs being duplicative. All PAs interviewed for this study stated that the Energy Division has been responsive and available during JCM development and that no concerns regarding the JCMs have subsequently been raised by the Energy Division in response to these filings. The consensus impression among the PAs indicates that because they have received no feedback to the contrary, they all feel that the Energy Division is satisfied by the process and that there are no major concerns with the level of documenting program overlap and approaches to differentiating the programs amongst the PAs that collaborate on the filing of the JCM, hereafter referred to as joint PAs. Based on our review of the JCMs and evaluation activities, the evaluation team agrees the level of documentation appears to conform with CPUC requirements.

Finding #2: Our in-depth interviews about the JCM process uncovered several potential risks that PAs are could potentially lead to duplication. These risks include:

- **Rollout of new third-party programs.** Due to confidentiality rules, the IOUs cannot disclose whether there is any potential for overlap between RENs and the new third-party programs, and there is no current way to address these matters in the JCM process. This uncertainty could jeopardize some of the RENs programmatic activities, especially REN programs that do not serve hard-to-reach markets. This has the potential to stifle innovation since the RENs could invest time and effort in new program design and later learn that a third party proposed an overlapping activity.
- **Emergence of new joint PAs.** As more organizations seek CPUC approval to administer EE programs, the likelihood of overlapping service territories increases. This will further add to the complexity of California's EE portfolio and will require existing and new PAs to increase their coordination efforts and remain vigilant in customer screening and validation protocols to mitigate customer confusion and avoid double counting of incentives.

[4] In the case of the BayREN, we also spoke with representatives from Grounded Research, a third-party evaluator hired by BayREN to conduct a process evaluation of BayREN programs and who played an integral role in the development of BayREN's value metrics.

- **Growth of Non-PA EE and Distributed Energy Resource (DER) programs.** California's energy landscape continues to evolve rapidly, with at least 14 non-PA CCAs[5] offering EE, DER, and/or greenhouse gas (GHG) reduction programs as well as 40 municipal utilities[6] that reported EE savings to the CEC in 2019. Many of these programs are not administrated or claimed by the IOU ratepayer funded PAs, but they share similar attributes, including customer and contractor demographics. Although these entities may not fall under the CPUC's regulatory jurisdiction, these programs represent considerable potential to create overlapping and duplicative programs. As of now there is no formal process or procedure for coordinating with these entities. To date, PAs have reported mixed results when coordinating informally with entities that are not accepting public benefit funds for the administration of EE programs (non-PAs).

- **Uncertainty concerning the priority and precedence of unique program offerings.** Some of the PAs indicated they feel uncertain regarding the precedence of programs among joint PAs. Clearly statewide programs come first, it is less clear what happens after that. Moreover, while it is also clear that third party programs must coordinate with the PAs, it is somewhat unclear what happens if a REN has a pre-existing program and then a non-REN PA decides to offer a similar program. As it stands, representatives of the RENs and IOUs interviewed have interpreted the decision language that the onus is on the RENs to either point out the differences or modify their program; if they cannot, then it seems the REN can no longer offer the program. The backstop for this is that RENs may continue to offer these programs as long as they are using them to serve hard-to-reach customers, which may not be a viable option for all programs or PAs.

Recommendation: The following recommendations align with the above findings concerning JCMs:

- **Rollout of new third-party programs.** Any potential overlap with REN offerings from new third-party programs should be raised through existing communication channels between the relevant parties immediately when the IOU is legally able to share such information. In addition, language should be included in future third-party solicitations and/or contracts to require these parties to address how they plan to minimize overlap and coordinate with existing RENs.

- **Emergence of new Program Administrators with overlapping territories.** When joint PAs file a JCM for the first time they historically run into challenges and should anticipate the process to take longer than it does for joint PAs who have filed together previously. Existing PAs should reach out to potential new PAs as early as possible to discuss how to mitigate duplication, customer confusion, and incentive double counting. Additionally, new joint PAs should plan to begin JCM preparation in early January and schedule a formal process and timeline that paces the effort appropriately from kick-off to the submission due date to ensure that sufficient time is allocated to address any unexpected issues that may arise. The PAs should also reserve ample time for the document to pass through multiple rounds of edits by all involved parties, including reviews by management, and legal and regulatory reviewers.

- **Growth of EE and DER programs offered by entities that do not utilize public benefits funds (non-PAs).** PAs should be encouraged to expand the scope of their coordination with these emerging entities and programs, even if informally. It may be the difference between building popular new programs that leverage multiple resources to drive energy, cost and GHG reductions, or inadvertently creating programs that compete with non-PA programs for participants and savings. One such success story

[5] According to CalCCA, there are 17 CCAs offering a broad range of programs. Of these CCA's only MCE, Redwood Coast Energy Authority, and Lancaster Choice Energy administer EE programs with CEDARS reporting. https://cal-cca.org/cca-programs/#toggle-id-3-closed.

[6] Table 5. EE Program Results by Utility, Energy Efficiency in California's Public Power Sector 15th Edition – 2021. https://www.cmua.org/files/2021%20%20Joint%20POU%20EE%20Report.pdf.

that exemplifies this opportunity is the Sonoma Clean Power and PG&E Advanced Energy Rebuild program, which was recently showcased in a separate evaluation.[7]

- **Uncertainty concerning the priority and precedence of unique program offerings.** The evaluation team recommends that the CPUC address the current asymmetry between the subordinance of existing REN programs and the primacy of programs offered by other PAs. Specifically, the team suggests clarifying the priority of program offerings and stating the CPUC's preferred procedures and outcomes for when new program offerings are introduced into the market by any party and the new offering overlaps with pre-existing programs offered by either RENs or other PAs. This clarity should help minimize confusion and avoid the unnecessary expenditure of ratepayer dollars on the creation of duplicative new programs.

Finding #3: The JCM preparation process has been successful at increasing communication and coordination among PAs with comparable programs and overlapping service territories. JCMs facilitate active communication among these PAs on a regular basis through periodic meetings. The JCM process has led, where necessary, to customer screening protocols, decision trees and other agreements to minimize customer confusion and prevent double dipping of incentives.

Recommendation: If the CPUC is interested in a more quantitative appraisal, an evaluation assessing the degree of customer confusion or double dipping of incentives among PAs that file a JCM for comparable overlapping programs could be conducted. For example, a quantitative assessment might include a survey of customers who participated in a Joint PA program that currently uses a customer screening protocol, decision tree or other process specified in the JCM to coordinate activities and prevent duplication.

Findings Related to REN Unique Value Metrics

Finding #4: Based on this study's value metrics related tasks, the evaluation team finds the RENs to be prepared and capable of tracking and reporting their value metrics. Once the CPUC approves the metrics and baseline data has been collected by each REN, REN performance can be measured and assessed by third-party evaluators. In their respective 2021 ABALs, the RENs proposed unique value metrics, suggested timetables for preparing baselines, and identified metrics to measure their progress. They stated that some initial value metric baseline data might be available from 2020, but full baselines for target setting were not expected until 12 months of data can be collected for all value metrics. This implies that all REN value metric baselines detailed in the 2021 ABALs should be available at the end of 2021 and that the RENs may begin to report these baselines and set value metric targets as early as the 2022 ABALs.

Recommendation: An evaluability assessment of REN value metric baselines and ongoing data collection protocols should be conducted once all baselines and targets are finalized. Any value metric evaluation efforts starting in 2021 would likely be limited to an assessment of what data the RENs were able to collect in 2020 and which baselines could be established using finalized 2020 data.

Finding #5: All three RENs are improving their data tracking; however, tracking protocols, methods and data currently differ among programs, especially across the three RENs. Although it is logical for programs designed to deliver a unique value proposition to consequentially have unique value metrics, it is important from an evaluability perspective for there to be a set of common value metrics that can be assessed across programs and RENs. The new metrics requirements discussed in Decision 21-05-031 provide a mechanism to bring greater unanimity across the RENs and other PAs.

[7] Group B, Deliverable 33 Case Study 2, Sonoma Clean Power and PG&E's Advanced Energy Rebuild Program, Opinion Dynamics and Tierra Resource Consultants, August 27, 2019. This study is available on Energy Division's Public Document Area.

Recommendation: All three RENs should prepare to provide, at a minimum, the following details for every value metric: applicable sectors, associated core value, data source, calculation methodology, reported value, unit, numerator (of reported value if appliable), denominator (of reported Value if appliable). In addition, RENs should ensure they have the necessary systems in place to streamline the collection, measurement and reporting of their value metrics. An example of this level of value metric detail can be seen in Appendix A. REN-Wide Portfolio Metric Details Table of SoCalREN's 2021 ABAL.

Finding #6: BayREN conducted a formal process evaluation to gather a wide range of feedback from the CPUC, overlapping PAs and stakeholders in order to prepare a Core Value and Proposed Value Metrics Memo. The memo clearly outlines how BayREN's programs contribute in a unique way to the EE portfolio, as well as formally tying their metrics to Program Theory and Logic Models (PTLMs). During 2020, SoCalREN initiated a comparable formal process evaluation that includes assistance with core values and proposed value metrics. Those results are to be made public in 2021.

Recommendation: New RENs should include development of their core values and associated metrics in their feasibility and planning documents. This process should include discussions with CPUC representatives, overlapping PAs and a broad range of efforts to solicit stakeholder feedback such as jurisdiction-wide group discussions, online surveying, in-depth interviews, and feedback from local jurisdictions. After running programs long enough to establish baselines, RENs should conduct a thorough process evaluation to assess how effectively their programs are delivering on their initially stated value metrics.

Findings Related to REN Workforce, Education and Training

Finding #7: REN workforce education and training offerings are well integrated with REN program offerings. During the 2018 and 2019 program years SoCalREN, BayREN, and 3C-REN offered a combined 84 distinct training courses that were delivered a total of 250 times, including repeat offerings of the same course to new audiences. Including repeats, SoCalREN sponsored 121 training activities (48%), BayREN sponsored 108 (43%) and 3C-REN sponsored 21 (8%) activities. The table below shows the distribution of the 84 distinct offerings by REN and by sector.

Table 1. REN Training Activities During 2018-2019

REN Trainings by Sector	Total Training Courses		
	# Unique Training Courses Offered*	% All REN Training	% Training Each REN
3C-REN	10	12%	100%
Public Sector	2	2%	20%
WE&T	8	10%	80%
BayREN	27	32%	100%
Multifamily	2	2%	7%
Public Sector	15	18%	56%
Single Family	4	5%	15%
WE&T	6	7%	22%
SoCalREN	47	56%	100%
Multifamily	9	11%	19%
Public Sector	16	19%	34%

Single Family	2	2%	4%
WE&T	20	24%	43%
Total	**84**	**100%**	**100%**
*Excludes repeat offerings of the same course			

Finding #8: REN training activities serve a wide variety of customers including building professionals, building department staff, real estate professionals, public agency staff, and high school students. In all, 3,554 people attended REN-sponsored training efforts. Of these, the RENs trained 1,969 people in Public Sector activities (55%), 1,443 people in WE&T activities (41%), 76 people in Single Family activities (2%); and 66 people (2%) in Multifamily activities. The table below shows the number of students trained by REN and by sector.

Table 2. Number of Students Trained During 2018-2019

REN Trainings by Sector	# Training Courses Offered	# students trained in all activities	% students per REN	% students across All RENs
3C-REN	10	580	100%	16%
Public Sector	2	114	20%	3%
WE&T	8	466	80%	13%
BayREN	27	1521	100%	43%
Multifamily	2	20	1%	1%
Public Sector	15	900	59%	25%
Single Family	4	76	5%	2%
WE&T	6	525	35%	15%
SoCalREN	47	1453	100%	41%
Multifamily	9	46	3%	1%
Public Sector	16	955	66%	27%
Single Family	2	0	0%	0%
WE&T	20	452	31%	13%
All RENs	84	3554	100%	100%

Finding #9: Just under half of all REN training efforts (45%) provided attendees with continuing education units (CEUs) upon successful completion of the training activity, while 48% of the REN training efforts provided attendees with professional certifications (PCs) from third parties such as the International Code Council (ICC) and the American Institute of Architects, among others.

Finding #10: Training activities aligned with CEUs and PCs from third-party organizations involved post-training testing as a requirement for attendees to obtain course credits, however this testing is rare in other REN training efforts.

Recommendation: Because testing is so central to assessing student learning, the evaluation team recommends that the RENs review their training activities to determine the appropriateness of incorporating testing protocols into their training efforts. For some types of training where it does not make sense to test

due to training format, intended application, or type of content, RENs should explore other ways of assessing student learning and long-term outcomes. For instance, if a training activity focuses on an applied skill, such as learning how to conduct an energy audit or properly install equipment, then conducting quality assurance checks after trainees have applied their new skills in real world situations may be better suited to identifying where additional training may be needed to improve performance.

Finding #11: The RENs do not consistently collect basic WE&T tracking data, solicit post-training feedback to improve training offerings, or conduct post-training follow-up to assess effective application of the training in field settings. Although incomplete data documenting training effectiveness is a shared issue for all three RENs to some degree, this relative lack of data may also be prevalent among other California PAs, including IOUs, since non-resource activities in general, and training in particular, have not been required to meet the more rigorous requirements for tracking attributable energy savings.

Recommendation: If the CPUC is interested in understanding the effectiveness and impacts of training across its PAs, then the evaluation team recommends developing guidelines for a consistent set of data collection requirements and, where feasible, instituting statewide systems with unique identifying numbers for training attendees that are unique to the individual and not to the company, such as state license numbers, driver's license numbers, or uniquely generated IDs, that can be used to link individuals to specific training courses and subsequent activities such as audits, bids, project completion paperwork, and rebate forms that would help the CPUC to better track and attribute energy savings at the meter, as well as other associated nonenergy benefits.

2. Regional Energy Networks and Study Overview

2.1 Regional Energy Networks Overview

Regional Energy Networks (RENs) are coalitions of local governments created to provide new or unique value to the CPUC's energy, climate, and equity goals by administering EE programs independent of other PAs. The REN concept originated from the desire of local governments to undertake EE program design and management more freely. They were initially intended to augment or supplement the existing utility EE portfolios by leveraging local governments' experience directly administering EE programs from the American Recovery and Reinvestment Act.

In D.12-11-015, the CPUC approved the creation of two RENs to administer EE programs in Northern and Southern California. BayREN falls entirely within the PG&E service territory, while SoCalREN covers much of the SCE/SCG joint service territories. Later D.18-05-041 approved the Tri-County REN, which covers, San Luis Obispo, Santa Barbara and Ventura counties. The Tri-County REN territory overlaps with those of PG&E, SCE and SCG. Table 3 below summarizes the counties served by each REN as well as the overlapping IOU territories.

Table 3. Regional Energy Networks at Time of Study

REN	Counties Served	Overlapping IOU Territories
BayREN	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma	PG&E
SoCalREN	Imperial, Inyo, Kern (partial), Kings (partial), Los Angeles, Mono, Orange (partial), Riverside, San Bernardino, Santa Barbara (partial), Tulare (partial), Ventura,	SCE, SCG
Tri-County REN	San Luis Obispo, Santa Barbara, Ventura	PG&E, SCE, SCG

D.12-11-015 introduced specific criteria to evaluate REN proposals, which intended to have RENs fill gaps in the IOUs' portfolios and serve hard-to-reach customers. The CPUC has found these criteria to "have served reasonably well since they were instituted".[8] In D.19-12-021 the CPUC revised these criteria to include CCAs and clarified that RENs are meant to fill gaps in all PA portfolios. RENs are required to meet at least one of the following revised criteria from D.19-12-021:

- Offering activities that the utilities or CCAs cannot or do not intend to undertake.
- Piloting activities where there is no current utility or CCA program offering, and where there is potential for scalability to a broader geographic reach, if successful.
- Offering activities serving hard-to-reach markets, whether or not there is another utility or CCA program that may overlap.[9]

D.19-12-021 also recognized that the RENs have been in place long enough and no longer are considered pilots; The decision also requires newly formed RENs, and all existing RENs include a governance structure that includes more than one local government so that they remain regional in nature. Each approved REN must submit JCMs that they have developed with each overlapping PA with which they share the same

[8] D.19-12-021 page 30.
[9] D.19-12-021, page 32.

geographic area. The JCM's are designed to address program and customer overlaps, including those with IOUs, CCAs that offer ratepayer funded EE programs, and existing or newly formed RENs. The Decision further clarified that REN business plans must:

- Be vetted by stakeholders through the California Energy Efficiency Coordinating Committee (CAEEC);
- Include an explanation of their REN governance structure; and
- Include benefit-cost ratios and savings targets, as RENs are not required to meet a cost-effectiveness threshold.[10]

Further noted in D.19-12-021 are the changes in the landscape of funding for EE programs in California given that the budgets and roles for Local Government Partnerships (LGPs) are shrinking and that CCAs are increasingly showing an interest in administering EE programs. Because the RENs are designed to offer programs outside of utility and CCA activities, the decision maintains that RENs should continue to serve customers. The decision places no restriction on the customer segments or program areas served, so long as at least one of the above revised criteria from D. 19-12-021 is met. One intent of the CPUC with this decision was to reduce the uncertainty about the future of the RENs raised in D.16-08-019 with the caveat that in the event of changing circumstances, the topic could be revisited.

2.2 RENs Covered in this Study

This Year 2 study examines the three RENs that actively administered EE funds in the 2018 and/or 2019 program years. The following sections provide summaries of each REN included in this study as well as overviews of the RENs' program offerings and activities based on our review of the data and materials received in response to this year's data request.

2.2.1 Bay Area Regional Energy Network (BayREN)

BayREN, led by the Association of Bay Area Governments, is a collaboration of the nine counties of the San Francisco Bay Area: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma. Since 2013, BayREN has offered more than seven million residents of these counties regional-scale EE programs, services, and resources alongside PG&E and MCE EE program offerings. BayREN collaborates and coordinates with PG&E, however, its programs are distinct from PG&E's offerings. BayREN's programs are divided into four sectors – Residential, Commercial, Codes & Standards (C&S), and the Water Energy Nexus.

2.2.2 Southern California Regional Energy Network (SoCalREN)

With the County of Los Angeles serving as its lead agency, SoCalREN administers EE programs for 20 million residents and over 700 public agencies in twelve counties that overlap with the Southern California Edison (SCE) and Southern California Gas (SCG) service territories. During 2018 and 2019, SoCalREN offered programs targeting homeowners, local governments, low-income communities, contractors/energy professionals, and commercial and multifamily property owners. SoCalREN's programs are divided into four sectors – Public, Residential, Finance, and WE&T.

[10] The reasoning for this is because they inherently serve the needs of hard-to-reach customer segments that are naturally less cost-effective to serve as well as not having the ability to offset cost-ineffective programs within a larger portfolio of largely cost-effective programs as IOUs currently do.

2.2.3 Tri-County Regional Energy Network (3C-REN)

The CPUC approved 3C-REN to administer EE programs in May of 2018 to residents and businesses located in the Central Coast counties of Ventura, Santa Barbara, and San Luis Obispo with the intent of filling gaps left in workforce training, local government training, and full-service EE services for hard-to-reach markets. This approval allowed 3C-REN to offer three programs beginning in mid-2019 including WE&T, C&S, and the Residential Direct Install Program for Hard-to-Reach Customers.

2.3 Key Research Questions

The study objectives for this second-year assessment were to assess 1), the degree of overlap and coordination among REN and other PAs non-resource activities and programs, 2) how the RENs are demonstrating their unique value in achieving state goals as laid out in D.19-12-021, and 3) the benefits of REN training activities, including C&S. The key research objectives addressed by this study are:

- How do the RENs coordinate their EE offerings with those offered by other PAs including IOUs and CCAs?
- What are the RENs' desired outcomes from activities that fill gaps of other PAs?
- What are the savings goals and metrics the RENs propose to demonstrate their unique value?
  - What was the process for developing these value metrics?
  - How do the RENs anticipate measuring progress towards their proposed value metrics?
- What types of metrics should the CPUC consider assess whether the RENs are meeting the criteria for RENs to offer programs as adopted out in Decision 19-12-021?
- What training activities are offered by the RENs operating in California and how are they benefiting customers?

2.4 Research Tasks

For this second-year assessment of RENs the evaluation team conducted the research tasks listed in Table 4 below to address the key research questions presented in Section 2.3.

Table 4. Research Tasks for RENs Study Second-Year Assessment

Evaluation Tasks	Description
Data Request	Submitted data requests to BayREN, SoCalREN and 3C-REN to acquire files that document the development and preparation of JCMs; any materials that represent research and or planning efforts in the process of developing their value metrics; and tracking data related to WE&T activities; WE&T marketing materials, course curricula, training materials and other WE&T program documentation; As part of this data request the RENs were asked to complete a WE&T data reporting form (Excel spreadsheet) to standardize the collection of information for all past 2018 and 2019 WE&T activities and any planned 2020 WE&T activities. Appendix B
Materials/Data Review	Reviewed responses to understand each REN's overlap with other PA's, value metrics development, and WE&T activities.
Joint Coordination and Overlap In-Depth Interviews with REN and PA Staff	Conducted in-depth interviews with REN staff and their implementation teams, as well as with PA staff that informed the Joint Coordination and Overlap Assessment.
Joint Coordination and Overlap Assessment	Assessed the JCMs and responses provided by IOU and PA staff during in-depth interviews to examine the degree of overlap, interaction, and cooperation among joint PAs.
Value Metrics Development	Worked with the RENs to explore how they are demonstrating unique value and provided feedback on their proposed metrics, data, and tracking methods to measure progress.
WE&T Interviews	Conducted in-depth interviews with REN staff and their implementation teams to explore their training efforts and other associated training activities.
WE&T Activity Data Analysis and Case Study Development	Analyzed REN data on training activities to create a comprehensive overview of each REN's training efforts and a comparison across RENs to understand how RENs are serving customers throughout California.

3. Joint Cooperation and Overlap Assessment

The following sections present an overview of REN JCMs, followed by a synthesis of insights and findings from the evaluation team's review of 2020 and 2021 JCMs, as well as our in-depth interviews with RENs and other PAs regarding their process for drafting the JCM's and coordinating efforts across EE program activities.

3.1 Joint Cooperation Memo Overview

On June 5, 2018, the CPUC issued D.18-05-041 which directed REN and IOU PAs with overlapping service areas to file annual JCMs that "demonstrate how they will avoid or minimize duplication" and "must explicitly identify and discuss how its activities are complementary and not duplicative of other PA's planned activities". In addition, joint PAs that include a REN are required to demonstrate in their JCMs that the REN's proposed activities meet at least one of the following criteria from D.12-11-015:

- Activities that utilities cannot or do not intend to uptake.
- Pilot activities where there is no current utility program offering, and where there is potential for scalability to a broader reach, if successful.
- Pilot activities in hard-to-reach markets, whether or not there is a current utility program that may overlap.

Table 5 below shows the combination of PAs that have jointly filed JCMs to the CPUC in each year since D.18-05-041 was issued.

Table 5. PAs Jointly Submitting JCMs by Program Year

JCM Joint PAs	PY 2019	PY 2020	PY 2021
BayREN and PG&E	✓	✓	✓
BayREN and MCE			✓
SoCalREN, SCE, and SCG	✓	✓	✓
3C-REN, SCG, SCE, and PG&E	✓	✓	✓
PG&E and MCE	✓	✓	✓

Currently the RENs are required to file JCMs on June 15 of each year. In our interviews, most RENs and PAs stated that the timeframe for filing JCMs is challenging because they are due shortly after annual reports, and submission as well as approval of annual JCMs are a prerequisite for consideration of ABALs, which are due on September 1 of each year. Although, most also seemed to either agree or understand that it would be difficult or impractical to shift the timeline. Consequently, PA's begin coordinating on the development of JCMs far in advance of the deadline to ensure there is enough time to discuss program changes, address any new areas of overlap, and advanced drafts of the document through multiple rounds of management and legal review. The key milestones and events that occur during the development of JCMs are generally consistent across joint PAs and include:

- Internal preparation in late January or early February, including initial outreach to joint PAs to schedule meetings, establish timelines, and review the previous year's JCM.

- A joint PA kick-off meeting in March or Early April.
- A first round of edits in March or April involving each of the PA's program leads documenting changes to the previous year's JCM. During this time, program leads coordinate with their other PA counterparts as needed to identify and discuss any potential conflicts or potential areas of overlap as well as areas of collaboration.
- One to two additional rounds of review in late April or early May, where the JCM is circulated again to each partner to provide feedback and any outstanding issues are addressed.
- A standard legal/regulatory review around late May or early June. In recent years this legal review has been brief as in most instances the JCM's have previously been filed and only new programs or substantial changes require thorough review.
- The lead PA files the JCM no later than June 15.

3.2 Joint PA Coordination

3.2.1 BayREN and PG&E

BayREN and PG&E have comparable programs in the Residential Single Family and Multifamily, Commercial, and C&S sectors. Table 6 below details these programs, which are discussed in their 2021 JCM.

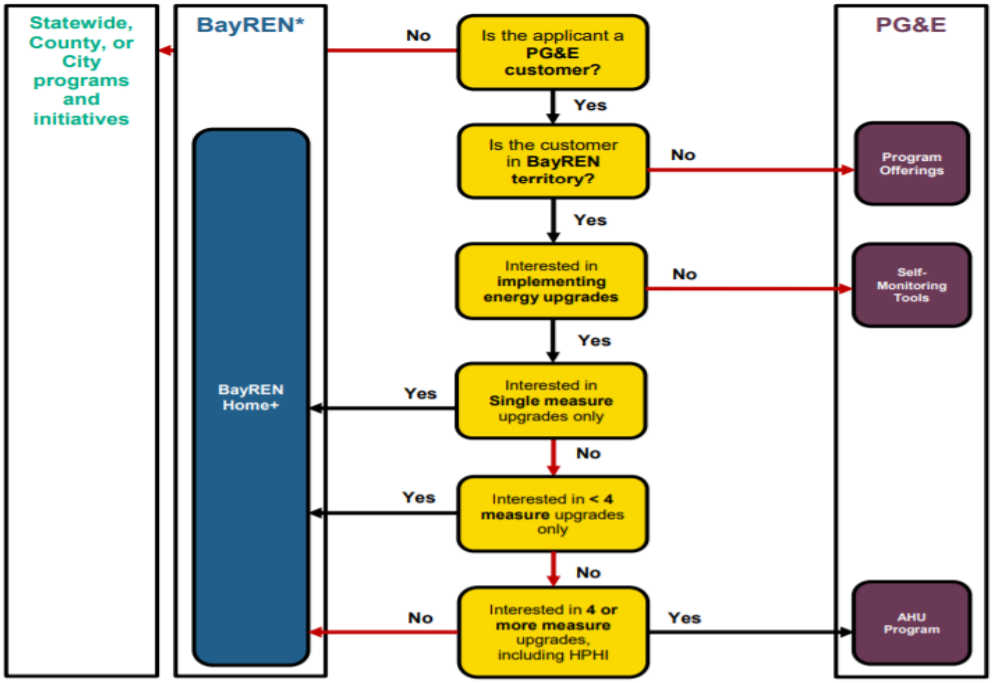
Table 6. BayREN and PG&E Comparable Programs by Sector

Sector	BayREN Comparable Programs	PG&E Comparable Programs
Residential - Single Family	BayREN Home+	Pay for Performance (P4P) Pilot; Plug Load and Appliances; Home Energy Checkup
Residential - Multifamily	Bay Area Multifamily Building Enhancement (BAMBE)	Energy Savings Assistance- Common Area Measures; Multifamily Upgrade Program
Commercial	BayREN Business	Hospitality Program; Energy Smart Grocer Program; Healthcare Energy Efficiency Program; Commercial Deemed Incentives Program; Commercial Calculated Program; Commercial HVAC Program;
Codes & Standards	BayREN C&S Program	PG&E C&S Program

Both BayREN and PG&E staff indicated in their in-depth interviews that their JCM development process has gone well for the last three years in a row. However, initially when developing the first JCM, BayREN was concerned by the potential for PG&E to implement a program across their entire service territory, of which BayREN was already offering something similar within its more limited territory. In retrospect, after they had an in-person meeting to discuss these concerns, the joint PAs were able to agree on the distinctions between their programs. Since that time, there have been no major disputes or difficulties regarding overlapping programs. PG&E staff also gave high praise to BayREN regarding their collaborative JCM development process. They stated that over the last two cycles good will has developed between the PAs, and PG&E has no concerns about working with BayREN to deliver a clear, collaborative, and compliant JCM.

Communication and coordination between these joint PAs does not end at the filing of the JCM. Although PG&E staff indicated that there were times early on when communication check ins were not happening frequently enough and at times there were questions regarding what needed to be shared between the PAs, these issues have been corrected and for over the past two years the parties have been meeting regularly. Bi-weekly meetings occur between BayREN and PG&E management to discuss contracts, payments, invoicing, and program implementation at a high level. Additionally, BayREN and PG&E program/sector leads meet monthly or quarterly depending on need. These meetings ensure that their JCM remains on track by addressing and documenting any issues that may arise in a timely fashion. In addition, they have developed coordination protocols for programs that warrant it, such as the Single Family Coordination Protocol Diagram illustrated in Figure 1. [11] Consequently, PG&E and BayREN can clearly articulate to customers the differences between their programs, as detailed in the JCM, which results in an improved customer experience.

Figure 1. BayREN and PG&E Single Family Program Coordination Protocol Diagram



NOTE: (1) BayREN Energy Advisors will remain a resource for customer questions, regardless of the program they participate in. (2) BayREN Energy Advisors will direct customers to Home Energy Score, described in the sections below, to support the BayREN customer journey and in-home assessment offerings. (3) Energy Advisors will continue to support customers through the renewable or non-EE measure process in order to develop a long-term customer relationship and ensure program completion based on available program offerings.

One factor that appears to have made the JCM process easier for BayREN and PG&E is that BayREN has generally had a consistent set of programs, and in some cases such as the Green Labeling and the water savings programs, PG&E had no similar offerings. However, just as other PAs mentioned in their interviews,

[11] Figure 1: Coordination Protocol for Single Family Programs, 2021 BayREN and PG&E Joint Cooperation Memo, p.8. Available on CAEECC.

both BayREN and PG&E signaled that PG&E's solicitation of third-party implementers[12] for its programs made the 2021 JCM much more difficult than past years because it was impossible to identify at the time whether there is any overlap between the new third-party implementation proposals and the REN's planned activities. The joint PAs did attempt to minimize this risk by having PG&E include a line in their RFP for third-party implementers to require all bidders to explain how they will coordinate with the RENs and address potential overlap. This is a good example of how strong communication and coordination among PAs, developed in part by the JCM process, can facilitate the avoidance and/or minimization of program duplication, even in the light of uncertainty from the ongoing transitions within the EE portfolio.

3.2.2 BayREN and MCE

BayREN and MCE have comparable programs in the Residential Single Family and Multifamily, and Commercial sectors. Table 7 below shows these programs, which are covered in their 2021 JCM.

Table 7. BayREN and MCE Comparable Programs by Sector

Sector	BayREN	MCE
Residential - Single Family	BayREN Home+	SF Direct Install (Stand Alone)
Residential - Multifamily	Bay Area Multifamily Building Enhancement (BAMBE)	Multifamily Comprehensive Program; Multifamily Direct Install Program
Commercial	BayREN Business	Commercial Upgrade Program

The 2021 JCM was the first JCM between BayREN and MCE, whereas previously BayREN and MCE had developed a JCM with PG&E each year since 2019. As discussed earlier in section 3.1, joint PAs that include a REN must meet an additional layer of requirements. During the in-depth interviews the evaluation team learned that both parties entered into the process thinking that it would be easier and less time-consuming than it was. The process of developing this JCM did not go as smoothly as anticipated because the JCM requirements MCE was accustomed to fulfilling with PG&E in previous cycles are not the same as those BayREN was accustomed to fulfilling in its JCM with PG&E. The Joint PAs did not think through in advanced these differences, resulting in a mismatch in expectations regarding the additional REN-centric reporting requirements which could've been mitigated by better planning. Additionally, these issues were further compounded by COVID-19 related issues that caused delays and prevented a face-to-face meeting that has traditionally been helpful in planning out the process. When asked to reflect on the process, BayREN suggested that a more formal process and an earlier start date would have improved the process. It is also important to note that, as discussed in more detail in section 3.3, based on in-depth interviews across PAs, the first cycle of filing a JCM appears to be much more difficult. Fortunately, the process seems to become easier in subsequent cycles as expectations become clearer and more frequent coordination occurs.

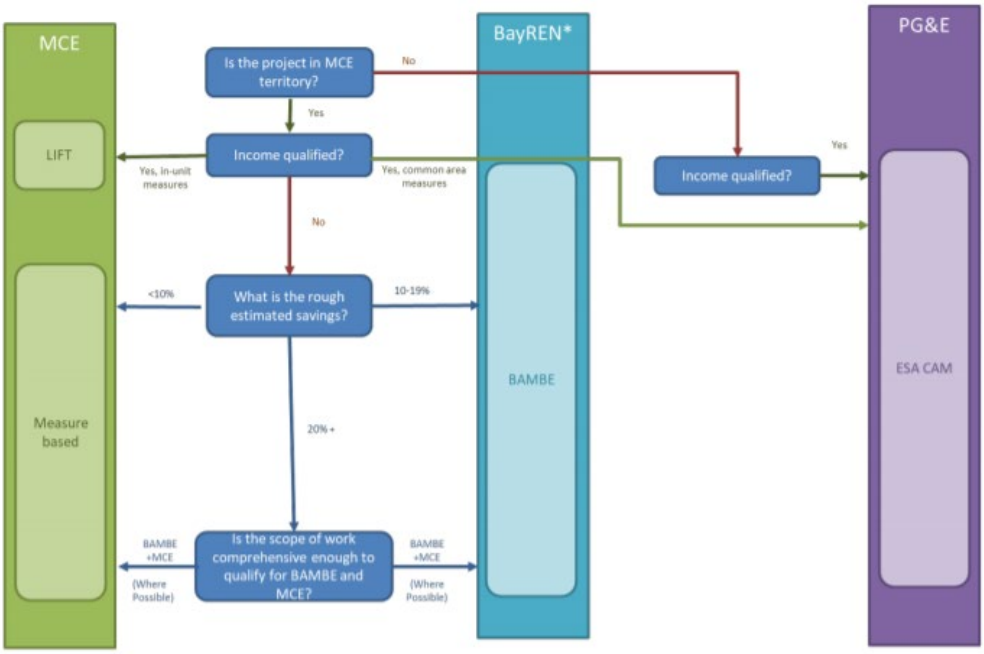
Another contributing factor, according to BayREN, was that this partnership had more potential for overlapping programs than with PG&E. As a result, BayREN and MCE had to come to an understanding on how they would jointly avoid or minimize customer confusion. Their similar single family programs provide an example, with BayREN's Home+ program and MCE's (stand-alone) Single Family Direct Install program having overlapping measures and target audiences. The solution they agreed upon was for BayREN to not target customers in those communities being targeted by MCE, with the caveat that if a customer in the service territory reached out to BayREN, then that customer would still be eligible for the program. Additionally, both PAs continue to

[12] "PG&E is working to outsource 25% of its portfolio to 25% third-party implementers by June 2020, and 40% of the portfolio to third-party implementers by December 2020.As a result, many programs will be ramping down in 2020 and there are many unknowns about the programs that will be onboarded through solicitations by the end of 2020." 2021 PG&E and BayREN Joint Cooperation Memo, p. 2. Available on CAEECC.

direct customers to the other's program when a customer is interested in that other program offering or if they are a better fit for the other program.[13]

The joint PAs followed a similar approach for the multifamily sector, including BayREN's BAMBE and MCE's Multifamily Comprehensive and Multifamily Direct Install Programs. For these programs, BayREN performs intake on leads for both programs and the joint PAs share a technical assistance provider who determines which program is a better fit for the customer.[14] Figure 2 below illustrates the joint PA's referral tree for these programs.[15] These compromises demonstrate how the JCMs are successfully fostering collaboration that reduces customer confusion, optimizes customer experience, and creates a more complementary set of regional programs.

Figure 2. BayREN and MCE's Multifamily EE and Low-Income Program Referral Tree



*The Program Administrators represented in this referral tree also coordinate on programs and activities that are outside of the EE portfolio.

Although this was BayREN and MCE's first JCM together, MCE noted that they have collaborated on programs in years prior. For example, MCE and BayREN developed a robust coordination plan to jointly serve the multifamily sector. Similarly, on non-residential programs, MCE and BayREN have been holding monthly calls since 2018 to coordinate on the planning and implementation of two commercial programs. Under the more formal JCM arrangement, the joint PA's program teams hold monthly calls to review program results, as well as discussing future program planning, new partnerships, and potential areas of overlap or collaboration. MCE indicated that this frequent engagement has furthered the organizations' informal partnership and has provided a great opportunity for both PAs to strengthen and improve their program offerings. For example, the joint PAs have been exploring variations of commercial normalized metered energy consumption (NMEC) programs, and their monthly calls present a chance to discuss processes, rules, contracts, and other issues.

[13] 2021 MCE and BayREN Joint Cooperation Memo, p.5. Available on CAEECC.
[14] 2021 MCE and BayREN Joint Cooperation Memo, p.7. Available on CAEECC.
[15] Figure 1: Multifamily EE and Low-Income Program Referral Tree, 2021 MCE and BayREN Joint Cooperation Memo, p.8. Available on CAEECC.

3.2.3 SoCalREN, SCE, and SCG

SoCalREN, SCE and SCG have comparable programs in the Residential Multifamily, Public, WE&T, and Commercial sectors. Table 8 below details these programs, which are discussed in their 2021 JCM.

Table 8. SoCalREN, SCE and SCG Comparable Programs by Sector

Sector	SoCalREN	SCE	SoCal Gas
Residential Multifamily	SoCalREN Multifamily Program	Multifamily Energy Efficiency Rebate Program	SoCal Gas Home Upgrade Program
	SoCalREN Residential Loan Loss Reserve (Multifamily Finance Program)	SCE New Finance Offerings	SoCal Gas New Finance Offerings
Public	Public Agency EE Project Delivery Program	SCE Public Sector Programs	SoCal Gas Public Sector Programs
	Public Agency NMEC Program	SCE Public Sector Performance Based Retrofit High Opportunity Program	SoCal Gas High Opportunity Projects and Program- Metered and Performance-Based Retrofits Program
	SoCalREN Public Agency Revolving Loan Fund (RLF)	SCE On-Bill Financing (OBF)	SCG Statewide Finance Program-On-Bill Financing (OBF)
Workforce Education and Training	SoCalREN WE&T Program	SCE WE&T Integrated Energy Education & Training Program	SoCal Gas WE&T Integrated Energy Efficiency Training
Commercial	Healthy Stores Refrigeration Energy Efficiency (HSREE) Program	SCE Commercial Core Offerings	SoCal Gas Commercial Energy Efficiency Rebate Programs

Similar to the sentiment expressed in the preceding BayREN sections, SoCalREN, SCE, and SCG agreed that the first cycle of developing the JCMs was the most challenging. For instance, SCE staff expressed that in the first JCM the RENs led the process, while the IOUs gave feedback. As a result, SCE staff indicated that the IOUs voices were missing from the initial draft, which needed revisions to make it into a truly joint document. For subsequent years this has not been an issue, as all the PAs indicated that since then the successive JCMs have not been too difficult to complete. Low variability in PA programs and regular coordination were cited as the primary reasons. Also echoing the previous subsections, the three PAs indicated that the first cycle required greater legal and regulatory review, while subsequent cycles have enjoyed quicker legal and regulatory review times due to standardization of the document.

Like other PAs, SoCalREN, SCG and SCE all expressed concern that the introduction of the IOU's new third-party programs has made the JCMs more challenging to prepare. The issue is that if a third-party proposes a program with overlap, a PA cannot discuss it with anyone outside of that proposer's group since it is considered privileged intellectual property. Consequently, the joint PAs enter into the process of crafting the JCM uncertain about whether portions of their portfolio face potential overlaps with these third-party programs. As a result, there is a risk that the RENs will unknowingly propose overlapping or duplicative activities as some third-party implementer. However, the joint PAs currently feel there is not much that can be done about this due to confidentiality rules. Consequently, any future unpredictable overlap or duplication will have to be negotiated once the solicitations close and, depending on timing, may have to be worked out in-between JCM cycles.

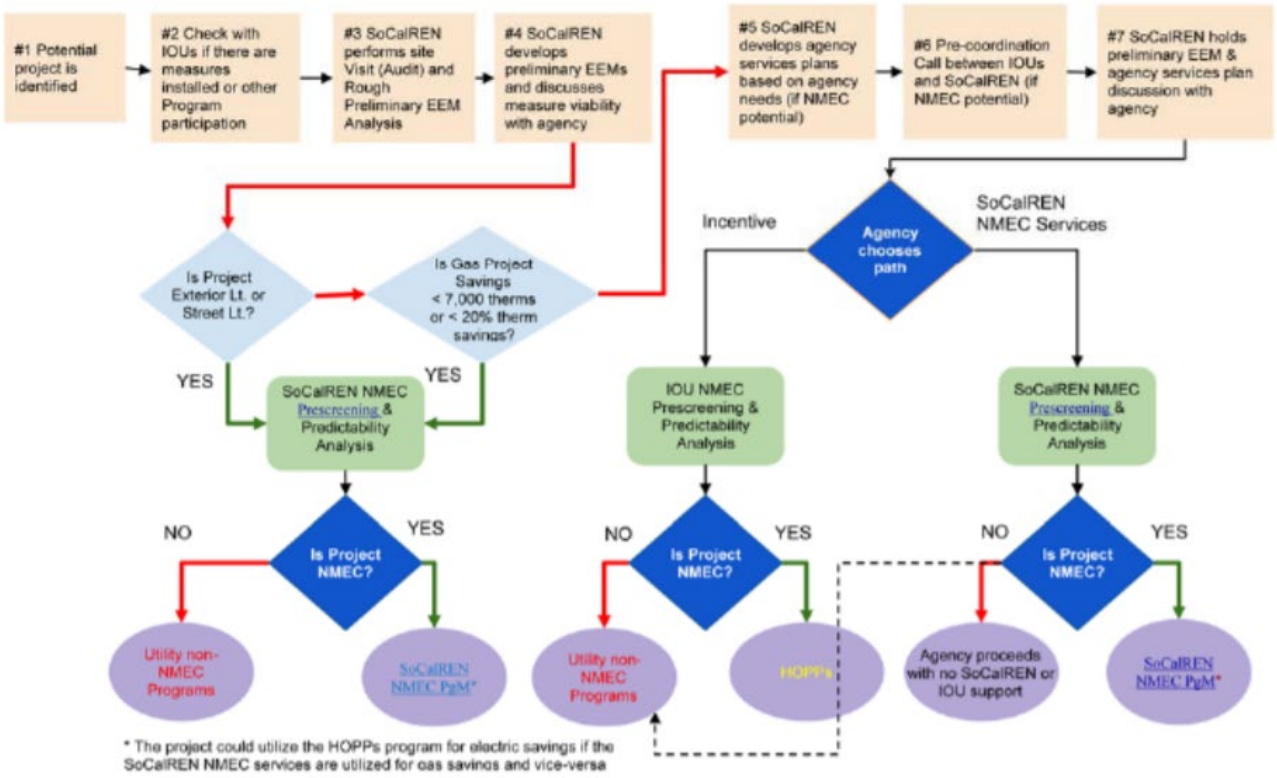
SoCalREN staff recalled that some sectors or programs started coordinating across PAs in 2013, before the advent of JCMs. SoCalREN, SCG and SCE's Joint Partnership recognized early on the benefit of on-going coordination throughout the year. So, they established a portfolio coordinating committee with high-level staff from each of the PAs. This portfolio coordinating committee handles the high level coordination , while details are handled by sector-specific technical coordinating committees composed of program managers from each of the PAs, as well as representatives from third-party contractors. These technical coordinating committees meet to discuss plans, updates, and how to best leverage resources. If any issues are identified, then the technical committee elevates it to the portfolio committee, and if the portfolio committee cannot resolve it, then it gets elevated to Energy Division. Historically these technical coordinating committees met monthly, but now some sectors, such as residential and finance, are needed less frequently. Other coordinating committees such as the public sector program continue to require frequent touchpoints, since SoCalREN channels a sizable number of projects through SCE and SCG's programs.

According to SCE staff, the joint PAs usually identify issues with duplication before programs launch. When that happens, they have a discussion. The SoCalREN Public Agency NMEC program provides an example of how the joint PAs addressed the overlap with SCE's HOPPS program. To solve that issue they had a kickoff meeting, several follow-up meetings, and ultimately created a decision tree, shown in Figure 3 below[16], which determines what happens for a given project and whether it will end up in a SoCalREN program or one of the IOUs' programs.

Another instance of coordination, highlighted by SoCalREN staff, described an issue with the multifamily program, which appeared to be duplicative to the multifamily programs both SCE and SCG were offering. Consequently, SoCalREN had to find ways to differentiate through different incentive levels, measures, program structure, and implementation differences. Once SCE stopped offering their multifamily program, no gap remained because SoCalGas does not offer electricity. However, other overlaps between SoCalREN and SCG continue, so the two have worked to implement and market their programs differently, which allowed the PAs to differentiate their programs to avoid overlap. In addition, such as if a customer is only interested in natural gas measures, then SoCalREN will refer them to SCG's program. This is an example of where a dynamic EE portfolio requires continuous adjustments each cycle to deal with program overlap. It also points out the importance of tracking the non-resource activity data necessary for the RENs to demonstrate their involvement and to claim appropriate credit for their contribution to gross energy savings.

[16] NMEC Decision Tree, SoCalREN, SCG, and SCE 2021 Joint Cooperation Memo, p.89. Available on CAEECC.

Figure 3. SoCalREN and IOU Public Agency NMEC Decision Tree



3.2.4 3C-REN, SCG, SCE, and PG&E

3C-REN, SCG, SCE and PG&E have comparable programs in the Residential (Direct Install), WE&T, and C&S sectors. Table 9 below shows these programs, which are covered in their 2021 JCM.

Table 9. 3C-REN, SCG, SCE and PG&E Comparable Programs by Sector

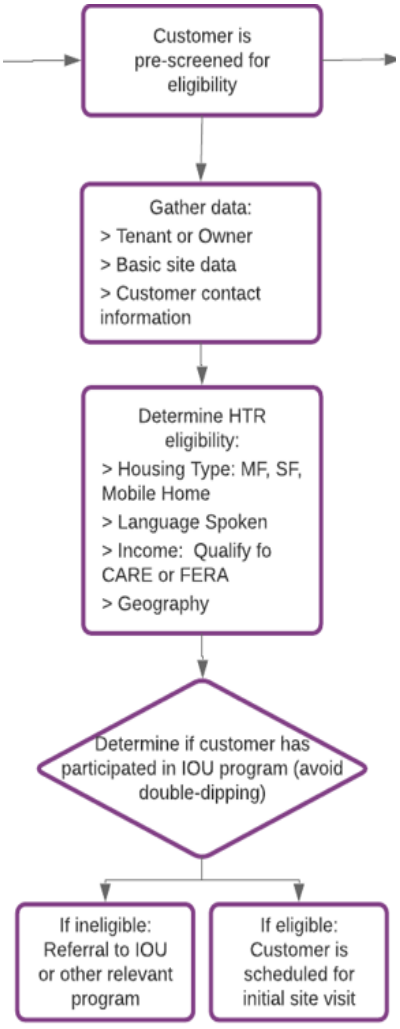
Sector	3C-REN	PGE	SCE	SoCal Gas
Workforce Education and Training	3C-REN WE&T Building Performance Training	PG&E WE&T Integrated Energy Education & Training (IEET)	SCE WE&T Integrated Energy Efficiency Training (IEET)	SoCalGas WE&T Integrated Energy Education Training (IEET)
Codes & Standards	3C-REN C&S Energy Code Connect	Statewide C&S Compliance Improvement Subprogram	Statewide C&S Compliance Improvement Subprogram	Statewide C&S Compliance Improvement Subprogram
Residential	Home Energy Savings Program	PG&E Residential Direct Install (formerly Energy Upgrade California – MIDI)	Multifamily EE Rebate Program	SCG Residential Direct Install Program

Early in the first cycle of developing a JCM, 3C-REN, SCG, SCE and PG&E held frequent meetings to set up processes to minimize duplication and avoid double counting of savings. 3C-REN, SCG, and SCE recalled that the primary challenge during this time was coming to an agreement on a process for coordinating the activities of their four comparable residential direct install programs.[17]

The joint PAs explored the possibility of using real time validation, but in the end, it proved too difficult to align internal capabilities across all parties. They also found it impractical for 3C-REN to access three different IOU systems to look up customers and see what programs they were already participating in. It was also unworkable for the implementing contractors to have to wait for a utility to respond if there is a redundancy. Because 3C-REN's program is limited to low-cost direct install measures, the REN wanted to avoid unnecessarily utilizing an expensive, rigorous project validation process. Therefore, the joint PAs worked out a system where the validation occurs on the backend, but they have agreed to do a utility evaluation to determine what percentage of measures double dip, and an issue with double dipping arises they will implement a more rigorous validation process. They also agreed that for any change in measure mix, they will re-examine the potential for overlap prior to implementation.

On the front end, 3C-REN asks the customer to verify the IOU that serves them. 3C-REN then confirms the type of equipment to be installed and notifies the appropriate IOU who then checks their database to determine if the customer has received these services in the last five years, thereby limiting the potential for double-dipping. During this process, a 3C-REN Energy Advisor helps the customer to determine if the 3C-REN program is the best choice or if the customer would be better served by one of the IOU programs. Figure 4 from 3C-REN's Residential Direct Install Supporting Documents illustrates this upfront customer pre-screening process.[18] it provides yet another example of how RENs and IOUs' successfully work together to develop processes that reduce customer confusion and ensure their programs avoid any customer double dipping on incentives.

Figure 4. 3C-REN Residential Direct Install Customer Pre-screen



Although this group of joint PAs met frequently during the first year as they were setting up processes to avoid double counting of savings, they now typically meet ad-hoc. 3C-REN and the IOUs have less frequent meetings than the other joint PAs because 3C-REN is currently operating fewer programs and because the joint PAs find that most communication can be handled via informal but frequent phone calls and emails. While the JCMs are developed equally, SCG leads IOU coordination with RENs as the fiscal agent. The other PAs expressed appreciation for SCG playing this role. 3C-REN particularly appreciated that the IOUs tend to discuss topics and issues amongst themselves, coming to a consensus among the IOUs prior to engaging 3C-REN, which helps to streamline larger coordination efforts across this large group of Joint PAs.

[17] The four comparable residential direct install programs include 3C's Home Energy Savings Program, SCE's RES DI (formerly Energy Upgrade California – MIDI) and Multifamily EE Rebate Program, as well as SCG's Residential Direct Install Program. 2021 3C-REN, SCG, SCE and PG&E 2021 Joint Cooperation Memo, p.14. Available on CAEECC.

[18] Figure: 3C-REN Residential Direct Install Process Flowchart, 3C-REN Residential Direct Install Supporting Documents, October 3, 2018, p.9. Available on CEDARS.

3.3 Mitigating Potential Duplication

In order to examine the degree of overlap and determine whether the RENs are providing duplicative programs and offerings to their customers, the evaluation team reviewed the most recent and previous JCMs and then interviewed each of the RENs as well as representatives from the IOUs and MCE. The evaluation team finds that the JCMs clearly articulate which programs are comparable and that the memos do an adequate job of explaining the differences among comparable program offerings, as well as illustrating some of the coordination that takes place among PAs. The JCMs also detail which D.12-11-015 REN criteria each REN program fulfills, as summarized in Table 10 below.

Table 10. REN Programs' Compliance with D.12-11-015 Criteria

REN	Sector	Programs	D.12-11-015 REN Criteria		
			1. Activities that Utilities Cannot or Do Not Intend to Undertake	2. Pilot Activities where there is no current utility undertaking, and where there is a potential for scalability to a broader geographic reach, if successful	3. Undertaking pilot activities in hard-to-reach markets, whether or not there is a current utility program that may overlap
BayREN	Residential – Single Family	BayREN Single Family (BayREN08)	✓	✓	
	Residential – Multifamily	Bay Area Multifamily Building Enhancement (BAMBE) (BayREN02)	✓	✓	
	Residential	BayREN Green Labeling (BayREN07)	✓	✓	
	Commercial	BayREN Commercial (BayREN06)		✓	✓
	Codes &Standards	C&S (BayREN03)	✓	✓	
	Cross Cutting	BayREN Water Energy Nexus (BayREN04)	✓	✓	
3C-REN	WE&T	3C-REN WE&T Building Performance Training (3C-WET-001)	✓		
	C&S	3C-REN C&S Energy Code Connect (3C-CC-001)	✓		
	Residential	Direct Install Home Energy Savings Program (3C-R-001)			✓
SoCalREN	Residential-Multifamily	Multifamily Program (SCR-RES-A1)	✓		✓
		Residential Community Coordinator Program (SCR-RES-A2)	✓	✓	✓
	Public	Energy Efficiency Project Delivery Program (SCR-PUBL-B1)	✓		
		Public Agency NMEC Program (SCR-PUBL-B3)	✓	✓	✓

		DER DAC Public Delivery Program (SCR-PUBL-B2)	✓	✓	✓
	Cross Cutting	Public Agency Revolving Loan Fund (RLF) (SCR-FIN-C1)	✓	✓	
	Cross Cutting	Residential Loan Loss Reserve (SCR-FIN-C2)		✓	✓
	WE&T	Workforce Education &Training (SCR-WET-D1)	✓	✓	✓
	Commercial	Healthy Stores Refrigeration (HSREE) Program (SCRC-OM-E1)	✓	✓	✓

None of the PAs raised concerns about current programs being duplicative during our JCM interviews. The evaluation team's impression from these interviews is that although at times specific topics may be contentious, the joint PAs reported that they are generally content with the agreed upon communication practices, customer screening protocols and decision trees that they have established to avoid duplicative offerings. Moreover, all PAs interviewed for this study stated that while the Energy Division has been responsive and available during JCM development when necessary, to their knowledge no concerns regarding the JCM's have been raised by the Energy Division in response to these filings. The consensus impression among the PAs indicates that because they have received no feedback to the contrary, they all feel that the Energy Division is satisfied by the process and that there are no major concerns with the level of documenting program overlap and approaches to differentiating the programs amongst the PAs that collaborate on the filing of the JCM, hereafter referred to as joint PAs. Based on our review of the JCMs and evaluation activities, the evaluation team agrees the level of documentation appears to conform with CPUC requirements.

Based on our review, the evaluation team finds that the JCM process has been successful at increasing communication and coordination across joint PAs as they attempt to avoid duplication, minimize customer confusion, and prevent double dipping of incentives. If Energy Division is interested in a more quantitative appraisal, future assessments could be conducted to quantitatively measure the degree of customer confusion through participant surveys and/or duplicative savings from impact evaluations.

In addition, our interviews uncovered several potential risks that should be watched closely since they may result in future program duplication. These risks include:

- **Rollout of new third-party programs.** Although at the time of this evaluation it was too early to determine if there will be significant overlap in program design between the new third-party implementation proposals and the RENs, during our in-depth interviews most of the RENs expressed concern that due to confidentiality rules the IOUs cannot disclose whether there is any potential for overlap between RENs and the new third-party programs, and there is no current way to address these matters in the JCM process. This uncertainty could jeopardize some of the RENs' programmatic activities, especially REN programs that do not serve hard-to-reach markets. This has the potential to stifle innovation since the RENs could invest time and effort in new program design and later learn that a third party proposed an overlapping activity.
    - The evaluation team recommends that any potential overlap with REN offerings from new third-party programs should be raised through existing communication channels between the relevant parties immediately when the IOU is legally able to share such information. In addition, language should be included in future third-party solicitations and/or contracts to require these parties to address how they plan to minimize overlap and coordinate with existing RENs.
- **Emergence of new Program Administrators with overlapping territories.** As more organizations seek CPUC approval to administer EE programs, the likelihood of overlapping service territories increases.

This further adds to the complexity of California's EE portfolio and will require existing and new PAs to increase their coordination efforts and remain vigilant in customer screening and validation protocols to mitigate customer confusion and avoid double counting of incentives. When joint PAs file a JCM for the first time, they historically run into challenges and should anticipate the process to take longer than it does for joint PAs who have filed together previously. Existing PAs should reach out to potential new PAs as early as possible to discuss how to mitigate duplication, customer confusion, and incentive double counting. Accordingly, any new joint PAs should plan to begin JCM preparation in early January and schedule a formal process and timeline that paces the effort appropriately from kick-off to the submission due date to ensure that sufficient time is allocated to address any unexpected issues that may arise. During scheduling the PAs should also reserve ample time for the document to pass through multiple rounds of edits by all involved parties including reviews by management, legal and regulatory reviewers.

- **Growth of EE and DER programs offered by entities that do not utilize public benefits funds (non-PAs).** California's energy landscape continues to evolve rapidly, with at least 14 non-PA CCAs offering EE, DER, and/or greenhouse gas (GHG) reduction programs as well as 40 municipal utilities[19] that reported EE saving to the CEC in 2019. Many of these programs are not administrated or claimed by the ratepayer funded PAs, but they share similar attributes, including participating customer and contractors. Although these entities may not fall under the CPUC's regulatory jurisdiction, these programs have considerable potential to create overlapping and duplicative programs. As of now there is no formal process or procedure for coordinating with these entities. Although the PA's reported mixed results when coordinating informally with these entities, they should be encouraged to expand the scope of their coordination with these emerging entities' programs. It may be the difference between building popular new programs that leverage multiple resources to drive energy, cost and GHG reductions or inadvertently creating programs that compete with non-PA programs for participants and savings. One such success story that exemplifies this opportunity is the Sonoma Clean Power and PG&E Advanced Energy Rebuild program, which was showcased in a separate evaluation.[20]

- **Uncertainty concerning the priority and precedence of unique program offerings.** Some of the PAs indicated that they feel uncertain regarding the precedence of programs among joint PAs. Clearly statewide programs are of primary importance, but it is less clear what happens to currently existing REN program offerings, that were unique at the time of their creation, when new offerings by IOUs, CCAs, or third-party implementers reach the market thereby rendering the REN program duplicative. In other words, while it is clear that new third-party programs must coordinate with the PAs, it is somewhat unclear what happens if a REN has a pre-existing program and then a non-REN PA decides to offer a similar program. As it stands, representatives of some of the PAs interviewed were interpreting the decision language that the onus is on the RENs to either point out the differences or modify their program, and if they cannot, then it seems they can no longer offer the program. The backstop for this is that RENs can continue to offer these programs as long as they are using them to serve hard-to-reach customers, which may not be a viable option for all programs or PAs. The evaluation team recommends that the CPUC address the current asymmetry between the subordinance of existing REN programs and the primacy of programs offered by other PAs. Specifically, the team suggests clarifying the priority of program offerings and stating the CPUC's preferred procedures and outcomes for when new program offerings are introduced into the market by any party

[19] Table 5. EE Program Results by Utility, Energy Efficiency in California's Public Power Sector 15th Edition – 2021. https://www.cmua.org/files/2021%20%20Joint%20POU%20EE%20Report.pdf.

[20] Group B, Deliverable 33 Case Study 2, Sonoma Clean Power and PG&E's Advanced Energy Rebuild Program, Opinion Dynamics and Tierra Resource Consultants, August 27, 2019. This study is available on Energy Division's Public Document Area.

and the new offering overlaps with pre-existing programs offered by either RENs or other PAs. This clarity should help minimize confusion and avoid the unnecessary expenditure of ratepayer dollars on the creation of duplicative new programs.

4. Value Metrics

On December 5, 2019, the Commission's D.19-12-021 called upon the RENs to demonstrate the unique value that they are providing. In the discussion section of D.19-12-021 the CPUC requested that RENs "state their desired outcome from activities that fill gaps of other PAs [...] and propose savings goals and metrics associated with their unique value, as well as a methodology for measuring progress toward their metrics."[21] In light of this decision, Energy Division asked the evaluation team to provide recommendations regarding best practices for establishing and collecting metrics that the Commission should consider when evaluating the RENs on the "value metrics" portion of their unique value proposition. The idea was not to insert third party evaluators into the RENs' decision-making process in terms of complying with the recent decision. Rather it recognizes that while each REN may be pursuing a different path, the CPUC desires an evaluation-oriented perspective regarding the types of tracking and performance information that it may want to direct the RENs to collect and report. This may go towards supporting Energy Division-sponsored retrospective evaluation efforts starting in 2021 or thereafter.

In response to this directive, the evaluation team conducted in-depth interviews with staff from each of the RENs, to learn about their perspectives on how their REN is contributing in a unique way, the most appropriate metrics to assess their efforts, as well as the current state of operations and forward-looking plans for the near-term and long-term time horizons. As part of this process, we also worked with them prior to their submission of the 2021 ABALs, as well as in some cases also meeting with their consultants, to review, identify gaps and provide recommendations on their draft value metrics and methodologies for collecting data. Based on these tasks, the subsequent subsections provide:

- An overview of the process the RENs used to develop their value metrics and methodologies.
  - Recommendations regarding best practices for establishing and collecting metrics that were provided in our various engagements with each RENs prior to filing their 2021 ABALs.
- The REN's perspectives on how their programs are contributing in a unique way to the EE portfolio.
- A summary of the draft metrics the RENs propose to demonstrate their unique value.
  - How the RENs anticipate measuring progress towards their proposed value metrics.
- An assessment of the evaluability of these value metrics and methodologies for supporting Commission-sponsored retrospective evaluation efforts starting in 2021 or thereafter, including:
  - Recommendations on what types of metrics the CPUC would consider to assess whether the RENs are meeting the criteria adopted for them in D.19-12-021?

[21] D.19-12-021, p. 30.

4.1 SoCalREN

4.1.1 Value Metrics Development

SoCalREN began their value metrics development by conversing with their third-party implementers about the unique activities they conduct, the metrics they already collect, and possible additional metrics to track. From those conversations, SoCalREN identified numerous potential metrics, and, in the process, better articulated their unique value proposition as a REN. This process identified six gap-filling activities, described in Table 11, that later served as the foundation from which SoCalREN developed its five core values.[22]

Table 11. SoCalREN's Gap Filling Activities

Comprehensive and Persistent Support	High Engagement Through Multiple Touchpoints	Focus on DACs, HTR, Underserved	Continuing EE Education	Quick Ramp-Up	Ability to Leverage Other Financing Options
▪ Turnkey support and solutions ▪ One-Stop-Shop ▪ Procurement and Construction support ▪ Persistence of Savings Support ▪ Support for Gas and Electric Measures	▪ Dedicated Project/Account Managers ▪ Collaborate with regional experts to better engage with local communities	▪ Increase participation from of Underserved groups ▪ Develop and distribute in-language materials ▪ Specialized recruitment, training, and support for MWDBE/HTR Contractors ▪ Targeted marketing, education, and outreach to Underserved groups	▪ Capacity Building ▪ Peer to Peer Learning ▪ Mentoring/Coaching ▪ Customer Education ▪ Network Toolkit	▪ Piloting Programs and Services ▪ Inside knowledge via regional partners and advisory committee ▪ Introducing Programs that meet current and future needs	▪ Financing support via non-ratepayer funds ▪ Additional grant Funding for Innovative Programs

The process then shifted from identifying program level metrics to identifying program level unique value propositions common across SoCalREN's EE portfolio and tying them back to the SoCalREN business plan, mission, CPUC adopted directives for RENs, and the State's overarching climate goals. These common links helped SoCalREN to form their core values. They then confirmed these values by asking their implementation teams to independently define the values to ensure a shared sense of definition and understanding between SoCalREN's staff and its implementation teams. SoCalREN's final core values are presented in more detail in Figure 5 of the subsequent section.

[22] Figure 2. SoCalREN's Unique Value Proposition: Gap Filling Activities, SoCalREN's 2021 ABAL, September 1, 2020, p.67/110 or attachment F-3. Document available at CAEECC.

Draft Value Metric Feedback

On July 24, 2020, the evaluation team met with SoCalREN staff to review multiple slide decks that SoCalREN had prepared to discuss their unique activities and core values, as well as specific proposed value metrics for their WE&T, residential, and public sector offerings. The conversation covered a considerable number of topics. This subsection summarizes the most salient of these, as well as several of the evaluation team's recommendations.

Overall, SoCalREN's core values and associated metrics appeared well considered, thorough, and comprehensive. As discussed during the meeting, SoCalREN's core values included:

- Building capacity and energy competency
- Energy climate goals
- Economic resilience
- Equity
- Innovation

The evaluation team encouraged SoCalREN to articulate for stakeholders why each of their five foundational values are important for achieving not only their own goals but also those of the CPUC, State of California, and the local governments they serve. Furthermore, it the team encouraged them to articulate how well integrated SoCalREN's programs are with their goals and objectives. For example, SoCalREN staff discussed their intricate relationship with public agencies and how they are more than just a customer segment, but rather an integral partner that SoCalREN works with to bring value to local communities. SoCalREN also explained the unique value their advisory committee and regional partners add to their programs. This interconnectedness to local communities is a clear strength and differentiator from the IOUs, which highlights how SoCalREN utilizes these resources as an expansive tool to fill gaps in the EE portfolio.

During the meeting with the evaluation team, SoCalREN also devoted considerable time to explaining their proposed metrics for each program and how the metrics relate to the five core values. One detail that reflected the considerable effort invested in creating their metrics was the clearly specified numerator and denominator level inputs for the proposed metrics. For instance, rather than only proposing to measure program influence on customer decisions based on program participant surveys and net to gross interviews, SoCalREN proposed additional metrics based on the number of actual EE measures recommended to the customer versus the number ultimately installed, as shown below:

- Percent of recommended energy efficiency measures completed at participating properties.
  - Ex. Recommended 555 EE measures / Installed 300 EE measures = 54%
- Percent of recommended energy savings completed at participating properties.
  - Ex. Recommended 5,000,000 Net kWh savings / Installed 2,000,000 Net kWh = 40%

In all SoCalREN created more than 50 PowerPoint slides to discuss their core values and the metrics for each program. While the detail was very useful for the meeting with the evaluation team, and for the subsequent process of preparing the 2021 ABAL, the evaluation team recommended condensing the materials into a

simpler format for SoCalREN's broad range of stakeholders. Other evaluation team recommendations included aligning value metrics with goals, business plan and PTLMs since the draft slides shown did not yet clearly articulate their relationships. For instance, one suggestion was to refine and organize their content in the following order:

1. State the vision of SoCalREN based on the business plan.
2. Clarify SoCalREN's primary and subgoals based on the business plan.
3. Define SoCalREN's foundational values.
4. Discuss strategies for accomplishing the goals, based on the business plan and PTLMs, and then discuss how they support one or more of the unique values SoCalREN provides.
5. Describe the objectives of the strategies, likely in the PTLMs, and then discuss how they support one or more of the unique values SoCalREN provides.
6. Define outcomes, likely in the PTLMs, and then discuss how they support one or more of the unique values SoCalREN provides.
7. Create metrics, or use those already in business plan or PTLMs, and then discuss how they support one or more of the unique values SoCalREN provides.

The evaluation team also encouraged SoCalREN to include more details on this process when they present their value metrics to stakeholders, in particular the following:

- Holding multiple working group meetings where different sector teams brainstormed lists of the unique activities they were doing, and the various metrics they already are and could be tracking.
- Conducting a review of over 200 metrics across all sectors, to identify their 5 core value pillars that were common across the entire portfolio.
- Asking their teams to go back to their list to see if and where their metrics and activities fit into these values.

These elements of their process reflect the detailed approach SoCalREN took to define its value metrics. It also underscores how intertwined their five foundational values are with each other, with their value metrics and with their gap-filling activities. The evaluation team recommended visually showing how these unique activities map across program offerings through infographics that succinctly illustrate how the elements relate, particularly linkages between PTLMs and the unique value SoCalREN provides.

In addition to these higher-level ideas, the evaluation team also recommended many small or specific changes, including but not limited to:

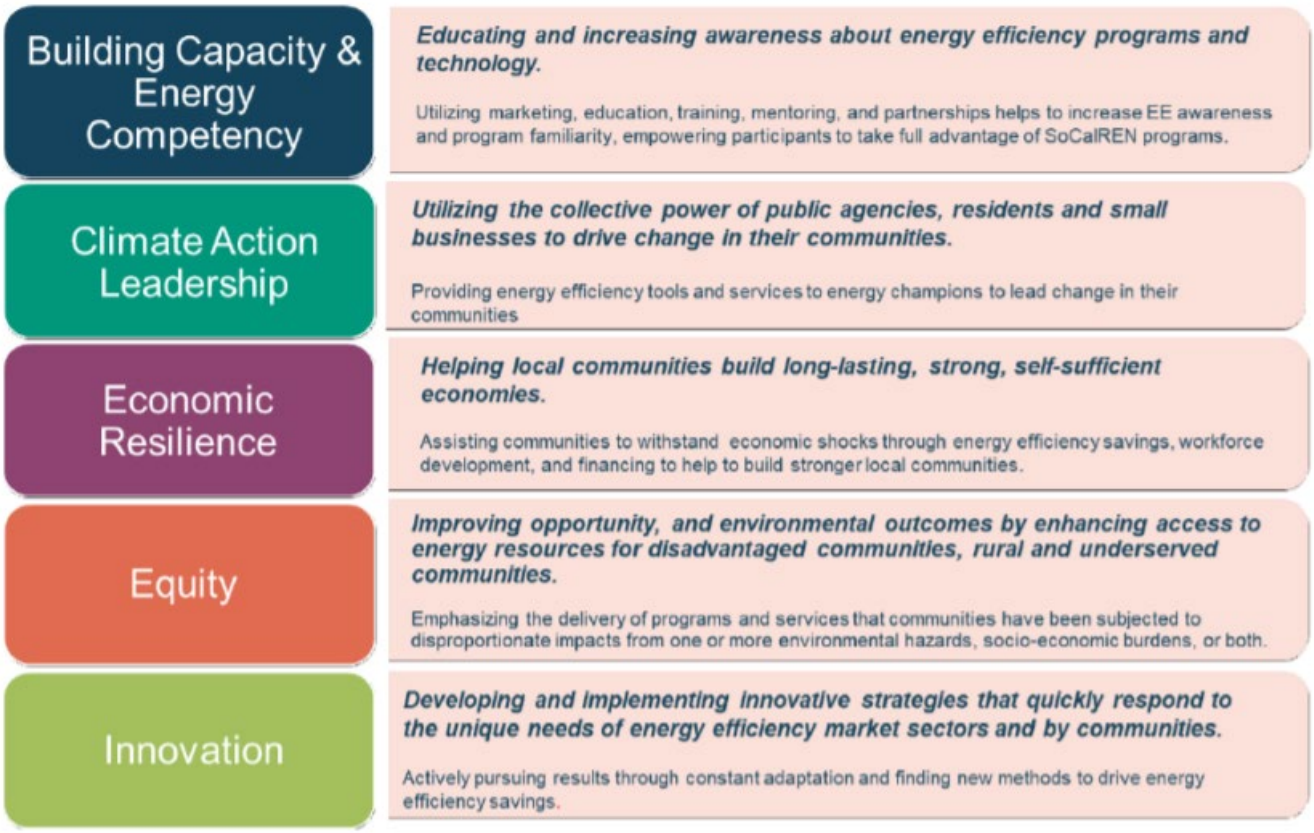
- Having a table to summarize the metrics/targets that are used portfolio wide, those that are unique to a specific sector, and those that are unique to SoCalREN.
- Incorporating the degree to which SoCalREN leverages 3rd party implementers and the associated benefits of this approach.
- Clarifying data sources and methods related to equity, especially considering that there are many different commonly used federal, state, and local metrics.

- Considering adding more metrics regarding the time value of energy and demand as most of their initial metrics seemed to be based on annual energy savings. This was especially important in light of the many recent times fires and other natural disasters have put substantial stress on the grid.

4.1.2 Unique Value, Metrics, and Measurement

Figure 5 below details the final core values SoCalREN included in their 2021 ABAL. This figure also provides definitions of their foundational values, which was one of the evaluation team recommendations that SoCalREN went on to incorporate.

Figure 5. SoCalREN Core Values



Another evaluation team recommendation that SoCalREN implemented in their 2021 ABAL was to articulate the importance of each foundational value to the bigger picture. This is shown in Table 12, which shows the additional benefits that accrue to the local communities and program participants because of SoCalREN's activities. These can be interpreted as SoCalREN's desired outcomes from activities that fill gaps of other PAs.

Table 12. SoCalREN Core Value Benefits

Overarching Goal:	Energy and Environmental Impacts				
Core Values:	**Economic Resilience**	**Capacity Building**	**Climate Action Leadership**	**Equity**	**Innovation**
Definition	*Helping local communities build long-lasting, strong, self-sufficient economies.*	*Educating and increasing awareness about energy efficiency programs and technology.*	*Utilizing the collective power of public agencies, residents and small businesses to drive change in their communities.*	*Improving opportunity, and environmental outcomes by enhancing access to energy resources for disadvantaged communities, rural and underserved communities.*	*Developing and implementing innovative strategies that quickly respond to the unique needs of energy efficiency market sectors and by communities.*
Portfolio	**Assisting communities to withstand economic shocks through energy efficiency savings, workforce development, and financing to help to build stronger local communities.**	**Utilizing marketing, education, training, mentoring, and partnerships helps to increase EE awareness and program familiarity, empowering participants to take full advantage of SoCalREN programs.**	**Providing energy efficiency tools and services to energy champions to lead change in their communities.**	**Emphasizing the delivery of programs and services that communities have been subjected to disproportionate impacts from one or more environmental hazards, socio-economic burdens, or both.**	**Actively pursuing results through constant adaptation and finding new methods to drive energy efficiency savings.**
Public Sector	Creating long-term energy savings, community benefits, and jobs for public agencies	Educating agencies and contractors to create a culture of energy competency	Identifying LG Energy champions and providing the necessary tools and services to accomplish local EE goals.	Leveraging public agencies as ambassadors for EE in under-resourced, HTR communities	Promoting innovative strategies and technologies to bolster EE leadership by local governments
Residential	Feeding the green economy through energy savings and capital for EE improvements	Increasing awareness and guiding contractors and customers in leveraging EE programs	Leveraging LG leaders to enact change in local residents and small business owners	Funneling public investment to positively impact customers and contractors in historically marginalized groups	Responding quickly to market shifts to maximize benefits for residents and contractors
Workforce Education and Training	Building a robust and diverse EE workforce through strategic partnerships that drive growth in local, diverse communities	Developing pathways for high school students and transition age youth to pursue careers in EE	Driving knowledge to lead change through the implementation of projects by contractors.	Focusing program recruitment, training, and education to benefit diverse youth and contractor companies	Championing new ideas for recruiting, retention, and success to bring new participants into the green economy
Financing	Driving investment in EE improvements with low-interest financing offerings	Educating customers and contractors about smart EE investment strategies to maximize ROI	Providing the necessary tools or products that can be leveraged by energy champions to accomplish EE goals.	Alleviating funding barriers to support EE investment and benefits in underserved areas	Providing tools for tailored solutions to improve customer understanding of EE as a positive investment

SoCalREN proposes to measure these outcomes and better demonstrate SoCalREN's unique value through the proposed value metrics in their 2021 ABAL. SoCalREN divided its value metrics into two categories, sector-specific value metrics and portfolio-wide value metrics. Table 13 summarizes by sector the proposed portfolio value metrics/indicators found in Attachment F-2 of their 2021 ABAL. Due to the extensive nature of the sector unique value metrics, we have not included them here, but they are available in SoCalREN's 2021 ABAL budgetary appendix under the tab titled "SCR UVM". SoCalREN intends to use 2020 as the baseline year for these metrics and will work to develop targets in time for the next ABAL or business plan filing.[23]

[23] SoCalREN's 2021 ABAL, September 1, 2020, p.65-77/110 or attachment F-1 to F13. Document available at CAEECC.

Table 13. SoCalREN Proposed Portfolio Level Value Metrics/Indicators and Measurement Approach

Unique Value Demonstrated	Program Sector				Value Metric/Indicator
	RES	PUB	WE&T	COM	
Building Capacity & Energy Competency	✓	✓	✓		% of participants indicated increase in their EE knowledge
	✓	✓	✓	✓	Industry engagement - # of events completed; and # of participants
	✓	✓	✓	✓	Educational Materials - Industry engagement - # of unique educational materials produced
	✓	✓		✓	Educational Materials - # of unique in-language educational materials produced
	✓	✓	✓	✓	Training and Education - Total # of training hours completed
	✓	✓		✓	Training and Education - Total # of mentoring hours delivered
	✓	✓	✓	✓	Paid Media - # of digital impressions
	✓	✓	✓	✓	Paid Media - % of click-through rate
	✓	✓	✓	✓	Paid Media - # of direct mail pieces distributed
	✓	✓	✓	✓	Paid Media - # of print advertising impressions
	✓	✓	✓	✓	Paid Media - # of social media engagements
	✓	✓	✓	✓	Paid Media - # of digital website impressions
Climate Action Leadership	✓	✓		✓	Cost Efficiency – Implementation budget/kBtuh saved
	✓	✓		✓	Cost Efficiency –Admin budget/kBtuh saved
	✓	✓		✓	# GHG emission reductions (net kWh and Therms)
	✓	✓		✓	# completed projects
	✓	✓	✓	✓	# completed participants
	✓	✓		✓	# lifetime kWh saved
	✓	✓		✓	# lifetime kW saved
	✓	✓		✓	# lifetime Therms saved
	✓	✓		✓	# annual energy savings (BTUs)
		✓			# of DERs installed
		✓			Total dollars invested in DER strategies
		✓			% of DERs recommendations adopted
	✓	✓		✓	% of recommended EE measures completed
	✓	✓		✓	% of recommended kWh energy savings completed
	✓	✓		✓	% of recommended kW energy savings completed
	✓	✓		✓	% of recommended Therm energy savings completed
	✓	✓	✓		% of participants satisfied with the program
	✓	✓			% of gross kWh, kW and Therm savings across projects
	✓	✓			% of net kWh, kW and Therm savings across projects
Economic Resilience	✓	✓		✓	Total project costs supported by non-ratepayer funding
	✓	✓			Average utility bill savings per project
	✓	✓		✓	EE resources invested in DAC/LI/HTR

	✓	✓		✓	# of construction jobs supported
	✓	✓			# of contractors actively participating in programs
Equity	✓	✓	✓	✓	% of participants in DAC
	✓	✓	✓	✓	Percent of participants in LI communities
	✓	✓			Incentive dollars invested in disadvantaged communities
	✓	✓	✓		# of GHG emission reductions in DAC
	✓	✓		✓	Percent of projects completed in DAC
	✓		✓	✓	Percent of program participants primarily speaking a language other than English
	✓	✓	✓	✓	# of unique ZIP codes served
	✓	✓		✓	% of rural/HTR/underserved areas served
	✓	✓		✓	% of relative participation by county (net kWh, kW, Therm)
Innovation	✓	✓	✓	✓	# of unique strategies delivered
	✓	✓	✓	✓	# of unique program or subprogram ideas introduced and implemented
	✓	✓	✓		# of emerging/innovative technologies promoted
	✓	✓		✓	# of unique electric measures recommended and installed
	✓	✓		✓	# of unique gas measures recommended and installed

4.2 3C-REN

4.2.1 Value Metrics Development

3C-REN began developing its value metrics by seeking ways to demonstrate unique value while aligning with pre-established principles, including the REN criteria in D.19-12-021 and the foundational metrics in its initial business plan. 3C-REN's business plan goals include the following:

- Goal 1. All Tri-Counties residents will have the access, information and path to achieve deeper energy retrofits.
- Goal 2. The Tri-Counties Region will substantially increase implementation and adoption of energy retrofits for their residential buildings.
- Goal 3. The Tri-Counties will have a profitable workforce capable of delivering buildings at quality and efficiency levels mandated by the State and through building codes.
- Goal 4. Building Departments will have the necessary tools and resources to increase energy code compliance.

3C-REN's value metric adoption process involved four stages. First, they considered the metrics that they were currently collecting. Then they encouraged REN staff, local government staff, and implementers to brainstorm potential metrics. Next, they narrowed the list to those that were manageable from an implementation perspective, and ultimately the 3C-REN leadership team and the county representatives reviewed and approved the final unique values and associated metrics. During in-depth discussions with the evaluation team, 3C-REN representatives stressed the importance of considering multiple perspectives to inform value metrics selection. Local government perspectives were paramount since 3C-REN's decision-making process for selecting value metrics involved buy-in from its three counties, as well as from the cities

in each county. Moreover, 3C-REN staff are county employees who report to county department heads, so their dual REN and county perspectives inform their understanding of the importance of balancing local needs with ratepayer considerations more typically aligned with the traditional utility industry perspective. 3C-REN also strove to ensure that implementers and trainers agreed on the feasibility of tracking the selected metrics.

Draft Value Metric Feedback

On July 23, 2020, the evaluation team met with 3C-REN representatives to review their proposed unique values and value metrics, which are detailed in section 4.2.2 of this report. This subsection summarizes the most relevant recommendations from the evaluation team's review of 3C-REN's core values, draft metrics, and proposed approach to fulfilling the CPUC's directives.

At the time of the meeting, 3C-REN's metrics remained in rough draft form and had not yet been organized by applicable program. 3C-REN provided the team with a three-page outline consisting of brief sections for each of its proposed four core values, which included:

- Economic Development and Community Impacts
- Diversity, Equity, and Inclusion
- Targeting Hard-to-Reach Customers
- Serving Customers/Needs Not Otherwise Served by Existing Utility Programs

Each section of the rough draft highlighted a core value and included a bullet list describing several metrics, a proposed approach to measuring these metrics, potential baselines, targets, in some cases background information about the metrics. One early topic discussed involved how to highlight 3C-REN's unique value. Some of the evaluation team's suggestions included:

- Highlight 3C-REN's EE offerings within a geographic area that is distant from major urban centers and recognize value based on availability and ease of access.
- Consider how to interpret the phrase "not otherwise served" from 3C-REN's core values. For instance, hard-to-reach customers and disadvantaged communities are well defined groups, but availability, overlap, and equity of service provide some latitude to align 3C-REN offerings to fit constituents needs, particularly those from underrepresented groups.
- Characterize the 3C-REN connection to local governments and explain how local perspectives and needs—which are inherently apart of their decision-making process—translate into value.

3C-REN then explained their draft metrics to the evaluation team and the group discussed how to collect and calculate these metrics. Much of the metrics discussion involved straightforward recommendations for quantifying and collecting standardized information on customers, businesses, and program participation. The evaluation team also suggested including indicators as well as metrics. Indicators provide a way to track progress towards goals for which it is impossible to establish a baseline and therefore are not conducive to the metrics approach. Instead, milestones can be created to indicate progress towards objectives.

Another issue raised by the evaluation team involved measuring co-benefits, many of which can be notoriously difficult to track and can be defined in multiple ways. Among the evaluation team's suggestions included a way to replace economic co-benefits that are difficult to quantify by reporting the number of jobs created. 3C-REN could then collect additional detailed information beyond the basic job numbers such as documenting

people who are new to the energy efficiency industry, like contractors working on EE projects for the first time. Likewise, 3C-REN might consider how many of these people live or work in disadvantaged communities. Another angle might be to use dollars as a metric, for instance budget or expenditure dollars per activity or outcome (e.g. budget/kBtuh, expenditure/kBtuh). Because co-benefits are a complex topic, the team recommended working with the other RENs to establish ways to track and explore common co-benefit options and aligning with the IOU-funded Evergreen Economics study on co-benefits provided by LGPs.

Another key area discussed during the meeting focused on 3C-REN embedding an EM&V approach into their program design to ensure that the appropriate data is tracked and measured. 3C-REN's. For example, WE&T program surveys customers to determine their needs, to design courses, to market and deliver them, and to the outcomes. An embedded EM&V approach might include measuring survey responses, people contacted via email, emails opened, training course sign-ups, class participants, class graduates, pre-and posttest scores, etc. In addition, the evaluation team stressed the importance of gathering an appropriate level of detail, be that company or individual data, including projects the training attendee is involved in, and potentially even the measures associated with those projects.

Although it is not currently practical to capture and track all of these metrics, the evaluation team believes it is valuable for the RENs to track more metrics internally than report to the CPUC, because it is difficult to manage what is not measured. With this in mind, the evaluation team encouraged 3C-REN to think holistically and begin building the systems and process required to track and measure their efforts, which will enable 3C-REN to achieve desired outcomes and demonstrate wise custodianship of ratepayer dollars.

The evaluation team provided 3C-REN with a memo documenting the recommendations discussed during the meeting. A few points discussed in the memo include the following.

- Align value metrics with business plan goals and objectives and with PTLMs.
- Revamp the discussion of value metrics and methods so it begins with big picture REN mission and unique values before cascading down to programs, strategies, tactical execution, and individual metrics.
- Ensure that all stakeholders served by 3C-REN are addressed, including local governments, customers, ratepayers, and the state of California.
- Define terms to ensure clarity and avoid misinterpretation.

4.2.2 Unique Value, Metrics, and Measurement

3C-REN's 2021 ABAL reflects their subsequent thinking regarding the REN's unique values and proposed metrics, which now better align with their business plan. 3C-REN's final four core values include:

- Value 1: Diversity, Equity and Inclusion. Execute program design, procurement, delivery and participant targeting to deliver diverse, equitable, and inclusive participation across the Tri-County region.
- Value 2: Service. Serve Tri-County residents not otherwise served by existing ratepayer-funded programs.
- Value 3: Climate Action. Support Tri-County member agencies in meeting climate goals.

- Value 4: Economic Impact. Positively impact the economic development of the Tri-County region through its built environment and workforce.

Table 14 summarizes by program these unique core values, associated metrics/indicators, and how 3C-REN propose to measure them. Attachment 2 of the 3C-REN 2021 ABAL, provides commentary for values 1, 3 and 4, including indicators or metrics; targets, baselines and timelines for establishing baselines, the associated business plan goal, as well as brief methodologies for collecting and calculating the proposed metrics. Although Service (value 2) is absent from the table below, which is drawn from in Attachment 2 of the 2021 ABAL, it is clear to the evaluation team that Service spans all of SoCalREN's programs even though it wasn't explicitly discussed in their ABAL. For additional context, please see the tables in Attachment 2 of their 2021 ABAL.[24]

Table 14. 3C-REN's Proposed Program Value Metrics/Indicators and Measurement Approach

Applicable Programs	Unique Value Demonstrated	Value Metric/Indicator	Measurement
C&S and WE&T	Value 1: Diversity, Equity and Inclusion	Metric: Percentage of event 3C-REN attendees considered HTR	Target: Percentage of HTR attendees over total number of 3C-REN attendees;
			Baseline: Reported in 2021 reporting
			Timeline: To be determined after 2021 baseline established
	Value 4: Economic Impact	Indicator: Number of jobs and economic value, inclusive of job creation at counties	Target: N/A
			Baseline: Reported in 2020 reporting
Residential	Value 3: Climate Action	Metric: Number of TriCounty member jurisdictions receiving annual 3C-REN data that informs member jurisdictions achievements toward climate action plans GHG emission reduction goals	Target: To be determined after 2020 baseline established
			Baseline: Reported in 2020 reporting
			Timeline: To be determined after 2020 baseline established

4.3 BayREN

4.3.1 Value Metrics Development

After D.19-12-021 was adopted, BayREN enlisted Grounded Research and Consulting, a third-party evaluation firm, to facilitate the process of better defining BayREN's value proposition. Much of the groundwork for developing BayREN's value metrics was laid when Grounded Research conducted a process evaluation of BayREN's programs.[25] As part of this process evaluation they reviewed BayREN's materials and spoke with various stakeholders, which included:

- Gathering feedback from the CPUC

[24] 3C-REN 2021 ABAL, September 1, 2020, p. 13 to 14 of 25. This document is available on Energy Division's Public Document Area.
[25] BayREN 2019 Process Evaluation, Grounded Research and Consulting, March 1, 2020. This study is available on Energy Division's Public Document Area.

- Observing BayREN meetings including meetings with CCAs, the BayREN Coordinating Circle, and regional forums.
- Reviewing all comments on the administrative law judge's value of the RENs ruling to understand the perspective of various stakeholders
- Interviewing multiple representatives from the 9 BayREN counties including program leads and implementers.
- Gathering feedback from 41 of the 101 BayREN local jurisdictions to better understand the existing communication channels between BayREN and local government members as well as identify areas where member jurisdictions need additional support from BayREN (e.g. program information, direct program marketing, technical assistance, and direct rebates/project funding).

This work culminated in BayREN's "value pillars," which refer to the value beyond energy savings that BayREN provides to its customers and the communities it serves. BayREN and Grounded Research then worked to develop metrics to show progress towards the BayREN value pillars and to demonstrate value that BayREN delivers beyond what is captured in the standard Commission compliance metrics measured in kWh, kW and therms. BayREN and Grounded Research then drafted a Core Value and Proposed Value Metrics Memo. This memo complements the BayREN JCM, which details BayREN's compliance with the previously discussed REN criteria and shows how it fills gaps in the EE portfolio. It does this by describing in detail the key outcomes from BayREN's six programs and proposes value metrics to measure these outcomes. These outcomes define the value pillars and support their overarching goal of "GHG reductions and energy savings to support sustainable and resilient communities."[26]

Draft Value Metric Feedback

By the time workplan for this evaluation was approved and the team was able to schedule interviews, BayREN's Core Value and Proposed Value Metrics memo was already in draft form. Consequently, the evaluation team reviewed the draft memo, provided comments and recommendations on proposed unique value metrics and methodologies presented within, and then met with both Grounded Research and BayREN staff to discuss things.

In comparison to SoCalREN and 3C-REN, BayREN's value metric materials were already close to being ready for inclusion in BayREN's 2021 ABAL. Therefore, the evaluation team's comments were more refined in nature, such as small specific recommendations on metrics and milestones or suggesting additional clarification on elements of the memo. Table 15 below is an overview of the changes made to the draft document and reflected in the posted draft on Energy Division's Public Document Area, based on the exchanges between the evaluation team, BayREN and Grounded Research.

[26] BayREN Core Value and Proposed Value Metrics Memo, BayREN, July 6, 2020. This study is available on Energy Division's Public Document Area.

Table 15. Changes to BayREN's Core Value and Proposed Value Metrics Memo from Evaluators' Comments

Highlighted Evaluator Comments	Changes Made
Clarify the intent of the memo.	To better frame the issue, added in a paragraph with the Commission directive that the memo is addressing (see *italicized language* at the top of the memo).
The connections between the PTLMs, overarching model and metrics (as described in Grounded Research's presentation) are not clear.	1. Added bullets to call out the key outcomes with value metrics (this connects directly to the rows in the metric tables). 2. Added in one example PTLM (in a 1-page boxed call out) to better describe how all of the various pieces connect. 3. Moved the more detailed metrics tables to the end of the document and rearranged the document to better show the connections.
Quantitative metrics alone are difficult to interpret.	1. Relabeled the tables to more clearly call out that all of the tables attempt to provide both quantitative counts (in the second to last column) along with the additional details of the information that BayREN will collect to provide context to the quantitative value. 2. Added a sentence to describe that each program is also tracking additional outputs.
Define "ready to scale" and what will be done in the mid-pilot evaluations.	Added criteria for "ready to scale" and indicated that the mid-pilot evaluations would assess these criteria
Various comments on the milestone tables.	Added in a column (in all milestone tables) to show that the milestones listed would be reported with detail in BayREN's Annual Reports
Small/specific changes on metrics and the milestone tables.	Attempted to make small tweaks or clarifications to better explain the metrics, but we did not make all the suggested changes.
Comments regarding tracking non-energy benefits	Edited the language/header to more clearly specify that BayREN is *not* going to be reporting on these.

In addition to these recommendations, the evaluation team also cautioned that some metrics in the memo were reminiscent of similar efforts by LGPs in the past, which proved difficult to evaluate because their targets and goals were structured in a way that was difficult to track. (The evaluation team notes that this risk applied to similar comments provided to SoCalREN and 3C-REN as well.) In response, the BayREN team explained the memo was intended to propose a comprehensive framework for discussion and not to establish specific targets or goals. In time, BayREN expected to add targets and goals; however, they felt it was premature to do so in the memo, and instead proposed indicators, which are milestones or values without specific targets. Targets for future years will be revisited once a baseline is established after the first year of collecting data.

After addressing and incorporating these recommendations, BayREN published the memo on the Energy Division's Public Document Area to facilitate a discussion around BayREN metrics prior to filing the now available 2021 ABAL.

4.3.2 Unique Value, Metrics, and Measurement

BayREN's three key unique values are listed below along with their reasoning for selecting them:

- Value 1: BayREN builds human and organizational infrastructure within local jurisdictions so that Bay Area communities are better able to save energy and reduce GHG emissions.

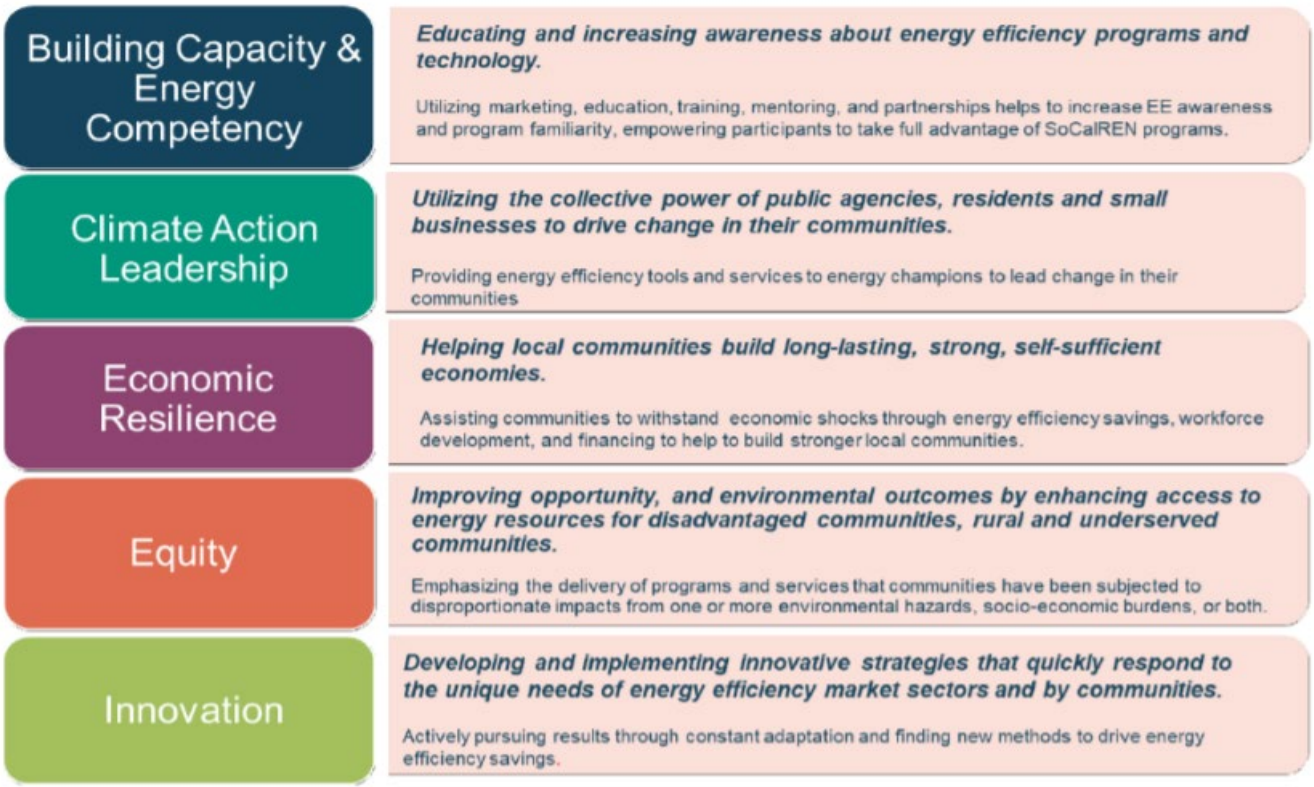
- Why: BayREN is suited to serve in this capacity because of the member's connections to local jurisdictions and their understanding of what is needed by local governments and their communities.

- Value 2: BayREN obtains energy savings locally, while also supporting local difficult to serve populations.
  - Why: Local governments have a deep understanding of the needs of their communities. Based on member's (i.e., local government's) assessment of the needs in their communities, they have identified populations that need additional support and are designing program activities to better target these populations.

- Value 3: BayREN tests innovative solutions that have the potential to help local jurisdictions increase energy savings and reduce greenhouse gas emissions.
  - Why: The innovative solutions tested by BayREN bubbled up from discussions with local governments, and thus represent local needs and gaps to be filled. These innovative solutions are wholly designed and implemented by BayREN members, which are themselves local governments.

These three values support BayREN's stated vision within its Business Plan. That is "to help the State meet aggressive goals related to climate change" by engaging local governments through the 9 BayREN county representatives. Figure 6, from BayREN's Core Value and Proposed Value Metrics memo, illustrates how their values support the mission of GHG reductions and energy savings, and how the outcomes tie to these values.

Figure 6. SoCalREN Core Values



4.4 Evaluability of Value Metrics

Although typically evaluations are retrospective, the tasks associated with section 4 of this report, including the review of draft value metric documents and in-depth interviews, were prospective. This prospective approach arose when the Energy Division asked the evaluation team to provide input on the REN's core values and supporting value metrics while they were still underdevelopment. The idea was not to insert third party evaluators into the RENs' decision-making process in terms of complying with D.19-12-021. Thus, the evaluation team's involvement was limited to providing feedback and suggested recommendations to the RENs to inform the types of tracking and performance information that would support Energy Division retrospective evaluation efforts starting in 2021 or thereafter.

During the evaluation team's discussions with each of the RENs, the team pointed out that while it is important for each REN to define its own unique values and metrics for demonstrating progress, there is potential value in also having a set of commonly measured standardized value metrics among all RENs so that they can be evaluated across RENs. This would establish the RENs on a more level playing field, ensuring that there is a way for the CPUC to compare progress on value metrics. Such REN-wide value metrics would need to be reasonably consistent so that one REN does not set a high reach goal and then fail to meet it, while another REN sets a low bar that is easily achievable. Although there are similarities among the RENs' core values, their values, program offerings and associated metrics are unique enough to make it impractical for third parties to establish a set of standardized value metrics for all RENs without consequently assigning metrics that do not align with the RENs' core values.

The evaluation team recognizes that D.19-12-021 placed the onus on the RENs to design their own value metrics in a way that demonstrates their unique core values. Although it is logical for programs designed to deliver a unique value proposition to consequentially have unique value metrics, it is important from an evaluability perspective for there to be a set of common value metrics that can be assessed across programs and RENs. The new metrics requirements discussed in Decision 21-05-031 provide a mechanism to bring greater unanimity across the RENs and other PAs. Unless common value metrics are developed and approved by the CPUC, future evaluations of REN value metric must account for the reasonableness of the RENs' value metric targets and avoid comparisons between RENs. In other words, evaluations should assess the degree of progress each REN makes against its own value metric baselines and ensure program activities are meeting reasonably set targets.

Based on the value metrics tasks of this study, the evaluation team finds the RENs to be prepared and capable of tracking and reporting their value metrics. In future years REN performance can be appropriately measured and assessed by third-party evaluators. As evidence of this, the RENs provided in their respective 2021 ABALs the following estimated timetables for preparing baselines and targets to measure their value metrics:

- SoCalREN "intends to utilize 2020 as a baseline year (a year to collect 12 months' worth of data). Once 2020 program year data is finalized and reported, SoCalREN will work to develop targets for the near, mid and long-term [...] SoCalREN aims to have targets established and included in either the next ABAL or Business Plan filing (whichever may occur first)."[27]

- 3C-REN states in its table of value metrics that targets and timelines will be determined after baselines are established. For its Climate and Economic Impact related metrics/indicators, it expects to report baseline values in "2020 reporting", while its Diversity, Equity and Inclusion related metric will have its baseline value reported in "2021 reporting."[28]

[27] SoCalREN 2021 ABAL, September 1, 2020. p. 70, Attachment F-6.
[28] 3C-REN 2021 ABAL, September 1, 2020. p. 14 of 25

- BayREN states that it is "proposing indicators (that is, values without specific targets) for the 2021 reporting year. Whether or not BayREN would select targets for future years will be revisited after the first year of collecting data, that is, once a baseline is established." However, they also note under the value metrics tables associated with building organizational infrastructure, building human infrastructure, and obtaining energy savings by supporting local difficult to serve populations that they will "Start to track" these metrics when possible in 2020[29]

Based on these statements, any value metric evaluation efforts starting in 2021 would likely be limited to an assessment of what data the respective RENs were able to collect in 2020 and baselines established using finalized 2020 data. More importantly however, a full evaluability assessment of their baselines and ongoing data collection protocols is feasible now that they have established their initial value metrics. In preparation of future value metric centric evaluation, the evaluation team recommends all three RENs prepare to provide at a minimum the level of value metric detail that was provided in Appendix A. REN-Wide Portfolio Metric Details Table, of SoCalREN's 2021 ABAL that specifics the following details for every value metric:

- Applicable Sectors
- Associated Core Value
- Data Source
- Methodology
- Reported Value
- Unit
- Numerator (of Reported Value if appliable)
- Denominator (of Reported Value if appliable)

We also recommend the RENs utilize a dashboard of some sort to streamline the collection, measurement and reporting of their value metrics.

Finally, the evaluation team found that BayREN's core values and value metrics were enhanced by their formal process evaluation to gather a wide range of feedback from the CPUC, overlapping PAs and stakeholders in order to prepare a Core Value and Proposed Value Metrics Memo. This process resulted in a pathway to articulating how their programs contribute in a unique way to the EE portfolio, as well as formally linking their metrics to their PTLMs. During 2020, SoCalREN initiated a comparable formal process evaluation that includes assistance with core values and proposed value metrics. Those results are to be made public in 2021.

Accordingly, we recommend that new RENs should include development of their core values and associated metrics in their feasibility and planning documents. This process should include discussions with CPUC representatives, overlapping PAs and a broad range of efforts to solicit stakeholder feedback such as jurisdiction-wide group discussions, online surveying, in-depth interviews, and feedback from local jurisdictions. After running programs long enough to establish baselines, RENs should conduct a thorough process evaluation to assess how effectively their programs are delivering on their initially stated value metrics.

[29] BayREN 2021 ABAL, September 1, 2020. p. 28 to 37/Exhibit D Page 2 to 11 of 11

5. Workforce Education and Training

Because WE&T activities may be classified in different ways—including those under the auspices of other program/administrative/budget categories, such as codes and standards, marketing education and outreach, contractor and trade ally training, finance, etc.—the evaluation team sought information regarding all REN-sponsored training activities that took place during 2018 and 2019 program years. The intent was to evaluate REN-sponsored training and educational activities to better understand the breadth of REN training efforts and to explore how the RENs fit training into their overall value proposition.

To narrow the scope of the evaluation, the evaluation team limited eligible training activities to those targeting people in the workforces that the RENs offered training to, while excluding educational efforts for end use customers or members of the public. We also focused on training activities with defined learning objectives and curriculum involving energy efficiency related topics or job skills necessary to accomplish an activity that would ultimately result in energy savings. This precluded marketing, education, and outreach efforts such as distributing outreach materials or REN representatives making public presentations to educate and recruit customers into a REN program.

In all, the three RENs provided data on 84 distinct training courses that were offered 250 times, including repeat offerings of the same course. The training efforts spanned a myriad of delivery formats, timeframes, and audiences, ranging from lunchtime C&S sessions for building professionals to multi-day courses for real estate professionals, and from semester-long courses for high school students to one-on-one coaching for contractors participating in REN-sponsored resource programs. Over the two-year evaluation period, from 2018 to 2019, SoCalREN provided 47 distinct offerings, while BayREN offered 27 unique offerings. 3C-REN sponsored 10 different training activities, even though they did not begin offering training until the middle of 2019. A full list of training activities offered by the RENs can be found in Appendix C.

5.1 REN WE&T Overview Analysis

5.1.1 Types of Training Provided

While some REN training activities are classified as WE&T, others are offered as components within REN EE programs. This made creating REN-to-REN comparisons and a statewide REN training summary challenging. So, to resolve this apples-and-oranges mix of training classifications, the evaluation team sorted the 84 training activities into four categories: single family, multifamily, public, and WE&T, based on the primary audience for the training or the type of REN program with which the training was most closely associated. Examples of training topics for each of the four sector categories are shown below:

- **Single Family** - Representative training topics include sales training for contractors to increase program participation and energy savings, and Building Performance Institute (BPI) training certification courses to build contractor knowledge and improve installations.
- **Multifamily** - Typical training activities include Energy Pro Lite software training for Home Energy Rating System (HERS) raters, on-the-job training to ensure participating contractors can properly complete auditing forms, and online training for a new trade ally program portal.
- **Public Sector** -Examples of training efforts include in person C&S courses for code officials on the 2019 California Energy Code changes, an online course regarding EE incentives for public agencies, and a self-study digital toolkit with case studies, presentation slides, and project implementation guidebooks.

- **WE&T -** This category encompassed efforts that didn't align with typical resource program categories or audiences. Representative training activities categorized as WE&T included such things as community college coursework and paid internships for high school students studying Architecture, Construction and Engineering, and Title 24 HERS registry training for contractors and other building professionals, without specific reference to or association with participation in a REN program or sector specific effort.

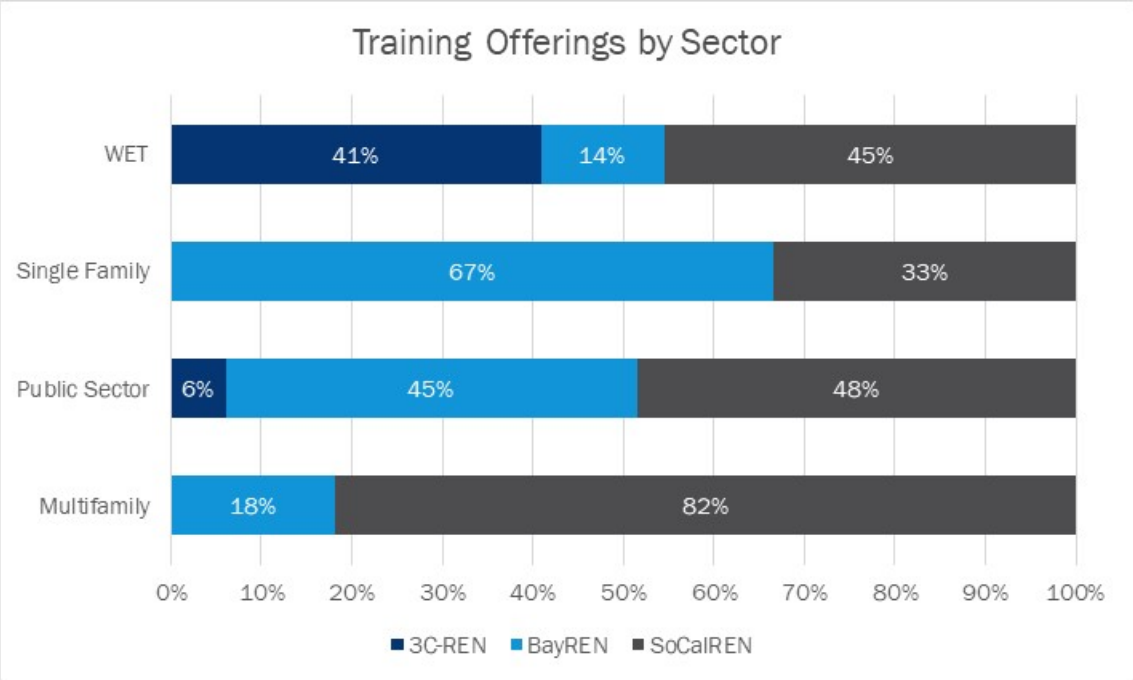
When all REN training activities were considered together as a whole, SoCalREN's tally of unique training offerings accounted for 56% of all REN training, while BayREN courses comprised 32% of all REN trainings, and 3C-REN constituted 12%. On an individual REN basis, 20% of 3C-REN's training activities focused on the public sector while 80% were WE&T. Public sector training accounted for 56% of all BayREN courses, with an additional 22% devoted to WE&T, 15% to single family and 7% to multifamily. WE&T was the largest sector served by SoCalREN at 43%, compared to 34% for the public sector, 19% for multifamily, and 4% for single family training (Table 16).

Table 16. REN Training Activities During 2018-2019

REN Trainings by Sector	Total Training Courses		
	# Unique Training Courses Offered*	% All REN Training	% Training Each REN
3C-REN	10	12%	100%
Public Sector	2	2%	20%
WE&T	8	10%	80%
BayREN	27	32%	100%
Multifamily	2	2%	7%
Public Sector	15	18%	56%
Single Family	4	5%	15%
WE&T	6	7%	22%
SoCalREN	47	56%	100%
Multifamily	9	11%	19%
Public Sector	16	19%	34%
Single Family	2	2%	4%
WE&T	20	24%	43%
Total	**84**	**100%**	**100%**
*Excludes repeat offerings of the same course			

When all REN training was combined and considered by sector, BayREN training efforts constituted the majority (67%) of single family activities, while SoCalREN dominated multifamily (82%). For the public sector, SoCalREN (48%) and BayREN (45%) were more or less evenly split, with 3C-REN providing 6% of public sector trainings. WE&T had the highest percentage of 3C-REN training activities at 41% of all REN WE&T efforts, compared to 45% from SoCalREN and 14% from BayREN (Figure 7).

Figure 7. REN Training by Sector

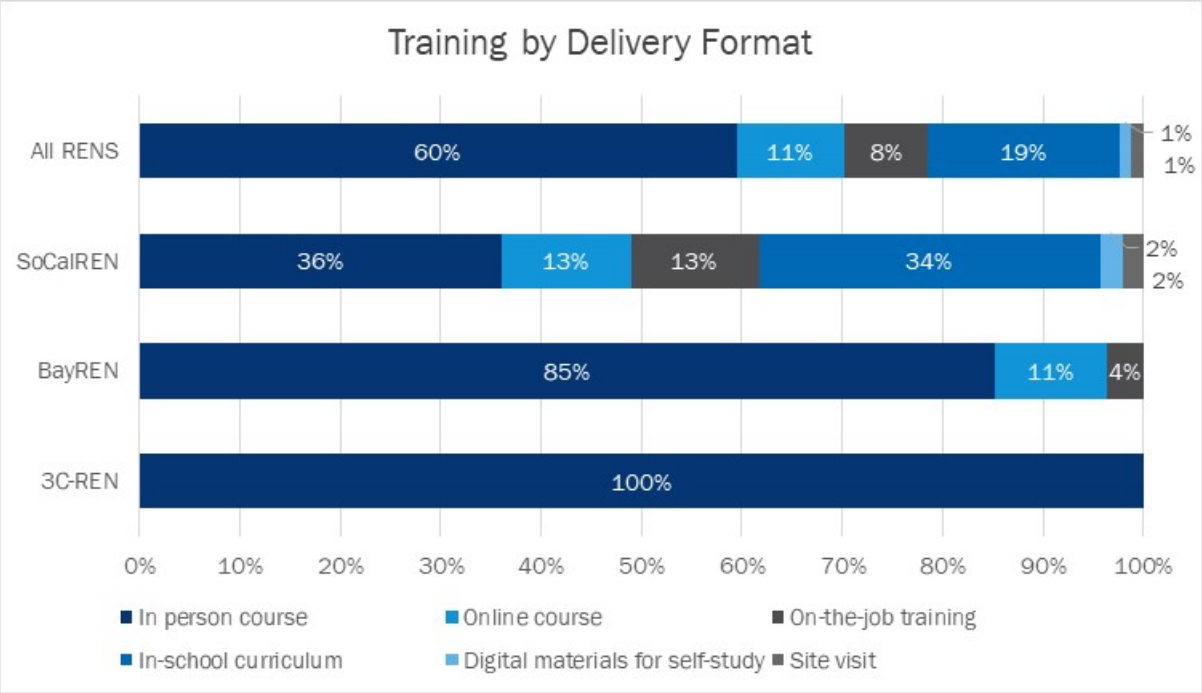


5.1.2 Training Format

The RENs also provided information on the format of the training delivery. These categories included: in person, online, on-the-job training, digital materials for self-study, in school curriculum, and site visits. While many training activities encompassed more than one format, for analysis purposes we asked the RENs to identify the primary format for delivery. Not surprisingly, in person courses predominated. Among all REN training activities, in person courses constituted 60% of training, with an additional 11% delivered online, 8% involving on-the-job training, 19% in school curriculum, and 1% each for digital self-study materials and site visits.

3C-REN delivered 100% of its training activities in person (Figure 8). SoCalREN was the only REN to offer in school curriculum, and it constituted a third of SoCalREN training offerings. BayREN used in person training 85% of the time. Needless-to-say, the Covid-19 pandemic and the associated social distancing measures that began in March 2020 necessitated an abrupt shift to online course delivery. Although the 2020 program year was still underway at the time of this evaluation, the evaluation team did speak with each of the RENs about changes in their training effort brought about by the pandemic. Those findings are mentioned in section 5.2.

Figure 8. REN Training by Delivery Formats



5.1.3 Number of Training Activities

In many instances training courses were provided only one time during the 2018 and 2019 program years, but in several cases training efforts were repeated multiple times for new audiences. Over the two-year evaluation period, including repeats BayREN reported delivering 108 training activities, SoCalREN reported 121 activities, and 3C-REN reported 21 activities during its limited run in 2019 (Table 17). By this count, BayREN's training efforts represented 43% of all training delivered by the RENs, compared to 48% by SoCalREN, and 8% by 3C-REN. However, this numeric representation must be understood in the context of the way the training activities were counted to create the tally. The simple tally method counted the number of times a training activity was delivered without regard for the duration of the training effort. So, a lunch time Codes & Standards course provided by BayREN or 3C-REN was counted the same as a semester or school-year length course sponsored by SoCalREN. The evaluation team's data collection instrument did not ask RENs to indicate the total number of hours of instruction for each training effort, and hence an apples-to-apples comparison of training hours cannot be reported here.

Table 17. Cumulative Times Training Activity Provided During 2018-2019

REN Trainings by Sector	# Training Courses Offered	# Times Training Offered	% All REN Activities	% Per REN Activities
3C-REN	**10**	**21**	**8%**	**100%**
Public Sector	2	3	1%	14%
WE&T	8	18	7%	86%
BayREN	**27**	**108**	**43%**	**100%**
Multifamily	2	2	<1%	1%

Public Sector	15	60	24%	23%
Single Family	4	17	7%	14%
WE&T	6	29	12%	62%
SoCalREN	**47**	**121**	**48%**	**100%**
Multifamily	9	15	6%	14%
Public Sector	16	28	11%	22%
Single Family	2	2	<1%	2%
WE&T	20	76	30%	63%
All RENs	**84**	**250**	**100%**	**100%**

5.1.4 Number of Students Trained

Over the 2018 and 2019 program years, the three RENs trained a combined 3554 people. Among these, BayREN provided instruction to 1521 students (43%), while SoCalREN educated 1453 (41%), and 3C-REN trained 580 (16%) people during its limited 2019 tenure (Table 18). In all, the RENs trained 1969 people in Public Sector activities (55%), 1443 people in WE&T activities (41%), 76 people in Single Family activities (2%); and 66 people (2%) in Multifamily activities. For both BayREN and SoCalREN, most students trained fell within public sector training activities. While for 3C-REN, WE&T training was predominant.

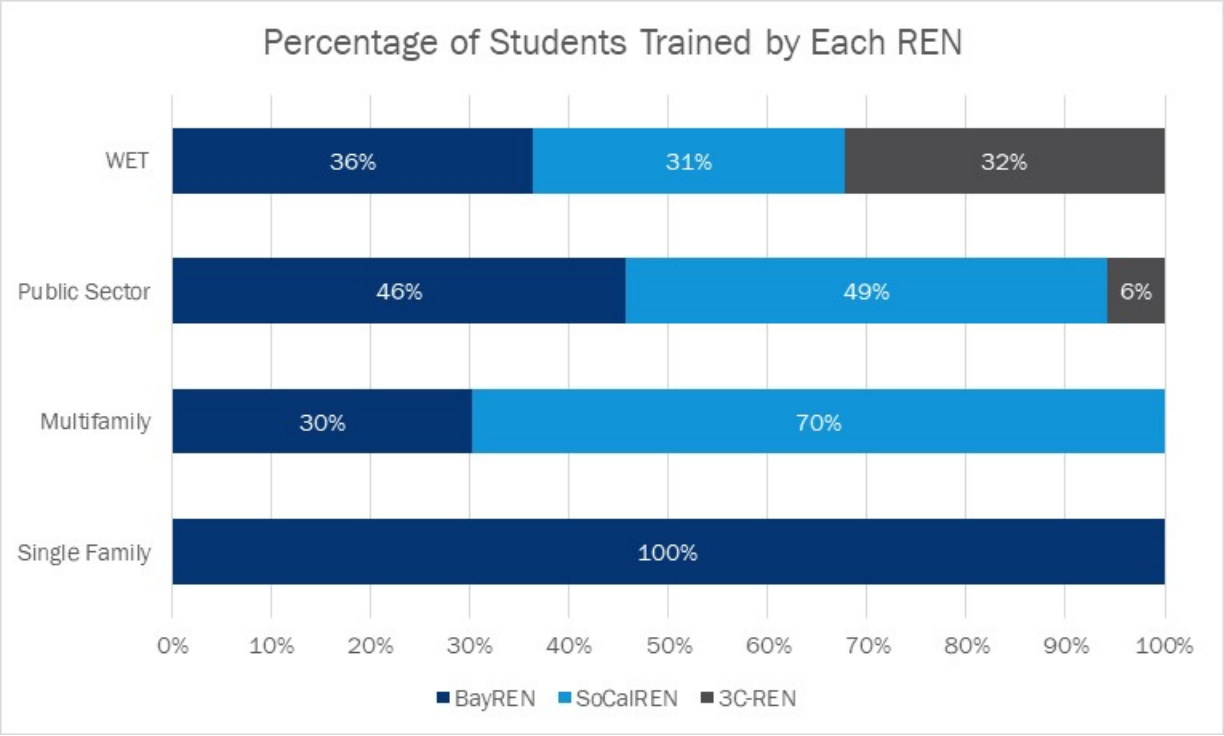
Table 18. Number of Students Trained During 2018-2019

REN Trainings by Sector	# Training Courses Offered	# Unique students trained in all activities	% students per REN	% students across All RENs
3C-REN	10	580	100%	16%
Public Sector	2	114	20%	3%
WE&T	8	466	80%	13%
BayREN	27	1521	100%	43%
Multifamily	2	20	1%	1%
Public Sector	15	900	59%	25%
Single Family	4	76	5%	2%
WE&T	6	525	35%	15%
SoCalREN	47	1453	100%	41%
Multifamily	9	46	3%	1%
Public Sector	16	955	66%	27%
Single Family	2	0	0%	0%
WE&T	20	452	31%	13%
All RENs	84	3554	100%	100%

When considered by sector, the RENs trained an approximately equal number of students within WE&T (31-36%). In the public sector, training percentages were also closely equivalent for BayREN (46%) and SoCalREN (49%), with 3C-REN training 6% of students. BayREN and SoCalREN split the multifamily sector 30% to 70%

respectively. 3C-REN did not conduct any trainings in the single family or multifamily sector and only BayREN provided training for the single family sector (Figure 9).

Figure 9. Percentage of All Students Trained by Sector



5.1.5 Types of Students

Although the RENs train a wide variety of people, the evaluation team distilled them into five broad categories: high school students, building professionals, building department staff, real estate professionals, and those working for public agencies. Each of these categories is in turn comprised of numerous roles and professional capacities. For instance, the real estate professional category includes realtors, appraisers, and lenders. The types of students within each of the five categories is shown in the list below.

- High school students
- Building Professionals
  - Architects
  - Engineers
  - Energy Consultants
  - Designers
  - Builders
  - Contractors
  - Lighting Professionals
  - Lighting Contractors
  - Lighting Designers
  - Lighting Distributors
  - Distributors
  - Installers
  - HERS Raters
- Building Department Staff
  - Code Officials
  - Plans Examiners
  - Permit Technicians
  - Inspectors
  - Counter Staff
- Real Estate Professionals
  - Real Estate Agents
  - Appraisers
  - Mortgage Lenders
- Public Agencies
  - Public Staff
  - Program/project managers & coordinators
  - LGP Advisory Committee Members

Across all the REN training offerings, 29% focused on building professionals as their primary audience, with a total of 24 courses being provided to address their needs (Figure 10). Courses targeted at building professionals were the only category served by all three RENs. In fact, each of the RENs targeted three of the six student categories. While BayREN and 3C-REN both offered courses for building department staff, SoCalREN did not. However, only SoCalREN specifically targeted training activities at public agencies. SoCalREN was also the only REN to provide training to high school students. Likewise, BayREN was the only REN to focus on courses specifically for real estate professionals, but 3C-REN did train real estate professionals in courses designed for multiple audiences (Table 19).

Figure 10. Percentage of Training Offerings by Primary Student Type

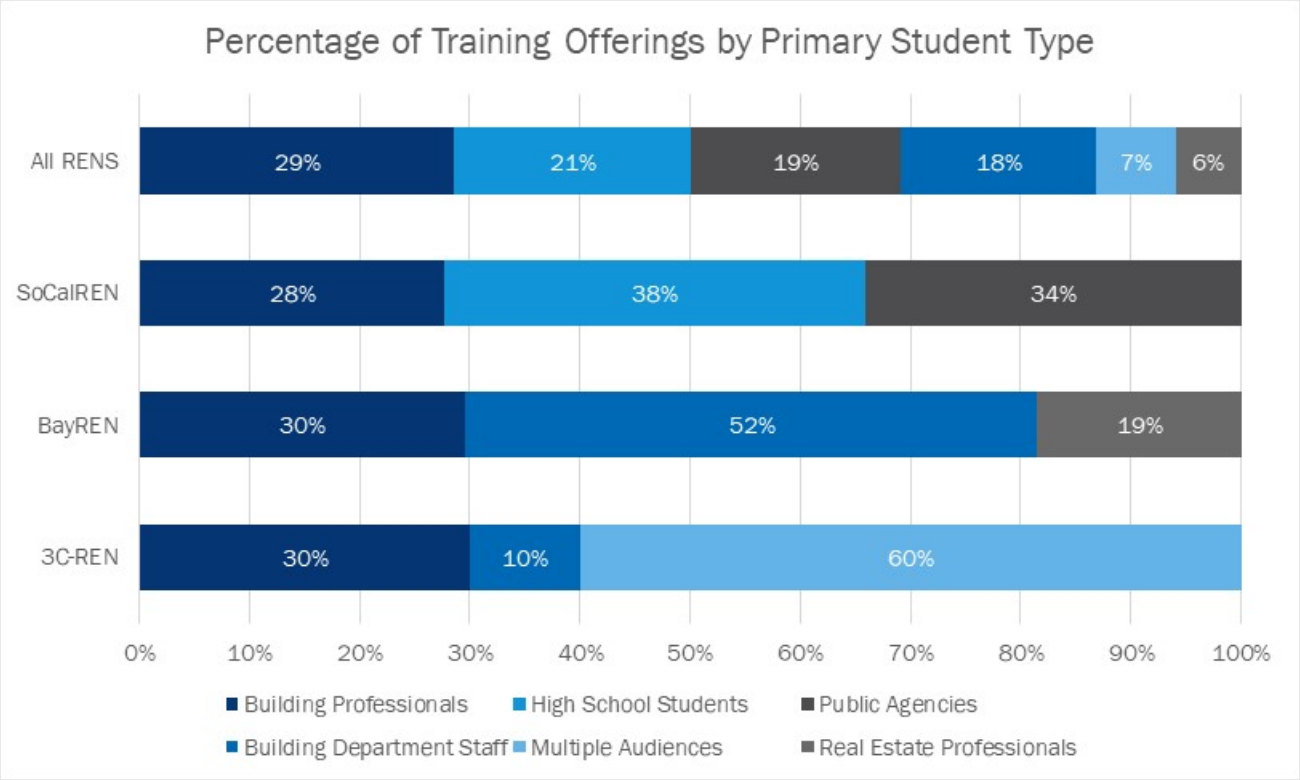


Table 19. Number of Courses by Primary Student Type

REN Sector	Building Professionals	Building Department Staff	Public Agencies	High School Students	Real Estate Professionals	Multiple Audiences	Total
3C-REN	**3**	**1**	**0**	**0**	**0**	**6**	**10**
Public Sector	1	1	0	0	0	0	2
WE&T	2	0	0	0	0	6	8
BayREN	**8**	**14**	**0**	**0**	**5**	**0**	**27**
Multifamily	2	**0**	0	0	0	0	2
Public Sector	1	14	0	0	0	0	15
Single Family	4	0	0	0	0	0	4
WE&T	1	0	0	0	5	0	6

SoCalREN	**13**	**0**	**16**	**18**	**0**	**0**	**47**
Multifamily	9	0	0	0	0	0	9
Public Sector	0	0	16	0	0	0	16
Single Family	2	0	0	0	0	0	2
WE&T	2	0	0	18	0	0	20
All RENs	**24**	**15**	**16**	**18**	**5**	**6**	**84**

5.1.6 Association with Continuing Education Units and Professional Certifications

Sometimes the RENs created their own unique training activities designed to accomplish learning objectives directly associated with their resource programs and non-resource activities. These training efforts were focused on program requirements or on specific learning objectives. In other instances, when the RENs sought to offer a course that appealed to a broad audience or one that provided in-depth training, they opted to associate their training offerings with external professional associations that could provide PCs and CEUs to those people who successfully complete the training or educational activity. Such arrangements provide several advantages to both the students participating in the training and to the RENs. For the students, the certifications and continuing education credits help advance their careers and maintain professional credentials and licensing. In and of itself, this helped to attract more students to REN-sponsored training activities. However, in many cases there were other advantages to the RENs as well. For some training activities, the RENs sponsored courses that were created by the BPI] or the National Association of Realtors. In other cases, the RENs created their own curricula, and upon approval by an organization such as the ICC, they issued documentation of ICC-approved training.

Across all 84 REN training efforts conducted during 2018 and 2019, 40 (48%) provided continuing education units and 38 (45%) provided professional certifications (Figure 11). Thirty-seven efforts were not associated with either CEUs or PCs. When considered on a REN-by-REN basis, 80% of 3C-REN's training activities were associated with continuing education units, while none were offered with professional certifications during the 2018-2019 timeframe. Among BayREN offerings, 59% were associated with continuing education units and 70% were associated with professional certifications. For SoCalREN, 34% were associated with educational units and 40% with professional certifications.

Figure 11. Percent of REN Training with Professional Certifications or Continuing Education Units

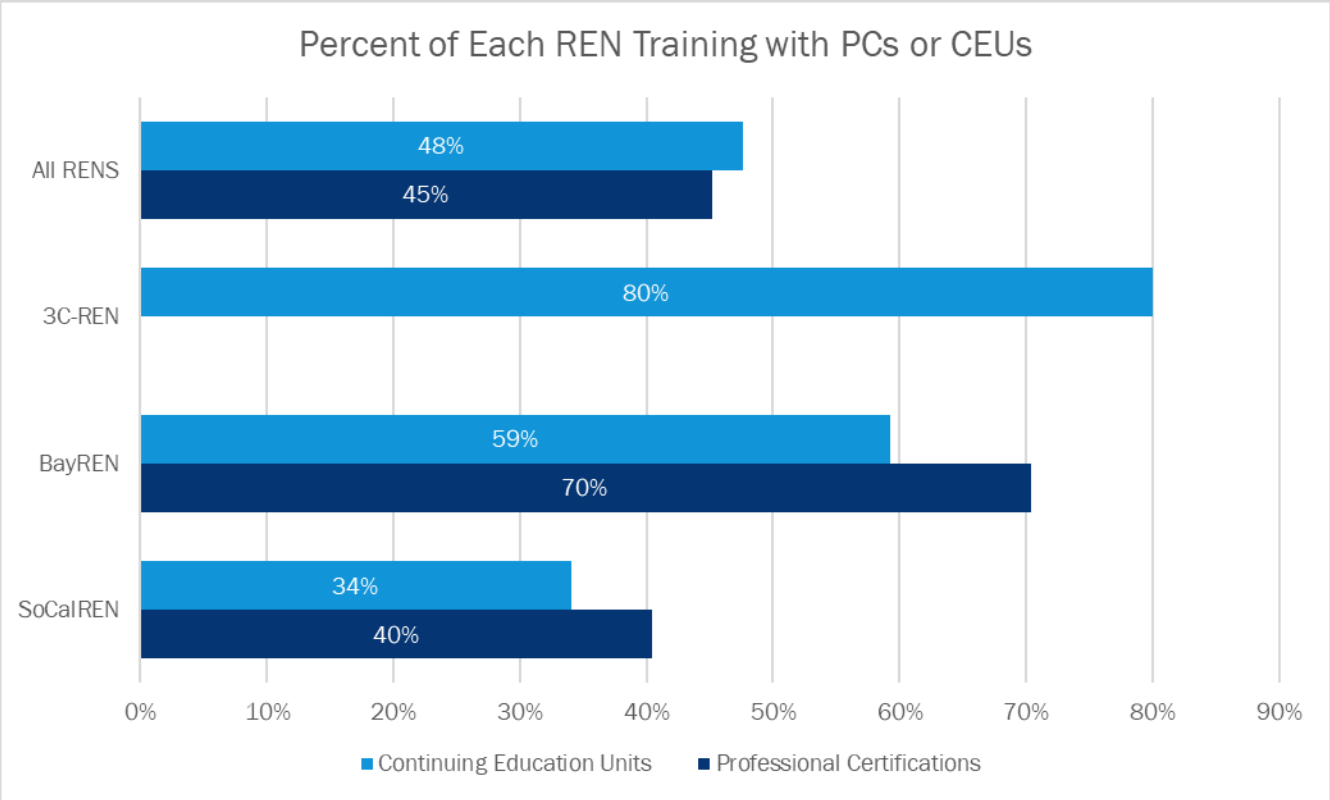


Table 20 below shows a tally of courses offered by each REN. Of 3C-REN's 10 training offerings, 8 were associated with continuing education units, including 5 courses from the American Institute of Architects and 3 courses from the ICC. During the 2018-2019 timeframe, 3C-REN did not offer any courses with professional certifications.

Among its 27 training offerings, BayREN sponsored 16 training efforts yielding CEUs. These included: ICC (14), one each through the California Department of Real Estate the California Bureau of Real Estate Appraisers. BayREN sponsored a total of 19 training efforts that provided professional certifications to those students who successfully completed the course. These include 14 via the International Code Council and one each from Building Performance Institute, National Association of Realtors, US Department of Energy, Earth Advantage, Franklin Energy.

Among its 47 training offerings, SoCalREN provided 16 with educational credits via courses that are part of its Architecture, Construction and Engineering Students (ACES Pathway for disadvantaged high school students that is offered through East Los Angeles College. It also offered 19 training efforts that provide participants with professional certifications, including three through BPI and 16 via ACES that issues job skills certificates through East Los Angeles College.

Table 20. REN Training Associated with CEUs and PCs

REN Trainings by Sector during 2018-2019	Total Training Courses	# With Professional Certifications	# With Continuing Education Units	# Without PCs or CEUs
3C-REN	10	0	8	2
Public Sector	2	0	2	0
WE&T	8	0	6	2
BayREN	27	19	16	8
Multifamily	2	0	0	2
Public Sector	15	14	14	1
Single Family	4	1	0	3
WE&T	6	4	2	2
SoCalREN	47	19	16	27
Multifamily	9	1	0	8
Public Sector	16	0	0	15
Single Family	2	2	0	0
WE&T	20	16	16	4
All RENs	84	38	40	37

5.1.7 Association with Program Theory Logic Models (PTLMs)

Because WE&T activities may or may not be closely associated with program delivery, the evaluation team asked the RENs to use the WE&T data collection spreadsheet to indicate the number of training efforts that were directly aligned with PTLMs. Of the 84 training efforts identified, 55 (65%) were associated with PTLMs. All of 3C-REN training efforts were tied to PTLMs, while only 64% of SoCalREN training activities and 56% of BayREN activities were linked with PTLMs (Table 21). However, these percentages must be considered in the context of how the RENs associate their respective training activities with their formal logic models.

Table 21. REN Training Associated with PTLMs

REN Trainings by Sector during 2018-2019	Total Training Courses	# with PTLMs	% with PTLMs
3C-REN	**10**	**10**	**100%**
Public Sector	2	2	100%
WE&T	8	8	100%
BayREN	**27**	**15**	**56%**
Multifamily	2	0	0%
Public Sector	15	15	100%
Single Family	4	0	0%
WE&T	6	0	0%

SoCalREN	**47**	**30**	**64%**
Multifamily	9	0	0%
Public Sector	16	14	88%
Single Family	2	0	0%
WE&T	20	16	80%
All RENs	**84**	**55**	**65%**

Of the 17 SoCalREN training efforts not closely linked to a PTLM, 7 were related to the multifamily sector. They included in-person training courses, online courses, and on-the-job training for contractors. Because many of these activities were focused on information and knowledge necessary for contractor participation in its multifamily program, despite SoCalREN's indication that these efforts were not related to the multifamily PTLM, the evaluation team feels that a link could be made to outcomes covered within the PTLM. Among SoCalREN's other non-PTLM-related training activities, these efforts were often focused on longer-term workforce educational outcomes including paid internships for high school students to provide practical on-the-job experience, and contractor training workshops specifically targeted at small and diverse contractors, to prepare them to compete for, and perform EE retrofit projects for the County of Los Angeles and throughout Southern California. As such, these may be more properly associated with longer-term outcomes than with a specific program's logic model.

Among the 12 BayREN training efforts that were not closely linked to a PTLM, BayREN indicated that 6 were associated with its Green Labeling effort focused on real estate professionals. The remaining training activities were considered to be focused on the single family or multifamily sectors, including contractor sales training, BPI certification, and an online course on Home Performance & Best Practices. While these activities have the potential to lead to future energy savings, BayREN did not directly correlate those efforts to the activities and outcomes associated with its formal PTLMs.

Regardless of whether a training activity has a direct link to a PTLM or if the effort is designed to drive other longer-term outcomes, the evaluation team recommends that the RENs align the purpose of their training efforts and the intended outcomes derived from it with their larger strategic frameworks and document formally document the linkages. We also encourage the RENs to establish metrics for tracking their training efforts and quantifying the results to demonstrate the success of their efforts.

5.1.8 Testing to Assess Learning and Document Effectiveness

While training activities cover a broad range of topics and desired outcomes, their common purpose is to increase the knowledge base and skill sets of those people who attend the training. Mastery and retention of the curricula and application of the training can be assessed and documented in numerous ways, but the most straightforward way is to test student knowledge. Testing to assess learning and to document the effectiveness of training is central to determining if the ratepayer dollars devoted to training activities are well spent. Simply put, if you do not test, you will not know how effective the training was. Moreover, if you only conduct testing at the end of the training period, then you will only determine what the students know when the training is over. However, if you also conduct pre-testing to establish what the students already knew about the curriculum prior to taking the training, then you know how well new information was delivered and how effective the training is at educating students.

With this in mind, we asked the RENs, as well as a representative sample of the trainers who are teaching the courses, to report on the use of testing within the various training modules. Overall, nearly half (48%) of all REN training efforts incorporate post- training learning assessment via testing. 3C-REN includes testing for

80% of its training activities, while BayREN does so for 59%, and SoCalREN does so for 34%. Essentially, REN-sponsored training activities that correspond with professional certifications or continuing education units require post-testing as a prerequisite to receiving credit for the course. The same applies for the junior-college level courses provided to high school students through SoCalREN's ACES program. Other REN-sponsored training activities were less likely to involve testing at the end of the training session, and none of the RENs reported conducting both pre-and-post-testing in any of their training activities. A comparison of REN testing efforts is shown in Figure 12 and Table 22.

Figure 12. Testing to Assess Learning and Training Effectiveness

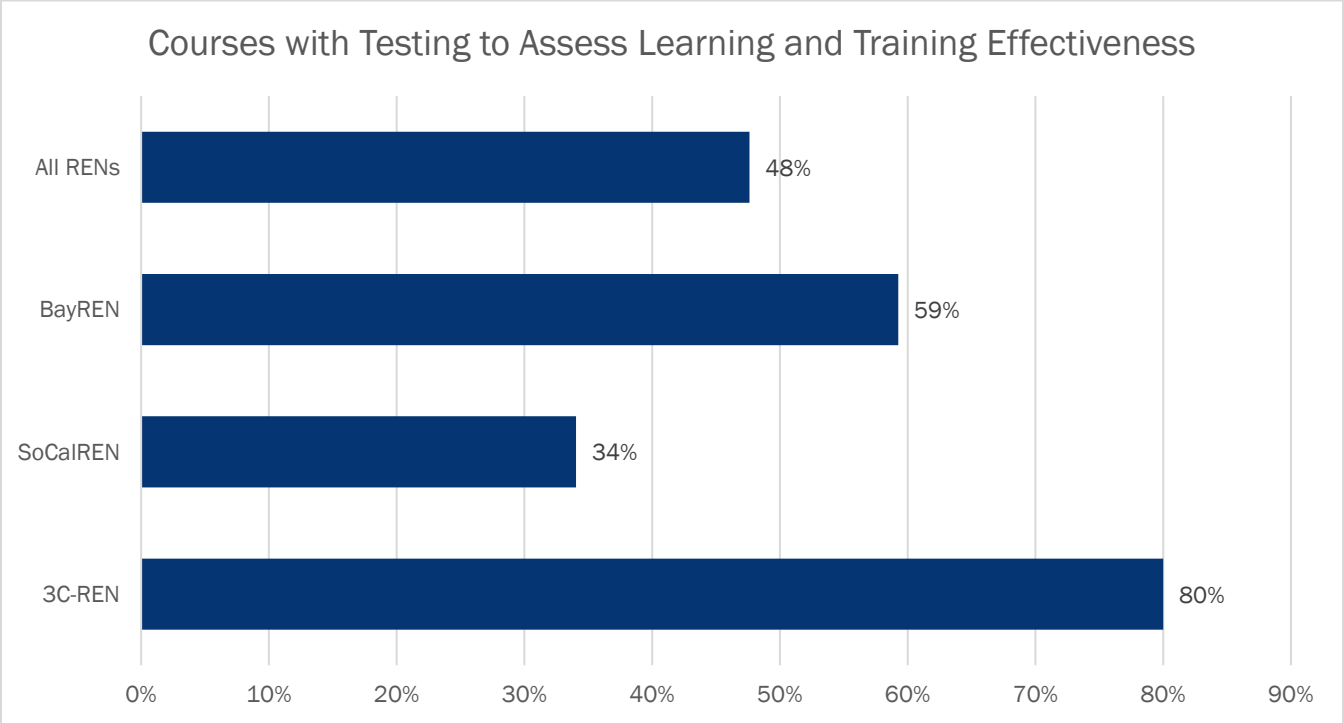


Table 22. Testing to Assess Learning and Training Effectiveness

REN Trainings by Sector during 2018-2019	Total Training Courses	# With Post-Testing*
3C-REN	**10**	**8**
Public Sector	2	2
WE&T	8	6
BayREN	**27**	**16**
Multifamily	2	0
Public Sector	15	14
Single Family	4	0
WE&T	6	2
SoCalREN	**47**	**16**
Multifamily	9	0

Public Sector	16	0
Single Family	2	0
WE&T	20	16
All RENs	**84**	**40**

** Post testing data availability based on professional certifications and continuing education credits*

Because testing is so central to assessing student learning, the evaluation team recommends that the RENs review their training activities to determine the appropriateness of incorporating testing protocols into their training efforts. For instance, a training course designed to familiarize building professionals with heat pump water heaters might have four learning objectives: 1) familiarize the students with the new technology, 2) explain the benefits of the new technology, 3) explain how the technology fits into the appropriate codes, and 4) explain how the technology can be applied to the day-to-day work of the person attending the class. Student understanding of each of these objectives can be readily tested.

Of course, for some types of training, pre- and post-testing may not make sense due to the training format, intended application, or type of content. For instance, a downloadable toolkit with reference materials to guide a workforce activity is clearly an educational vehicle, but its online format, which is designed for independent use, does not readily lend itself to testing. Likewise, hour-long C&S courses taught over a lunch break also do not lend themselves to pre-and post-testing. Such lunch and learn presentations are necessarily time constrained since the curriculum must fit within the timeframe that students have available for learning. If any time were devoted to pre- and post-testing, fewer minutes would be available for delivering the training curriculum. However, these limitations do not mean that such efforts should remain immune from testing or data tracking requirements. Rather, RENs should explore different ways of assessing student learning and long-term outcomes.

For training efforts such as the downloadable toolkit, RENs might require an email address in order to obtain the link for the download. That email address could then later be used to send a brief follow-up survey to ascertain the effectiveness of the materials and how students applied the training. For training activities like lunch and learn courses — particularly where multiple topics are presented to the same audience in a series such as C&S topics presented to municipal building departments — it may be practical to conduct annual pre--and post-testing. For instance, to assess overall understanding of 2019 codes, the RENs could have their training partners administer a pretest to everyone within a student cohort, such as all employees at a building department. Then after the last training topic had been covered, the RENs could test overall knowledge of the codes. Comparing the pre-and post-test scores would enable the RENs and the CPUC to determine the knowledge acquired through the lunch and learns or via on-the-job training. These are just a few examples of how testing might be incorporated into WE&T efforts. The evaluation team encourages the RENs to explore and propose the most suitable ways to incorporate testing and other forms of learning assessment into their training activities.

5.1.9 Availability of Data to Track Training Effectiveness

While testing is central to assessing student learning, it is not the only metric by which to assess the overall effectiveness of REN training efforts. For this reason, the evaluation team asked each REN to report on:

1) Collection of attendee contact information.
2) Use of post-training feedback forms.
3) Post-course follow-up data to determine if, how, and where the student is using the training.
4) Tracking data to determine where and how the training is being applied in the real world.

Overall, the RENs collected participant contact information for most of their training efforts. Although 100% data collection is the gold standard, issues periodically arise. As a result, BayREN was able to provide customer contact information for 96% of its training activities. SoCalREN did so for 74% of its training efforts. 3C-REN reported no availability of customer contact data for evaluation purposes, but this was the result of issues with the release of personally identifying information and not due to a failure to collect information in the first place.

The RENs were less consistent with the use of post training feedback forms to gather data on attendee perspectives for improving training effectiveness. In all, BayREN used feedback forms for 70% of its training efforts; 3C-REN did so for 40%, and SoCalREN did so for only 9%. Soliciting feedback from attendees is a best practice, and the evaluation team encourages the RENs to do so on a regular basis. However, we also acknowledge that training format, timing, and other factors can limit its practical use for some types of training activities.

When it came to post training follow-up, BayREN's Green Realtor Mentoring effort was the only WE&T activity that specifically followed up with training attendees to assess how and where the training was being used. This represented 7% of all BayREN training efforts. While SoCalREN, did not sponsor a training effort that specifically provided post course follow-up, it did report collecting attendee follow-up data for 40% of its training activities. Most of this follow-up was attributable to longitudinal tracking of SoCalREN's ACES program for high school students and their subsequent career placement. 3C-REN had no mechanism for collecting follow-up data, but their training efforts were only beginning to get underway in the latter half of 2019. Further details about tracking efforts and data availability are shown in Figure 13 and Table 23 below.

Figure 13. Availability of Tracking Data to Document REN Training Effectiveness

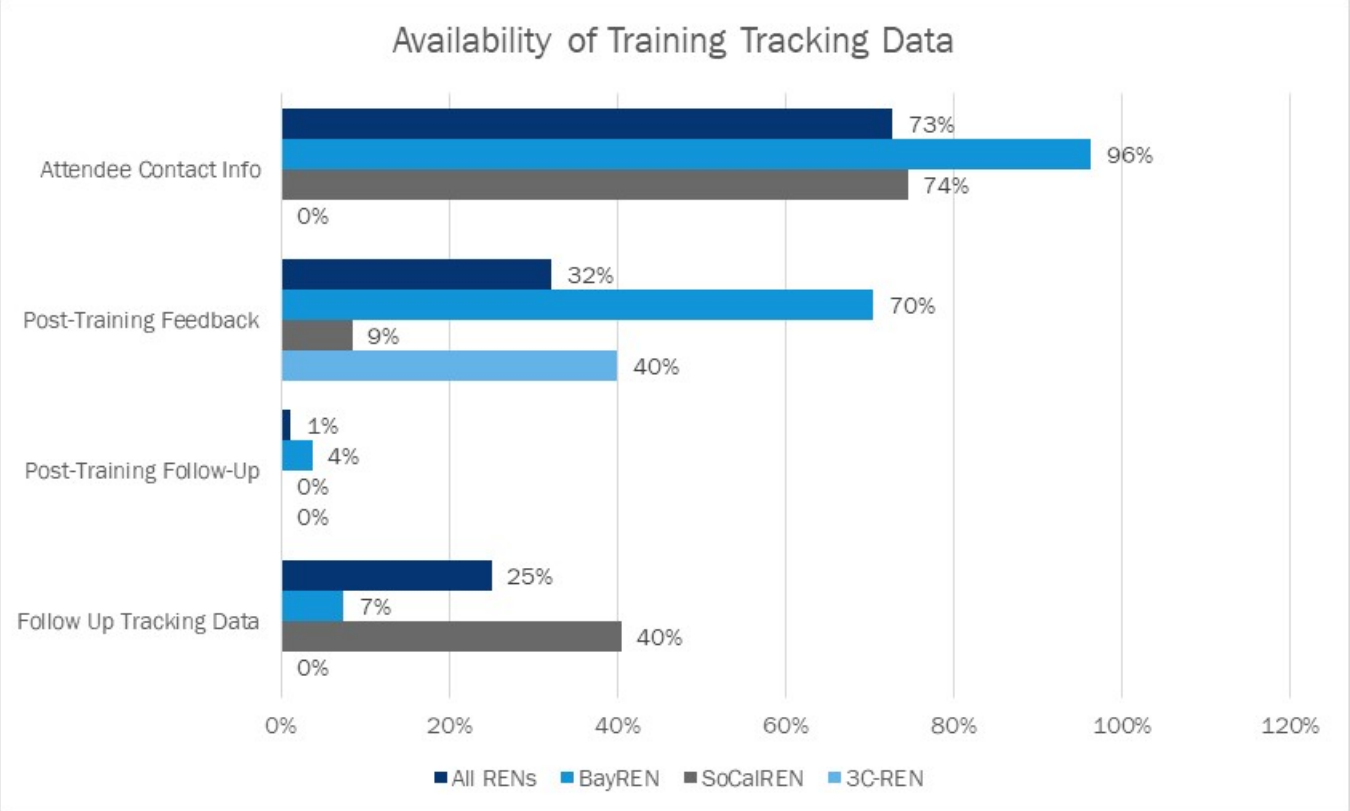


Table 23. Availability of Tracking Data to Document REN Training Effectiveness

REN Trainings by Sector during 2018-2019	Total Training Courses	# With Attendee Contact Info	# With Post-Training Feedback	# With Post-Training Follow-Up	# With Follow Up Tracking Data
3C-REN	**10**	**0**	**4**	**0**	**0**
Public Sector	2	0	1	0	0
WE&T	8	0	3	0	0
BayREN	**27**	**26**	**19**	**1**	**2**
Multifamily	2	2	0	0	1
Public Sector	15	15	15	0	0
Single Family	4	4	0	0	0
WE&T	6	5	4	1	1
SoCalREN	**47**	**35**	**4**	**0**	**19**
Multifamily	9	7	1	0	0
Public Sector	16	8	1	0	1
Single Family	2	0	0	0	0
WE&T	20	20	2	0	18
All RENs	**84**	**61**	**27**	**1**	**21**

Although the scarcity of data documenting training effectiveness is a shared issue for all three RENs, the evaluation team feels that it is important to note that this lack of data collection is common across all California PAs, including IOUs, since non-resource activities in general, and training, in particular, have not been required like the more rigorous requirements for tracking attributable energy savings.

If the CPUC is interested in understanding the effectiveness of training across the PAs it regulates, then the evaluation team offers a few suggestions for how to do so beyond requiring testing. In some instances, employing pre--and post-testing to ascertain command of learning objectives may be less important than tracking program outcomes to document that students can demonstrate the overall desired outcome. This is particularly true when a training activity focuses on an applied skill, such as learning how to conduct an energy audit or how to use the online HERs registry. In cases like these, rather than testing for academic understanding, it may be more effective to track compliance with training protocols and to conduct quality assurance checks to identify any opportunities for additional training to improve performance.

For instance, for a training on how to use the online HERs registry, it should be reasonably straightforward to document where the training is being applied by quantifying the forms (CF1, CF2, CF3 R) filed during a given timeframe. If tracking data is maintained regularly then it would be possible to observe an uptick in the number of forms filed on the registry after the training had been delivered, and if unique identifiers were used for each person who received the training and the same numbers were used to identify who filed the form, it would be possible to link the training activity to the individual, to the job, and to any associated energy savings.

Likewise, if people attending a training session on how to conduct an energy audit or how to install a heat pump were given audit and rebate forms with unique numbers and those forms were then used when they worked in the field, then it would be possible to correlate their activities with both the training and with the actual on-site audit or installation of the equipment. Moreover, if the identifying numbers were unique to the individual rather than to the company that the contractor works for, it would enable PAs to track the activities of each person independently. Admittedly, this becomes more challenging when individuals who take the

training apply it elsewhere outside of a REN-sponsored program, but if data were tracked on a statewide level, contractor activities could be tracked across all PAs. Moreover, even if each REN did so independently with no other PAs adopting such a practice, it would nonetheless provide an additional means by which the RENs could demonstrate their unique value metrics.

These are just a few examples of how the RENs might make efforts to incorporate testing, initiate post-course follow-up, and otherwise collect long-term tracking data to begin to quantify the effectiveness and real-world application of their training activities.

5.2 REN WE&T Case Studies

To supplement the above quantitative comparison of REN training activities the evaluation team also crafted a qualitative review of their numerous efforts. The subsequent sections discuss each REN's unique WE&T activities conducted during the 2018 to 2019 evaluation timeframe.

5.2.1 BayREN

During 2018 and 2019, BayREN provided a robust and well-developed set of training options for a diverse set of student audiences, including: codes and standards and new technology training for building departments staff and contractors; BPI-certified technical training, building science and sales training for contractors; Energy Pro software training for HERS raters; energy efficiency and green home training for realtors, appraisers, underwriters, and lenders. Many of these training activities were offered through BayREN programs such as C&S, Home + single family, Multifamily Building Enhancements, and Green Labeling. BayREN's program implementers also provided training for their internal staff to better serve BayREN's customers, including through the BayREN Commercial program.

For its Codes & Standards training BayREN focuses on enhancing individual and organizational knowledge among local government staff, with an emphasis on building departments. Standard training topics cover residential and nonresidential code compliance and ways of improving code enforcement, with additional classes focused on reach codes and new technologies like heat pump water heaters. C&S training sessions are typically 60 to 90 minutes so that they can be fit into a lunch break or building department staff meeting. More in-depth training is covered through Energy Code Ace or other efforts sponsored by PG&E.

BayREN also uses contractor training in its Home +program to educate participating contractors so they can install more higher efficiency measures per job and achieve greater whole home energy savings by better explaining to the customer the overall value provided by high efficiency equipment rather than competing for the job based on low upfront costs. The program conducts a needs assessment for each contractor participating in its program and then provides the appropriate level of training. Technical topics cover building science, combining EE measures, sales, and the mechanics of program participation. BayREN also sponsors more in-depth BPI technical training. The program also refers contractors to the PG&E Energy Centers for more in-depth training.

Because the BayREN Multifamily Building Enhancements program allows participating property owners to choose their own contractors, BayREN does not work to educate them in the same manner as the Home + program. Nonetheless, training plays an integral role in BayREN's Multifamily program by helping to eliminate marketplace confusion among HERS raters so that they understand the differences between the BayREN program and PG&E's multifamily program. The training effort focused on EnergyPro Light software, which is a streamlined version of EnergyPro used by raters to do EE modeling. The training was designed to help the raters determine the optimum savings path and to make appropriate referrals between the two programs. This has been helpful as BayREN has focused on serving the smaller multifamily market.

BayREN's Green Labeling Program is designed to overcome barriers to energy efficiency in the real estate market. Training plays an important part in this program by educating realtors, appraisers, lenders, and underwriters to learn how to appropriately value energy efficiency in real estate transactions, whether that is recognizing the equipment and pointing it out to homebuyers and sellers, including the value in an appraisal, or in finding the right energy efficient mortgage. The second objective of the training is to create real estate ambassadors who can educate homebuyers and sellers on the value of energy efficiency. Much of the training for this program is outsourced to professional real estate associations who have standardized models and can provide PC or CEUs.

The BayREN Commercial program targets underserved small/medium-size businesses by offering rebates based on a NMEC approach, as well as providing microloans to small businesses. During the 2018-2019 timeframe, BayREN was launching the program so its training activities focused on implementer staff training to ensure that customers could be better served. Topics included how to sell customers on the idea of energy efficiency with payback analysis, ways to leverage incentives and package financing, and how to help small businesses qualify for EE loans by building or repairing their credit.

To provide its portfolio of training offerings, BayREN's works with seven implementation vendors including: Stop Waste, Frontier Energy, Franklin Energy (who purchased the former training provider Build It Green), CLEAResult, CalCERTS, and the Association for Energy Affordability. Training design and delivery vary by vendor and course. For example, the Codes & Standards program maintains a core set of courses based on the three-year California code cycle. When the course catalog needs to be updated BayREN works with its training providers to review the new codes and assess participation levels for previous courses to determine the new curriculum. In addition, BayREN also offers a mix of other offerings based on new technologies and the needs of public staff, so unique courses may also be developed that way as well. For instance, in 2019, as BayREN was preparing for the three-year code changes, they knew that many jurisdictions had passed reach codes for building electrification, so they worked with CalCERTS, Bay Area CCAs, and local jurisdictions to design a course to educate building department staff on reach code compliance and enforcement. They also created a new course on heat pump water heaters based on the rising importance of that equipment throughout the BayREN service territory.

The idea for a new course typically comes from BayREN staff or from one of their trainers, but BayREN is also open to suggestions from their implementers and customers. Once they identify the topic, BayREN typically tasks its trainers with outlining the curriculum. In the case of the new heat pump water heater course, CalCERTS applied the new topical content into a standard course format that follows a five-part sequence: 1) introduction, 2) learning objectives, 3) compliance process, 4) day-to-day application (typical forms, etc.), 5) best practices. Where possible, when BayREN offers a new course they seek to make that course more attractive to potential attendees by providing continuing education credits or professional certifications if possible. In the case of the water heater course, BayREN would seek certification from the ICC, and if approved students who take the class would be given appropriate credit.

Other times when it comes to offering courses with professional certifications and continuing education credits, BayREN works with its vendors to provide standardized training that meets nationwide standards, while still focusing on Bay Area audience needs. For instance, in BayREN's Green Labeling program, Franklin Energy delivers a realtor training module approved by the National Association of Realtors when it provides training to people selling homes in affluent counties such as Marin and Napa. It also offers a similar class approved by the National Association of Real Estate Brokers, which is a separate organization, that focuses largely on African American realtors and is designed to serve hard-to-reach and disadvantaged communities in pockets of Richmond, Oakland, Palo Alto, San Jose and Suisun City. While having parallel content for many topics, the details can differ based on the types of issues homebuyers may face regarding retrofits,

electrification, and different types of lending products. BayREN zeros in even more by having a BayREN representative speak at the trainings to discuss rebates and the other resources that are available.

Perhaps the most straightforward example of tracking training effectiveness comes from the BayREN Multifamily Building Enhancements program. For that program BayREN tracks the number of HERS raters who participate and can see by the number of projects submitted who is using their training. BayREN also regularly quantifies the number of people who complete professional certifications each year, but for many of the other training efforts data collection is limited to post event feedback sheets and/or anecdotal observation by BayREN staff, program implementers, and trainers. For instance, the CalCERTS instructor interviewed for this evaluation provides his email address in case people have questions after a class. The emails that he receives provide insights into how the training is being implemented and what portions of the material were new to the student. In a simple example, a building inspector may send a follow-up email seeking additional information about a particular code. Other times the anecdotal evidence is more circumspect yet more illustrative. For example, when discussing the online HERS registry the instructor tells building departments to look for the green dots that indicate that a form has been completed. Later, he heard from contractors wanting to know about the green dots that the building department is asking about. This was an indication that the building departments were applying the new information on the job and that the information was being propagated into the larger workforce. However, other than this type of anecdotal feedback, during the 2018-2019 timeframe BayREN did not employ a consistent or organized system for longitudinal tracking of the effectiveness of their training.

BayREN shifted much of its training online during 2020, which brought a range of benefits and drawbacks. During the lock-down phase of California's pandemic response in the spring of 2020, realtors were less busy so attendance rates for training efforts increased. Conversely, training activities that require hands-on experience with equipment were hampered. Another challenge was maintaining student engagement in an online format. BayREN's trainers experimented with different techniques including Zoom breakout rooms and requiring attendees to have their cameras on for the duration of the lesson, as well as requiring minimum passing grades during the post-course exams. BayREN has also discovered that despite the convenience of recording online sessions and subsequently offering on-demand training, the option for people to train on their own time can reduce participation. While BayREN has no hard data for this counterintuitive observation, one theory is that when a course is offered once at a predetermined time people prioritize the activity and make a commitment to take it. Whereas when a course can be taken at any time without a deadline, more important tasks continually take precedence.

5.2.2 3C-REN

3C-REN launched its training midway through 2019. Consequently, less than a year of training efforts were covered within the evaluation timeframe. They began by first determining what types of training PG&E, SCE, and SoCalGas were already offering to their customers. Then they assessed the needs of local constituents in both the public and private sectors to determine how 3C-REN-sponsored training could supplement and improve what was currently available. One driving factor for 3C-REN is the geographic isolation of their service territory that makes it difficult for their constituents to access the training that is typically provided by the IOUs in the large population centers of Northern and Southern California. So, one of 3C-REN's primary objectives was to ensure that their constituents are aware of and educated about energy codes, building practices, new technologies such as heat pump water heaters, and other resources that can help local communities to meet their EE and carbon goals. In particular, 3C-REN recognizes that electrification is becoming increasingly important for reaching California's statewide targets, and their local workforce is not yet sufficiently knowledgeable about the technologies and practices that will be necessary for accomplishing those goals.

After considering potential topics, 3C-REN eventually opted to begin training on California Energy Code Changes and Opportunities, Title 24-related courses designed to improve understanding of best practices for higher efficiency construction, zero net energy technologies such as heat pumps, and an introduction to passive homes. They also began planning to provide green certification training for local real estate professionals. The next step was to recruit instructors. Where practical, 3C-REN contracted with instructors who were already working for other RENs or IOU PAs, such as CalCERTS and Energy Code Ace. Other 3C-REN courses were either contracted to InBalance, a local firm, or directly administered by 3C-REN.

When working with trainers who bring existing courses from outside the local area, 3C-REN works with them to ensure that the curriculum reflects local considerations such as climate zones and local jurisdictional requirements. The courses provided by InBalance and 3C-REN itself are designed for local audiences from the beginning. 3C-REN's self-administered California Energy Code Changes and Opportunities training event provides an example of a homegrown local REN offering that was designed to increase code compliance and enforcement by bringing together public and private sector professionals to foster a shared understanding and common practices. The training was specifically designed by and for the tri-county region with speakers from local companies and jurisdictions, as well as external experts, who shared their experience and skills, responded to questions with local perspectives, and suggested best practices for the tri-county region since it tends to have more residential than commercial construction, and more retrofits than new construction.

3C-REN sees training as an integral part of their overall value proposition. They use workforce education to increase building professionals' awareness of and interest in code changes, to introduce new technologies, to explain the value proposition of higher energy savings, and to increase program participation and installation rates of higher efficiency equipment. They also use their training efforts to synergistic effect by targeting multiple audiences. 3C-REN seeks to educate architects to influence new construction and real estate professionals to promote efficiency and electrification at the time of sale. They also promote soft skills training for contractors to better sell energy efficiency. On the program side of things, 3C-REN is using their residential direct install program to build customer interest in efficiency and electrification so customers will ask contractors for the new measures. In this way, building departments, architects, designers, contractors, and installers have multiple points of exposure and an increased likelihood of changing their business practices and driving greater energy savings. The approach has also been helpful for educating city and county staff members and elected officials as they conduct planning and policy efforts.

When creating a new training offering, 3C-REN meets with instructors to discuss knowledge gaps for the target audience and potential learning objectives. The instructors then plan the learning objectives and outline the course curriculum to best serve these target audiences. Frequently, there is more potential material to cover than will fit within the class length so the instructors pare down the material to what the audience most needs to know, what will hold their interest, and how it can best be applied in real world applications. PowerPoint presentations are standard, but hands-on time with technical equipment and small group breakout sessions engage the students more directly and reinforce learning. When providing the same course material to a different audience on a different day, 3C-REN's instructors maintain the same curriculum to ensure consistency, but they often include different examples to make the content more relevant to that audience.

Eighty percent of 3C-REN's courses used a test at the end of the training to assess learning on the course curriculum. The courses provided by Energy Code Ace included testing. Others did not. Aside from tracking the number of students who complete professional certifications and continuing education units, 3C-REN's other primary means of assessing training effectiveness involved feedback forms that were provided at the end of the training or sent via email after the class. These quick surveys were used to gather feedback on the applicability of the course content to their daily work and on the instructor. They also collected anecdotal feedback, but not in a systematic manner.

During 2019, 3C-REN's training efforts were all conducted live and in person. This was done for several reasons. First, as a new REN they sought opportunities for direct interactions with people to build relationships. Second, in person workshops provide the advantages of face-to-face student-teacher exchanges, hands-on experience with equipment, and networking opportunities among attendees. 3C-REN and its trainers reported that event attendees were excited about "local" events hosted in locations across San Luis Obispo, Santa Barbara, and Ventura counties. Driving for an hour to attend an interesting course was considered viable, whereas the previous need to travel to the greater Los Angeles and San Francisco Bay Areas for training was considered by many to be an insurmountable barrier.

3C-REN halted in person training and switched to offering online training in 2020 because of the coronavirus pandemic's social distancing requirements. In some cases, this proved beneficial. Elimination of travel time has boosted enrollment numbers, and the use of Zoom breakout rooms has encouraged people to have small group discussions and network. However, online trainings can be unwieldy as the number of attendees grows, which led 3C-REN to cap attendance at 50 people. Additionally, building performance training to familiarize students with new equipment has proven more challenging since showing video demonstrations and online diagrams does not have the same immediacy of hands-on experience.

5.2.3 SoCalREN

WE&T serves the SoCalREN mission by promoting energy efficient technologies, fostering job opportunities, and helping constituents to understand the central role that energy plays in relationship to climate, health, and the economy. Moreover, SoCalREN's training activities align with its REN value proposition by building capacity and improving equity by increasing the diversity of the EE workforce to better reflect the demographics of the communities that SoCalREN serves. They also address challenges with an aging workforce providing training to encourage young people to enter careers that will help address climate challenges.

SoCalREN's training activities during the 2018-2019 timeframe included efforts aligned with its public sector, multifamily, and single family programs, as well as WE&T courses not directly affiliated with an EE program. The training focused on identifying EE opportunities, rebates, funding and financing, energy benchmarking, EE strategies to maximize savings, water/wastewater training, EZ Retrofit Excel-based audit tool, BPI-certified technical training, building science and sales training for contractors; and contractor workshops to explain program requirements for doing business with SoCalREN, LA County, and other public agencies. These activities were implemented through ICF, the Energy Coalition, and the Emerald Cities Collaborative.

SoCalREN's training primarily targets three groups: local governments, hard-to-reach constituents in disadvantaged communities, and contractors, particularly those that are Women, Minority Disabled Veteran Business Enterprises (WMDVBE). Often these audiences overlap. For example, since 2018 SoCalREN has sought to train WMDVBE contractors through its E-Contractor Academy with the skills and credentials needed to contract with local governments for EE projects in disadvantaged communities or to work as participating contractors in its multifamily program serving hard-to-reach constituents. This approach does more than just help to build local capacity. It also helps to establish and/or deepen the trust between contractors and the customers they serve. Because the contractors often live and work in the same communities, SoCalREN finds that customers are more receptive to adopting energy saving technologies and behaviors. When a contractor from their own community is explaining their options, customers tend to feel more comfortable learning about the rebates and financial products that can help them afford the upgrades.

In addition to working with contractors, SoCalREN also has a specially designed WE&T program for ACES that provides teenagers and young adults from disadvantaged communities with science, technology, engineering, architecture, and math curriculum, as well as internships and on-the-job training to encourage their entry into trades and professions associated with the EE workforce. The ACES program identifies promising high school

students and partners with East Los Angeles College to provide in classroom education. Classes include courses on drafting, computer-assisted design, manufacturing mathematics, architecture, surveying, construction, machine shop, and electronics.

Generally, the contractors working with SoCalREN are well established in their trade and businesses, so they do not need help with those aspects of program delivery. Instead, SoCalREN's single family, multifamily and public sector WE&T efforts sought to familiarize contractors with new energy efficient technologies, explain incentives and financing that make EE projects more affordable, and teach the soft skills to sell energy efficiency. For instance, SoCalREN's trainers educated participating contractors on CalGreen building codes and then trained them how to audit a building and assess opportunities for energy savings outside of their respective fields of expertise. So, an electrician might learn to see HVAC opportunities and building envelope opportunities and an HVAC contractor would learn to identify lighting opportunities. The training also helped contractors to understand what rebates were available, how to calculate them, how to write bids to qualify for rebates, and how to complete and process the paperwork. The public sector WE&T training efforts went further by also helping contractors to understand the requirements for public agency bidding and contracting and by helping contractors to learn about upcoming bid opportunities based on SoCalREN's EE work with public agencies.

SoCalREN's public sector training focused on educating local government staff about five primary learning objectives: 1) understanding how to identify and evaluate potential EE and water/wastewater project opportunities; 2) learning about energy efficient technologies and the feasibility of implementing them; 3) becoming familiar with funding and financing options for public sector EE projects, and how to apply for and comply with financing requirements; 4) learning about energy benchmarking and how energy analysis can help identify and verify EE projects; 5) appreciating how SoCalREN can support and provide public agencies with no cost services. SoCalREN also engaged public agencies to discuss the benefits of establishing goals for WMDVBE contractors and how to structure their public works construction opportunities to hire them. Additionally, to satisfy the need for on-demand information, SoCalREN developed an online toolkit with digital copies of previous webinars and presentations delivered to public agencies, as well as marketing, educational, and outreach materials.

SoCalREN's approach to training began with a gap analysis based on an examination of the market, a review of IOU training offerings, and a close understanding of the needs of their customers. For 2018-2019, SoCalREN focused on two prominent gaps: the need for more young people to begin energy-related careers and the need for more WMDVBE businesses to be working in disadvantaged communities and contracting with public agencies. To develop appropriate curriculum SoCalREN then tasked its contracted trainers to design courses and training materials.

For example, when the ACES program recognized the need for a new course on three-dimensional advanced computer-assisted design, one of primary ACES professors selected the most appropriate software tool, prepared the course materials, and had it approved for instruction the following semester. Of course, not all training fits neatly within an academic calendar. Often training arises based on emerging needs. For instance, ICF, which implements the SoCalREN multifamily program, had its account managers work one-on-one with participating contractors to assess their needs and ensure that they fully understand all the program processes, forms, and procedures, including requirements for properly handling personally identifying information and other data protection rules. SoCalREN has found that while providing a standard overview of what is required for program participation conveys the primary message points, it is the one-on-one discussion and review that ensures clear understanding and brings compliance into place.

SoCalREN is also cognizant of aligning the delivery format with the audience. They find that their E-Contractor Academy training for contractors works best with one-on-one coaching to help them prequalify to bid on project

opportunities with public agencies. Conversely, online webinars can work well when training representatives of public agencies from across the SoCalREN service territory on potential EE measures for different types of facilities and how to apply for funding and financing. The online format also reduces travel times which can increase training participation.

Prior to 2018, SoCalREN had no consistent metrics for measuring WE&T activities. Starting in 2018 they aligned their metrics with their business plans and then adopted CPUC common metrics. Since then, in most but not all cases, they have captured the basics including training dates, number of students attending, and student contact information. Additional assessment and data collection varied by training effort. The ACES program maintains academic standards for data collection, testing, and learning assessment; they also track student job placement. Similarly, SoCalREN-sponsored BPI courses also capture essential information including the testing prior to providing professional certifications. However, other training activities had less robust mechanisms to assess training effectiveness.

One example of a training activity with no tracking at all was a lunch and learn seminar to teach public agencies about the California Building Energy Benchmarking Program, energy use planning, prioritization of efficiency measures, and the energy analysis services available through the SoCalREN. While that curriculum was specifically designed to encourage the target audience to take energy-related actions, attendance was not tracked; no testing was involved; and no specific follow-up was done. However, SoCalREN indicates it has taken steps to rectify these deficiencies for all of its WE&T activities. Moreover, new data collection practices, including outcome-based performance measures, are under development, and SoCalREN indicates the changes will align with their final value metrics.

In 2019, SoCalREN closed its single family program and increased its efforts on working with contractors through its multifamily and public sector programs. The pandemic of 2020 brought further changes, with a rapid decrease in in-person activities a rise in online training. During 2020 SoCalREN reassessed its WE&T activities to ensure alignment with its proposed value metrics, as did BayREN and 3C-REN. In its 2021 ABAL SoCalREN proposed 81% increase in budget for WE&T activities.

6. Findings and Recommendations

This subsection provides findings and recommendations from the research and evaluation activities conducted in the Year 2 Assessment. Note that not all findings have an associated recommendation.

Findings Related to the Joint Cooperative Memos

Finding #1: The evaluation team finds that the JCMs clearly articulate which programs are comparable and that the memos do an adequate job of explaining the key differences among comparable program offerings offered by other geographically overlapping PAs. None of the PAs raised concerns about programs being duplicative. All PAs interviewed for this study stated that the Energy Division has been responsive and available during JCM development and that no concerns regarding the JCMs have subsequently been raised by the Energy Division in response to these filings. The consensus impression among the PAs indicates that because they have received no feedback to the contrary, they all feel that the Energy Division is satisfied by the process and that there are no major concerns with the level of documenting program overlap and approaches to differentiating the programs amongst the PAs that collaborate on the filing of the JCM, hereafter referred to as joint PAs. Based on our review of the JCMs and evaluation activities, the evaluation team agrees the level of documentation appears to conform with CPUC requirements.

Finding #2: Our in-depth interviews about the JCM process uncovered several potential risks that PAs are could potentially lead to duplication. These risks include:

- **Rollout of new third-party programs.** Due to confidentiality rules, the IOUs cannot disclose whether there is any potential for overlap between RENs and the new third-party programs, and there is no current way to address these matters in the JCM process. This uncertainty could jeopardize some of the RENs programmatic activities, especially REN programs that do not serve hard-to-reach markets. This has the potential to stifle innovation since the RENs could invest time and effort in new program design and later learn that a third party proposed an overlapping activity.

- **Emergence of new joint PAs.** As more organizations seek CPUC approval to administer EE programs, the likelihood of overlapping service territories increases. This will further add to the complexity of California's EE portfolio and will require existing and new PAs to increase their coordination efforts and remain vigilant in customer screening and validation protocols to mitigate customer confusion and avoid double counting of incentives.

- **Growth of Non-PA EE and Distributed Energy Resource (DER) programs.** California's energy landscape continues to evolve rapidly, with at least 14 non-PA CCAs[30] offering EE, DER, and/or greenhouse gas (GHG) reduction programs as well as 40 municipal utilities[31] that reported EE savings to the CEC in 2019. Many of these programs are not administrated or claimed by the IOU ratepayer funded PAs, but they share similar attributes, including customer and contractor demographics. Although these entities may not fall under the CPUC's regulatory jurisdiction, these programs represent considerable potential to create overlapping and duplicative programs. As of now there is no formal process or procedure for coordinating with these entities. To date, PAs have reported mixed results when

[30] According to CalCCA, there are 17 CCAs offering a broad range of programs. Of these CCA's only MCE, Redwood Coast Energy Authority, and Lancaster Choice Energy administer EE programs with CEDARS reporting. https://cal-cca.org/cca-programs/#toggle-id-3-closed.

[31] Table 5. EE Program Results by Utility, Energy Efficiency in California's Public Power Sector 15th Edition – 2021. https://www.cmua.org/files/2021%20%20Joint%20POU%20EE%20Report.pdf.

coordinating informally with entities that are not accepting public benefit funds for the administration of EE programs (non-PAs).

- **Uncertainty concerning the priority and precedence of unique program offerings.** Some of the PAs indicated they feel uncertain regarding the precedence of programs among joint PAs. Clearly statewide programs come first, it is less clear what happens after that. Moreover, while it is also clear that third party programs must coordinate with the PAs, it is somewhat unclear what happens if a REN has a pre-existing program and then a non-REN PA decides to offer a similar program. As it stands, representatives of the RENs and IOUs interviewed have interpreted the decision language that the onus is on the RENs to either point out the differences or modify their program; if they cannot, then it seems the REN can no longer offer the program. The backstop for this is that RENs may continue to offer these programs as long as they are using them to serve hard-to-reach customers, which may not be a viable option for all programs or PAs.

Recommendation: The following recommendations align with the above findings concerning JCMs:

- **Rollout of new third-party programs.** Any potential overlap with REN offerings from new third-party programs should be raised through existing communication channels between the relevant parties immediately when the IOU is legally able to share such information. In addition, language should be included in future third-party solicitations and/or contracts to require these parties to address how they plan to minimize overlap and coordinate with existing RENs.

- **Emergence of new Program Administrators with overlapping territories.** When joint PAs file a JCM for the first time they historically run into challenges and should anticipate the process to take longer than it does for joint PAs who have filed together previously. Existing PAs should reach out to potential new PAs as early as possible to discuss how to mitigate duplication, customer confusion, and incentive double counting. Additionally, new joint PAs should plan to begin JCM preparation in early January and schedule a formal process and timeline that paces the effort appropriately from kick-off to the submission due date to ensure that sufficient time is allocated to address any unexpected issues that may arise. The PAs should also reserve ample time for the document to pass through multiple rounds of edits by all involved parties, including reviews by management, and legal and regulatory reviewers.

- **Growth of EE and DER programs offered by entities that do not utilize public benefits funds (non-PAs).** PAs should be encouraged to expand the scope of their coordination with these emerging entities and programs, even if informally. It may be the difference between building popular new programs that leverage multiple resources to drive energy, cost and GHG reductions, or inadvertently creating programs that compete with non-PA programs for participants and savings. One such success story that exemplifies this opportunity is the Sonoma Clean Power and PG&E Advanced Energy Rebuild program, which was recently showcased in a separate evaluation.[32]

- **Uncertainty concerning the priority and precedence of unique program offerings.** The evaluation team recommends that the CPUC address the current asymmetry between the subordinance of existing REN programs and the primacy of programs offered by other PAs. Specifically, the team suggests clarifying the priority of program offerings and stating the CPUC's preferred procedures and outcomes for when new program offerings are introduced into the market by any party and the new offering overlaps with pre-existing programs offered by either RENs or other PAs. This clarity should help minimize confusion

[32] Group B, Deliverable 33 Case Study 2, Sonoma Clean Power and PG&E's Advanced Energy Rebuild Program, Opinion Dynamics and Tierra Resource Consultants, August 27, 2019. This study is available on Energy Division's Public Document Area.

and avoid the unnecessary expenditure of ratepayer dollars on the creation of duplicative new programs.

Finding #3: The JCM preparation process has been successful at increasing communication and coordination among PAs with comparable programs and overlapping service territories. JCMs facilitate active communication among these PAs on a regular basis through periodic meetings. The JCM process has led, where necessary, to customer screening protocols, decision trees and other agreements to minimize customer confusion and prevent double dipping of incentives.

Recommendation: If the CPUC is interested in a more quantitative appraisal, an evaluation assessing the degree of customer confusion or double dipping of incentives among PAs that file a JCM for comparable overlapping programs could be conducted. For example, a quantitative assessment might include a survey of customers who participated in a Joint PA program that currently uses a customer screening protocol, decision tree or other process specified in the JCM to coordinate activities and prevent duplication.

Findings Related to REN Unique Value Metrics

Finding #4: Based on this study's value metrics related tasks, the evaluation team finds the RENs to be prepared and capable of tracking and reporting their value metrics. Once the CPUC approves the metrics and baseline data has been collected by each REN, REN performance can be measured and assessed by third-party evaluators. In their respective 2021 ABALs, the RENs proposed unique value metrics, suggested timetables for preparing baselines, and identified metrics to measure their progress. They stated that some initial value metric baseline data might be available from 2020, but full baselines for target setting were not expected until 12 months of data can be collected for all value metrics. This implies that all REN value metric baselines detailed in the 2021 ABALs should be available at the end of 2021 and that the RENs may begin to report these baselines and set value metric targets as early as the 2022 ABALs.

Recommendation: An evaluability assessment of REN value metric baselines and ongoing data collection protocols should be conducted once all baselines and targets are finalized. Any value metric evaluation efforts starting in 2021 would likely be limited to an assessment of what data the RENs were able to collect in 2020 and which baselines could be established using finalized 2020 data.

Finding #5: All three RENs are improving their data tracking; however, tracking protocols, methods and data currently differ among programs, especially across the three RENs. Although it is logical for programs designed to deliver a unique value proposition to consequentially have unique value metrics, it is important from an evaluability perspective for there to be a set of common value metrics that can be assessed across programs and RENs. The new metrics requirements discussed in Decision 21-05-031 provide a mechanism to bring greater unanimity across the RENs and other PAs.

Recommendation: All three RENs should prepare to provide, at a minimum, the following details for every value metric: applicable sectors, associated core value, data source, calculation methodology, reported value, unit, numerator (of reported value if appliable), denominator (of reported Value if appliable). In addition, RENs should ensure they have the necessary systems in place to streamline the collection, measurement and reporting of their value metrics. An example of this level of value metric detail can be seen in Appendix A. REN-Wide Portfolio Metric Details Table of SoCalREN's 2021 ABAL.

Finding #6: BayREN conducted a formal process evaluation to gather a wide range of feedback from the CPUC, overlapping PAs and stakeholders in order to prepare a Core Value and Proposed Value Metrics Memo. The memo clearly outlines how BayREN's programs contribute in a unique way to the EE portfolio, as well as formally tying their metrics to Program Theory and Logic Models (PTLMs). During 2020, SoCalREN initiated a

comparable formal process evaluation that includes assistance with core values and proposed value metrics. Those results are to be made public in 2021.

Recommendation: New RENs should include development of their core values and associated metrics in their feasibility and planning documents. This process should include discussions with CPUC representatives, overlapping PAs and a broad range of efforts to solicit stakeholder feedback such as jurisdiction-wide group discussions, online surveying, in-depth interviews, and feedback from local jurisdictions. After running programs long enough to establish baselines, RENs should conduct a thorough process evaluation to assess how effectively their programs are delivering on their initially stated value metrics.

Findings Related to REN Workforce, Education and Training

Finding #7: REN workforce education and training offerings are well integrated with REN program offerings. During the 2018 and 2019 program years SoCalREN, BayREN, and 3C-REN offered a combined 84 distinct training courses that were delivered a total of 250 times, including repeat offerings of the same course to new audiences. Including repeats, SoCalREN sponsored 121 training activities (48%), BayREN sponsored 108 (43%) and 3C-REN sponsored 21 (8%) activities.

Finding #8: REN training activities serve a wide variety of customers including building professionals, building department staff, real estate professionals, public agency staff, and high school students. In all, 3,554 people attended REN-sponsored training efforts. Of these, the RENs trained 1,969 people in Public Sector activities (55%), 1,443 people in WE&T activities (41%), 76 people in Single Family activities (2%); and 66 people (2%) in Multifamily activities

Finding #9: Just under half of all REN training efforts (45%) provided attendees with continuing education units (CEUs) upon successful completion of the training activity, while 48% of the REN training efforts provided attendees with professional certifications (PCs) from third parties such as the International Code Council (ICC) and the American Institute of Architects, among others.

Finding #10: Training activities aligned with CEUs and PCs from third-party organizations involved post-training testing as a requirement for attendees to obtain course credits, however this testing is rare in other REN training efforts.

Recommendation: Because testing is so central to assessing student learning, the evaluation team recommends that the RENs review their training activities to determine the appropriateness of incorporating testing protocols into their training efforts. For some types of training where it does not make sense to test due to training format, intended application, or type of content, RENs should explore other ways of assessing student learning and long-term outcomes. For instance, if a training activity focuses on an applied skill, such as learning how to conduct an energy audit or properly install equipment, then conducting quality assurance checks after trainees have applied their new skills in real world situations may be better suited to identifying where additional training may be needed to improve performance.

Finding #11: The RENs do not consistently collect basic WE&T tracking data, solicit post-training feedback to improve training offerings, or conduct post-training follow-up to assess effective application of the training in field settings. Although incomplete data documenting training effectiveness is a shared issue for all three RENs to some degree, this relative lack of data may also be prevalent among other California PAs, including IOUs, since non-resource activities in general, and training in particular, have not been required to meet the more rigorous requirements for tracking attributable energy savings.

Recommendation: If the CPUC is interested in understanding the effectiveness and impacts of training across its PAs, then the evaluation team recommends developing guidelines for a consistent set of data collection

requirements and, where feasible, instituting statewide systems with unique identifying numbers for training attendees that are unique to the individual and not to the company, such as state license numbers, driver's license numbers, or uniquely generated IDs, that can be used to link individuals to specific training courses and subsequent activities such as audits, bids, project completion paperwork, and rebate forms that would help the CPUC to better track and attribute energy savings at the meter, as well as other associated nonenergy benefits.

Appendix A. In-Depth Interview Guides

CPUC Energy Efficiency
Program Oversight and Evaluation of the Group B Sectors
Deliverable 22-B – Regional Energy Networks In-Depth Interview Guide

Value Metrics and JCM Questions

Overview

As you know, the CPUC is interested in ensuring that RENs are providing unique offerings to the customers for their service territories D.12-05-015 defines three specific criteria for the RENs to ensure their offerings are unique, including conducting activities that IOUs can't or don't intend to undertake, piloting activities where there is no IOU program and where there is potential to scale, or offering programs to hard-to-reach markets even if there is overlap with other PA programs.

The CPUC requested that RENs "state their desired outcome from activities that fill gaps of other program administrators [...] and propose savings goals and metrics associated with their unique value, as well as a methodology for measuring progress toward their metrics." The CPUC has asked the evaluation team to discuss with you your process for developing those metrics and to review them to ensure that they can be retrospectively evaluated by the CPUC.

Value Metrics Development and Planned Measurement

1. What are the key unique values that you intend to identify for the CPUC? Why did you select them?
2. How do your unique values support your overall mission as a REN? How do your unique values relate to your PTLMs? How do they relate to the key outcomes of your program offerings?
3. Tell us about your approach to defining your overarching value construct. How have you gone about defining what makes your REN unique? Tell us about the timeline. Who were the key players? What were their roles and responsibilities?
4. Did you work with any outside consultants? If so, who? What was their role?
5. Did you engage stakeholders? If so in what way and when? What feedback did you receive?
6. Identifying unique values are the first step, while defining goals and metrics that demonstrate delivery of those values are the second step. Tell us about your process so far for determining the right goals and metrics to measure your successful efforts to deliver unique value.
7. What are the goals that you are striving for that will demonstrate the delivery of your unique value? Why were these selected?
8. Tell us about the metrics you are proposing to measure your progress. Why were these selected? How will they be tracked and measured?
9. How will you go about measuring your progress, gathering feedback, and then course correcting based on your progress toward achieving your goals? On what timeframe will you reassess your metrics?
10. How will you report progress on your efforts to deliver value? How will you report the metrics you have collected?
11. How has COVID-19 impacted or shifted your goals and value metrics?

Joint Cooperation Memo Questions

1. Your REN files annual JCMs to demonstrate that your activities do not overlap with other PAs and are thus filling the gaps of other program administrators. Can you describe the process you use to consult with other PAs and prepare your annual JCM?
2. Who are the overlapping PAs in your service territory? Who were the key counterparts at the PAs with whom you work who play similar roles to the folks in your organization? Please provide us with the contact information for your key contacts at each program and senior management levels.
3. Given that creating the JCMs is an annual process, please walk us through a year-long timeline starting just after the filing of your previous JCM. What are the key milestones and events? On what dates to they tend to fall?
4. Who are the key players at your organization who are involved in JCM development?
5. What are your internal processes for preparing the JCMs?
6. How do you communicate and coordinate with your counterparts at other PAs to ensure that your efforts are unique and complementary rather than duplicative? Tell us about monthly check ins at the program level and what those are about. Tell us about your meetings between your REN and IOU senior management. Do you also meet to coordinate with CCAs? Tell us about that too.
7. Can you share with us some examples of how your programs are complementary and unique relative to the other PAs that overlap your service territory? Tell us about the process that you needed to go through to arrive at this point. Did you have an earlier idea for an offering that did not work in this contract? How did it need to be tweaked in order to be original and complementary?
8. Who are the key players at the CPUC with whom you interact in regard to the JCMs? What has been their role in the process?
9. From your perspective, how has the CPUC received your JCM? Have they raised any concerns or complimented elements of the memo?
10. Drafting the JCM is one thing, but implementing it is another. How do you work with your fellow PAs throughout the year to actually ensure that your efforts are well coordinated? Can you provide examples and explain why please? Can you suggest any ideas for how things might be done more effectively?

WE&T Questions

The Year 2 work plan for Deliverable 22 also calls for an evaluation of REN workforce training and education (WE&T) efforts. Because some training activities fall outside those formally categorized as we & T, for the purposes of this conversation we will refer to all WE&T and any other training activities that you do as "training" regardless of how it may be categorized via program delivery, budgets etc.

Big Picture

1. To set the stage for our conversation, imagine for a moment that you had not yet filled out the training spreadsheet when you completed the data request, how would you explain the breadth and depth of the training offerings provided by your REN?
2. How does your collective training contribute to your overall value proposition as a REN?
3. How does workforce education and training fit within your overall portfolio design? Give us some examples of how it fits within individual program design.

Training Offerings

4. From our analysis it appears that you offer the following types of training activities. [INSERT ANALYSIS BY PROGRAM TYPE AND SECTOR] Is this correct? Why have you decided to provide the types training and education that you do?
5. What other types of training activities have you considered and decided not to offer? Why?
6. How do your training offerings differ from those offered by overlapping PAs?

How do you identify the training needs of your constituents? Training Design

7. Do you have overall guiding principles or a mission statement for your training efforts? If so, what is it? How does it guide your efforts? If not, what do you do instead?
8. How do your training efforts contribute to the promotion of energy efficiency, demand savings, carbon savings, and your other goals as a REN?
9. Walk us through the process of how you design and develop a new course. [Probe for a needs assessment, learning objectives, curricula development, format, timing, location, etc.]
10. Since the pandemic started how have you changed your training? [Probe for changes in topics; delivery modes such as more online training; frequency; number of students per training course].
11. From our analysis it appears that you work with the following training vendors: [INSERT LIST OF TRAINING VENDORS] to deliver your training efforts. Is this correct? What are the factors that you consider when hiring a training vendor?
12. From our analysis it appears that you have partnered with [INSERT ANALYSIS REGARDING PROFESSIONAL ORGANIZATIONS] to provide professional course certification and [INSERT ANALYSIS REGARDING PROFESSIONAL ORGANIZATIONS] to provide continuing education credits. Is this correct? Tell us how you identified these organizations and how you have worked with them to provide the certifications for students of your training.

Targeting and Marketing

13. How do you identify the target audience to take your training?
14. How do you market your training efforts? How do you know that your marketing and outreach efforts are effective?

Measuring Training Effectiveness

15. How do you know how effective your education and training efforts are? What metrics to use? How do you measure the effectiveness of your training efforts? Why have you chosen to do it this way? Do you think there may be a better way? If so, how?
16. From our analysis it appears that you [INSERT ANALYSIS ON THE NUMBER AND TYPE OF COURSES FOR WHICH SMILE SHEETS, PRE-AND POST-TESTING, AND FOLLOW-UP ARE CONDUCTED]. What do your own efforts to track your effectiveness using these methods tell you about the efficacy of your training activities? How does this contribute to your ability to improve your training?
17. What type of additional assessment would you like to employ to measure training effectiveness? [Ask if they have considered doing more pre-and post-testing and post course follow-up to see determine if students are actually implementing/using their training.]
18. How do you track and report the influence of your training activities on bottom line energy savings as reported to the CPUC? If you do not do this, have you considered how you might doing so?
19. Is identifying the training needs and the success of your training efforts affected by the different implementers working on your RENs programs? If so, how?
20. From our analysis it appears that [INSERT PROGRAM] has [INSERT NUMBER] of training participants. Is this correct? Qualitatively, can you characterize the feedback you received from those participants about their experience?

Training Budgets

21. What was your overall budget for training activities per year for 2018 and 2019? What is your budget for 2020?
22. What was your actual spend on training in 2018? In 2019?
23. If you provided training activities outside of those covered by this overall annual training budget, what was your annual spend on those activities?
24. How do you decide how much budget to allocate to training?
25. Are your training activities subsidized by outside financial contributions? If so, from who and in what amounts?
26. Do you feel that your budget for training efforts is adequate? If not? How much more would you like to spend if you could? How would you choose to spend it?
27. Do you provide financial incentives to the people who take your courses, such as rebates or paying for the cost of certification? Do you charge students for training? For course materials? What factors go into those decisions?

Training examples

28. What would you say represent the greatest successes of your training efforts in 2018 and 2019? Why do you say that? How about for all time and not just 2018-2019? What have you learned from these successful efforts? How will you be applying the learnings from these successful efforts to future training activities?
29. What are areas of improvement you have identified from your training efforts in 2018 and 2019? Why do you say that? What have you learned from those less successful efforts? How have you changed or will you be changing things going forward?

30. Please let us know what you feel are your top three training offerings with the most important one mentioned first. Why do you feel these three are the most important?
31. Please walk us through the program theory and logic model that most closely relates to each of these three training offerings.

Follow-up interviews

32. We will want to speak with some of your training vendors, instructors, and students. Who would you recommend that we speak with? Why?

Appendix B. WE&T Data Reporting Form

D22B REN WET data reporting form 2020.x

Appendix C. Workforce, Education and Training Tallies

6.1 Number of courses by REN, sector, course, and topic

REN/Sector/Program	Code enforcement and compliance	EE opportunities, rebates, incentives, funding options	Equipment or Technology	In-school curriculum	On-the-job training	Program participation	Real Estate	Sales	Software or online platform	Total
3C-REN	6		3						1	10
Public Sector	1								1	2
California Energy Code - Changes and Opportunities	1									1
Title 24 HERS Registry Demonstration									1	1
WE&T	5		3							8
2016 Title 24 Part 6 Essentials: Residential Standards	1									1
2019 Nonresidential Building Energy Code for Lighting	1									1
All Electric ZNE – Heat Pumps and Electric Appliances for Residential and Small Commercia (Module 2)			1							1
Introduction to Passive House			1							1
Quality Insulation Installation			1							1
Residential Envelope and Renewable Energy for Title 24 2019 (Module 4)	1									1

Residential Retrofits – 2019 Title 24 and Best Practices For High Performance (Module 3)	1									1
Residential ZNE for Title 24 2019 (Module 1)	1									1
BayREN	13		2			2	6	1	3	27
Multifamily									2	2
Energy Pro Lite Rater Training									1	1
Energy Pro Lite v4 Training									1	1
Public Sector	13		1						1	15
Contractor Domestic Water Heater	1									1
Heat Pump Water Heater (HPWH)			1							1
HERS Registry									1	1
Nonresidential 2019 Energy Code Changes	1									1
Nonresidential Fenestration Compliance	1									1
Nonresidential Lighting Compliance	1									1
Nonresidential Mechanical Compliance	1									1
Nonresidential New Construction	1									1
Nonresidential Tentant Improvements and Alterations	1									1
Residential 2019 Energy Code Changes	1									1
Residential Additions	1									1

Residential Alterations Compliance	1									1
Residential Envelope Compliance	1									1
Residential New Construction	1									1
Residential Zero Net Energy for New Construction	1									1
Single Family			1			2		1		4
BPI Certification Training			1							1
Healthy Home+ Webinar						1				1
Home Performance & Best Practices for BayREN						1				1
Sales Training								1		1
WE&T							6			6
Accredited Green Appraiser Training							1			1
Certified Green Lending Professional							1			1
Green Realtor Mentoring							1			1
Home Energy Score Assessor Bootcamp							1			1
National Association of Real Estate Brokers Certified Green Real Estate Professional							1			1
National Association of REALTORS Green Designation							1			1

REN/Sector/Program	Code enforcement and compliance	EE opportunities, rebates, incentives, funding options	Equipment or Technology	In-school curriculum	On-the-job training	Program participation	Real Estate	Sales	Software or online platform	Total
SoCalREN		12	5	16	5	8			1	47
Multifamily			1		3	4			1	9
EZ Retrofit Tool Training									1	1
How To Do Business with SoCalREN - MultiFamily Program						1				1
Multifamily Rater Requirements Adjustment and BPI Class Offering + Discount			1							1
Review of SoCalREN MF Whole Building Measures with BrightPower					1					1
Review photo naming intakes for SoCalREN						1				1
SoCalREN Human Good Introduction and Intake Discussion						1				1
SoCalREN MultiFamily Workshop						1				1
SoCalREN: How to make energy savings assumptions for individual measures					1					1
Training on Auditing					1					1
Public Sector		12	2			2				16

2019 New Public Programs Overview: Metered Savings Program, Pathway to Zero & Revolving Loan Fund		1								1
Benchmarking Lunch n Learn		1								1
Energy Efficiency Incentives: Evolving Policy, Requirements and Challenges		2								2
Energy Efficiency Strategies to Maximize Savings		1								1
Energy Services Trainings		1								1
Funding and Financing Trainings		1								1
Incentives Trainings		1								1
Intro to SoCalREN						1				1
Peer-to-Peer Workshop: The Huntington Beach Experience		1								1
SoCalREN Public Agencies Webinar-Workforce Development						1				1
SoCalREN Public Agency Member Toolkit		1								1
Technology Application for Program Savings (TAPS) - Technology Highlights			1							1
The Expedited Delivery System for Your Energy Efficiency Projects		1								1

Tried, True and New Strategies to Fund and Implement Energy Retrofit Projects for Schools		1								1
Water/Wastewater Trainings			1							1
Single Family			2							2
BPI Class Offering + Discount for SoCalREN Single Family Contractors			1							1
Single Family Contractor BPI Class Offering + Discount			1							1
WE&T				16	2	2				20
ACES Excursions					1					1
ACES Paid Internship - Worksite Experience					1					1
Doing Business with SoCalREN An E-Contractor Workshop						1				1
East Los Angeles College Skills Certificates Course Sequence				16						16
SoCalREN LA County Contractor Workshop						1				1
Total	19	12	10	16	5	10	6	1	5	84

6.2 Number of students trained by REN, sector, course, and topic

REN/Sector/Program	Code enforcement and compliance	EE opportunities, rebates, incentives, funding options	Equipment or Technology	In-school curriculum	On-the-job training	Program participation	Real Estate	Sales	Software or online platform	Total
3C-REN	**441**		**122**						**17**	**580**
Public Sector	**97**								**17**	**114**
California Energy Code - Changes and Opportunities	97									97
Title 24 HERS Registry Demonstration									17	17
WE&T	**344**		**122**							**466**
2016 Title 24 Part 6 Essentials: Residential Standards	69									69
2019 Nonresidential Building Energy Code for Lighting	14									14
All Electric ZNE – Heat Pumps and Electric Appliances for Residential and Small Commercia (Module 2)			83							83
Introduction to Passive House			22							22
Quality Insulation Installation			17							17
Residential Envelope and Renewable Energy for Title 24 2019 (Module 4)	21									21
Residential Retrofits – 2019 Title 24 and Best Practices For High Performance (Module 3)	31									31

Residential ZNE for Title 24 2019 (Module 1)	209									209

REN/Sector/Program	Code enforcement and compliance	EE opportunities, rebates, incentives, funding options	Equipment or Technology	In-school curriculum	On-the-job training	Program participation	Real Estate	Sales	Software or online platform	Total
BayREN	**705**		**198**			**33**	**525**	**23**	**37**	**1521**
Multifamily									**20**	**20**
Energy Pro Lite Rater Training									8	8
Energy Pro Lite v4 Training									12	12
Public Sector	**705**		**178**						**17**	**900**
Contractor Domestic Water Heater	12									12
Heat Pump Water Heater (HPWH)			178							178
HERS Registry									17	17
Nonresidential 2019 Energy Code Changes	46									46
Nonresidential Fenestration Compliance	10									10
Nonresidential Lighting Compliance	15									15
Nonresidential Mechanical Compliance	23									23
Nonresidential New Construction	6									6
Nonresidential Tentant Improvements and Alterations	140									140
Residential 2019 Energy Code Changes	46									46
Residential Additions	82									82
Residential Alterations Compliance	21									21

Residential Envelope Compliance	94									94
Residential New Construction	57									57
Residential Zero Net Energy for New Construction	153									153
Single Family			**20**			**33**		**23**		**76**
BPI Certification Training			20							20
Healthy Home+ Webinar						11				11
Home Performance & Best Practices for BayREN						22				22
Sales Training								23		23
WE&T							**525**			**525**
Accredited Green Appraiser Training							71			71
Certified Green Lending Professional							8			8
Green Realtor Mentoring							40			40
Home Energy Score Assessor Bootcamp							16			16
National Association of Real Estate Brokers Certified Green Real Estate Professional							31			31
National Association of REALTORS Green Designation							359			359

REN/Sector/Program	Code enforcement and compliance	EE opportunities, rebates, incentives, funding options	Equipment or Technology	In-school curriculum	On-the-job training	Program participation	Real Estate	Sales	Software or online platform	Total
SoCalREN		590	327	305	111	100			20	1453
Multifamily			0		3	23			20	46
EZ Retrofit Tool Training									20	20
How To Do Business with SoCalREN - MultiFamily Program						0				0
Multifamily Rater Requirements Adjustment and BPI Class Offering + Discount			0							0
Review of SoCalREN MF Whole Building Measures with BrightPower					1					1
Review photo naming intakes for SoCalREN						3				3
SoCalREN Human Good Introduction and Intake Discussion						1				1
SoCalREN MultiFamily Workshop						19				19
SoCalREN: How to make energy savings assumptions for individual measures					1					1
Training on Auditing					1					1
Public Sector		590	327			38				955

2019 New Public Programs Overview: Metered Savings Program, Pathway to Zero & Revolving Loan Fund		62								62
Benchmarking Lunch n Learn		34								34
Energy Efficiency Incentives: Evolving Policy, Requirements and Challenges		47								47
Energy Efficiency Strategies to Maximize Savings		0								0
Energy Services Trainings		44								44
Funding and Financing Trainings		69								69
Incentives Trainings		237								237
Intro to SoCalREN						19				19
Peer-to-Peer Workshop: The Huntington Beach Experience		35								35
SoCalREN Public Agencies Webinar-Workforce Development						19				19
SoCalREN Public Agency Member Toolkit		0								0
Technology Application for Program Savings (TAPS) - Technology Highlights			234							234
The Expedited Delivery System for Your Energy Efficiency Projects		0								0

Tried, True and New Strategies to Fund and Implement Energy Retrofit Projects for Schools		62								62
Water/Wastewater Trainings			93							93
Single Family			**0**							**0**
BPI Class Offering + Discount for SoCalREN Single Family Contractors			0							0
Single Family Contractor BPI Class Offering + Discount			0							0
WE&T				**305**	**108**	**39**				**452**
ACES Excursions					55					55
ACES Paid Internship - Worksite Experience					53					53
Doing Business with SoCalREN An E-Contractor Workshop						22				22
East Los Angeles College Skills Certificates Course Sequence				305						305
SoCalREN LA County Contractor Workshop						17				17
Total	**1146**	**590**	**647**	**305**	**111**	**133**	**525**	**23**	**74**	**3554**

6.3 Number of students trained by REN, sector, course, and type of student

REN/Sector/Program	Building Department Staff	Building Professionals	High School Students	Multiple Audiences	Public Agencies	Real Estate Professionals	Total
3C-REN	**17**	**128**		**435**			**580**
Public Sector	**17**	**97**					**114**
California Energy Code - Changes and Opportunities		97					97
Title 24 HERS Registry Demonstration	17						17
WE&T		**31**		**435**			**466**
2016 Title 24 Part 6 Essentials: Residential Standards				69			69
2019 Nonresidential Building Energy Code for Lighting		14					14
All Electric ZNE – Heat Pumps and Electric Appliances for Residential and Small Commercia (Module 2)				83			83
Introduction to Passive House				22			22
Quality Insulation Installation		17					17
Residential Envelope and Renewable Energy for Title 24 2019 (Module 4)				21			21
Residential Retrofits – 2019 Title 24 and Best Practices for High Performance (Module 3)				31			31
Residential ZNE for Title 24 2019 (Module 1)				209			209

REN/Sector/Program	Building Department Staff	Building Professionals	High School Students	Multiple Audiences	Public Agencies	Real Estate Professionals	Total
BayREN	**888**	**124**				**509**	**1521**
Multifamily		**20**					**20**
Energy Pro Lite Rater Training		8					8
Energy Pro Lite v4 Training		12					12
Public Sector	**888**	**12**					**900**
Contractor Domestic Water Heater		12					12
Heat Pump Water Heater (HPWH)	178						178
HERS Registry	17						17
Nonresidential 2019 Energy Code Changes	46						46
Nonresidential Fenestration Compliance	10						10
Nonresidential Lighting Compliance	15						15
Nonresidential Mechanical Compliance	23						23
Nonresidential New Construction	6						6
Nonresidential Tenant Improvements and Alterations	140						140
Residential 2019 Energy Code Changes	46						46
Residential Additions	82						82
Residential Alterations Compliance	21						21
Residential Envelope Compliance	94						94
Residential New Construction	57						57
Residential Zero Net Energy for New Construction	153						153
Single Family		**76**					**76**
BPI Certification Training		20					20
Healthy Home+ Webinar		11					11
Home Performance & Best Practices for BayREN		22					22

Sales Training		23					23
WE&T		**16**				**509**	**525**
Accredited Green Appraiser Training						71	71
Certified Green Lending Professional						8	8
Green Realtor Mentoring						40	40
Home Energy Score Assessor Bootcamp		16					16
National Association of Real Estate Brokers Certified Green Real Estate Professional						31	31
National Association of REALTORS Green Designation						359	359

REN/Sector/Program	Building Department Staff	Building Professionals	High School Students	Multiple Audiences	Public Agencies	Real Estate Professionals	Total
SoCalREN		**85**	**413**		**955**		**1453**
Multifamily		**46**					**46**
EZ Retrofit Tool Training		20					20
How To Do Business with SoCalREN - MultiFamily Program		0					0
Multifamily Rater Requirements Adjustment and BPI Class Offering + Discount		0					0
Review of SoCalREN MF Whole Building Measures with BrightPower		1					1
Review photo naming intakes for SoCalREN		3					3
SoCalREN Human Good Introduction and Intake Discussion		1					1
SoCalREN MultiFamily Workshop		19					19
SoCalREN: How to make energy savings assumptions for individual measures		1					1
Training on Auditing		1					1
Public Sector					**955**		**955**
2019 New Public Programs Overview: Metered Savings Program, Pathway to Zero & Revolving Loan Fund					62		62
Benchmarking Lunch n Learn					34		34
Energy Efficiency Incentives: Evolving Policy, Requirements and Challenges					47		47
Energy Efficiency Strategies to Maximize Savings					0		0
Energy Services Trainings					44		44
Funding and Financing Trainings					69		69

Incentives Trainings					237		237
Intro to SoCalREN					19		19
Peer-to-Peer Workshop: The Huntington Beach Experience					35		35
SoCalREN Public Agencies Webinar- Workforce Development					19		19
SoCalREN Public Agency Member Toolkit					0		0
Technology Application for Program Savings (TAPS) - Technology Highlights					234		234
The Expedited Delivery System for Your Energy Efficiency Projects					0		0
Tried, True and New Strategies to Fund and Implement Energy Retrofit Projects for Schools					62		62
Water/Wastewater Trainings					93		93
Single Family		**0**					**0**
BPI Class Offering + Discount for SoCalREN Single Family Contractors		0					0
Single Family Contractor BPI Class Offering + Discount		0					0
WE&T		**39**	**413**				**452**
ACES Excursions			55				55
ACES Paid Internship - Worksite Experience			53				53
Doing Business with SoCalREN An E-Contractor Workshop		22					22
East Los Angeles College Skills Certificates Course Sequence			305				305
SoCalREN LA County Contractor Workshop		17					17
Total	**905**	**337**	**413**	**435**	**955**	**509**	**3554**

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