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Submitted by

Mary Sutter, Alan Elliott, Mikhail Haramati, Jenn Mitchell-Jackson
Opinion Dynamics
1999 Harrison Street, Suite 1420
Oakland, CA 94612
msutter@opiniondynamics.com
(510) 444-5050 x104

Additional contributors to the study

Jeremy Battis, CPUC Project Manager
jeremy.battis@cpuc.ca.gov
(415) 703-3041

Katherine Johnson, CPUC Advisor for the implementation and reporting part of the study
kjohnson@johnsonconsults.com
(301) 461-4865

Aaiysha Khursheed, Project Manager for Itron
Aaiysha.Khursheed@itron.com
(858) 724-2628

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Abstract

In 2012, the California Public Utility Commission authorized two new program administrators to conduct ratepayer funded energy efficiency programs in the State of California. Authorized as provisional pilots, the Regional Energy Networks (RENs) operate independently of the Investor Owned Utilities (IOUs) (i.e., the RENs design and administer energy efficiency programs without utility oversight). The two RENs operate with a two-year budget of approximately $67 million or 2.6% of California's $2.6 billion 2013–2014 energy efficiency portfolio budget.

This study summarizes research on the RENs' value and effectiveness. The Consultant Team gathered primary data via participant surveys for three of the 17 programs in the RENs portfolios and in-depth interviews with REN and IOU staff. The Consultant Team also conducted a secondary review of program tracking data and other program materials.

For the purposes of this study, the RENs will have demonstrated value if their programs, as implemented, break new ground in areas not presently served by utilities, if their activities and programs have the potential to be widely replicated, or if their programs serve hard-to-reach markets. Additionally, the RENs would have demonstrated value if their activities promote Workforce Education & Training (WE&T), technology development, or the water-energy nexus. Positive program participant perceptions of the RENs are considered a strong indicator of value.

Study findings were that the RENs provided technical expertise that was beneficial. Close to two-thirds (64%) of BayREN Home Upgrade Advisor participants described some sort of benefit with the technical expertise provided by the Home Upgrade Advisor. Additionally, participants found the Advisor professional, knowledgeable, and responsive to their needs. All SoCalREN Public Agency Program participants stated that, as a result of the program, they now had access to such technical services as audits, design, or construction management assistance, and 93% of the participants indicated that they had access to EE expertise that their organizations did not have. Three-quarters of participants stated that working with the Public Agency Program reduced the amount of time needed to implement projects. Across the board, participants indicated a high level of knowledge by the SoCalREN team implementing the Public Agency Program (scores from 9.2 to 9.6 on a 0–10 scale where 10 is completely knowledgeable.)

The RENs will have demonstrated effectiveness if the RENs clearly show an ability to manage program implementation and adjust to necessary changes as they arise. Additionally, the RENs would be considered effective if program participants are satisfied and the RENs successfully mitigated program participants' challenges.

The study findings were that the RENs put in place and successfully implemented their $67 million portfolio within an 18-month period. This is commendable, especially given the high level of coordination required between the RENs and the IOUs to determine in how to create and deploy programs that target the same pool of customers. The three programs studied all had high levels of customer satisfaction, which indicates good management and effective service delivery. Additionally, the RENs navigated the new regulatory environment with some difficulties to begin with, but are now performing adequately (according to ED staff). A six-month regulatory delay occurred in the start-up of the RENs that the management of both RENs successfully overcame, although the delay made it difficult for the RENs to meet previously planned participation goals.

Glossary

To assist the reader, this section includes a list of abbreviations used throughout the report. This list does not include all abbreviations used in the report, only key terms that may help a reader who is not familiar with the area.

Abbreviations	Definitions
AAPOR RR1	American Association for Public Opinion Research Response Rate 1
AB32	Assembly Bill 32
ABAG	Association of Bay Area Governments
ARRA	American Recovery and Reinvestment Act of 2009
BayREN	Bay Area Regional Energy Network
BKi	Bevilacqua Knight Inc.
C&S	Codes and Standards
CALMAC	California Measurement Advisory Council
CAP	Climate Action Plan
CDC	Community Development Commission
CEEPMS	Community Energy Efficiency Project Management System
CHERP	Community Home Energy Retrofit Program
CPUC	California Public Utilities Commission
DSM	Demand Side Management
EBMUD	East Bay Municipal Utility District
ECC	Emerald Cities Collaborative
ED	Energy Division
EE	Energy Efficiency
EM&V	Evaluation, Measurement, and Verification
EUC	Energy Upgrade California
FTE	Full-Time Equivalent
GHG	Greenhouse Gas
HVAC	Heating, Ventilation, and Air Conditioning
IDEEA	Innovative Designs for Energy Efficiency Activities
IOU	Investor-Owned utility
LA	Los Angeles
LARC	Los Angeles Regional Collaborative for Climate Action and Sustainability
LGP	Local Government Partnership
MCE	Marin Clean Energy
ME&O	Marketing, Education, and Outreach
MFEER	Multifamily Energy Efficiency Rebate
MOU	Memorandum of Understanding
MUSH	Municipal, University, School, and Hospital
NAR	National Association of Realtors
PAC	Program Administrator Cost
PACE	Property Assessed Clean Energy

Abbreviations	Definitions
PAYS®	Pay As You Save®
PG&E	Pacific Gas & Electric Company
PIP	Program Implementation Plan
PPM	Program Performance Metrics
PROP	Permit Resource Opportunity Program
RCPA	Regional Climate Protection Authority
REN	Regional Energy Network
SCE	Southern California Edison
SCG (SoCalGas)	Southern California Gas Company
SEEC	Statewide Energy Efficiency Collaborative
SFPUC	San Francisco Public Utilities Commission
SoCalREN	Southern California Regional Energy Network
TEC	The Energy Coalition
TEN	The Energy Network
TRC	Total Resource Cost
UCLA	University of California, Los Angeles
WE&T	Workforce Education and Training

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Executive Summary

In 2012, the California Public Utility Commission (CPUC) authorized two new program administrators to conduct ratepayer funded energy efficiency programs in the State of California. Authorized as provisional pilots, the Regional Energy Networks (RENs) operate independently of the Investor Owned Utilities (IOUs) (i.e., the RENs design and administer energy efficiency programs without utility oversight) and implement programs that the IOUs cannot or do not intend to do. The CPUC requires that the RENs address hard-to-reach markets and test programs that have the potential to be replicated. The two RENs operate with a two-year budget of approximately $67 million or 2.6% of California's $2.6 billion 2013–2014 energy efficiency portfolio budget.

To test the feasibility of this new program administrator model, the CPUC authorized the San Francisco Bay Area Regional Energy Network (BayREN), spanning nine member counties entirely within the Pacific Gas & Electric (PG&E) service territory, and the Southern California Regional Energy Network (SoCalREN), which spans most of the Southern California Edison (SCE) and Southern California Gas Company (SCG) service territories. The BayREN administers seven distinct programs that focus on residential, commercial and multifamily customers; SoCalREN has 10 programs that focus on both residential customers and public agency organizations.

This report summarizes research on the RENs' value and effectiveness. Part of the study's purpose is to inform the CPUC on key performance aspects of the RENs that would be considered in weighting whether the RENs should be continued and/or expanded. Specifically, the CPUC would like to know if the RENs are fulfilling designated charter assignments, providing value to the State, and performing effectively.

The Consultant Team gathered primary data via participant surveys from three of the 17 REN programs and in-depth interviews with REN and IOU staff. The Consultant Team also conducted a secondary review of program tracking data and other program materials. These data sources inform the conclusions and provide the basis for recommendations within this report. In addition to this study, the CPUC has commissioned four additional studies to inform its decision as to whether to continue and/or expand the RENs. Those studies are either in the planning stages or in progress, with expected completion by the end of 2016.

Summary of Findings and Conclusions

Value

For the purposes of this study, the RENs will have demonstrated value if their programs, as implemented, break new ground in areas not presently served by utilities, if their activities and programs have the potential to be widely replicated, or if their programs serve hard-to-reach markets. Additionally, the RENs would have demonstrated value if their activities promote Workforce Education & Training (WE&T), technology development, or the water-energy nexus. Positive program participant perceptions of the RENs are considered a strong indicator of value.

The Consultant Team found some level of value in all areas assessed, but as indicated above, the primary data collection was from three of the 17 programs and REN and IOU staff. The findings below derive from both primary and secondary information.

- **EE programs new to California that hold potential for energy savings:** The RENs unveiled to the California EE community two new programs in the 2013-2014 program cycle that, although presently non-resource programs, hold potential to contribute to State energy savings goals: Pay As You Save® (PAYS) and two Southern California Regional Energy Center (SoCalREC) software packages.

  - **BayREN PAYS:** The BayREN PAYS program addresses the water-energy nexus and deploys new and existing water-saving technologies. Akin to an on-bill financing program, customers pay for the implementation of the program on their water bills. Energy ratepayer funds support the program design and assure availability of technical assistance in the early stages of water agency implementation. The program promotes water and energy savings, in turn lowering consumer water and electric costs. Additionally, energy savings accrue from the embedded energy savings that water conservation brings. Measures include ultra-efficient indoor water saving devices, drought tolerant landscaping, and weather-based irrigation controls. BayREN PAYS pilots were first started in 2012, funded through a Better Building Program grant administered by the Sonoma County Regional Climate Protection Agency (RCPA). As of July 2015, two communities are implementing PAYS – the Town of Windsor and the City of Hayward..
  - **SoCalREN software packages:** SoCalREN (through its Regional Energy Center, SoCalREC) assists local governments in tracking and building energy use and upgrade requirements via software packages. The first software package tracks energy use across several facilities. As of the end of 2014, 56 local governments have licensed this software through SoCalREC and are monitoring nearly 150 buildings. The second software package, now in the prototype phase, is an online building permitting software platform that lends local governments greenhouse gas (GHG) reduction tracking capability. SoCalREC has developed two prototypes and one local government has enrolled for product launch.

- **Program Overlap**: Overlap of customers is present, but services offered are distinct. Within the assessed programs, both the REN and IOU staff agreed that the Home Upgrade offerings vary, as do the offerings within the Public Agency Program. The multi-family programs also include the same customers, although BayREN program has experienced significant participation by market-rate buildings and PG&E has primarily served low-income complexes. Within SoCalREN, IOU account representatives often market both the IOU and SoCalREN multifamily program to customers.
- **Hard-to-Reach Populations:** The RENs are supporting energy efficiency in hard-to-reach markets, specifically in the Multifamily sector. The RENs employ Spanish speakers for outreach and marketing of the Home Upgrade program to non-English-speaking households.
- **Perceptions by program participants:** The RENs provide beneficial technical expertise to program participants. The Consultant Team found value in all three programs studied (BayREN Home Upgrade Advisor, SoCalREN Public Agency Program, and PAYS). Close to two-thirds (64%) of BayREN Home Upgrade Advisor participants described receiving benefit from the technical expertise of their Home Upgrade Advisor. Participants found the Advisor professional, knowledgeable, and responsive to their needs. All SoCalREN Public Agency Program participants said they now had access through the program to technical services such as audits, design, or construction management assistance. A large majority of the Public Agency Program participants (93%) indicated that they also have access to energy efficiency expertise that exceeds that of their local agency. Within the Public Agency Program, three quarters of participants said that working with the program reduced the amount of their time needed to implement projects. Across the board, participants indicated a high level of knowledge by the SoCalREN team implementing the Public Agency Program (i.e., scores from 9.2 to 9.6 on a 0-10 scale where 10 is completely knowledgeable.) The three water utilities that received support to develop and enhance a PAYS program also found value in the assistance that BayREN provided.

Effectiveness

The RENs will have demonstrated effectiveness if the RENs clearly show an ability to manage program implementation and adjust to necessary changes as they arise. Additionally, the RENs would be considered

effective if program participants are satisfied and the RENs successfully mitigated program participants' challenges.

The RENs successfully navigated the CPUC regulatory environment and mitigated administrative challenges to bring their $67 million dollar portfolio of programs to fruition within 18 months.

- **Navigating the regulatory environment:** The RENs have successfully surmounted significant barriers to entry and have gained proficiency within the complex energy efficiency regulatory environment. As new program administrators, the RENs by necessity had to navigate the complex and rigorous regulatory processes that the IOUs had been responding to for years. This includes filing program implementation plans, preparing advice letters, preparing cost-effectiveness calculators, and responding to data requests and proceeding comments. In early 2013 as the RENs were submitting their first round of compliance documents such as E3 calculators, there was a tremendous learning curve and the RENs experienced difficulties. Recent interviews reveal that RENs staff now indicates that they have developed adequate processes for managing regulatory processes; Energy Division (ED) staff generally concurs with this opinion.

- **Adjusting to management challenges:** The RENs responded well to management challenges. When faced with delays in CPUC decision making and funding, the RENs took stock, made adjustments, and responded to mitigate the late start and to advance their goals in a responsive manner.

  - For example, SoCalREN explained that they cut some non-resource activities in order to meet resource activity goals under a constrained timeframe. To help with the multiple regulatory requirements, the Association of Bay Area Governments (ABAG, the lead agency for BayREN) added an assistant to manage most regulatory processes for BayREN.

  - Another management challenge mentioned by both RENs was that the Home Upgrade Single-Family programs' designs required significant re-tooling. According to SoCalREN, in the initial Home Upgrade design, the incentive levels were too low, the incentives calculations were too complicated, and the application process was too difficult for customers. To address this, SoCalREN developed what they considered to be a more attractive incentive structure (replicated statewide), more streamlined program requirements and simplified prescriptive rebates. BayREN staff indicated that the Home Upgrade Single Family program also had initial design issues. Improvements in conversion rate data over time for the BayREN Home Upgrade program support an effective management of program implementation activities.

- **Program participant satisfaction and benefits:** Program participants have high satisfaction. The high level of satisfaction noted from surveyed respondents across the three different programs demonstrates effective program service delivery. Additionally, REN staff implementing the studied programs —i.e., BayREN Home Upgrade Advisor staff and SoCalREN Public Agency Program staff —are effectively assisting participants in overcoming challenges they face in planning, procuring, and completing energy efficiency projects.

Informing CPUC Policy

The CPUC seeks to better understand the differences between the two REN models as well as whether the REN non-resource programs are scalable.

- **Scalability of present offerings, ability to add new programs, and adding new RENs:** Existing program offerings can be replicated and scaled up but as explained below, new REN programs may encounter added difficulty and new RENs could face significant barriers to entry.

  - The management structures of the RENs allow for scaling up of existing small-scale efforts because they use consultants for program implementation. The RENs have demonstrated the

management capability to oversee consultants; the RENs and their implementing consultants are performing well in the three studies programs mentioned previously.

- If provided an opportunity to add new programs, the SoCalREN model may have a slight advantage over the BayREN model because of its fewer number of applicable decision makers, but both would potentially face challenges with oversight of a new program.
  - Within the SoCalREN model, the choice to pursue a new program is made by a single organization, although the Advisory Committee (composed of several local governments) likely would provide guidance on the appropriateness of any new program. BayREN has an additional coordination hurdle to overcome, as five of its nine members would need to agree to add a program.
  - For any new proposed program considered by BayREN, a lead agency would need to volunteer to manage any necessary consultant. Because BayREN member county staff reps indicate that they are often serving close to full time in their REN capacities, it may be problematic to shoulder additional work responsibility.[1] SoCalREN, with fewer full-time in-house staff, may have a slightly lower ability to oversee a new program.
  - Examples of potential areas for new programs, submitted by the REN staff, include a regional code compliance "clearing house", small business programs, agriculture, and Integrated Demand Side Management pilots for local governments.
- Since the existing RENs cover a large part of the IOU service territories, the primary geographic areas remaining within California to potentially establish a new REN would be within those areas defined by the central coast, the northern coast, the Sierra, the Central Valley, and San Diego County.
  - Collaboration was a key factor to successfully launching an existing REN given the significant time investment and consensus building required across multiple local government agencies.
  - Because in-person meetings are generally superior for building rapport and promoting diplomacy, the existing RENs enjoyed a comparative advantage in terms of their proximity to the IOU main offices. For any new REN, in-person meetings with the IOUs could prove to be time consuming and costly with the exception of the San Diego region.
  - Additionally, the existing RENs indicated that any new REN would incur costs at several levels, with the initial investment estimated by one person at about $250,000 for those startup costs not supported by the State (a cost that may prove prohibitive to smaller organizations and less affluent local governments). There are also the ongoing costs of collaboration among program administrators, which increases program costs.

Recommendations

The study supports a few specific recommendations and five areas to consider for any new potential REN.

- **The RENs should continue.** They should continue owing to the value that they demonstrate to their constituencies (within the three programs studied most closely) in several important areas: technical expertise, targeting hard-to-reach markets, and linkages with other utility offerings. While the study found value as described, this study is indeterminate on whether the RENs should continue as program administrators in either a probationary or a permanent status.

[1] According to BayREN, with additional resources they would have the ability to add new programs without difficulty.

- **The RENs should maintain their new programs and document customer response**. Both the PAYS program and the two software packages within SoCalREC are new and their full potential is uncertain. They are providing value now in the form of new technologies and savings via a water-energy nexus, but both have few participants. Tracking uptake will help the RENs determine whether customers find the program designs appealing enough to participate or if design changes are necessary.
- **The RENs and IOUs should ensure tracking of key pilot metrics in order to compare activities across program administrators.** The RENs believe that their relationships with local governments (and with community organizations) increase long-term energy savings. One way to determine this is to track specific metrics such as conversion rates. For example, BayREN Home Upgrade did track conversion rates (which increased from 4% in 2013 to 19% in 2014). If this metric were available for both SoCalREN and the IOUs, a stronger correlation would emerge of the presence or absence of an advantageous influence of the RENs relationship.

If the CPUC were to invite applications for new proposed RENs, this study identified several areas to consider. The CPUC could potentially benefit by:

- Creating a set of guidelines regarding the full regulatory processes by which any new proposed REN would be expect to adhere. This would reduce uncertainty about the significant coordination, time, and cost required in becoming a REN.
- Providing seed money to assist a new potential REN with preparing its first set of regulatory filings.
- Allowing for a prudent increase in administrative costs to facilitate collaboration through in-person meetings.
- Reviewing the associated Energy Division staffing requirements for overseeing additional RENs to assure appropriate coverage for ongoing interactions with additional program administrators.
- Assuring that any new REN leverages and borrows from the experience, models, and lessons learned from the existing RENs.

1. Introduction

In 2012, the CPUC created two Regional Energy Networks (RENs) to administer EE programs in Northern and Southern California. The RENs grew out of past efforts by local governments through the federal American Recovery and Reinvestment Act of 2009 (ARRA) and were established by CPUC Decisions D.12-05-015 and D.12-11-015. With a two-year budget of approximately $67 million, the RENs account for 2.6% of California's 2013–2014 EE portfolio budget of $2.6 billion. Independent of the IOUs, but supported by ratepayer funds, the RENs are unique. The CPUC evaluated initial REN proposals on the following criteria: undertake activities that the utilities cannot or do not intend to do, perform pilot activities that have the potential for scalability to a broader geographic reach, and take on pilot activities in hard-to-reach markets..[2]

1.1 RENs Overview

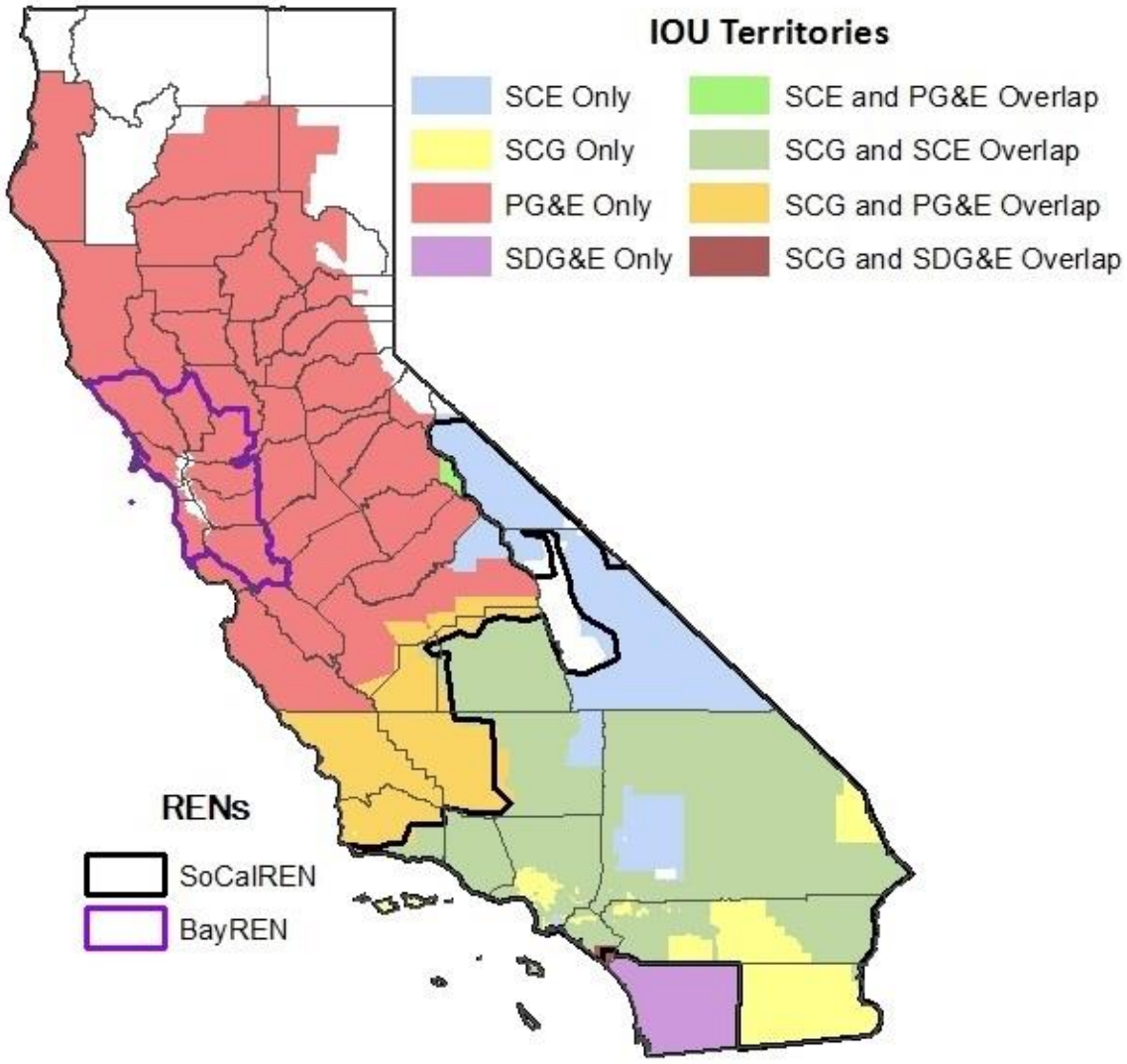
The BayREN is entirely within the PG&E service territory. The SoCalREN covers much of the SCE and SCG service territories. Although SoCalREN markets itself as The Energy Network (TEN) within its territory, the term SoCalREN is used here to maintain clarity between the two RENs examined in this study. Figure 1, below, shows the coverage areas of the two RENs, and listed in Table 1, below.

Table 1. Counties covered by the two RENs

BayREN	SoCalREN
1. Sonoma 2. Napa 3. Marin 4. Solano 5. San Francisco 6. San Mateo 7. Contra Costa 8. Alameda 9. Santa Clara	1. Los Angeles 2. San Bernardino 3. Riverside 4. Ventura 5. Inyo 6. Imperial 7. Mono 8. Orange (partial) 9. Kern (partial) 10. Tulare (partial) 11. Santa Barbara (partial) 12. Kings (partial)

[2] D.12-11-015 (November 2012)

Figure 1. Map of BayREN and SoCalREN



Sources: Geographic information system (GIS) mapping from the California Energy Commission site for IOU service territories, GIS mapping from SoCalREN, knowledge of counties covered by BayREN.

1.2 Background on the RENs

In guidance Decision D.12-05-015 (May 2012), the CPUC invited local governments to submit proposals to provide PIPs and budgets for regional energy efficiency (EE) pilots. Local governments were required to demonstrate the extent to which the pilots would:

- "Leverage additional state and federal resources so that EE programs were offered at lower cost to ratepayers,
- Address the water-energy nexus,

- Develop and deploy new and existing technologies,
- Address workforce training issues, and
- Address hard-to-reach customer segments, such as low- to moderate-income residential households and small- to medium-sized businesses."[3]

In authorizing REN pilots in the 2013–2014 funding cycle portfolio, the CPUC provided coalitions of local governments the opportunity to develop records of accomplishment as administrators of EE programs. As such, a key objective underlying the proposed REN pilots was to determine whether local governments are capable of planning and administering EE programs "without utility interference or direction as it relates to the design and delivery of their programs".[4] Recognizing that there would be a "learning curve"[5] with significant start-up costs, D.12-11-015 declined to establish a "threshold cost-effectiveness level"[6], either Total Resource Cost (TRC) or Program Administrator Cost (PAC), for the REN pilots during the 2013–2014 funding cycle. The CPUC extended this special exception to 2015 (the one-year extension of the EE portfolio funding cycle).[7]

Applicants developed proposals that responded to the five criteria above. However, the CPUC's stated criteria for evaluating proposals changed slightly within budget Decision D.12-11-015 (November 2012), Thus, expectations for the RENs were re-characterized as three criteria requiring that the RENs support:

- "Activities that utilities cannot or do not intend to undertake,
- Activities for which there is no current utility program offering and for which there is the potential for scalability to a broader geographic reach, if successful, and
- Activities in hard-to-reach markets, whether or not there is currently a utility program that may overlap."[8]

In November 2012, the CPUC approved two RENs, BayREN and SoCalREN, weighing some combination of both sets of screening criteria and authorized the RENs to begin service in January 2013. Due to additional IOU reimbursement contract requirements and additional CPUC submittal requests -- including revised and corrected cost-effectiveness calculators -- the RENs received final CPUC approval to begin offering EE services in July 2013, with many programs rolling out by September 2013.[9]

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[3] D.12-05-015, pages 149–150.

[4] D.12-11-015, page 11.

[5] D.12-11-015, page 14.

[6] D.12-11-015, page 19.

[7] Regardless of this exception, the CPUC expects the RENs to estimate the cost-effectiveness of their pilots via cost-effectiveness calculators.

[8] D.12-11-015, page 17.

[9] Subsequent to the issuance of D.12-11-015, the BayREN, on January 14, 2013, submitted Advice Letter 1, which included a revised PIP. On April 2, 2013, in compliance with Ordering Paragraph 5 of D.12-11-015, the IOUs and RENs filed revised PIPs in a joint Advice Letter for the Energy Upgrade California Enhanced Basic and Modified Flex Path programs (renamed to Home Upgrade and Advance Home Upgrade, respectively), requesting approval for program changes directed in the Decision. On May 31, 2013, the ED partially approved the joint Advice Letter via Disposition Letter, and directed the administrators to file a Tier 2 Advice Letter to address the issues that were deemed non-compliant. An additional Advice Letter was filed on July 14, 2013, and was approved later that summer. On May 8, 2013, BayREN, after receiving feedback from subject matter experts within the ED, filed a Second Amended PIP proposing slight

1.2.1 Portfolio of Programs

While the RENs continue to implement programs in 2015, this study covers only the first 18 months (June 2013 to December 2014). Therefore, although there may be changes in the portfolios of the two RENs in 2015, these changes are not included in this report.

1.2.2 2013–2014 REN Budgets

The RENs offer different suites of programs to their constituents, although both include Energy Upgrade California (EUC) and Financing program activities (see Table 2 and Table 3, below).

Table 2. SoCalREN Programs and 2013–2014 Budgets

Programs	2013–2014 Budget
EUC – 6 programs	**$ 21,158,104**
Multifamily	$ 9,543,801
Single-Family	$ 4,616,309
Local Marketing and Outreach	$ 3,273,744
Green Building Labeling	$ 2,010,000
Contractor Training and Outreach	$ 1,014,250
Low-Income Single-Family	$ 700,000
Regional Energy Center[a]	**$ 16,586,725**
Financing – 3 programs	**$ 5,558,499**
Single-Family Loan Loss Reserve	$ 3,475,000
Non-Residential Property Assessed Clean Energy (PACE)	$ 1,411,500
Public Agency Financing Assistance	$ 671,999
Total	**$ 43,303,328**

Note: Budget source is Page 8, Advice Letter 3, 2013-2014 Budgets, March 26, 2014.

[a] This includes the following activities: Aggregated Regional Procurement; Integrated Comprehensive Whole Building Retrofits (including Data Management and Benchmarking); Enterprise Energy Management Information System (EEMIS); Climate Action and Energy Plan; Water-Energy Nexus Pilot; Marketing, Outreach, Education, and Training; Workforce Development; and Energy Project Tracking and Permitting.

modifications to all program offerings. On June 11, 2013, the CPUC approved the Second Amended PIP. The Multifamily Capital Advance and Single Family Loan Loss Reserve programs were part of a separate Financing decision released after the Energy Efficiency decision.

Table 3. BayREN Programs and 2013–2014 Budgets

Programs	2013–2014 Budget
Energy Upgrade California – 2 programs	**$ 18,393,644**
Single-Family	$ 6,744,779
Multifamily	$ 11,618,865
Codes and Standards (C&S)	**$ 2,761,418**
Financing – 3 programs	**$ 2,633,659**
Multifamily Capital Advance	$ 1,605,928
PAYS® Water Efficiency Pilot	$ 721,612
Commercial PACE Administration and Marketing	$ 306,119
Total	**$ 23,788,721**

Note: Budget source is Page 8, Advice Letter 3, 2013-2014 Budgets, March 26, 2014.

1.2.3 Structure and Governance Model

SoCalREN encompasses the seven counties of Los Angeles (LA), San Bernardino, Riverside, Ventura, Inyo, Imperial, and Mono, as well as portions of Orange, Kern, Tulare, Santa Barbara, and Kings counties. BayREN encompasses the nine Bay Area counties of San Francisco, Santa Clara, San Mateo, Alameda, Contra Costa, Solano, Napa, Sonoma, and Marin. The RENs differ in geographic size, budget, and governance structure (see Table 4, below).

Table 4. Summary of the RENs Organizational Structures

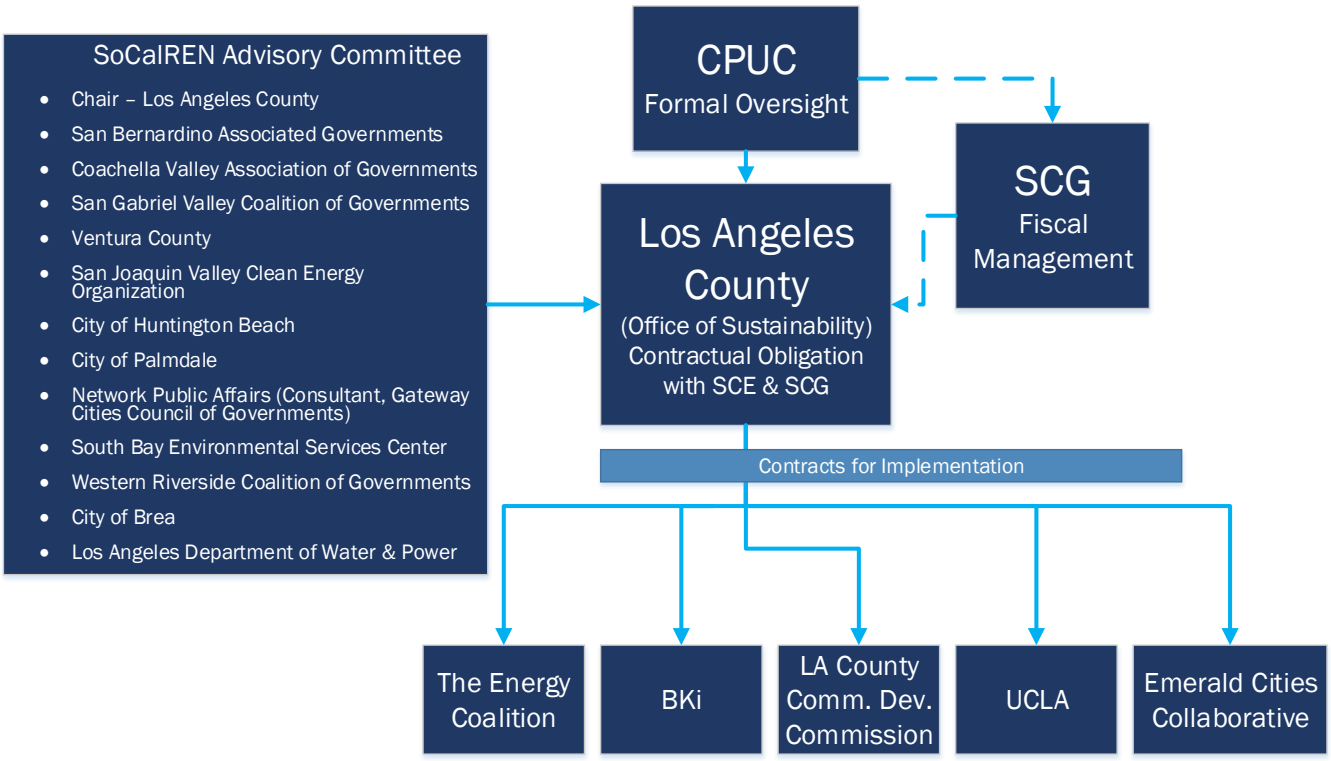
Element	SoCalREN	BayREN
Service Territory	More than 700 eligible public agencies served: 12 counties; 216 cities, townships, tribes, and unincorporated areas; 104 water/wastewater districts; 398 education agencies; other special districts	All nine counties and 101 cities that comprise the San Francisco Bay Area.
Governance Structure	1) The County of LA is the Administrator. 2) The County of LA convenes an Advisory Committee composed of 13 representatives of municipalities covering its entire territory. 3) The Advisory Committee counsels the Administrator, but does not directly determine its programs and activities.	1) ABAG is the fiscal agent and contractual grantee of CPUC/PG&E funds for pilot activities. 2) ABAG chairs a Coordinating Circle, composed of representatives of the nine counties, that directly determines programs and activities by voting. ABAG and the counties have equal votes. 3) Each program is assigned a committee, with at least one representative from each county as committee members.
Number of Programs	10	6
Total 2013–14 Budget	**$43,300,329**	**$22,742,750**

Note: Budget source is EESTATS December 2014 reports.

SoCalREN Governance and Implementation Structure

An Advisory Committee composed of 13 local governments provides advice on REN administration and programs, but does not directly determine SoCalREN activities.[10] The LA County Office of Sustainability holds the funding contract with both SCE and SCG for the REN and maintains five contracts with other agencies to support SoCalREN's programs (see Figure 2, below).

Figure 2. SoCalREN Management Structure



LA County manages the SoCalREN through a "consultant" model in which the County of LA acts as the REN Administrator and employs the services of the consulting firms Bevilacqua Knight, Inc. (BKi) and The Energy Coalition (TEC). These firms are the prime contractors implementing the Home Upgrade residential customer program and the SoCalREC public agency programs, respectively. The two firms jointly implement the Financing program. The County of LA contracts with the LA County Community Development Commission/Public Housing Authority to manage the Low-Income Single-Family Home Upgrade program and manages two other programs with the University of California, Los Angeles (UCLA) and Emerald Cities Collaborative. Table 5, below, shows the specific managing agency for each program.

[10] As an added layer of complexity to the SoCalREN governance structure, eight members of the Advisory Committee contractually connect to SCE and nine governments contractually connect to SCG as IOU LGPs. According to SoCalREN, only two of the Advisory Committee members are not directly connected to an LGP.

Table 5. SoCalREN Implementation Structure

Program ID	Program Description	BKI	TEC	LA County - County Community Development Commission/Public Housing Authority	UCLA	Emerald Cities
SCR-EUC	**EUC (in the County of LA only)**					
SCR-EUC-A1	Local Marketing and Outreach	x				
SCR-EUC-A2	Green Building Labeling	x				
SCR-EUC-A3	Flex Path Incentives	x				
SCR-EUC-A4	Contractor Outreach and Training	x				
SCR-EUC-A5	Multifamily Incentives	x				
SCR-EUC-A6	Low-Income Single-Family Residential			x		
SCR-FIN	**Financing**					
SCR-FIN-B2	Single-Family Loan Loss Reserve	x				
SCR-FIN-B4	Non-Residential PACE	x				
SCR-FIN-B5	Public Agency Revolving Loan Fund		x			
SCR-REC	**SoCalREC**					
SCR-REC-C1	Aggregated Regional Procurement		x			
SCR-REC-C2	Integrated Comprehensive Whole Building Retrofits		x			
SCR-REC-C3	Regional Climate Action and Energy Plan				x	
SCR-REC-C4	Water-Energy Nexus		x			
SCR-REC-C5	Regional Energy Project Tracking and Permitting (CEEPMS)		x			
SCR-REC-C6	Marketing, Outreach, Education, and Training		x			
SCR-REC-C7	Workforce Development					x

BayREN Governance and Implementation Structure

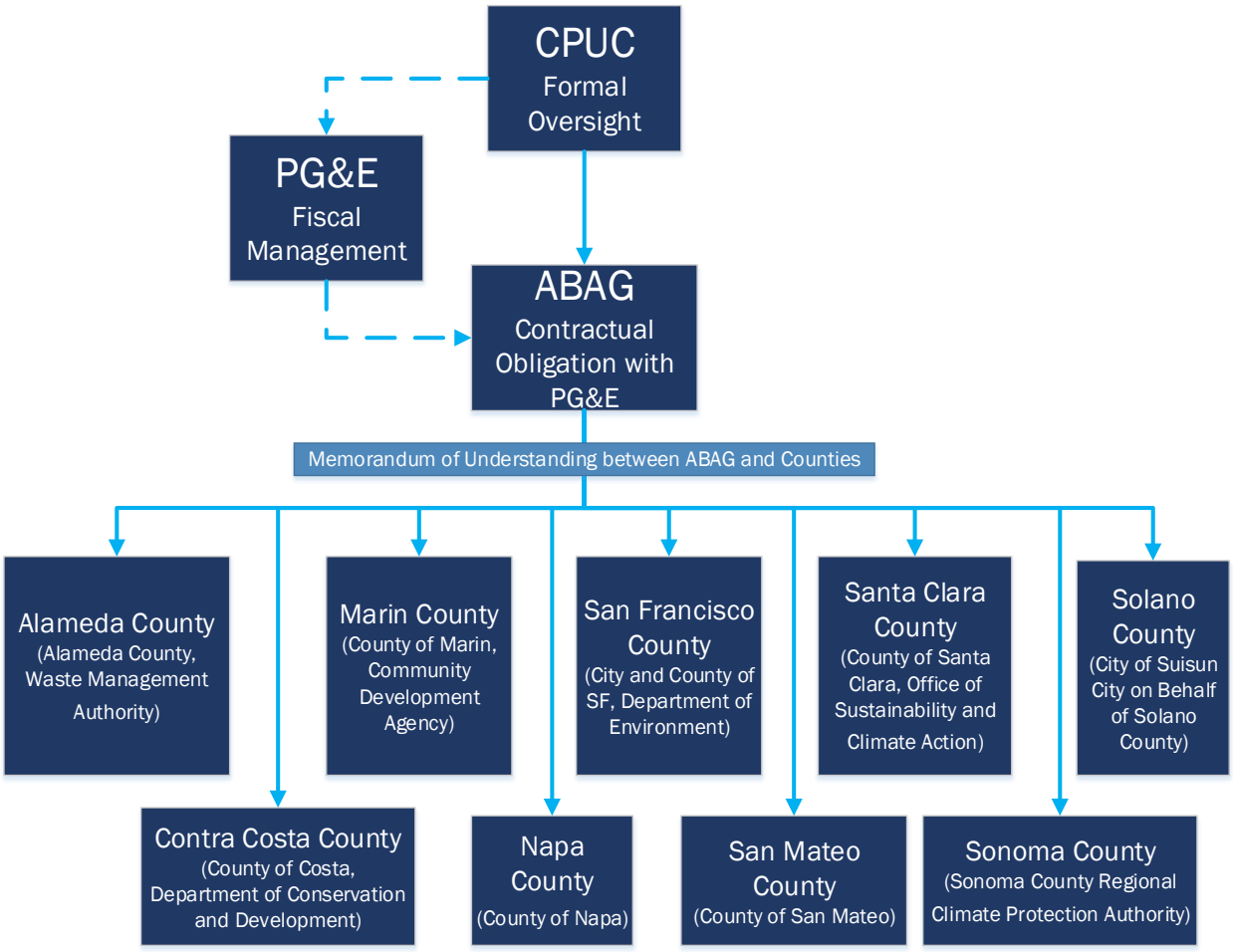
A Coordinating Circle composed of ABAG and its nine member agencies governs BayREN. The REN makes decisions on programs and budgets by vote, with each member having equal voting rights. A majority of the Coordinating Circle constitutes a quorum, with action taken by a majority vote of those present at a meeting. In addition, each program has its own decision-making committee. During the course of implementing BayREN, ABAG restated and revised the Memorandum of Understanding (MOU) between the participating members. According to BayREN staff, this new MOU helped codify improvements in the functioning of the REN. Specifically, what had been a single Coordinating Committee became three different groups (the Coordinating Circle, Lead Links, and Program Circles). The Coordinating Circle is responsible for coordination of activities for all other local government jurisdictions within their counties, especially with Local Government Partnerships (LGPs).[11] Each BayREN member agency appoints a representative to the Coordinating Circle. The

[11] The IOUs form LGPs through a contractual arrangement between an IOU and an organization representing a single or multiple local governments. An LGP consists of the LGP Implementer (i.e., the contract holder) and may have many members (i.e., member governments). An older 2010-2012 study provides a description of LGPs (*Program Assessment Study: Local Government Partnership Programs.* Located on Calmac.org under CPU0063.01) and a forthcoming LGPs Value and Effectiveness Study (expected to be available in Q3 2015) provides further information about LGPs.

Coordinating Circle elects Lead Links who are responsible for management of a single program. Program Circles, made up of volunteer members, provide input to the Lead Links on budgets and PIPs. In addition, the updated MOU stated the powers and roles of each of the three groups.

BayREN operates under an "in-house" model in which ABAG acts as the REN Administrator and has signed nine distinct MOUs with each REN member agency for funds disbursement. Contracts connect ABAG to a sole public agency in each member county through the MOU (see Figure 3, below).

Figure 3. BayREN Management Structure

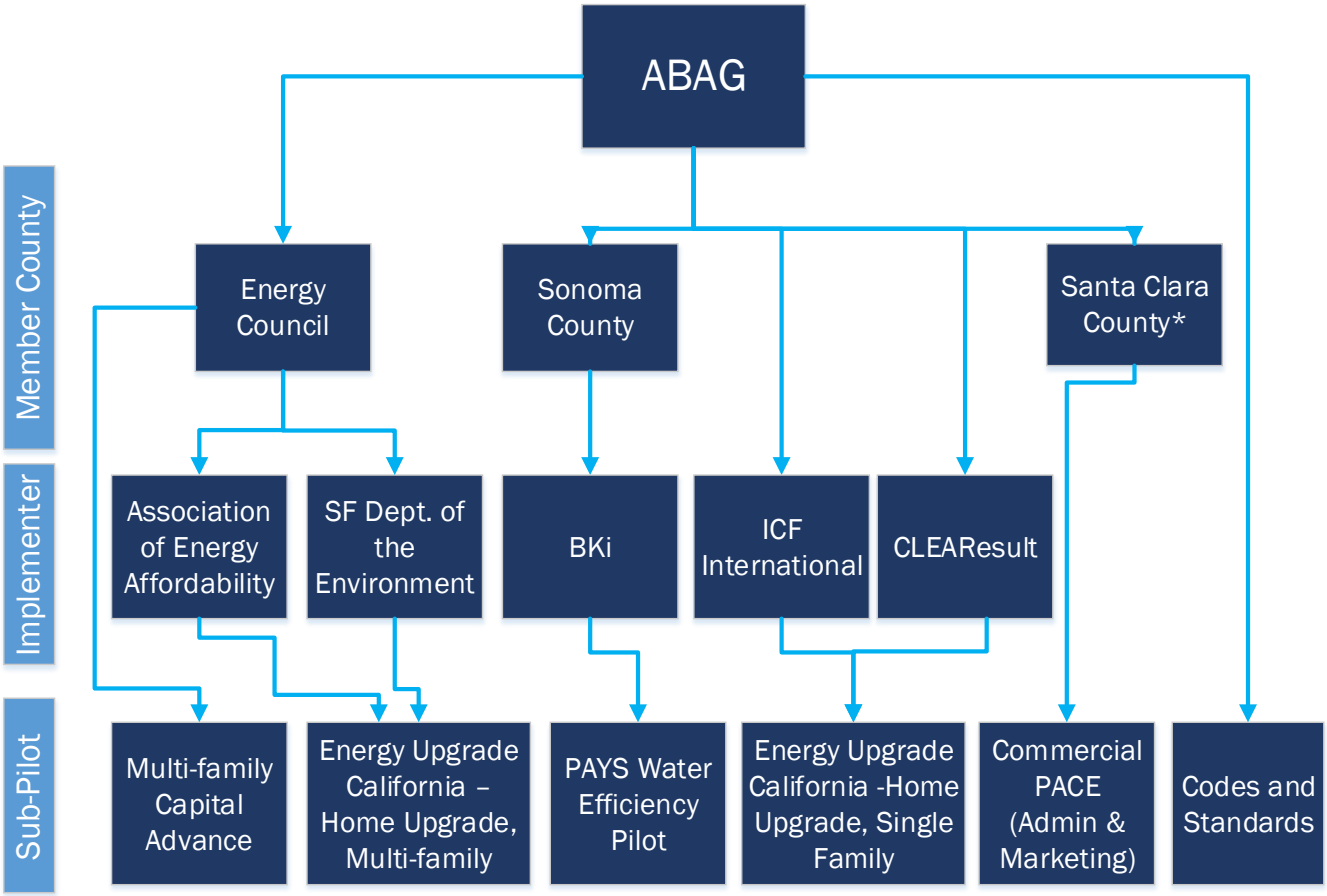


In addition, in 2013–2014, three member agencies—Alameda, Santa Clara, and Sonoma counties—served as the Lead Links for specific programs, with all three leads also contracting with other organizations for implementation.

As Figure 4, below, shows, the Energy Council is the lead for the Energy Upgrade California – Multifamily program, which two other organizations implement, and Alameda County directly implements the Multifamily Capital Advance program. In 2013–2014, Santa Clara County was the lead for the Single-Family Home Upgrade program (which also uses two other entities for implementation) and the Commercial PACE

program.[12] Sonoma County is the lead for the PAYS program. One exception is the C&S program, which ABAG directly implements.

Figure 4. BayREN Program 2013–2014 Lead County Implementation Structure



Note: Since the Evaluation Plan document, CLEAResult purchased Populus. The same team is implementing the Home Upgrade program, just under a different name.

*ABAG held the contracts with ICF International and Clear Result. However, SCC was the lead for the Single Family program.

[12] In 2015, Santa Clara County relinquished both lead activities. San Mateo County is now the Home Upgrade Single-Family program lead and San Francisco County leads the Commercial PACE program.

2. Study Methodology

This study was originally labeled a process study, but the goals and objectives for the research caused the Consultant Team to change the name to a value and effectiveness study. A process study is typically called for when there are new and innovative components in a program, there has been no previous process study, or there is a new vendor for the program.[13] Although the RENs have not been fully studied, California Energy Efficiency Evaluation Protocols[14] indicate that a process study is primarily *"an in-depth investigation and assessment of one or more program-related characteristics in order to provide specific and highly detailed recommendations for program changes."* The RENs are pilots, however, and the CPUC needs information on such topics as scalability and overlap—not information to improve the programs within the RENs, but rather to help decide whether to continue the pilots. This study, therefore, provides information on the value and effectiveness of the RENs, as described below in Section 2.1.

This study is not the sole source of information that the Consultant Team expects the CPUC to use to facilitate its decision on the RENs. The ED is planning four studies.

- The ED is performing a process study of the BayREN C&S Compliance Improvement program, expected to be completed late in 2015.
- The ED is performing a study of the Multifamily program, expected to be completed in the first quarter of 2016.
- An energy impact evaluation of the RENs, with a preliminary draft due in November 2015, will cover the 2013–2014 program years and the first two quarters of 2015.
- The ED is planning a second phase of this RENs value and effectiveness study, to be completed in 2016.

Additionally, ABAG has completed one study that is available publicly. The study was designed to identify and share best practices and improve building code enforcement and building performance rates within the region.

- A study of the BayREN C&S Permit Resource Opportunity Program is completed and available to the public. (The study is available at www.calmac.org.)

2.1 Study Goals and Objectives

As described in Section 1.2, the RENs are a pilot initiative authorized by the CPUC with certain expectations and with established criteria by which to assess their ability to deliver energy efficiency in an innovative and non-redundant manner. The guiding language within the authorizing Commission Decision states that the "RENs and the IOUs should coordinate and cooperate for seamless program offerings and to avoid customer confusion." Mindful of this and other Decision language, the Consultant Team assessed the value and effectiveness of the RENs at two levels: a broad view of how the RENs are managing the programs, based on

[13] Paraphrased from information provided by Katherine Johnson, the ED EM&V advisor, and as written in the Arkansas and New York Process Evaluation Protocols.

[14] The TecMarket Works Team. April 2006. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*. Prepared for the CPUC.

discussions with both REN and IOU staff members, and a narrower view from a select number of constituents in the REN programs. (Table 16, page 24, Section 2.5 defines the constituents[15].)

The two objectives of this study are to:

1. Determine the value of the RENs through two views:

   Broad View: The REN pilots will have demonstrated value if their programs, as implemented, break new ground in areas not currently served by utilities or if their activities and programs have the potential to scale to a broader geographic area or serve hard-to-reach markets. The RENs also will have demonstrated value if there is little to no overlap with the IOU programs and the RENs and IOUs coordinate on programs. Further, as the Consultant Team described in Section 1.2, above, additional criteria judging the merits of the RENs proposed programs was introduced after the applications had been received and at the time the RENs were approved in November 2012[16]. Because the November 2012 REN expectations criteria were introduced at the time the RENs were approved, the Consultant interprets the three criteria as appropriate performance criteria by which to evaluate the RENs for 2013-2014. However, because the RENs developed their proposals under the original criteria of promoting WE&T, technology development, and the water-energy nexus, the Consultant Team accounts for additional value REN activities provide in these areas.

   Narrow View: The RENs will have demonstrated value if program participants provide positive responses when queried about the program in which they participate.

2. Determine the effectiveness of the RENs through two views:

   Broad View: The RENs will have demonstrated effectiveness if they have sufficiently addressed management issues as they arise (or there is a definite plan to mitigate them going forward). Additionally, they will demonstrate effectiveness if they clearly demonstrate an ability to manage program implementation and adjust to necessary changes as they arise.

   Narrow View: The RENs will have demonstrated effectiveness if program participants consider the offerings of reasonable benefit.

2.2 Scope of This Study

Applying the original decisions authorizing the REN pilots as guidance, this study explores two aspects of the REN organizations. The Consultant Team takes a broad look at the RENs' governance structure and implementation model for all programs. The study also examines three non-resource programs that do not directly count toward energy savings goals. Some programs fall within the study scope, while others do not (see Table 6 and Table 7, below).

The justification to include only non-resource programs has two parts. First, impact evaluations forthcoming in 2015 and 2017 will assess resource programs. Second, budget constraints necessitate that the overall scope of the evaluation be narrow. The Consultant Team collated the RENs data across all activities so readers could see the full breadth of activities that the RENs undertook in 2013–2014. The Consultant Team used secondary data obtained from the RENs (e.g., the annual narratives provided to the CPUC), but did not verify those activities due to the limited scope of this study. The Consultant Team only collated data with no subsequent analysis and, thus, makes no evaluative statements about the activities listed.

[15] The term "constituents" and "program participants" are interchangeable in this report.

[16] D. 12-05-015, invited proposals in May 2012 and D.12-11-015 chose proposals in November 2012.

Table 6. SoCalREN Activities inside and outside of Study Scope

Programs	Activities	Reason for Excluding
INSIDE STUDY SCOPE		
Regional Energy Center	Aggregated Regional Procurement	Refer to Table 16, page 24 for a discussion of how these five activities changed to become the one Public Agency Program assessment within this study. Specifically, the Regional Climate Action and Energy Plan Support, Water-Energy Nexus, and CEEPMS were not evaluated.
	Integrated Comprehensive Whole Building Retrofits	
	Regional Climate Action and Energy Plan Support	
	Water-Energy Nexus	
	Regional Energy Project Tracking and Permitting (CEEPMS)	
OUTSIDE STUDY SCOPE (although descriptive statistics included)		
Regional Energy Center	Marketing, Outreach, Education, and Training	A 2013–2014 study of marketing, education, and outreach (ME&O) is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any ME&O activities.
	Workforce Development	There is a 2013–2014 study of WE&T that is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any WE&T activities.
EUC – Home Upgrade	Multifamily	Resource activity
	Flex Path Incentives	Resource activity
	Local Marketing and Outreach	Covered in the ME&O evaluation. A 2013–2014 study of ME&O is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any ME&O activities.
	Green Building Labeling	No local government constituents are associated with this program.
	Contractor Training and Outreach	There is a 2013–2014 study of WE&T that is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any WE&T activities.
	Low-Income Single-Family	Resource activity
Financing	Single-Family Loan Loss Reserve (LLR)	A 2013–2014 study of Financing is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team did not include any Financing activities.
	Non-Residential PACE	Covered in the Financing evaluation
	Public Agency Financing Assistance	Covered in the Financing evaluation

Table 7. BayREN Activities inside and outside of Study Scope

Programs	Activities	Reason for Excluding
INSIDE STUDY SCOPE		
EUC — Home Upgrade, Single-Family	Home Upgrade Advisor	
Financing	PAYS Water Efficiency Pilot	
OUTSIDE STUDY SCOPE (although descriptive statistics included)		
EUC — Home Upgrade, Single-Family	Home Upgrade/Advanced Home Upgrade Incentives	Resource activity
	Contractor Recruitment and Training	A 2013–2014 study of WE&T is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any WE&T activities.
	Marketing and Outreach	A 2013–2014 study of ME&O is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team does not include any ME&O activities.
	Leveraging Statewide Financing	Simply includes leveraging the statewide financing pilots (which are not yet being implemented) and is not a specific program that can be assessed
EUC — Home Upgrade, Multifamily	Multifamily incentives	Resource activity
	Coordination with financing pilots	Coordination activity
	Consultation to property owners	Insufficient evaluation funds to field a separate data collection and analytical effort
Financing	Multifamily Capital Advance	Covered in separate evaluation
	Commercial PACE administration and marketing	A 2013–2014 study of Financing is ongoing. Due to the potential for coverage in a different study and the targeted focus of our study, the Consultant Team did not include any Financing activities except PAYS, which the Financing study had not targeted for assessment.
Codes and Standards	Baseline Compliance with Energy Codes	The evaluations of C&S activities are unique and typically require substantial effort. There is a CPUC-led C&S study in 2013–2014, which may cover these activities. Because of the targeted focus of our study and the potential for this area to be addressed within a different study, Consultant Team does not include these activities.
	Establish Compliance Metrics and Monitoring	
	Training Program	
	Advanced Code Advocacy and Support	

2.3 Study Research Questions

Seventy stakeholders participated in the CPUC's public webinar on July 15, 2014, to discuss the main areas of this study. A set of research questions derived from the draft study scope and modified based on webinar participant comments is presented below in Table 8, Table 9, and Table 10. In addition, the Consultant Team categorized the specific research questions into the two categories of value and effectiveness, as well as a third set of policy-based questions.

2.3.1 Research Questions to Inform the Value Assessment of the RENs

Value is a subjective concept. The Consultant Team used information from the CPUC guidance and budget Decisions to appropriately frame the evaluation of the value to attribute to the RENs. Table 8, below, shows the research questions used to gauge the value of the RENs.

Table 8. Research Questions to Inform the Value Assessment of the RENs

Research Question	Sub-Questions
1) What overlap, if any, is occurring between the RENs programs and activities and IOU programs and activities?	a) Do they fill a niche or provide additive benefit that is not provided by IOU program offerings? b) Do they serve hard-to-reach markets?[a] c) Additional questions for non-resource programs/activities: i) How successful have the programs and activities been in terms of participation? ii) How many customers or constituents have participated in the programs or activities? iii) What was the expected rate of uptake for the programs or activities by the RENs and how well has the actual rate met that expectation? iv) Have expectations about participation changed based on program roll-out? v) Have the RENs demonstrated a level of responsiveness or innovative approaches to customer service beyond those traditionally delivered by the IOUs (SoCalREN and BayREN PAYS programs only)? vi) Is there cooperation and synergy between the IOUs and the RENs? What is the level of coordination?
2) What are the goals of the programs or activities undertaken by the RENs?	None
3) What is the history of the programs or activities?	None
4) How are the programs or activities being implemented?	a) Where is the implementation of the programs or activities geographically located? b) How are they marketed? c) To whom are they marketed?
5) How do the costs associated with the non-resource programs and activities compare to the overall RENs portfolio of programs?	None

[a] The *Energy Efficiency Policy Manual* (v. 5) defines hard-to-reach residential customers as "those customers who do not have easy access to program information or generally do not participate in energy efficiency programs due to a language, income, housing type, geographic, or home ownership (split incentives) barrier." Hard-to-reach business customers also include such factors as business size and lease (split incentive) barriers.

2.3.2 Research Questions to Inform the Effectiveness Assessment of the RENs

Similarly, it can be difficult to agree on what is effective in terms of EE programs. Table 9, below, shows the final research questions that provide the framework for the effectiveness assessment of the RENs. The Consultant Team applied the answers obtained from these research questions to assess the effectiveness of the RENs, but acknowledges there may be other ways to consider effectiveness.

Table 9. Research Questions to Inform the Effectiveness Assessment of the RENs

Research Question	Sub-Questions
1) What are the pros and cons of the two RENs' implementation models?	a) What have been the areas of difficulty as the RENs have taken on their role as program administrators? b) How do the RENs manage regulatory processes? c) How do they manage their program managers/implementers? d) What are the pros of their administrative models? e) What are the cons of their administrative models?
2) How do the RENs manage their programs?	a) How many staff are included in the management of the portfolio and all other aspects of program administration? b) Who is implementing the programs and how many staff are involved with each program activity? c) How are decisions made when issues arise? d) How well are they able to mitigate problems when they arise? e) How are the services delivered? f) How have delays or other issues (anticipated or not) affected implementation? How have the RENs attempted to mitigate these issues? g) Do the RENs' constituents consider the REN offerings to be well serviced, sufficient, and adequate? h) How effective do participating constituents rate the REN programs? Do they feel the REN programs could be improved or made more effective? i) Are there differences within program funding allocations among the RENs local governments? If so, why? j) How often do the RENs communicate with their constituent local governments? For those local governments that have IOU partnerships, is it more or less often than they communicate with the IOUs (SoCalREN and BayREN PAYS only)? k) What offerings, if any, do the RENs provide in terms of capacity building for local governments? l) What activities do the RENs encourage or discourage, if any, within the local governments?

2.3.3 Research Questions to Inform Policy

In addition to gauging the value and effectiveness of the RENs as outlined above, the ED staff would like to provide credible findings to the Commission and other decision makers on the scalability of the non-resource program activities examined here and insights on question such as whether the CPUC should continue to discourage the overlapping of IOU and REN programs and activities. Questions that address CPUC policy decisions are presented below in Table 10.

Table 10. Research Questions to Inform Policy

Research Questions
1) Can or should the non-resource programs be scaled up or introduced to other areas of the state?
2) Would allowing more duplication of programs among RENs and IOUs create healthy competition or would it lead to added consumer confusion, redundancy, and waste?

The Consultant Team used a mixed-mode approach to collect primary data, meaning that data was gathered from both structured surveys (one via the telephone and one via the Internet) and unstructured in-depth interviews. Because of the varied nature of the data, analysis is qualitative, meaning that the Consultant Team is drawing conclusions from the multiple data sources through a "preponderance of evidence" approach.

2.4 Sampling

This study required minimal sampling, as the Consultant Team performed all but one of the primary data collection activities with the respective populations (i.e., a census approach). Data collection from IOU staff required a sample. Table 11, below, presents the data collected within the study and the respective response rates.

Table 11. Sample Frame and Targeted Number of Completes

Task Description	Respondent Type	Population (N)	Number of Completes	Response Rate[a]
In-Depth Interviews	SoCalREN Staff[b]	48	7	n/a
	BayREN Staff[b]	43	14	n/a
	IOU Staff	Unknown	10	n/a
	PAYS Water Agency Staff	3	3	100%
Internet Survey	SoCalREN Public Agency Participants	53	28	56%
	BayREN: residential customers that participated in Home Upgrade Advisor program	238	77	32%

[a] For the two Internet surveys, the Consultant Team calculated the response rate using the American Association for Public Opinion Research (AAPOR) Response Rate 1 (RR1) method. Please see the appendices for details on this specific response rate.
[b] Neither REN indicated the specific staff numbers associated with the REN. The Consultant Team expects that the true population of people working on the RENs in some capacity is closer to 50. Interviews were with all main contacts within the REN and consulting staff organizations; therefore, a response rate is not applicable because we did not attempt to talk to other staff members.

For the IOU staff sample, the Consultant Team approached IOU staff whose areas were related to those programs the RENs were conducting for the purpose of assessing whether the IOUs had identified any duplication of efforts with the RENs and whether IOU customers had reported any confusion as a result of the RENs entering the EE arena. The Consultant Team also wanted to discuss how the IOUs and RENs were collaborating. To this end, the Consultant Team created a list of potential IOU staff interviewees from three sources: 1) ED staff who have some oversight of the specified areas, 2) REN staff, and 3) internal contact information. The list was then narrowed to a targeted group of 24. Finally, the Consultant Team conducted interviews with the 10 IOU staff members drawn from these three sources as illustrated in Table 12, below.

Table 12. Sample Disposition for IOU Staff Interviews

Source of List Name	Number in List	Number Targeted	Number Completed
ED Staff	63	12	7
REN Staff	10	10	2
Internal Consultant Team	2	2	1
Total	**75**	**24**	**10**

The 10 interviewees covered all IOUs and the majority of programs, as shown below in Table 13. The Consultant Team did not ask about potential C&S activity overlap with BayREN.

Table 13. Number of IOU Staff Interviews by REN Areas of Potential Overlap

IOU	REN Program with Potential Overlap				Total
	Financing	EUC – Home Upgrade Single-Family	EUC - Home Upgrade Multifamily	Public Agency Program	
PG&E	1	1	0	0	2
SCE	0	1	1	2	4
SCG	0	0.5[a]	1	2.5[a]	4
Total	**1**	**2.5**	**2**	**4.5**	**10**

[a] One person was able to discuss possible overlap in two areas, so the Consultant Team split the number in the table.

The list of IOU contacts provided by multiple sources put the Consultant Team in contact with the appropriate people to answer questions, especially for issues around customer confusion or overlap. Table 14, below, shows which IOU programs were represented in the interviews.

Table 14. IOU Programs in Which Interviewed IOU Staff Were Involved and Areas of Potential REN Overlap

Sample	Entity	Utility Program	Potential Overlap Area
2	PG&E	emPower Central Coast	BayREN Financing (PAYS)
	PG&E	Residential Programs	BayREN Home Upgrade
4	SCE	Prop 39 lead	SoCalREN Public Agency Program – Schools
	SCE	Energy Upgrade California - Multifamily Path	SoCalREN Multifamily
	SCE	Partnerships	SoCalREN Home Upgrade and Advanced Home Upgrade, SoCalREC, Financing (PAYS)
	SCE	Home Upgrade and Advanced Home Upgrade	SoCalREN Home Upgrade and Advanced Home Upgrade
4	SCG	SCG Local Government Special Projects Energy Efficiency Partnership Customer Programs & Assistance	SoCalREN Home Upgrade and Advanced Home Upgrade, Public Agency Programs (SoCalREC)
	SCG	Custom and Express Programs	SoCalREN Commercial Programs (SoCalREN Public Agency)
	SCG	EUC Multifamily Path and Multifamily Energy Efficiency Rebate (MFEER)	SoCalREN Multifamily
	SCG	Prop 39 lead	SoCalREN Public Agency Program – Schools

2.5 Data Collection

Data collection occurred from December 2014 through May 2015 (Table 15, below).[17]

Table 15. Data Collection Time Frame

Task Description	Respondent Type	Time Frame of Data Collection	Average Length of Data Collection per Respondent (minutes)
In-Depth Interviews	SoCalREN Staff	12/17/14 to 12/18/14	50
	BayREN Staff	12/15/14 to 12/19/14	56
	IOUs Staff	1/29/15 to 2/19/15	35
	PAYS Water Agency Staff	4/1/15 to 5/6/15	60
Internet Survey	SoCalREN Public Agency Participants	4/24/15 to 5/14/15	23
	BayREN: residential customers who participated in Home Upgrade Advisor program	4/6/15 to 4/22/15	21

Each data collection task provided one or more inputs to the research questions. Appendix B in Volume II provides the mapping of research question to data collection activity.

The REN interviews, performed early in the data collection, provided a good basis for understanding the knowledge and opinions of those directly implementing the REN activities. However, the Consultant Team also needed to interview staff who are not directly involved with the RENs in order to gain a different perspective. The IOU staff interviews, PAYS water agency staff interviews, and the two Internet surveys provided primary data to round out the Consultant Team's understanding of the RENs in those areas.

The Consultant Team labeled the PAYS interviews and two Internet surveys as "constituent" surveys to provide a single name for these three disparate data collection activities. Table 16, below, describes the full set of constituents from the plan, why the Consultant Team considered the group constituents, and the changes that took place during the evaluation plan implementation.

As shown in Table 16, below, SoCalREC included five programs originally planned for primary data collection. However, one program received such low interest that SoCalREN has discontinued it and two other programs were not yet ready for evaluation. Therefore, the primary data collection occurred for the SoCalREC program from two programs – which SoCalREN had combined into a single program labeled "Public Agency Program".

[17] During this effort, the SoCalREN staff members were instrumental in helping the Consultant Team reach out to participants and encourage survey completion. BayREN staff also encouraged the PAYS staff to perform the interviews.

Table 16. SoCalREN and BayREN Constituents for Chosen Programs

REN	Constituents chosen for data collection	Why these are considered constituents	Changes from original plan
SoCalREN	190 local governments and public agencies that participate in one or more of the following programs within the SoCalREC: 1) Aggregated Regional Procurement 2) Integrated Comprehensive Whole Building Retrofits 3) Regional Climate Action and Energy Plan Support 4) Water-Energy Nexus 5) Regional Energy Project Tracking and Permitting	SoCalREN implements many of its programs directly to end-use consumers, such as residential customers within EUC, through consultants. Due to budget constraints, the Consultant Team has limited any constituents served to those programs in which SoCalREN implementers work directly with local governments and public agencies.	▪ The Consultant Team combined Items 1 and 2 (in the second column in this row in this table) into a single data collection effort (the Public Agency Survey) ▪ The Regional Climate Action and Energy Plan Support program (Item 3) is web-based and is scheduled to launch in June 2015. Therefore, the Consultant Team did not include this program in the study. ▪ The Water-Energy Nexus program (Item 4) planned to bring in water agencies and IOUs for this program, but found no interest after a small piloting of the effort. Given that SoCalREN was no longer pursuing this program, the Consultant Team did not include this program in the study. ▪ The Regional Energy Project Tracking and Permitting program (Item 5) is a software-based effort that originated from an SCE grant. SoCalREN is now funding the next steps and implementers plan to create the product in 2015. This program was not yet ready for an evaluation effort.
BayREN	Residential customers and local governments that participate in the following programs: 1) Home Upgrade Advisor program (part of Home Upgrade Single-Family) 2) PAYS program	The evaluation sought to understand how effective the REN members are at supporting program participants within their territory. The nine lead counties comprising BayREN do not interact directly with local governments when implementing every program. Thus, it is not appropriate to consider local governments as the sole constituents of BayREN programs.	▪ The Consultant Team learned that the BayREN activities in the PAYS program consisted of working directly with three water utilities to support a PAYS program within the water utility service territory. Therefore, the originally planned survey data collection with participants of a PAYS program changed to in-depth interviews with the water utilities.

2.6 Evaluation Protocols

As required, the Consultant Team adhered to the three relevant chapters of the California Energy Efficiency Evaluation Protocols.

Process Protocol: This Protocol comprises several areas, including three relevant to this study:

- **Interviews:** In accordance with the Protocols, the Consultant Team assigned experienced staff to conduct the interviews, which were designed to be the appropriate length for the respondent population. The in-depth interviews with REN and IOU staff ran about an hour, which is typical for this type of data collection. Interviews with participants were shorter (slightly over 20 minutes) and at the top of the range in terms of length suggested for this type of data collection.
- **Surveys:** The Consultant Team used qualified staff to design, test, and field the survey instruments.
- **Independence:** An objective third party independent of the studied organization conducted this study.

Sampling Protocol: The Protocols have no required rigor levels for process evaluations, so the Consultant Team provided no rigor level for the tasks within this study. The Consultant Team acknowledges that the Internet surveys are susceptible to potential non-response bias or framing issues. The Consultant Team mitigated non-response bias to the best of its ability by alerting potential respondents to the upcoming survey via a trusted source (for the SoCalREN Public Agency Survey) and by using multiple email reminders (for both Internet surveys). In addition, the Consultant Team enlisted the same trusted source to provide an email reminder of the SoCalREN Public Agency Survey. The Consultant Team ensured construct validity through iterations of the survey within the Consultant Team.

Reporting Protocol: The Consultant Team adhered to the reporting protocol as it applies to process evaluations.

2.7 Study Limitations

This is the first of several expected forthcoming studies of the RENs' activities. While planning the evaluation, budget considerations and other expected studies led the Consultant Team to target those areas that other assessments were not planning to address. As such, the value and effectiveness described here is limited to the areas supported by primary data collection.[18] While not a study limitation per se, the targeted nature of this study limits how well the CPUC can make choices about the RENs overall based solely on these results. Section 4.3, on page 70, provides the study findings that may inform CPUC policy.

Therefore, it is worth noting that this evaluation study is not intended to convey or capture the full value of the RENs and their program activities, but only a sample, which is limited to the three programs addressed here;

- BayREN Pay As You Save Program
- BayREN Home Upgrade Advisor Program
- SoCalREN Public Agency Program

Remaining REN program areas not covered here may be addressed in the companion studies, which are catalogued in Section 2, p. 15.

[18] This included the RENs staff, IOU staff, and participants in the BayREN Home Upgrade Advisor program, the BayREN PAYS program, and the SoCalREN Public Agency Program.

2.8 Report Structure

The report has two volumes. This volume is the main report and Volume II contains the appendices.

Volume I contains five numbered sections and the executive summary.

- The Report's executive summary.
- **Section 1** introduces the study and provides information about the RENs.
- **Section 2** provides the study methods and sample sizes.
- **Section 3** presents descriptions of each of the programs and progress through the end of 2014. The RENs provided this information and the Consultant Team has not verified the data. However, because of the targeted focus of this study, the Consultant Team felt it was important to provide the reader with a full description of the various activities the RENs undertake.
- **Section 4** contains the study findings. RENs' value is first, followed by the RENs' effectiveness and finally data to inform CPUC policy.
- **Section 5** provides study conclusions and recommendations.

Volume II has 11 appendices.

A – Public Comments to Draft Report and Evaluator Response

B - PAYS Program Information

C – Mapping of Research Question Results to Report Area

D – Data Collection Activities by Research Question

E – REN Staff In-Depth Interview Guide

F– IOU Staff In-Depth Interview Guide

G – BayREN PAYS In-Depth Interview Guide

H – BayREN Home Upgrade Advisor Data Collection Instrument

I – BayREN Home Upgrade Advisor Survey Disposition and Frequencies

J – SoCalREN Public Agency Data Collection Instrument

K – SoCalREN Public Agency Survey Disposition and Frequencies

3. REN Progress in 2013–2014

In this section, the Consultant Team reports on the progress of specific activities in 2013–2014 to help readers understand areas of activity not covered by this study. In addition, the sections below include brief descriptions of the programs.

The progress shown in these sections includes both resource and non-resource programs. A resource program has specific energy savings goals while a non-resource program has no energy savings goals, but may have other expected metrics. For BayREN and SoCalREN, the only resource programs are the Home Upgrade and Multifamily programs.

3.1 BayREN Program Progress in 2013–2014

In the subsequent sections, the Consultant Team presents the progress of BayREN's program as of December 2014. Where applicable, for each program, quantitative program performance metrics (PPM) goals[19] and accomplishments stated in the 2014 Annual Narrative are included.[20] Also documented are accomplishments beyond the quantitative metrics that, where they exist, the RENs include in their narratives.

The Consultant Team did not verify the values in this section, as it was outside the study scope.

3.1.1 Home Upgrade: Energy Upgrade California

Home Upgrade Description: BayREN is the sole implementer of the Single-Family Home Upgrade program within its territory. (PG&E implements the Single-Family Advanced Home Upgrade Program within BayREN territory.) The Single-Family Home Upgrade program is a points-based, prescriptive incentive program. It does not require energy modeling, and it reduces the number of homeowner interactions in an attempt to demystify the whole house EE upgrade approach. The program is open to the owners of single-family, detached homes in BayREN territory who are customers of PG&E. Homeowners can receive incentives of up to $3,150 for completing a project. An EUC Home Upgrade Participating Contractor must perform all work.

To drive uptake of PG&E's Advanced Home Upgrade Program in the Bay Area (for which homeowners can receive incentives of up to $6,500), BayREN conducts a multi-tiered ME&O campaign, offers an additional home energy assessment incentive of $300, and provides technical and referral assistance through BayREN's Home Upgrade Advisor program.

BayREN developed a Home Upgrade Training curriculum to attract and enroll a broad pool of Home Upgrade participating contractors throughout its region. These trainings are free two-day informational sessions that cover the basics of building science and that train contractors on how to sell Home Upgrades and identify EE upgrade opportunities. BayREN partnered with Build It Green to provide this training and commenced its Home Upgrade Certification Training Schedule in November 2013.

Home Upgrade Advisor Description: BayREN's Single-Family Home Upgrade Program includes the Home Upgrade Advisor program. Home Upgrade Advisors supports residential customers through the entire process of planning a Home Upgrade or Advanced Home Upgrade retrofit project. Support services include planning

[19] As presented in the Revised BayREN Program Implementation Plan (February 2014).

[20] Bay Area Regional Energy Network 2014 Energy Efficiency Annual Report (April 2015).

home upgrades, finding contractors to complete home upgrades, overseeing the completion of home upgrades (i.e., engaging with contractors), and reviewing the results of completed projects.

Progress: BayREN did not begin implementation of this program until September 2013, more than halfway through the first year of its funding cycle.[21] In addition to the PPM tracked below, the Home Upgrade Program achieved the following:

- 2,012 referrals to complementary programs through the Home Upgrade Advisors
- 7 Home Upgrade Curriculum Trainings held in 2014

Table 17. BayREN Home Upgrade Savings Goals and Accomplishments in 2013–2014

Savings Type	Goal	Accomplished in 2013–2014	Percent of Goal
Energy Savings (kWh)	2,128,378	128,234	6%
Peak Demand Savings (kW)	3,438	454	13%
Gas Savings (Therms)	293,803	53,870	18%

[21] According to BayREN staff, the regulatory delays with program approval were not anticipated when the goals were established.

Table 18. BayREN Home Upgrade Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of trained contractors and real estate professionals[a]	125	125	203 specialty contractors	81%
Number of participants in Home Upgrade Advisor Program	500	1,000	549[b]	37%
Number of units incented through Home Upgrade	360	2,142	684	27%
Number of PG&E Advanced Home Upgrade projects rebated in the Bay Area	1,320	1,380	561	21%
Number of audit incentives funded through BayREN[c]	586	743	1,245	94%
Percentage of Home Upgrade Advisor participants who complete a Home Upgrade project	15%	25%	43%[d]	108%
Number of Home Upgrade Advisor participants who complete a Home Upgrade project[e]	75	250	92	29%
Number of Home Upgrade Advisor participants that complete an Advance Home Upgrade project[e]	100	100	201	100%
Number of Participating Contractors who have completed one or more Home Upgrade projects	30	70	46	46%

[a] While BayREN did propose a Green Labeling program, which the CPUC approved, it did not allocate any funding to this effort in 2013–2014. Accordingly, BayREN did not train any real estate professionals.
[b] The 2014 Annual Report indicates that 549 customers participated in the Home Upgrade Advisor program; however, according to BayREN staff, BayREN received 2,455 inquiries about the service, which could signify "participation" within the program. Lacking specific guidance on what is considered "participation," the Consultant Team kept the lower value in the table as inquiry does not appear to be full participation.
[c] BayREN offers an audit rebate of $300 for Advanced Home Upgrade and Home Upgrade projects, but does not implement the Advanced Home Upgrade program. BayREN does implement and provide incentives for Home Upgrade projects. BayREN paid 561 audit rebates for Advanced Home Upgrade projects and incentives for 684 for Home Upgrade projects (total of 1,245).
[d] As reported in BayREN tracking data the Consultant Team received on December 18, 2014.
[e] These PPM were not in the revised PIPs. However, BayREN indicated that they track these goals and provided progress on these goals directly to the Consultant Team.

3.1.2 Multifamily Program: Energy Upgrade California

Description: BayREN's Multifamily program provides free consultation services and incentives to owners of multifamily properties. BayREN designed this program to provide a "middle of the road" offering that achieves deeper savings than single-measure programs, but requires less upfront investment than the IOU's whole building program. Through this program, BayREN conducts targeted outreach to multifamily property owners to promote participation. Property owners receive no-cost technical assistance to assess energy upgrade opportunities and develop a customized scope of work designed to reduce building energy use by a minimum percentage through installation of multiple measures. BayREN refers projects with deeper energy savings scopes of work or wish to work with their own third-party Rater to PG&E's Multifamily Upgrade Program. The program is presently open to multifamily buildings with five or more attached units. The program pays property owners a flat $750 rebate per unit.

Progress: While BayREN originally planned to conduct two contractor workshops (training a total of 50 contractors), due to the high demand among customers, BayREN elected to conduct only one workshop and shift funds to issuing rebates for more projects.

Table 19. BayREN Multifamily Savings Goals and Accomplishments in 2013–2014

Savings Type (Annual Ex Ante Gross)	Goal	Accomplished in 2013–2014	Percent of Goal
Gross Energy Savings (kWh)	1,365,019	1,672,439	123%
Peak Demand Savings (kW)	1,111	205	18%
Gas Savings (Therms)	152,850	171,940	113%

Note: BayREN states these are gross values

Table 20. BayREN Multifamily Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of units receiving technical assistance	3,000	6,000	36,031	400%
Number of units incented	1,250	3,750	8,384	168%
Number of multifamily contractors trained[a]	25	25	20	40%
Number of projects receiving technical assistance	75	150	220	98%
Number of property owners reached by outreach activities	150	150	400[b]	133%

[a] BayREN reports that the number of contractors trained was low because, due to quick uptake from customers, BayREN transferred funds from contractor trainings to rebates in order to enroll more units in the program.

[b] BayREN received interest forms from 400 property owners. Notably, BayREN estimates that they contacted thousands of property owners through various outreach activities. However, they are unable to track this accurately.

3.1.3 Codes and Standards

Description: BayREN works with local governments to measure, monitor, and improve energy code compliance, as well as develop EE policies and ordinances. To accomplish this, the C&S program conducted three activities. First, BayREN established Regional Forums, which were bimonthly, half-day meetings that included elected officials, policy board members, chief building officials, C&S advocates, and other stakeholders. The purpose of these forums was to share best practices and lessons learned and to build regional expertise in green building and energy policy. Second, BayREN conducted a baseline evaluation of city and county building departments, which included interviewing key building staff, observing their permitting processes, and conducting plan reviews and field inspections of several permitted projects. Third, BayREN delivered a number of code compliance and enforcement trainings to local officials and the private sector building community.

Progress: BayREN developed permit guides as well as building science and other quick reference guides for building departments.

Table 21. BayREN Codes and Standards Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Compliance Baseline and Tracking (number of counties)[a]	All Nine Bay Area Counties		n/a[a]	n/a[a]
Code Enforcement Education and Training (number of trainings)	33	38	72	101%
Code Enforcement Education and Training (number of trainees)	750	900	469	28%
Policy Support and Advocacy (number of forum participants)	150	200	413	118%

[a] Fifteen city and county building departments participated in the Permit Resource Opportunity Program (PROP). BayREN used the results of these activities to prioritize compliance improvement efforts for each jurisdiction and to develop a regional energy code compliance baseline.

3.1.4 Financing

Description of the Multifamily Capital Advance Program: BayREN's Multifamily Capital Advance Program co-finances with private lenders to provide up to half of an EE loan amount at zero percent interest rate. The private lender underwrites to its own criteria and applies its market interest rate. The effect is a lowering of the blended interest rate for the overall EE loan by up to half. The loan pool is $1.5 million and the marketing and administration budget is $500,000. BayREN leverages the technical assistance, scope qualification, and post-installation QA services of EUC-Home Upgrade Multifamily program from BayREN or PG&E by pre-qualifying scopes that are determined to be eligible under one of these programs.

Description of the PAYS Water Efficiency Pilot: BayREN provides technical assistance services to help water utilities develop new PAYS programs or enhance existing PAYS programs to reach additional customers. Examples of the services that BayREN provides include contract development, templates for program materials, procurement assistance, marketing materials, and assistance gaining buy-in from internal stakeholders. PAYS programs install energy and water efficiency measures in residential and commercial buildings with no upfront costs to the customer. The pilots attach a regular charge on the customer's water bill as a method of repayment.

Description of the Commercial PACE Administration and Marketing: BayREN provides marketing and administrative support to drive uptake in Commercial PACE programs. PACE loans are available to commercial, agricultural, and industrial customers, as well as multifamily properties with five or more units. PACE loans appear on the customer's property tax bill and cover such measures as weatherization, windows, doors, HVAC systems, efficient appliances, thermostats, solar photovoltaics, and other demand response measures. To support PACE, BayREN developed a county-by-county commercial inventory and profiling tool, using a baseline of 25 construction, ownership, performance, and financial indicators (additional custom indicators are also available). BayREN also uses this tool to provide market segmentation and commercial customer targeting. BayREN also performs validation of PACE programs in the Bay Area, which is part of the approval process for offering the program.

Progress by Program Performance Metric: Table 22, below, shows BayREN's progress in 2013–2014 on PPM across Financing activities. Following the table are additional details on progress in 2013–2014 for each of the Financing programs.

Table 22. BayREN Financing Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of multifamily projects served by the Multifamily Capital Advance Financing Pilot	10	30	0	0%
Number of multifamily units served by the Multifamily Capital Advance Financing Pilot	400	800	0	0%
Number of projects forecast under the PAYS program	0[a]	2,000	0	0%
Percentage of Home Upgrade Projects facilitated through the Financing Portfolio Subprogram	16%	22%	n/a: The Single-Family LLR was not approved by the CPUC.	
Percentage of PG&E Home Upgrade projects facilitated through the Financing Portfolio Subprogram	25%	36%		

[a] While PAYS programs supported with CPUC funds did not result in installed projects as of December 2014, the initial Windsor Efficiency PAYS pilot supported with Better Buildings Program funding administered by the Sonoma County Regional Climate Protection Agency had installed PAYS projects in 231 single family homes and 233 multifamily units as of December, 2014.

Progress for Multifamily Capital Advance: As of December 2014, BayREN had developed the partnerships necessary for implementation, but the program had not supported any loans. Specifically, BayREN recruited a consultant for lender outreach, recruited a loan servicer for the program, and signed participation agreements with two lending institutions.

Progress for PAYS Water Efficiency Pilot: BayREN conducted outreach to 16 water agencies and is working with three to design or expand PAYS services: Town of Windsor, East Bay Municipal Utility District (EBMUD), and City of Hayward. While two of these projects are still in the development stage, the utilities expect to launch them between June and August 2015. In addition, BayREN performed preliminary research for the San Francisco Public Utilities Commission (SFPUC), but development efforts are presently on hold.

Progress as of mid-May 2015 is summarized for each of the three water utilities below. This information was collected through in-depth interviews with these water agencies:

- **Town of Windsor:** BayREN has been working with the Town of Windsor to expand PAYS services to commercial customers. Windsor had done a soft launch, but experienced delays due to challenges with one of its supply-side partners. BayREN helped Windsor find a new partner, and Windsor began offering PAYS to commercial customers in early May.
- **City of Hayward:** In February 2014, the city council approved a PAYS program, but complications arose in terms of securing funding. As of May 2015, the City of Hayward had identified a new funding source and expects to launch its PAYS program by August 2015.
- **EBMUD:** BayREN is presently working with EBMUD to finalize program design, such as developing project contracts and contractor criteria, and has not yet launched.

Progress for Commercial PACE Administration and Marketing: For this program, BayREN has begun developing the Commercial Building Inventory & Profiling Tool, which includes over 25 baseline indicators. BayREN has also begun developing county-by-county reports that analyze commercial building patterns and market

segmentation profiles. Finally, BayREN has completed judicial validation[22] for two counties to begin offering Commercial PACE in their jurisdictions.

3.2 SoCalREN Program Progress in 2013–2014

This section presents the progress of SoCalREN's program as of December 2014. Where applicable for each program, the quantitative PPM goals[23] and stated accomplishments in the 2014 Annual Narrative[24] are included. SoCalREN told the Consultant Team that values in SoCalREN's 2014 Annual Narrative were not cumulative for 2013–2014 and then provided the updated cumulative values. The Consultant Team provides the cumulative 2013–2014 values as provided by SoCalREN, which for the most part were relatively minor changes. In the few cases where the changes were larger, such as trainings, the larger update made sense to the Consultant Team as the programs were ramping up in 2013.

The Consultant Team did not verify the values in this section, as it was outside the study scope.

3.2.1 Home Upgrade: Energy Upgrade California

Description: Through the Single-Family Incentives program, SoCalREN offers Home Upgrade incentives of up to $3,000 to homeowners in LA County who receive service from both SCE and SCG. An EUC Home Upgrade Participating Contractor must perform all work, and SoCalREN actively recruits and trains these contractors into its program. Although SoCalREN does not directly implement Home Upgrade in areas the municipal utilities serve (such as the LA Department of Water and Power, Pasadena Water and Power, or Long Beach Gas and Oil) or outside of LA County, SoCalREN promotes both Home Upgrade and Advanced Home Upgrade across the SoCalREN territory in an effort to drive participation in all Whole House programs. As described in the sections below, SoCalREN also engaged in a number of marketing and contractor support activities related to this program.

Progress: The Home Upgrade program is one of two programs with resource activities undertaken by SoCalREN. There were 29 contractors submitting participation agreements exclusively to SoCalREN in 2013–2014.

Table 23. SoCalREN Home Upgrade Savings Goals and Accomplishments in 2013–2014

Savings Type (Annual Ex Ante Gross)	Goal	Accomplished in 2013–2014	Percent of Goal
Home Upgrade			
Energy Savings (kWh)	2,335,784	87,817	4%
Peak Demand Savings (kW)	2,681	145	5%
Gas Savings (Therms)	164,629	12,056	7%

Source: EESTATS December 2014 Monthly Report, which are annual gross ex ante savings values.

[22] This is a legal formality to allow the county to offer PACE

[23] As presented in the Revised SoCalREN Program Implementation Plan (February 2014).

[24] 2015 SoCalREN Energy Efficiency Annual Report (April 2015)

Table 24. SoCalREN Home Upgrade Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of homes or buildings treated[a]	951	1,425	188	7.9%
Number of units incented or rebated	2,378	3,563	506	8.5%

[a] SoCalREN defines "treated" as total project applications in the pipeline, but not complete.

3.2.2 Multifamily Program: Energy Upgrade California

Description: The Multifamily Incentives program provides free consultation to owners of multifamily properties to identify EE upgrade improvements. SoCalREN also offers incentives to offset the cost of receiving an energy audit,[25] as well as incentives for the actual upgrades (up to $1,200 per unit). These services and incentives are available to any owner of a multifamily property of three or more units within the joint SCE/SCG service territory. Customers must complete projects with a participating rater and reduce building energy use by at least 10%.

In addition to providing incentives, SoCalREN completed a host of design changes for the Single-Family and Multifamily programs to encourage more participation. These included, for example, changing the incentive structure, expanding the pool of contractors, changing measure requirements, and adding new measures and incentives.

Progress: The Multifamily program is the other resource activity undertaken by SoCalREN.

Table 25. SoCalREN Multifamily Savings Goals and Accomplishments in 2013–2014

Savings Type	Goal	Accomplished in 2013–14	Percent of Goal
Multifamily			
Energy Savings (kWh)	6,264,000	385,255	6%
Peak Demand Savings (kW)	1,357.20	80	6%
Gas Savings (Therms)	269,280	14,650	5%

Source: EESTATS December 2014 Monthly Report

In addition to the PPM, SoCalREN supported multifamily contractors by delivering California Multifamily Existing Building training to 43 raters (representing 30 companies) with subsequent approval to participate. Additionally, SoCalREN stated that they assessed 16 buildings during the 2013–2014 period, with 2,037 incentives paid as part of the assessment activity.

Table 26. SoCalREN Multifamily Incentives Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of homes or buildings treated[a]	90	90	26	14%
Number of units incented or rebated	4,000	4,000	384	5%

[a] SoCalREN defines "treated" as total project applications in the pipeline, but not complete.

[25] $5,000 for buildings with between 5 and 49 units, $10,000 for buildings with between 50 and 100 units, and an additional $20/unit for every additional unit.

3.2.3 Local Marketing and Outreach

Description: To support transforming the whole building upgrade market, SoCalREN engages in a number of activities and tactics to increase awareness of residential EE programs available to customers. Activities included homeowner workshops, community events, maintaining a "Residents" webpage on TEN's website, social media campaigns, and a Home Upgrade Advisor hotline. SoCalREN also leverages community stakeholders in three ways. First, it engages in outreach with local government stakeholders to promote Home Upgrade through their channels and helps develop Community Home Energy Retrofit Program (CHERP) pilots, which are community-based education and outreach campaigns. Second, the Energy Champions campaign provides incentives of up to $400 to local organizations that refer homeowners to the Advanced Home Upgrade and Home Upgrade programs. Lastly, SoCalREN offers $200 Energy Coupons for participation in SCE/SCG's Advanced Home Upgrade Program.

Progress: SoCalREN engaged in a variety of marketing and outreach efforts.

Table 27. SoCalREN Local Marketing and Outreach Progress

Outputs	Accomplished in 2013–2014
Workshops and Events	
Direct interactions with individuals at events	2,542
Homeowner workshop attendees	150
Community events held	27
Homeowner workshops held	9
Online Marketing and Outreach	
TEN's '"Residents" webpage views	18,100
Facebook page "likes"	444
Other Outreach and Support	
Residents assisted via Home Upgrade Advisor hotline	476
CHERP pilots supported	2
Number of Advanced Home Upgrade Energy Coupons issued	172
Number of Energy Champion referrals	2

3.2.4 Green Building Labeling

Description: The Green Building Labeling program seeks to encourage homebuyers to pursue EE as part of their home purchase decision. The program employs an integrated outreach, training, and support approach to help real estate professionals understand the value of "green" buildings and incorporate "green buildings" into their professional services. This includes conducting National Association of Realtors (NAR) Green Designation and Appraisal Institute trainings, which certify realtors, brokers, and appraisers as green real estate professionals. SoCalREN complements these efforts with a consumer-facing "green realtor" marketing campaign to build demand for green-certified real estate professionals among homebuyers.

Progress: SoCalREN stated that it evaluated the impacts of its NAR Green Designation training through a pre- and post-survey. The results indicate a large increase in the number of realtors referring customers to EE programs—from 22% before the training to 64% afterward.

Table 28. SoCalREN Green Labeling Progress

Outputs	Accomplished in 2013–2014
Online Marketing and Outreach	
Green realtor campaign website page views	112,161
Realtor Training	
Number of realtors certified through Certified Green Real Estate Professional and NAR Green Designation trainings	516
Number of NAR Green Designation trainings	11
Number of workshops delivered to associations or realtors	6
Home Appraiser Training	
Number of appraisers trained	23
Number of appraiser trainings delivered	2

3.2.5 Contractor Outreach and Training

Description: The purpose of the Contractor Outreach and Training program is to recruit, train, and support Home Upgrade contractors. SoCalREN hosts several Contractor Recruiting Workshops across its territory. The program assigns Account Managers to recruited contractors, and the managers provide the contractors with continual information and support for completing Home Upgrades. These Account Managers also conduct outreach to contractors via events and office visits. SoCalREN also maintains a "Contractors" page on its website and a Home Upgrade Advisor hotline that contractors can call.

Progress: The HVAC Contractor Training took two forms: 93 one-on-one trainings with single companies and six "event trainings" with multiple companies.

Table 29. SoCalREN Contractor Outreach and Training Progress

Outputs	Accomplished in 2013–2014
Outreach to Contractors	
Contractor impressions at all events	259
New Home Upgrade contractor registrations	74
Contractor recruitment workshops held	6
Training and Technical Support	
Contractors assisted via Home Upgrade Advisor	473
Contractors supported via Account Managers	74
Email blasts to contractors	45
Number of HVAC Contractor Trainings	99
Number of HVAC Contractor Training attendees	206
Website Activity	
Contractor Resources webpage views	3,044
Online interest forms submitted	50
Co-Op Marketing	
Funding provided to contractors	$656,322[a]
Number of Co-op Marketing Projects incented	201
Number of contractors participating in co-op marketing	48

[a] $358,145 (or 55%) was ratepayer funds

3.2.6 Low-Income Single Family

Description: The goal of the Low-Income Single-Family program is to encourage the same comprehensive upgrades in low-income homes that occur in standard Home Upgrade single-family residences. SoCalREN works with the Community Development Commission (CDC) of LA County to develop and implement a business process that connects CDC program participants with EUC Home Upgrade programs. SoCalREN also educates and trains residential building rehabilitation contractors working with low-income homeowners on the Home Upgrade programs and encourages them to become Home Upgrade Participating Contractors.

Progress: Table 30, below, shows SoCalREN's progress in 2013–2014 in supporting low-income Home Upgrades.

Table 30. SoCalREN Low-Income Program Progress

Outputs	Accomplished in 2013–2014
Contractor Outreach and Training	
Number of CDC contractors contacted about the joint CDC-Home Upgrade Program	390
Number of Building Performance Institute (BPI) Building Analyst Trainings incentivized	25
Number of contractor incentivized for full cost of BPI certification	5
Marketing and Outreach	
Number of flyers sent to low-income residents	48,000
Application packages sent to low-income residents	226

3.2.7 Financing

SoCalREN supported loans for single-family, non-residential, and public agency customers in 2013 and 2014. However, because SoCalREN did not provide PPM goals for Financing in its updated PIP, it is difficult to gauge how it performed in comparison to original goals.

Single-Family Loan Loss Reserve

Description: The Residential LLR program targets the single-family residential market and supports two loan products: Home Energy Loans that support residential EE and solar upgrades through Home Upgrade and Cool Comfort Financing Loans that support the installation of HVAC measures above code. The LLR covers 90% of the loans, resulting in lower interest rates and making these loans more affordable and attractive to customers. In theory, this results in increased participation in Home Upgrade and high-efficiency HVAC installations.

Progress: Of the three Financing activities, SoCalREN supported the greatest number of projects through Single-Family LLR, although the loan value of each of these projects was smaller compared to other activities.

Table 31. SoCalREN Single-Family LLR Progress

Outputs	Accomplished in 2013–2014[a]
Number of applications received	535
Number of loans funded	272
Total value of loans	$4,745,105
Number of projects funded through loans	272
Number of loans paid off	36 (13%)

[a] SoCalREN states that the data are inclusive of both programs backed by single-family LLRs: Home Energy Loans and Cool Comfort Financing Loans.

Non-Residential PACE

Description: SoCalREN provides marketing and administration support for Commercial PACE projects in joint SCE/SCG service territories in LA County. SoCalREN uses the implementation funds for general project management, project development support, consumer outreach, marketing, application support, pre-approval support, and website management. PACE projects are available to commercial, agricultural, and industrial customers, as well as multifamily properties with five or more units. PACE loans appear on the customer's property tax bill and cover such measures as weatherization, windows, doors, HVAC systems, efficient appliances, thermostats, solar photovoltaics, and other demand response measures.

Progress: SoCalREN supported loans for five Non-Residential PACE projects through 2014. As of December 2014, an additional $41.9 million in projects are in the pipeline.

Table 32. SoCalREN Non-Residential PACE Progress

Outputs	Accomplished in 2013–2014
PACE applications received	144
PACE projects supported	5
Total loan value of PACE projects supported	$14.4 million

Public Agency Financing Program

Description: The CPUC did not approve funding for a Public Building LLR or Public Agency Revolving Loan Fund. Instead, SoCalREN uses these funds to support the Public Agency Financing Program. Through this program, SoCalREN provides "turnkey" technical assistance support to public agencies (such as cities, counties, and schools) by assisting them with evaluating financing options for energy upgrades and completing financing and incentive applications. One of the services is the development of a calculator that helps participating agencies evaluate the options for financing EE projects.

Progress: Although the value of the loans supported by the Public Agency Financing Program is the smallest of the Financing activities, the technical assistance activities SoCalREN provided allowed for high levels of engagement with public agencies. For instance, SoCalREN created a number of tools and materials to help overcome conceptual barriers commonly faced by public agencies, increasing their interest in SoCalREN and IOU financing options. Many projects remain in the pipeline for the Public Agency Financing Program in 2015.

Table 33. SoCalREN Public Agency Financing Program Progress

Outputs	Accomplished in 2013–2014
Loans Closed	
Value of financing loans closed	$1 million
Financing Application Assistance	
Number of financing applications completed for agencies	69
Potential loan value of financing applications completed	$10.2 million
Number of project proposals delivered to agencies	17
Marketing and Outreach	
Number of outreach events and presentations	37
Number of inboxes reached through email blasts	1,165

3.2.8 Southern California Regional Energy Center

Through the SoCalREC program, SoCalREN offers a number of different services to local governments and public agencies. The Public Agency Program, which is the focus of one of the constituent surveys (see the Study Methodology section), includes the Project Delivery activities below in addition to the Public Agency Financing Program described above.

Description of Aggregated Regional Procurement and Integrated Comprehensive Whole Building Retrofits (Project Delivery): SoCalREN offers start-to-finish project management support (including audits, performance design specifications, and financing and incentive application support) for comprehensive mechanical, lighting, street lighting, water/wastewater pumping, process optimization, and other demand-side management (DSM) projects. It also offers a pool of competitively bid specialty contractors. SoCalREN also offers public agencies the Enterprise Energy Management Information System (EEMIS) that enables agencies to track the impacts of their projects over time. This software monitors facility energy consumption and provides hourly and system-level usage profiles.

Description of Climate Action Plan/Los Angeles Regional Collaborative for Climate Action and Sustainability: The Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) includes LA County and several cities and councils of governments (COGs). The LARC coordinates regional climate action and sustainability strategies. SoCalREN is using the LARC and program funds to develop a countywide climate action and sustainability plan. To support this effort, SoCalREN, contracting with UCLA, has developed an Interactive Energy Atlas, which displays energy consumption and similar data on neighborhood, city, or other regional level.

Description of Water Energy Nexus: The high-level goal of this program was to support the development of a standardized methodology to quantify the value of embedded energy in water, perform combined water and energy audits and integrated retrofit project recommendations for 10 school districts, and develop a targeted marketing model to promote consumer awareness of the water-energy nexus. Notably, this program was halted due to lack of interest from water utilities and the IOUs.

Description of Regional Energy Project Tracking and Permitting System: Now under the name "On-Ramp," SoCalREN used implementation funds to develop the Community Energy Efficiency Project Management System (CEEPMS). The CEEPMS is an online building permitting software that means to build customer awareness of EE upgrades and lends local governments a tool for tracking GHG reductions in their jurisdictions. To increase customer awareness of EE opportunities, the CEEPMS matches customers to rebates

via the construction permits contractors pull. The CEEPMS also incorporates Title 24 processes and allows for measurement of GHG savings at the project level within permitting software presently available to local governments.

Description of Marketing, Outreach, Education, and Training: SoCalREN engaged with residents, business, and public agencies to promote EE and program participation. Examples of activities included developing a communication plan and brand and style guidelines for SoCalREN, maintaining a "Public Agencies" webpage, setting up a toll-free number for program inquiries, distributing SoCalREN Technical Reports, and attending conferences and events.

Description of Workforce Development: Through the Workforce Development program, SoCalREN partnered with the Emerald Cities Collaborative (ECC) to develop training and employment opportunities for minority, low-income, and disadvantaged workers. The ECC distributes a variety of resources on apprenticeship and training at local events. Further, the ECC developed the E-Contractor Academy, where it conducts weekly seminars for small and minority contractors on how to compete for and execute EE projects in the municipal, university, school, and hospital (MUSH) sector.

Progress: Intertwined with the Public Agency Financing Program above, SoCalREN supported public agencies with a wide variety of audit, project development, benchmarking, and educational services. SoCalREN far exceeded its PPM goals for this program (see Table 34 and Table 35, below).

Table 34. SoCalREN SoCalREC Progress by PPM

Program Performance Metrics	2013 Goal	2014 Goal	Accomplished as of December 2014	Percent of 2013–2014 Goal Accomplished
Number of homes or buildings treated	7	8	149	993%

Note: SoCalREN staff indicate that accomplishments are much higher than the original goals, as the PIP goals were put in place prior to a fully designed Public Agency Program.

Table 35. SoCalREN SoCalREC Progress

Outputs	Accomplished in 2013–2014
Aggregated Regional Procurement and Integrated Comprehensive Whole Building Retrofits (Project Delivery)	
Number of in-progress projects[a]	130
Number of completed projects[a]	5
Number of public agencies enrolled[b]	50
Number of public agencies that have adopted EEMIS	56
Number of facilities monitored by EEMIS	~150
Number of streetlights in process of retrofit	17,814
Climate Action Plan/LARC	
Interactive Energy Atlas website developed (launch in June 2015)	1[c]
Number of Energy Atlas stakeholder workshops delivered	2
Number of LA County COGs engaged regarding GHG inventories	6 (all COGs in LA County)
Water-Energy Nexus	
Number of facility-wide water and energy audits to public agencies	10
Regional Energy Project Tracking and Permitting System (CEEPMS)	
Number of CEEPMS prototypes developed	2
Number of cities enrolled for product launch	1
Marketing, Outreach, Education, and Training	
SoCalREN developed a number of marketing and outreach tools and resources in 2013–2014, such as a communications plan, branding and style guides, a "Public Agencies" website, toll-free numbers and email inquiry systems, and flyers and other marketing collateral.	
Workforce Development	
E-Contractor Academy Program created	1
Number of small, minority, and disabled contractors who have graduated from the E-Contractor Academy	110
Number of graduates who have become prequalified to perform work for LA County	7
Number of LA County contracts awarded to graduates	2
Number of graduates assisted with prequalification for LA Unified School District projects	3

[a] Based on SoCalREN's tracking dataset as of 12/17/2014; in-progress includes all projects flagged as "active" or "pilot," but excludes the five marked as "completed."
[b] Includes all agencies enrolled between July and December 2013 according to SoCalREN's tracking database we received on 12/19/2014.
[c] According to SoCalREN staff, this is a single website with 98 public agency profiles available upon launch.

4. Findings

This section first describes findings related to **value**, followed by information about the **effectiveness** of the RENs. The majority of the analysis presented in this section is qualitative, meaning that the Consultant Team is drawing conclusions from multiple data sources through a "preponderance of evidence" approach.

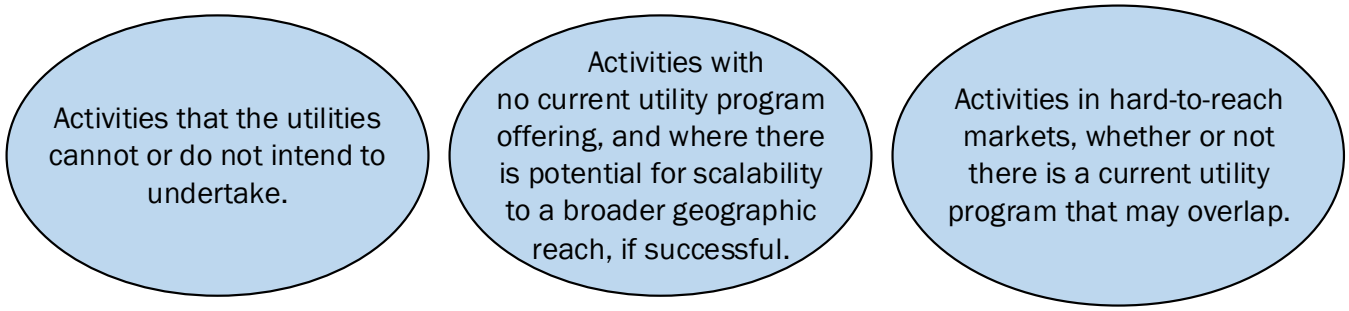
4.1 Value of the RENs

The REN pilots will have demonstrated value if their programs, as implemented, broke new ground in areas not presently served by utility offerings and if their activities and programs had the potential to scale up to a broader geographic area or to serve hard-to-reach markets. In addition, the RENs would have demonstrated value if their activities promote WE&T, new technology (i.e., software), or the water-energy nexus.

4.1.1 Value Compared to CPUC Pilot Evaluation Areas

The CPUC authorized the creation of the BayREN and SoCalREN to understand whether RENs could provide value as new program administrators entering an EE program space already occupied by IOUs and Marin Clean Energy (MCE). The RENs were expected to uncover opportunity areas overlooked by utility programs and to capture EE in marginalized program market areas where locating energy savings is difficult. The CPUC expected the RENs to undertake activities in one or more of the three categories shown in Figure 5, below.

Figure 5. CPUC Broad Categories for Expected REN Program Activities



Category 1: Activities that the utilities cannot do or do not intend to undertake

The CPUC specified that the RENs were to provide activities the utilities cannot or do not intend to undertake and approved the portfolio of programs proposed by the RENs and included in this study. It was outside the scope of this study to determine if those authorization choices were appropriate. Therefore, the Consultant Team looked for activities unique to the RENs that were providing value outside of the existing IOU programs and did not specifically query IOU staff regarding whether the current REN program was an activity that the IOU could not do or may not perform in the future.

REN presence and unique contribution to the local government EE sector as characterized by REN staff. In interviews with REN staff, they cited the organizational and governance structure of the RENs, the types of services and measures that they offer, the markets that they reach, and their level of engagement with local governments and communities as activities outside the IOU sphere. In the opinion of REN staff, the RENs' organization and governance provide greater credibility, trust, and flexibility than do the IOUs.

Further, REN staff offered three attributes that the RENs offer to local governments, which could result in increased program operational effectiveness and reach:

- **Credibility and Trust:** According to members of their staffs, BayREN and SoCalREN use pre-existing connections, credibility, and trust with their constituents to gain access and foster collaboration with the community. They suggest that this allows local governments to form partnerships with community-based training efforts or develop co-marketing campaigns to reach additional customers.
- **Flexibility:** As one BayREN staffer explained, because nine counties participate in BayREN's governance, local concerns or ideas for local program implementation are more easily elevated to the decision makers within BayREN (i.e., the Lead Link or the Coordinating Circle). The quick and easy access leads to greater flexibility in making small program changes. Conversely, according to BayREN staff, while local governments can easily access their IOU LGP representative,[26] some concerns need to be elevated to higher-level decision makers within PG&E (i.e., the supervisor of PG&E's Local Government Partnership programs).[27] Two county representatives mentioned that BayREN has less bureaucracy to navigate and makes decisions faster than the IOUs. The Consultant Team did not ask specifically about accessibility within SoCalREN since there is a single-decision maker. However, it seems plausible to the Consultant Team that this same ease of accessibility, leading to greater flexibility, occurs within SoCalREN.
- **Regional Resource Sharing:** Staff from both RENs mentioned that aggregation of resources across the REN counties allows local governments to save time and money by borrowing approaches or designs that other governments have developed and then customizing those resources to fit their needs. For instance, a county can use predesigned marketing materials for Home Upgrade programs. Further, LA County acquired and adapted an EEMIS, a benchmarking type of software that compares energy use across buildings in a city or region. SoCalREN is presently sharing the EEMIS licensing at cost to other governments in SoCalREN territory and plans to provide training and consulting services.

While the RENs' staff point out several important benefits to local governments, it is unclear that all these benefits are unique to the RENs. The LGPs most likely have similar levels of credibility and trust as the RENs (especially since they are the same people in some cases). However, the flexibility afforded to the RENs in terms of quick program changes is positive and most likely is a quality that the LGPs lack simply due to the IOU oversight.

IOU staff position on value of RENs vis a vis the LGPs. While local governments clearly benefit in the ways described above, interviews with the IOUs suggest that the LGPs provide similar value.[28] The LGPs consist of cities and counties with a partnership implementer and one or more local governments as members, which have networks and rapport within the communities they serve that may be similar to those of the RENs. Additionally, the line between an LGP and the REN can be blurred, as there are several cases where a BayREN county representative also has a LGP role and ties with PG&E and 11 of the 13 SoCalREN Advisors are part of an LGP.

[26] Each LGP Implementer has an IOU counterpart who is their point of contact within the IOU.

[27] One REN member county said, "The REN has a much better relationship with oversight and programs than the LGP Energy Watch program. The nine voting members that are approving the programs are the same people who are deploying programs in the field. The PG&E representative for our county is not able to influence what is in the portfolio and we can at the REN. At the REN, good ideas can rise to the top and be approved much faster than at PG&E."

[28] As of the end of 2014, the IOUs held contracts with 47 LGPs. LGPs funding for 2013–2014 was approximately $158 million.

LGPs also provide opportunities for sharing best practices and resources. For instance, the IOUs' LGP budgets support the Statewide Energy Efficiency Collaborative (SEEC),[29] which holds an annual EE forum for local governments and offers several no-cost resources, such as a quick-start guide for developing GHG inventories.

Overlap with IOU Programs

If the RENs are performing activities that the IOUs cannot or do not intend to perform, overlap of activities would be minimal. Discussions with both the RENs and the IOUs revealed that, although overlap of customers exists, the services offered are distinct.

- **Home Upgrade Offerings:** The customers for Home Upgrade and Public Agency Program programs fully overlap between the IOUs and the RENs. However, the RENs offer different services or higher levels of engagement to the same customers. BayREN and SoCalREN offer Home Upgrade while the IOUs offer Advanced Home Upgrade.[30] Both RENs help customers find the most appropriate program, as they refer customers to the Advanced Home Upgrade program when necessary.
- **Technical Assistance through SoCalREC:** One key area where SCE/SCG and REN services overlap is technical assistance. According to the IOUs, they offer similar technical assistance to local government (and public agencies) through the LGPs, schools programs, and Custom and Express Efficiency programs.[31] However, SoCalREN and the IOUs agree that their offerings are distinct in terms of the level of engagement involved. For instance, the IOUs' technical assistance may address one piece of the process of developing EE projects, while SoCalREN provides assistance through the entire process. Public Agency Program survey respondents provided similar feedback. Half of the respondents (13 of 28) mentioned that SCE/SCG offers services similar to those of SoCalREN. Six respondents mentioned similar technical assistance services, such as audits, project design assistance, savings estimates, incentive application assistance, and procurement assistance. Additionally, one survey participant highlighted the different level of engagement that SoCalREN offers: "[*The IOUs] do offer programs, but do not go above and beyond the way [SoCalREN] does*." One other participant offered a different opinion, stating, "*…a lot of the time it seems like they are duplicating what is offered through the local government partnership programs with SCE and SoCalGas*."

Similarly, the RENs' and IOUs' Multifamily programs fully overlap in terms of customers, but offer slightly different program designs.

- **BayREN has the same Multifamily program customer targets as PG&E:** The BayREN and PG&E Multifamily programs target the exact same populations, but with different measure mix offerings. While their implementation plans indicate service to any multifamily building, the Consultant Team heard that BayREN has experienced significant participation by market-rate multifamily complexes while PG&E has primarily served low-income (affordable) complexes. This may be due to differences in program design. BayREN's Multifamily program allows customers to utilize program-provided technical staff and an assessment process they consider streamlined while PG&E requires participants to invest in an in-depth upfront assessment by a participating Rater (subsidized with an assessment incentive).

[29] http://californiaseec.org/.

[30] SoCalREN offers Home Upgrade only to homeowners in LA County, while BayREN offers Home Upgrade to any homeowner in the entire BayREN region.

[31] The Consultant Team did not examine the IOU technical assistance offerings or verify the self-reported accounts of the IOU staff.

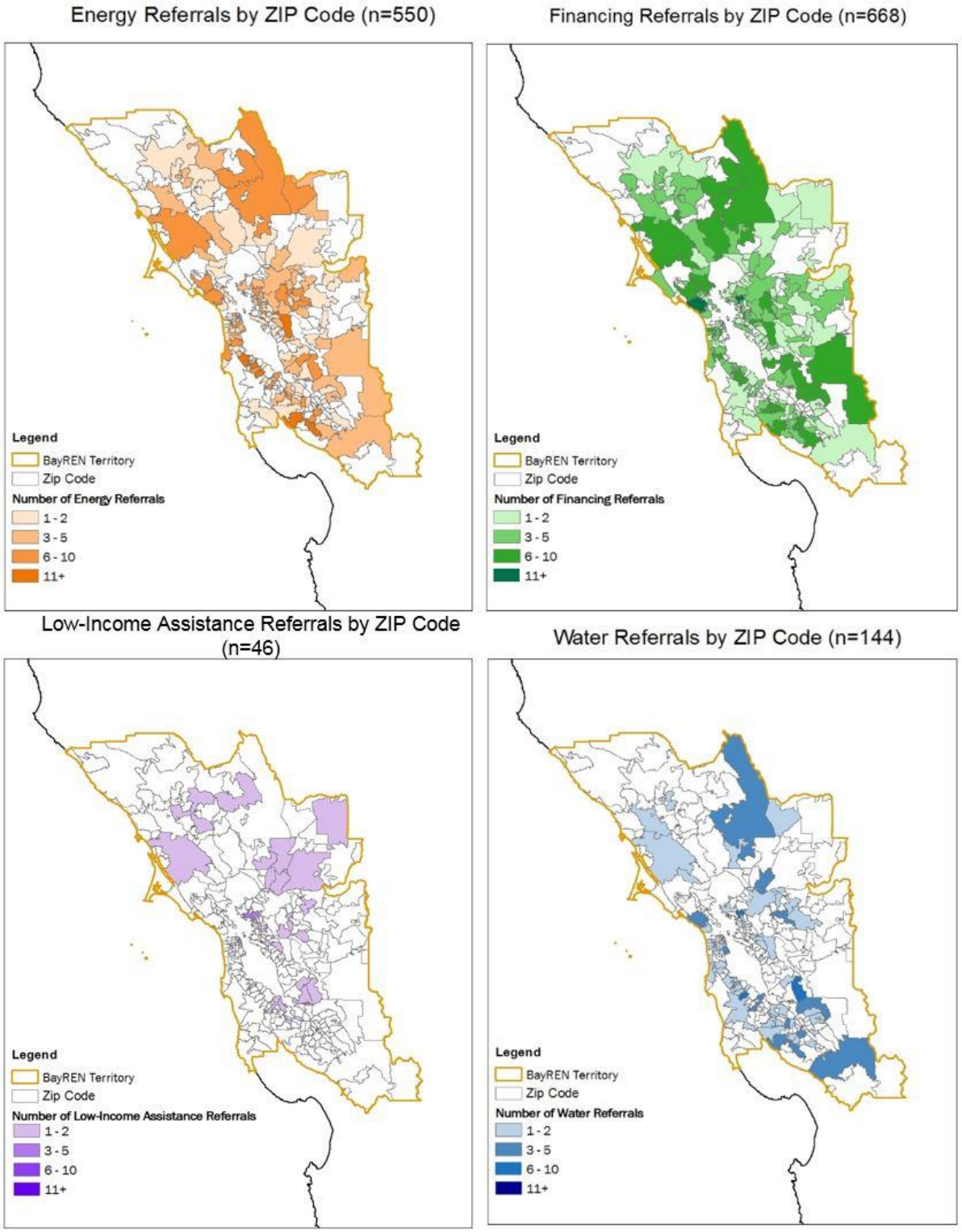
- **SoCalREN has the same Multifamily program customer targets as SCG:** Both SoCalREN and SCG are undertaking programs at multifamily sites in the same territory, and IOU account representatives often market both programs to customers. Although marketed to the same customers, the programs offer different measures and have different approaches to obtaining the final rating of the building.[32]

Within the BayREN Home Upgrade Advisor program, REN staff described a level of customer support that they feel is unlike other advisor offerings. Specifically, the RENs staff refers customers to a suite of complementary programs that may be relevant. Six BayREN staff members noted that referrals and lead generation are the main areas where coordination results in synergistic benefits for both administrators. As Figure 6, below, shows, the Home Upgrade Advisors program refers hundreds of customers throughout BayREN's territory to a wide variety of programs.[33]

[32] SoCalREN uses an open-rater model, whereas the IOUs assign a rater to the projects. The Consultant Team heard from the RENs that an open-rater model provides greater flexibility in the rater, but the Consultant Team did not verify that statement.

[33] BayREN provided the data in this figure. The Consultant Team neither collected nor validated this information.

Figure 6. BayREN Home Upgrade Advisor Number of Referrals to Other Programs, by Program Type



Source: BayREN Home Upgrade Advisor implementation team (CLEAResult).

From interviews with both REN and IOU staff, the Consultant Team determined that the two RENs have collaborated with the IOUs to carve out niches in the markets within the Home Upgrade and public agency technical assistance programs, two areas that we most closely reviewed. While many REN and IOU offerings overlap, in these cases the RENs provide differentiated services, measures, and/or enhanced levels of engagement to customers.

Availability of Services to Local Governments

The RENs have provided local governments with a wider array of EE services and products, compared to previous years. Since the RENs began in September 2013, local governments in the SoCalREN area report that more EE services and products have been available to them. As shown in Figure 7, below, more than half (17 of 28) of the Public Agency Program participants surveyed reported that a greater number and variety of services and products were now available.

Local governments in SoCalREN's territory that belong to LGPs (i.e., who were also in the LGP survey for the 2013–2014 LGPs study[34]) indicated that more services and products were available to them. Compared to LGP Implementers[35] in the LGP survey, a statistically larger number of participants in the Public Agency Program indicated a substantially greater number and variety of EE services and products available to them since the RENs began.[36] A possible reason for this difference is that Public Agency Program participants have greater exposure to SoCalREN's portfolio of offerings.

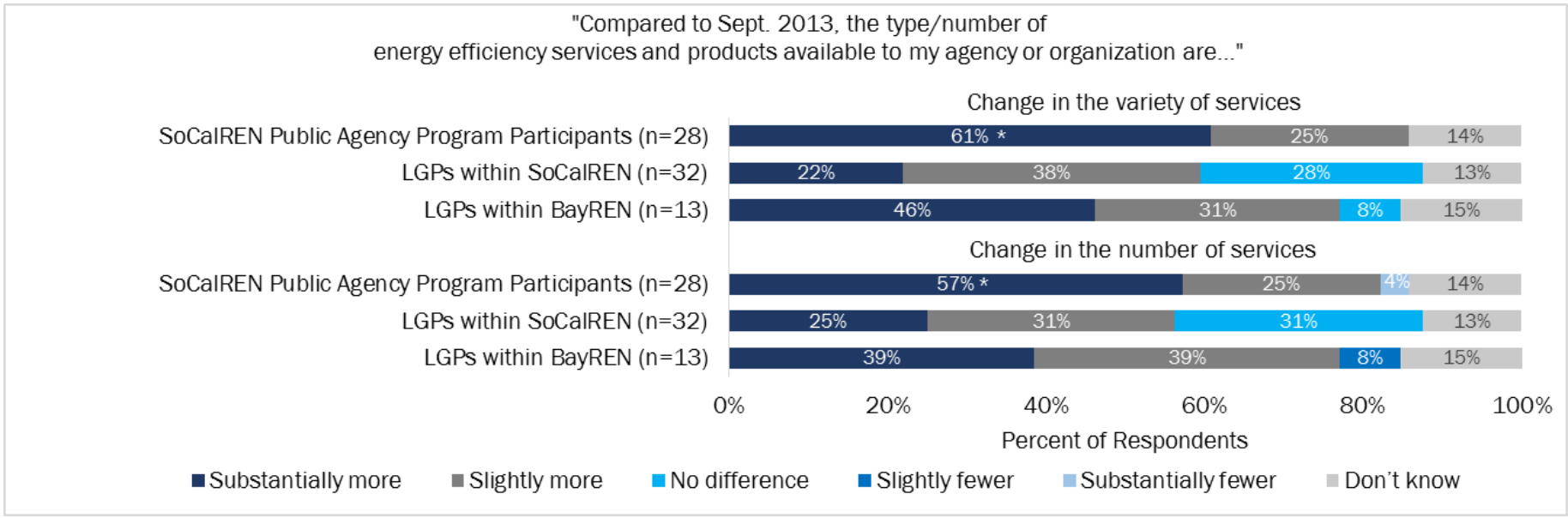
Of the 13 local governments in BayREN's territory also in the LGP survey for the 2013–2014 LGPs study, nearly one-half indicated substantially more variety of services were available to them (6 of 13), while 5 of 13 indicated substantially more services were available.

[34] The survey is within *Local Government Partnerships Value and Effectiveness Study* by Opinion Dynamics. The study is located on Calmac.org

[35] As described earlier, LGP Implementers hold the contract with an IOU to conduct activities within an LGP.

[36] A statistical difference at the 90% confidence level means that the Consultant Team has 90% certainty that the differences seen within the sample are actual differences in the full populations of SoCalREN Public Agency participants and LGPs in SoCalREN's area.

Figure 7. Change in the Number of EE Services and Products since RENs Began



* Difference between Public Agency Participants and SoCalREN Agencies are statistically different at the 90% confidence level.
Source: LGP Survey by Opinion Dynamics as part of the 2013–2014 LGP study. Respondents are only LGP respondents within the RENs territory who were familiar with the RENs.

Category 2: Activities where there is no utility program offering and where there is potential for scalability to a broader geographic reach, if successful

Early on, the RENs, faced with the prospect of program design with little allowance for duplication, had few choices in drawing from markets that had not been addressed by the IOUs, which had a 10-year head start in the local government EE sector.

The RENs introduced new program offerings to the California EE community—one addresses the water-energy nexus, another is a software platform for building permit tracking, and a third software package addresses building energy tracking and management.

- **BayREN PAYS program:** BayREN offers support to water agencies developing PAYS programs, enabling them to provide new EE offerings to their customers.[37] Within the program and through an on-bill financing arrangement, customers can pay for new energy- or water-savings devices by adding payments for the chosen devices cost to their water bills. Eligible devices must be approved by the sponsoring water agency. The two energy savings devices included in PAYS are high-efficiency shower heads and faucet aerators[38]. Water savings from measures such as toilets also include embedded energy savings (i.e., energy savings due to water conservation and therefore less need for energy to move water). Water agencies typically see PAYS as an innovative tool to overcome customers' upfront cash barriers because it offers financing that guarantees positive cash flow to the customer from day one. The Consultant Team also heard that BayREN's support yielded several internal benefits to the water agencies, such as helping them meet Climate Action Plan (CAP) goals and improving water-billing systems. A small-scale effort with three water agencies, the BayREN effort is an activity not previously performed by the IOUs. It has the potential for scaling anywhere in the state, if found successful.[39] (Because this program is different from other EE programs, the Consultant Team pulled in information from the implementer and placed it in Appendix A.) As of July 2015, two agencies are implementing PAYS: the Town of Windsor and the City of Hayward.

- **SoCalREC CEEPMS**: SoCalREC offers the Regional Energy Project Tracking and Permitting System software called CEEPMS, which links the building community to available rebates. While still in its early stages,[40] this is not an activity previously performed by the IOUs. It appears to have the potential for scaling anywhere in the state, if found successful. This software may be comparable to point-of-sale type marketing. Theoretically, an individual has already decided to move forward with a specific project requiring a permit; while going through the permit process, the opportunity to install an energy-efficient option as part of the project, supported by rebates, becomes available. Because of this timely information, the individual may take an EE action not previously planned. Thus, this software package shows promise for calculating indirect energy savings.

- **SoCalREC EEMIS**: In addition, the EEMIS system through SoCalREC, which provides enhanced benchmarking for local governments, is still new. As of the end of 2014, 56 local governments have

[37] PAYS is an on-bill financing program supported by water agency funding whereby savings from both water- and energy-saving devices are estimated to significantly exceed program charges used to repay the financed cost of the devices.

[38] Subsequent to the reporting of this study, Hayward updated their website to indicate that they also allow Common Area Lighting and Hot Water System Upgrades (pipe wrap, demand controllers, etc.).

[39] All three water agencies are still in the early stages of their piloting of PAYS, so the Consultant Team cannot determine the success of the individual water programs at this point.

[40] As of the end of 2014, SoCalREN has developed two prototypes, and one local government has enrolled for product launch.

licensed the software package through SoCalREC and are tracking approximately 150 buildings. The Consultant Team does not know if the cost of providing training and support for this new system would preclude scaling. Similar to CEEPMS, this software package has the potential for indirect energy savings, but the level of savings is not yet known.

Category 3: Activities in hard-to-reach markets, whether or not there is a current utility program that may overlap

The RENs are supporting hard-to-reach areas and SoCalREN has a small WE&T program that is putting disadvantaged contractors to work.

Both RENs serve hard-to-reach customers with the incentives and technical assistance offerings on the residential side available through their Multifamily programs. The multifamily sector overall is a difficult market. Renters are willing to pay for smaller measures that they can take with them when they move, yet the cost of more substantive energy-savings measures is borne by the owner of the buildings, who do not reap the financial rewards of energy savings (i.e., creating a "split incentives" barrier). Program implementers have been attempting to overcome this barrier for years, and the REN programs are no exception. The BayREN Program Implementation Plan (PIP) indicates that the customized technical assistance and long-term energy upgrade and cash flow plan that fit the buildings' capital investments plan helps overcome split incentives. The SoCalREN PIP indicates that they expected available PACE financing to reduce this barrier.

Both RENs have bilingual (Spanish/English) contractors and conduct bilingual outreach. BayREN has printed collateral materials in Spanish, and the contractor finder tool on the BayREN website includes options for specifying bilingual contractors. According to BayREN staff, contractor training has brought 94 Spanish-speaking contractors into the program.

Finally, SoCalREN targets disadvantaged populations for training through the WE&T program. According to REN records, 110 small, minority, and disabled contractors have graduated from the E-Contractor Academy, with seven prequalified to perform work for LA County, and two contracts have been awarded to graduates.

4.1.2 Value as Viewed by Program Participants

As described in the Evaluation Plan, the RENs will have demonstrated value if their participants respond positively when asked about the program in which they participated. For this evaluation, the study targets were drawn from the BayREN residential Home Upgrade Advisor program, PAYS, and the SoCalREN Public Agency Program. As such, our examination does not include all REN programs. Since the RENs work with local governments (which are often part of an LGP), information from the LGP study is also useful in gauging the value of the RENs.

In this section, the Consultant Team assessed value across three areas and determined value is present when:

1. The REN program participants found the REN offering and approach beneficial
2. The REN engagement with LGPs was similar to or better than LGP engagement with the IOUs
3. The REN helped local governments build capacity

REN Program Offerings and Implementation Approach

REN participants in the PAYS, Home Upgrade Advisor, and Public Agency Program programs indicated that they received substantial benefit from the RENs activities, as described below.

PAYS: While the Consultant Team earlier indicated a degree of uncertainty about the energy savings potential of the energy-saving devices available through the program, the quotes below describe an intervention that participating PAYS program water agencies staff found useful.

> "Without their help, it wouldn't be happening at all; too busy [with other] work."
>
> "They are very helpful - they were always there to look for ways to help push the program along."
>
> "Individuals have been great, committed, nice having a team that understands my challenges, my aspirations."

BayREN Home Upgrade Advisor: For BayREN Home Upgrade Advisor survey respondents, the most commonly mentioned positive benefits of working with a Home Upgrade Advisor were high satisfaction with the home upgrade process (83%) and increased likelihood of performing a home upgrade (77%). In general, improved comfort and bill savings were the top benefits of participating in the Home Upgrade program, according to participants.

Working with the Home Advisor made a difference for nearly two-thirds (64%) of the homeowners. Although no more than 12% of homeowners mentioned any single reason that working with a Home Advisor made a difference, the top four areas were that they would:

- Not have done a home upgrade otherwise (12%)
- Have done less-extensive upgrades (12%)
- Have felt less informed/knowledgeable (12%)
- Have had less confidence in work performed/decisions made (10%)

SoCalREN Public Agency Program: The Public Agency Program participants were pleased with the services provided by the implementer; 86% said that staff met or exceeded their expectations, and 71% said that staff always met their needs. Ten of the Public Agency Program respondents are also LGP Implementers, and five Non-Partner Local Government respondents have worked with an LGP. For these five:

- They tend to work frequently with LGP, but tend to work more frequently with SoCalREN.
- Three of the five say LGP and SoCalREN services are different.

A very high proportion of Public Agency Program participants indicated having received beneficial support from the SoCalREN program (see Table 36, below). Because each participant is in a different phase of project implementation, the fact that support like "fast procurement of goods and services" is showing for only half of the participants is to be expected. The satisfaction levels and proportion of beneficial support are very high and indicative of an effective program that is meeting the needs of its participants.

Table 36. Number of SoCalREN Public Agency Participants Who Received Support and the Type of Support They Received

Support from SoCalREN	n	Percent
Access to technical services, such as audits, design, or construction management assistance	28	100%
Access to EE expertise that our organization does not have	26	93%
Increased knowledge of ways to save energy within our organization	23	82%
Reduction in the amount of your organization's staff's time needed to design projects	23	82%
Reduction in the amount of your organization's staff's time needed to implement projects	21	75%
Increased knowledge of EE financing options available to our organization	20	71%
A greater understanding of energy use in our facilities	20	71%
Reduction in the amount of your organization's staff's time needed to procure goods and services for projects	19	68%
Access to external resources to secure EE financing (such as on-bill financing)	16	57%
Fast procurement of goods or services	15	54%
Access to a pool of prequalified contractors	14	50%

Local Government Engagement with RENs and IOUs

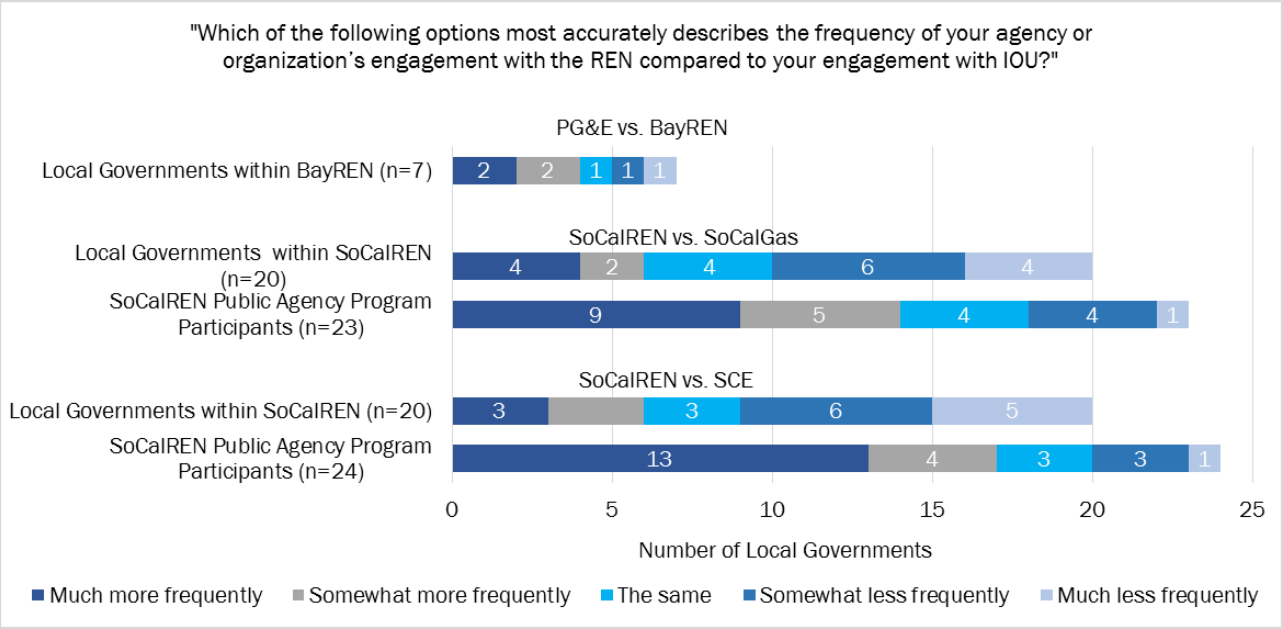
Both RENs have multiple local governments within their coverage areas, and many of them are also LGPs. For the RENs to provide value to this group there would need to be additive engagement compared to what is already occurring through IOU engagement with the LGPs. Unfortunately, the small sample size does not provide a clear answer to the question of whether or not the RENs provide additive engagement beyond that provided by the IOUs and LGPs.

Local governments in REN and LGP territories tend to work with both the RENs and the IOUs. Although these are small numbers (i.e., qualitative findings that cannot be extrapolated across the entire population), Figure 8, below, shows a trend that when the LGPs do engage, it is less frequent with the RENs than with their respective IOU. However, consistent with the program design, this trend is not evident for SoCalREN Public Agency Participants, as these participants engage much more frequently with SoCalREN than they do the IOUs.

Local governments interact often with other local governments, creating a web of information flow as staffs across different local governments discuss various issues with their colleagues. Because some of the local governments have close ties to the RENs[41], we made an effort to understand respondents with these ties to not inflate results. After close review, none of the Public Agency Program participants responding to our survey has close ties with SoCalREN, four of the 24 LGP respondents have close ties to SoCalREN, and five of the 12 LGP respondents have close ties to BayREN. Because we are discussing frequency of responses and inclusion of LGPs with close ties to the RENs could bias the results, we removed any LGP with close ties in Figure 8.

[41] We considered a local government who was on the SoCalREN advisory committee or a member agency for BayREN to have close ties. Several Advisory Committee members, such as COG, represent more than one local government. However, we did not include COG members for purposes of determining a 'close tie'.

Figure 8. Local Government Engagement with RENs vs. IOUs



Note: Does not include local governments with close ties to the RENs.

REN Local Government Capacity Building

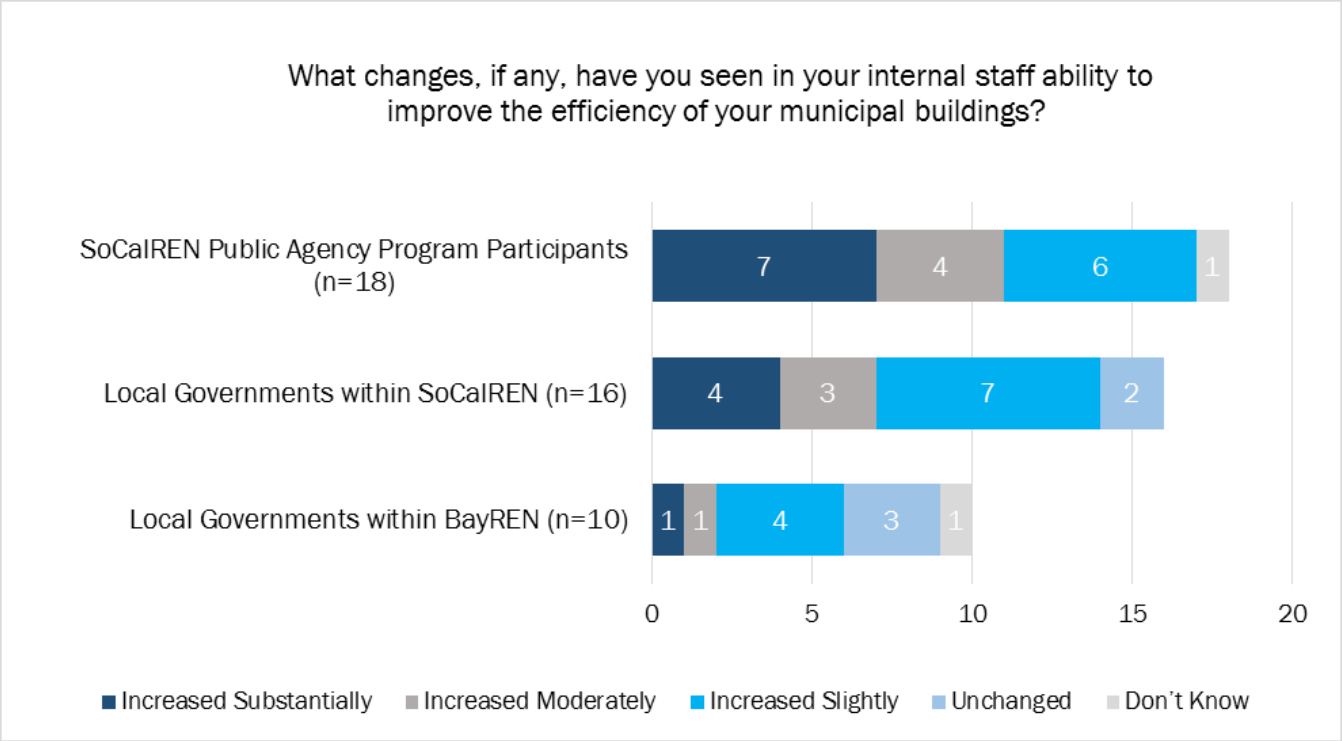
The RENs are helping to build local government capacity to increase EE within their municipal buildings and to deliver EE to their residents. For the purposes of this study, the Consultant Team is using the definition of capacity building from the Global Development Research Center.[42] Within this context, capacity building has three aspects:

- **Human resource development:** The process of equipping individuals with the understanding, skills, and access to information, knowledge, and training that enables them to perform effectively.
- **Organizational development:** The elaboration of management structures, processes, and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private, and community).
- **Institutional and legal framework development:** Making legal and regulatory changes to enable organizations, institutions, and agencies at all levels and in all sectors to enhance their capacities.

Public Agency Program participants said that the RENs help with building capacity among their staff by increasing their staffs' ability to improve EE within municipal buildings, with about the same number indicating either a significant increase (7 of 18) or a slight increase (6 of 18). Local governments that belong to LGPs note a more moderate increase in this same capacity (see Figure 9, below). (As indicated in the Program Implementation Plans and demonstrated in the results of the LGPs Value and Effectiveness report, the LGPs also perform activities to help local governments build capacity.)

[42] http://www.gdrc.org/uem/capacity-define.html. There is more than one definition of capacity building. Lacking a specific definition within EE for the RENs, the Global Development Research Center, which covers community development around the world and has a specific area for the environment, provided a holistic and community-based definition. Since the RENs are local governments themselves, this appeared to be an appropriate fit.

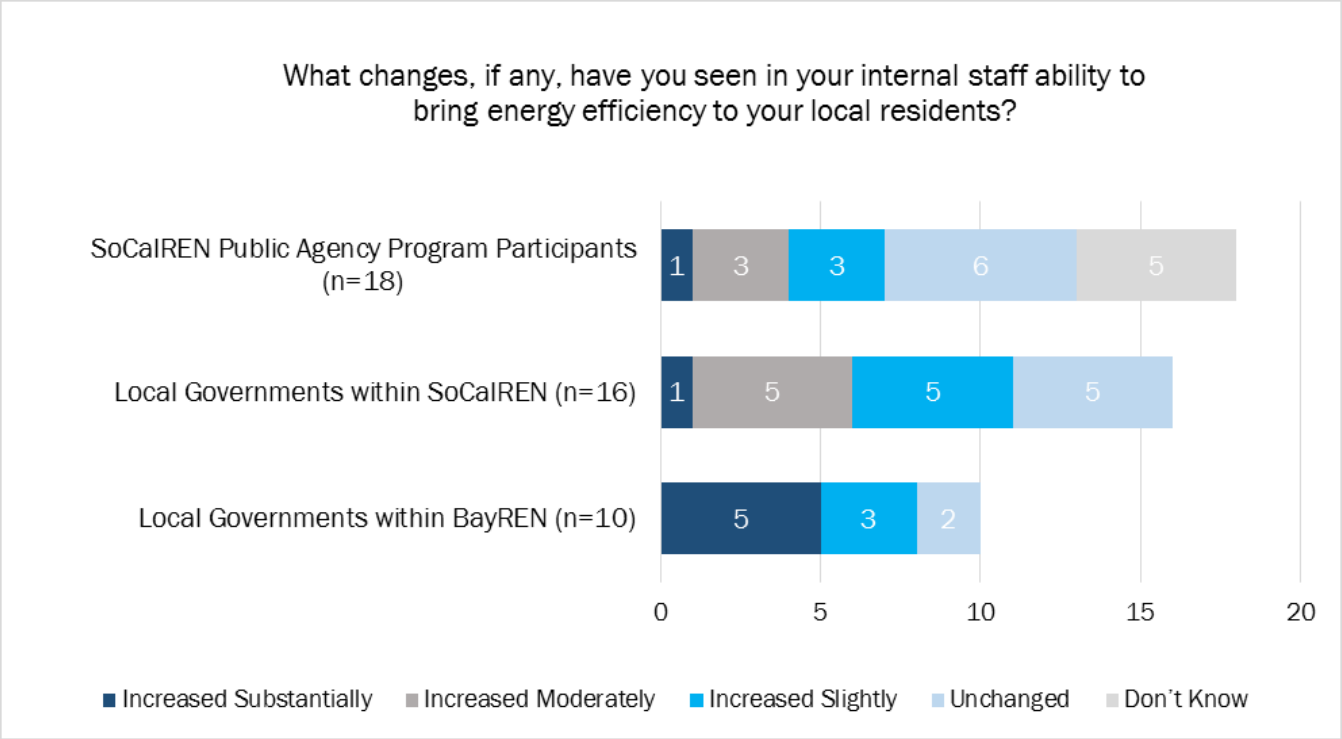
Figure 9. Changes in Internal Staff Ability to Improve Energy Efficiency in Municipal Buildings



Note: Only local governments that indicated that they worked with the RENs to build this capacity received this question. Includes local governments with close ties to the RENs.

As Figure 10 shows below, this arrangement appears to flip for in-house local agency staff capacity to deliver EE to their residents. Partner Local Governments that also work or coordinate with the RENs have a greater increase in this capacity than Public Agency Program participants. This is unsurprising given that the Public Agency Program intervention does not aim to increase residential EE (Figure 10).

Figure 10. Changes in Internal Staff Ability to Bring Energy Efficiency to Local Residents



Note: Only local governments that indicated that they worked with the RENs to build this capacity received this question. Includes local governments with close ties to the RENs.

The BayREN PAYS also provides local governments with technical services, expertise, and resources, such as contract templates and marketing materials for water agencies. This fits under the first bullet point of the Global Development Research Center definition of capacity building, whereby water agency staff are given the knowledge to perform effectively, at least in the short term.

The nature of the RENs' organizational and governance structure also builds capacity among local governments that administer the REN or implement REN activities. We note that prior to forming a REN, both ABAG and the LA County Office of Sustainability (the lead agencies administering the RENs) provided EE programs through ARRA funding, as did at least three other BayREN counties, so there was some level of expertise present already. Additionally, over time several of the REN member agencies have been involved as LGPs. Capacity continues to grow as the RENs implement programs. According to one BayREN staffer, one of the member counties started with a manager who had no EE knowledge and now has a sustainability office with a staff of six.

The presence of BayREN appears to have resulted in added helpful knowledge and capacity to those involved in managing it. As a new organization, BayREN has tested management structures that have been refined over time and, in the process, initiated institutional changes within its member county lead agencies that appear to enhance the EE capacities at these local governments. For example, the lead county agency responsibility of two of the programs has shifted among counties, which the Consultant Team expects to have a capacity-building effect. However, the full extent of capacity change is not explored in this study. Note that much of the institutional memory of how to effectively run a program resides with the consultants implementing the programs, and these consultants have not changed even though the manager may have.

However, it is unclear whether that capacity would continue to exist without REN support. Fundamentally, this is a question of whether the REN models enable temporary capacity to deliver EE programs (i.e., only with the REN) or if they build permanent capacity that would remain if the REN no longer offered support. There is some evidence that capacity would be permanent, in that the REN budget does not pay for certain local government staff. However, the Consultant Team also heard from at least one BayREN local government staff that reduced budgets meant that supporting consultant staff would not be available. Because local government staff within BayREN have multiple roles, while the knowledge may be present, without REN-supported consultants, the ability to perform EE-related actions might be reduced.

4.1.3 Summary of REN Value

The REN pilots will have demonstrated value if their programs, as implemented, broke new ground in areas not currently served by utility offerings and if their activities and programs had the potential to scale up to a broader geographic area or serve hard-to-reach markets. In addition, the RENs would have demonstrated value if their activities promote WE&T, new technology (i.e., software), or the water-energy nexus. Table 37, below, summarizes the findings on value for the RENs.

Table 37. Summary of Value Findings

Value Component	Rationale
Values Compared to CPUC Pilot Evaluation Areas (Broad View)	
Activities that the utilities cannot or do not intend to undertake	▪ **RENs provide additional technical expertise**. The additional technical expertise provided by the Home Upgrade Advisor and the staff within the SoCalREN Public Agency Program are areas not covered by the IOUs and bring added benefit. ▪ **SoCalREN provides new activities.** LA County licenses an EEMIS, a benchmarking type of software that compares energy use across buildings in a city or region. SoCalREN is presently sharing EEMIS licenses at cost to other governments in SoCalREN territory and plans to provide training and consulting services. ▪ **Overlap of customers is present, but services offered are distinct.** Within the assessed programs, both the REN and IOU staff agreed that the Home Upgrade offerings vary, as do the offerings within the Public Agency Program. The multi-family programs also include the same customers, although BayREN program has experienced significant participation by market-rate buildings and PG&E has primarily served low-income complexes. Within SoCalREN, IOU account representatives often market both the IOU and SoCalREN multifamily program to customers.
Activities where there is no current utility program offering, and where there is potential for scalability to a broader geographic reach, if successful	▪ **The RENs introduced two new program offerings to the California EE community.** Within the areas more closely studied by the Consultant Team, the RENs began two programs that were outside of IOU offering, although both of these described areas are too early in the process to determine if the REN actions have been successful and whether the REN may want to scale up the effort. ▪ **Energy savings from one new program addresses the water-energy nexus.** The direct energy savings potential for PAYS is low due to the low-level savings from the two measures. However, the embedded energy savings from installation of all water devices may go well beyond the direct energy savings. In addition, participants in the program pay for the program through a water rate surcharge. ▪ **The SoCalREC program software packages are useful technology offerings.** The other program includes two software packages put forward by SoCalREN that show promise for indirect savings, although their full potential will come only from extensive use.
Activities in hard-to-reach markets, whether or not there is a current utility program that may overlap	▪ **The RENs are supporting hard-to-reach areas.** The RENs are doing their part to continue helping this segment become more energy efficient through work within the multifamily sector (which is a hard-to-reach sector) and bringing in bilingual Spanish speakers for outreach and marketing for the Home Upgrade program. Additionally, SoCalREN has a small WE&T program that is putting disadvantaged contractors to work. The E-Contractor Academy has graduated 110 small, minority, and disabled contractors, with seven prequalified to perform work for LA County, and two contracts have been awarded to graduates.
REN Value to Program Participants (Narrow View)	
REN Program Offerings and Implementation Approach	▪ **The programs in this study provide benefit to participants.** The responses across all three programs indicate benefit from the RENs' activities. Water agencies felt that the REN staff was very helpful. Nearly two-thirds (64%) of the homeowners stated some type of benefit (such as feeling more informed and having higher confidence in the contractor). A very high proportion of Public Agency Program participants indicated receiving beneficial support from the SoCalREN program.
Local Government Engagement with RENs	▪ **LGPs may engage less with RENs than IOUs.** For SoCalREN, unless they are specifically involved with the Public Agency Program, the LGPs engage less with SoCalREN than with the relevant IOUs. For BayREN, these data are insufficient to determine if there is a clear difference.

Value Component	Rationale
Local Government Capacity Building by RENs	▪ **The RENs build local government capacity.** Simply by performing the activities of the RENs, whether as part of the Coordinating Circle for BayREN or the Advisory Committee for SoCalREN, EE knowledge transfer occurs. In addition, the management and procedures that have advanced by way of REN implementation are indicators of capacity growth. Outside of the organizations directly involved with the RENs, the SoCalREN provides a moderate level of capacity building to enable local governments to deliver EE within their municipal buildings and to their residents. SoCalREN also offers a public agency assistance program—the SoCalREC—that has a core purpose of leveraging local government resources. Although the SoCalREC appears replicable, it was not evaluated within this study. Thus, this program may hold value for capacity building not conveyed here.

4.2 Effectiveness of the RENs

In Section 2.1, the Consultant Team defined the effectiveness of the RENs both broadly and narrowly. This section includes findings regarding REN effectiveness, first within the broad area of management, followed by the more narrow area based on program participant information.

4.2.1 Management of the RENs and Programs: The Broad View

At the outset of the study, the Consultant Team indicated that the RENs would have demonstrated effectiveness if they have sufficiently addressed management issues as they arise (or there is a definite plan to mitigate them going forward). The RENs also would have demonstrated effectiveness in their ability to manage program implementation and adjust to necessary changes as they arise.

Allocating Staff Resources to REN Activities

The RENs have sufficient and experienced staff resources to conduct REN activities. There are 14 organizations conducting BayREN activities (10 local governments and four consultants) and five organizations conducting SoCalREN activities (one local government and four consultants). Table 38, below, presents the full-time equivalents (FTEs) across the organizations conducting REN activities. These staffing levels appear to be sufficient, as no REN staff indicated that he or she does not have enough resources to conduct REN activities when being asked about implementation challenges.

Table 38. Number of Staff and FTEs Conducting REN Activities

Organization Type	BayREN				SoCalREN			
	Number of Orgs.	Number of People[a]	Number FTEs	Percentage of FTEs	Number of Orgs.	Number of People[a]	Number of FTEs	Percentage of FTEs
Counties and Local Governments	10	29	22.2	70%	1	10	4.5	11%
Implementing Consultants	4	14	9.6	30%	4	38	35.0	89%
Total	**14**	**43**	**31.7**	**100%**	**5**	**48**	**39.5**	**100%**

[a] Some respondents did not provide staff counts. Thus, these counts are slightly less than the actual number of staff.

Many REN staff and organizations have a proven record of accomplishment of EE work. Interviews with the REN staff and consultants showed that they have a history of providing EE services to their local governments (for local government staff) and residential customers (for consultant staff). Four of the 10 local government staff were involved with similar ARRA-funded programs, and one is also part of the RCPA.[43] Many of the consultants also have years of experience in EE. For example, one implementing consultant staff member indicated close to 20 years working in the same sector, while another was involved with ARRA programs prior to his role in the REN.

When local government staff are involved with EE, the REN may not always reimburse local agencies for their billable time. For example, two of the primary SoCalREN managers within local agencies do not charge their time to the REN due to accounting difficulties, and two in BayREN donate their time (while working at least

[43] The RCPA was created in 2009 to improve coordination on climate change issues and establish a clearinghouse for efforts to reduce GHG emissions. The RCPA is made up of the same Board of Directors as the Sonoma County Transportation Authority and includes representatives from each of the nine cities in Sonoma County and the Board of Supervisors. http://www.sctainfo.org/rcpa.htm.

50% for BayREN). Additionally, as shown in Table 38, above, many of the local government staff work part-time for the REN and, therefore, have other requirements for their position. Balancing different types of jobs may be difficult for some local government staff and could pull staff away from REN activities in the future.

Consultant staff account for a higher number of FTEs for SoCalREN based simply on its design. BayREN has a higher percentage of local government staff involved in implementing BayREN than SoCalREN. In addition, each BayREN staff spends a greater amount of his or her time on BayREN than do SoCalREN staff members. This supports the noted increase in capacity building presented in Figure 10, page 55, Section 4.1.2 (i.e., increased ability to provide EE to local residents).

Ability to Navigate the Regulatory Environment

The RENs faced challenges related to delays in decision making and managing regulatory requirements. For those staff involved with ARRA EE programs, coming into the California regulatory environment was different. Both RENs indicated regulatory challenges but, where possible, seem to have navigated these challenges. In general, REN staff mentioned two categories of regulatory challenges:

- **Extended Period for Decision Making:** The extended period for CPUC approval meant that the RENs were unable to begin program implementation until June 2013, making it difficult for them to meet their initial two-year goals. In addition, delays in funding and decision making after the REN began have had impacts on one program, the BayREN's Multifamily program. This program had unexpectedly higher demand and could not serve all interested customers in 2013–2014 until it secured additional funding, an activity that took several months. Once secured, the program moved forward to serve additional customers.
- **Managing Regulatory Requirements:** As new program administrators, the RENs needed to fulfill new requirements and learn the complex and detailed regulatory processes that the IOUs had been performing for years.
    - Regulatory processes include filing PIPs, preparing advice letters, preparing cost-effectiveness calculators, and responding to data requests and proceeding comments. After initial challenges with submissions, REN staff indicated that they had developed adequate processes for responding to regulatory process logistics and ED staff generally concurs. (The Consultant Team was unable to verify this because examining REN filings for this purpose was outside the study scope.) An informal query of ED staff indicates that recent REN submittals have been considered adequate. According to ED staff, recent concerns surrounding REN operations have stemmed from minor "brushfire" issues, such as third-party protests and other low-level political controversies that have typically risen to the CPUC's attention in an indirect manner (i.e., the ED learns about issues via complaints or indirectly through others).
    - Any program administrator, in addition to regularly responding to data requests is expected to perform substantial reporting of program metrics. The RENs expeditiously provided two large data requests from the Consultant Team. In addition, the Consultant Team made several small, informal requests for information, which the RENs always provided within a reasonable amount of time. To help with the multiple regulatory requirements, ABAG added an assistant to manage most regulatory processes for BayREN. Although the RENs typically did not mention challenges with staff resources, two BayREN staff did mention that the REN member counties face time and staff constraints that prevent them from fully engaging in activities around regulatory reporting.[44]

[44] Both the RENs and their program implementers (BayREN's lead counties and SoCalREN's consultants) use the EnergyOrbit software (http://energy-orbit.com/) to track progress and develop routine monthly reports to the CPUC.

Ability to Mitigate Administrative Challenges

Outside the regulatory environment, the RENs encountered several administrative difficulties. First, they struggled with problems common to "start-ups," specifically, the time and money required to become a new EE program administrator in California. Second, they also faced obstacles coordinating with other program administrators in their territories. Last, the RENs had to overcome several hurdles with program design. The RENs have effectively overcome these administrative challenges by developing inclusive decision-making processes and redesigning programs in cooperation with the CPUC.

- Learning to be a Program Administrator:
  - BayREN in particular encountered challenges developing a REN model and decision-making processes that met the needs of all nine Bay Area member counties. One BayREN member county staffer said that the REN launch effort was a "big, difficult, and expensive process." According to BayREN staff, when internal conflicts between the counties arose early on, BayREN increased the transparency of its decision-making process by specifying county-specific governance roles. These changes, described earlier in Section 1.2.3, included the move from a single Coordinating Council to a Coordinating Circle and Lead Links. Even in BayREN's early stages, it was not always clear that every member could continue to participate. The Consultant Team learned that one of the counties was having administrative difficulties that would preclude its participation. While resolved, this situation points to the potential for the BayREN membership to change should other local issues arise. Though these initial challenges have been overcome, for BayREN, there may be future challenges if member counties choose to leave the REN; any member can withdraw with 30 days' notice to the other members.
  - SoCalREN faced fewer challenges in this area, as it does not have to balance the needs of multiple counties to administer the REN. However, one SoCalREN staff member described the $250,000 upfront investment to develop the initial REN application as extraordinary relative to the available means of typical local agencies.
- Program Design: Both RENs mentioned that the Home Upgrade Single-Family program designs required significant retooling. According to SoCalREN, in the initial design, the incentive levels were too low, the incentives calculations were too complicated, and the application process was too difficult for customers. To address this, SoCalREN developed what they considered a more attractive incentive structure (replicated statewide), more streamlined program requirements and incorporated simplified prescriptive rebates. BayREN staff indicated that the Home Upgrade Single-Family also had initial design issues.[45] After making adjustments, the staff indicated that the program is running well; in particular, the conversion rate from Home Upgrade Advisor to Home Upgrade projects has improved. (As of the end of December 2014, the conversion rate for Home Upgrade moved from 4% in 2013 to 19% in 2014, while the conversion rate for the Advanced Home Upgrade moved from 23% in 2013 to 34% in 2014.)

  There was an 18-month gap between when LA County implemented the Home Upgrade program under ARRA programs (2012) and when it began again as SoCalREN (mid 2013). During this time, the IOUs implemented the program. When SoCalREN resumed the program, the contractor base had dwindled significantly. The Home Upgrade program staff indicated that they needed to work hard to restore the contractor network to the more than 100 contractors now enlisted in the program. An additional challenge for this program centered on the requirement for contractors to conduct pre- and post-

[45] The RENs described to the Consultant Team that the issues were due to being "handed" a program design by the CPUC; however, following up on the specifics of this was outside the study scope.

combustion safety testing that was new to these contractors. Many contractors viewed this as such a significant hassle that they were hesitant to participate in the program. To surmount these protests, program staff decided to offer the contractors a $150 combustion test incentive to offset half the cost of the additional time required for the test.

Coordinating with the IOUs

The RENs and the IOUs have coordinated well. They use ongoing communication processes to synchronize services to the same customers and maintain differentiation in their offerings. However, several staff at both RENs mentioned that it was difficult and time-consuming learning how to manage having multiple program administrators in the same space. They accomplished this through IOU and REN conversations that took place early on with great frequency and continue, albeit less frequently.

The RENs and IOUs meet monthly and often discuss technical details. Staff at the BayREN's Home Upgrade Advisor and at SoCalREN's Public Agency Program programs mentioned meeting with IOU staff in person typically on a monthly basis to discuss coordination. SCE/SCG and SoCalREN's offerings for local governments are highly integrated in that many projects receive support from both the IOU and SoCalREN. Thus, for SoCalREN, the monthly meetings are often technical discussions on how SoCalREN and the IOUs can work together to serve these customers. According to SCE/SCG staff, the IOUs and SoCalREN developed a coordination plan and co-designed strategies to help address customer barriers together.

Other activities between SoCalREN and the IOUs are coordinated largely through the SCG coordination staff lead. Modes of communication include monthly meetings for the Home Upgrade, SoCalREN Financing, and SoCalREC programs. Other activities between SoCalREN and the IOUs are coordinated largely through the SCG coordination staff lead. There is also an administrative committee for budgeting and reporting activities. There are opportunities for informal communication and ad hoc meetings as well, but the IOU staff the Consultant Team interviewed indicated that most coordination appears to occur either at the monthly meetings or through the IOU coordination lead.[46]

PG&E reported regular meetings with BayREN and monthly calls for such programs as Home Upgrade. The monthly meetings with the IOUs typically involve discussions of how to coordinate marketing and how to differentiate their programs and offerings. PG&E also reported completing a co-branded outreach campaign for residential customers and Home Upgrade and described the level of coordination with the BayREN as high.

Meeting Program Goals

This study did not verify the multiple program progress activities shown in Section 3. However, Table 39, below, shows the metrics associated with the three programs that had primary data collection from participants to orient the reader to their progress. There were fewer Home Upgrade Advisor participants than planned, unless we count an inquiry as participation, in which case the program met 163% of the goal. While the program may not have met their specific participation goals, the conversion rate between the Advisor program and completion of a Home Upgrade Project was slightly over 100% of goal. The PAYS metrics does not appear to be the best metric of how well BayREN is progressing since they facilitate the local agency as they implement the program. As such, the local agency captures data on specific number of projects, not BayREN. The Public Agency Program met substantially more than its goal.

[46] Some of the utility staff reported having no coordination or coordination only through the SCG coordination lead.

Table 39. Select Program Performance Progress Metrics for Programs within the Study

Administrator	Program	Program Performance Metric	2013-2014 Goal	Accomplished as of December 2014	Percent of 2013-2014 Goal Accomplishment
BayREN	Home Upgrade Advisor	Number of participants in the Home Upgrade Advisor Program	1,500	549[a]	37%
		Percent of Home Upgrade Advisor participants who complete a Home Upgrade project	40%	43%	108%
		Number of Home Upgrade Advisor participants who complete a Home Upgrade project [b]	275	92	29%
		Number of Home Upgrade Advisor participants who complete an Advance Home Upgrade project [b]	100	100	100%
	PAYS	Number of projects forecast under PAYS program[c]	2,000	0	0%
SoCalREN	Public Agency Program	Number of homes or buildings treated	15	149	993%

[a] The 2014 Annual Report indicates that 549 customers participated in the Home Upgrade Advisor program; however, according to BayREN staff, BayREN received 2,455 inquiries about the service, which could signify "participation" within the program. Lacking specific guidance on what is considered "participation," the Consultant Team kept the lower value in the table as inquiry does not appear to be full participation.

[b] These PPM were not in the revised PIPs. However, BayREN indicated that they track these goals and provided progress on these goals directly to the Consultant Team.

c The program is implemented by the local agency and data on specific number of projects is unavailable. We present this data point as it is the set metric. Going forward, either additional data collection must occur between the local agencies and BayREN or BayREN should adjust this metric.

4.2.2 Service Delivery as Viewed by Program Participants: The Narrow View

The ability of the RENs to effectively manage EE programs can be gauged by the satisfaction of those with whom the programs interact, the level of communication between the RENs and their program participants, and the RENs' ability to mitigate program participant challenges. Each is detailed below.

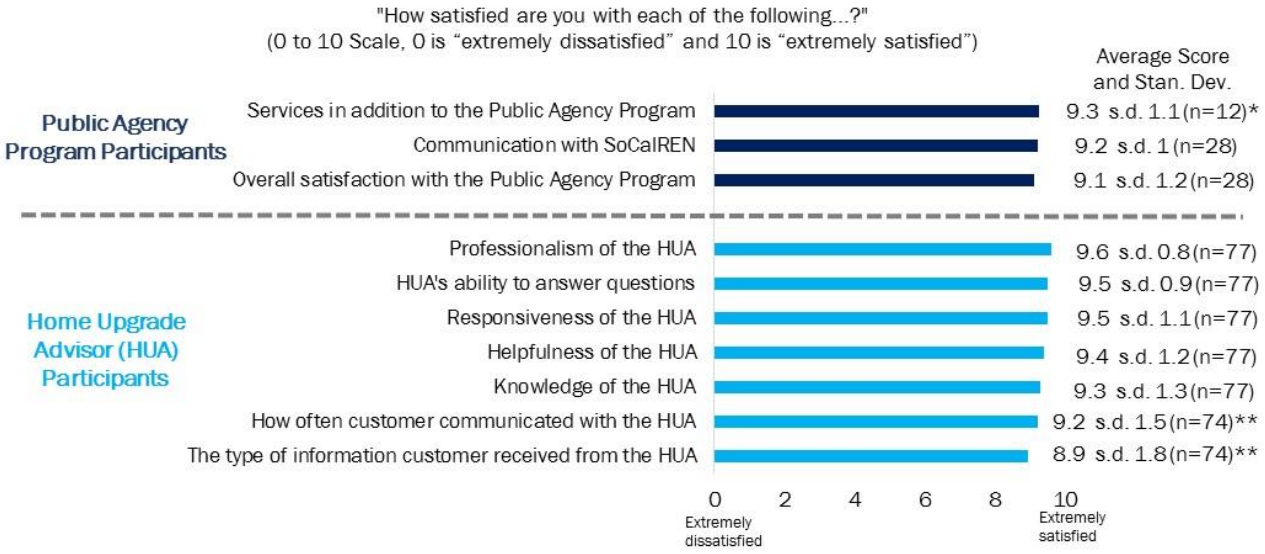
Program Participant Satisfaction with REN Services

For all the three REN programs assessed by the Consultant Team, REN participants stated the were highly satisfied with the services provided.

The water agencies that BayREN served through the PAYS program reported high satisfaction, with all three rating BayREN's support as "very helpful."

As Figure 11, below, shows, participants in the Home Upgrade Advisor and Public Agency programs provided high ratings for all the elements of these programs that the Consultant Team explored. Asked to assess their entire experience with the programs, 66% of Home Upgrade Advisor participants and 71% of Public Agency Program participants reported that the REN met all their needs, with the remaining respondents typically indicating that the program met their needs "most of the time." In addition, 86% of Public Agency Program participants reported that the REN met or exceeded their expectations.

Figure 11. Participant Satisfaction with REN Services

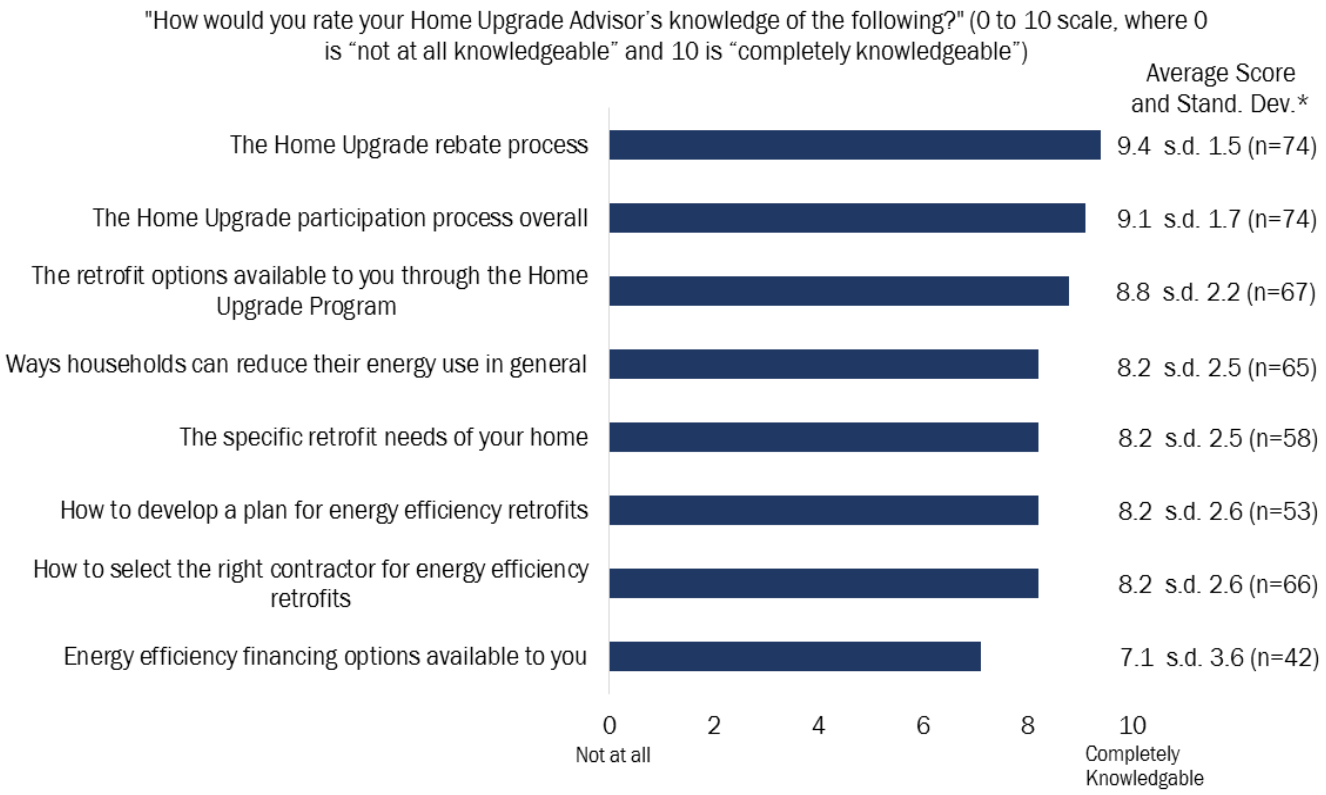


***** Average score excludes 14 respondents who did not identify any additional services and two who did not provide a valid satisfaction score

****** Average score excludes three respondents asked an older version of this question that did not differentiate between satisfaction with frequency or type of information. Of the three asked only about satisfaction with communication, two provided a score of 10 out of 10 and one provided a score of 6 out of 10.

Home Upgrade Advisor participants indicated that their advisor was capable of providing a high level of knowledge and expertise in most aspects of planning and implementing EE projects, although the Home Upgrade Advisor had a more moderate level of knowledge of EE financing options (see Figure 12, below).

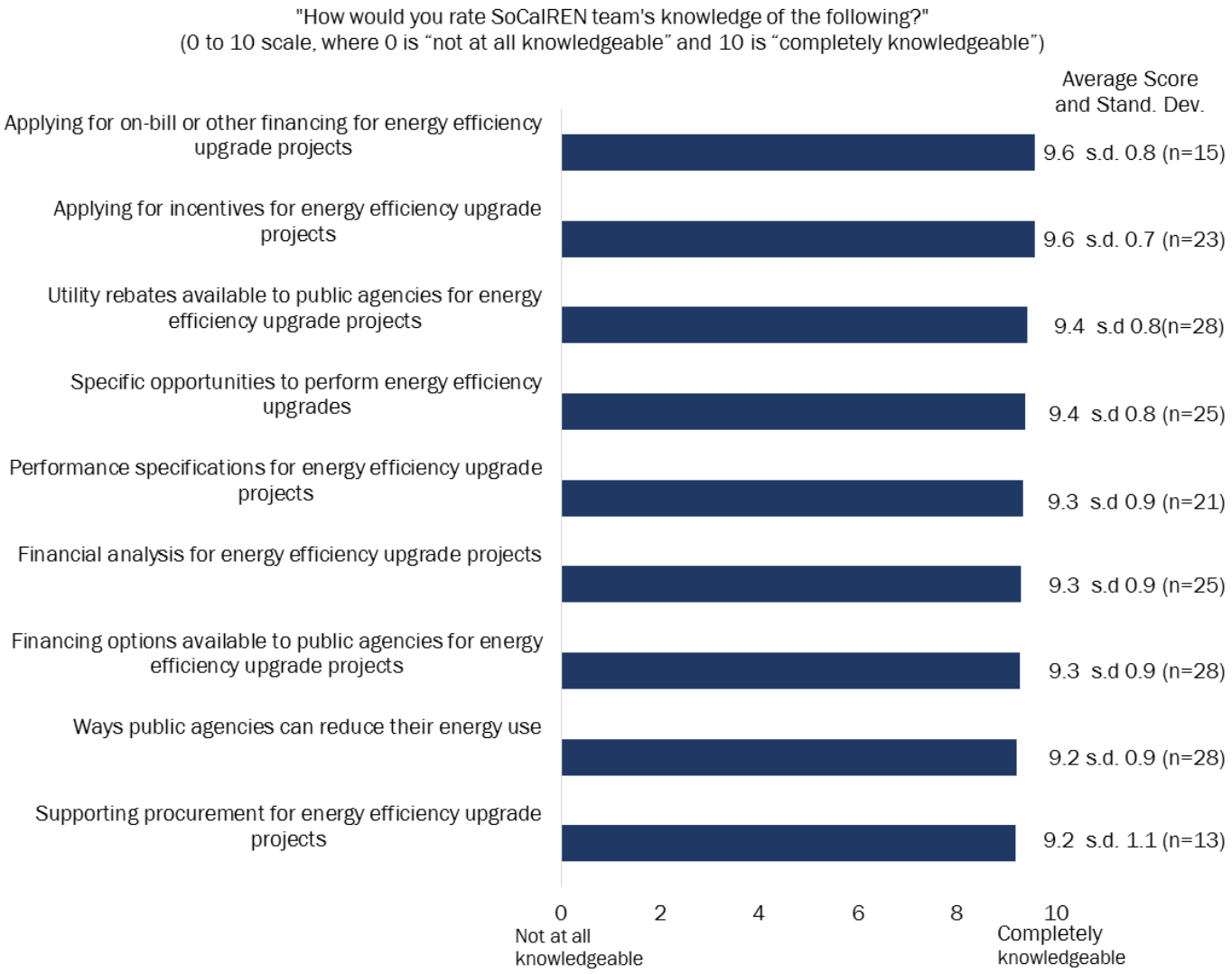
Figure 12. Home Upgrade Advisor Participants' Ratings of Advisor's Knowledge



***** Of the 77 respondents, the average scores excludes between three and 35 respondents who indicated "Not applicable" or "Don't Know" (number of excluded respondents varies by question).

The depth of knowledge demonstrated by the SoCalREN staff (shown in Figure 13, below) bolsters the already positive feedback from program participants about the Public Agency Program.

Figure 13. SoCalREN Public Agency Program Participants' Ratings of SoCalREN Team's Knowledge



Despite participants' high satisfaction ratings with BayREN's Home Upgrade Advisor programs, respondents reported feeling confused. As described above in Section 3.1.1, p. 27, PG&E is also present in the Home Upgrade space and handles payment of incentives in cases where a customer selects an Advanced Home Upgrade package. Nearly two-thirds of customers surveyed (64%) understood the roles that the two organizations played in the program. Still, half of all participants experienced some level of confusion, with a

small number (8%) describing the program as "very confusing." Also, 44% found the program "somewhat confusing,"[47] on level with the number, who found the program "not at all confusing" (44%).

A few BayREN staff respondents reported that even some contractors who were involved in SoCalREN and the BayREN Home Upgrade programs were left confused, at least at the beginning of the program. However, the BayREN implementers also felt the presence of the implementation team staff reduced this confusion over time.

Lastly, a BayREN member government county indicated that a marketing effort with information for both BayREN and the IOU programs fell flat and led to customer confusion. This same member county indicated that customer confusion occurs particularly in small towns where customers typically learn about the programs via word-of-mouth.

REN Communication with Program Participants

The frequency of customer communications with the Home Upgrade Advisor varies from less than once per month to multiple times per week, with email being the most common communication method for both programs (see Table 40, below). In-person communication was the least frequent mode. More than half of Home Upgrade Advisor participants never met with their advisor in person. Regardless of the mode of communication, participants were highly satisfied with the frequency of communication with their advisor (9.3 out of 10). For Public Agency Program participants, in-person communication was also the least frequent, but all participants met with SoCalREN staff in-person at least once. As was shown in Figure 11, above on p. 64 in section 4.2.2, participants are highly satisfied with the frequency of communication with SoCalREN (9.2 out of 10, n=28).

Table 40. Frequency of Communication between Program Participants and REN Staff

Frequency of Communication with Home Upgrade Advisor/SoCalREN Staff		Home Upgrade Advisor Participants (n=77)			Public Agency Program Participants (n=28)		
		Phone	Email	In-Person	Phone	Email	In-Person
More Frequent	Multiple times per week	4%	16%	1%	14%	32%	0%
	Once per week	17%	12%	1%	12%	14%	0%
	Multiple times per month	26%	45%	6%	24%	32%	14%
	Once per month	21%	17%	10%	20%	11%	32%
	Less than once per month	26%	10%	19%	27%	11%	54%
Less Frequent	Never	6%	0%	58%	1%	0%	0%
	Don't know	0%	0%	3%	0%	0%	0%

REN Ability to Mitigate Program Participant Challenges

REN staff implementing these programs—i.e., Home Upgrade Advisors and SoCalREN staff—are effectively assisting participants in overcoming the challenges encountered in planning, procuring, and completing EE projects. Nearly two-thirds of both Home Upgrade Advisor and Public Agency Program participants (49 of 77 and 18 of 29, respectively) faced challenges planning or implementing an EE project. As Table 41, below,

[47] The Consultant Team has no information against which to benchmark this finding so this level of confusion may be typical for a program even with one implementer involved.

shows, REN staff could not assist participants in all cases (as the difficulty was not one where staff could have helped overcome the challenge according to the respondent), but when they could assist, the REN staff were usually successful in resolving customers' needs. Further, when REN staff helped, participants provided very high ratings for their assistance in overcoming challenges.

Table 41. REN Staff's Ability to Mitigate Program Participant Challenges

Program	Number of Respondents Who Faced Challenges	Instances Where Respondents Faced Challenges[a]	Instances Where REN Staff Could Have Helped	Indicated REN Staff Tried to Help Overcome Challenge	Helpfulness Rating of REN Staff in Overcoming Challenge[b]
Home Upgrade Advisor	49	87	34 of 87 (48%)	32 of 34 (94%)	8.8 (2.0) (n=30)
Public Agency Program	18	29	18 of 29 (62%)	17 of 18 (94%)	9.5 (0.94) (n=17)

[a] The Consultant Team asked about challenges at several different stages in the participation process. Thus, the count of instances is larger than the total number of respondents.
[b] Based on scale questions where 0 is "not at all helpful" and 10 is "extremely helpful." Mean scores do not include "don't know" responses. Standard deviations shown in parentheses under the mean.

PAYS program participants were similarly satisfied with BayREN's assistance in overcoming challenges. Regarding the helpfulness of BayREN in overcoming barriers, one water agency staff member said, "I wouldn't be where I am today without their support."

One water agency encountered challenges with homeowner disclosure of the PAYS surcharge during a home sale transaction. The agency mentioned that the BayREN staff had been extremely helpful in taking the lead to update customer contracts to avoid this problem in the future. Another agency reported that the BayREN staff had been essential in helping convince internal decision makers to approve a PAYS program, by, for instance, developing a tool for estimating the potential benefits of a PAYS program and developing slides and materials for presentations to the public and boards of directors.

4.2.3 Summary of REN Effectiveness

Table 42, below, summarizes the findings on effectiveness for the RENs. Management of the RENs and programs is "sufficiently effective"; however, the information gathered through this study was limited. For the service delivery component, the Consultant Team gathered data from multiple sources to enable a clear determination of effectiveness. For other areas, the only data were self-reported. As such, there is no balancing information from an alternative or outside source.

Table 42. Summary of Effectiveness Findings

Effectiveness Component	Rationale
Management of the RENs and Programs (Broad View)	
Allocating Staff Resources to REN Activities	▪ **The RENs have sufficient staff.** The organizations that comprise the REN have sufficient staff resources to conduct REN activities; no staff member at either of the RENs mentioned challenges regarding the number of staffers dedicated to implementing REN activities when asked about implementation challenges. Both RENs use consultants to implement programs, with SoCalREN having a higher percent of consultant FTEs than BayREN. ▪ **The RENs have experienced staff.** Four of the 10 local government staff were involved with similar ARRA-funded programs, and one is also part of the RCPA. Many of the consultants also have years of experience in EE. For example, one implementing consultant staff member indicated close to 20 years working in the same sector, while another was involved with ARRA programs prior to his role in the REN
Ability to Navigate the Regulatory Environment	▪ **The RENs responded well to management challenges.** When encountered with delays in CPUC decision making and funding, the RENs took management actions to help ameliorate the late start and continue to move toward reaching their goals. ▪ **The RENs needed to learn a new regulatory environment.** After initial challenges with submissions, RENs staff indicated that they had developed adequate processes for managing regulatory processes and ED staff concurs. ▪ **The RENs provided data when required.** The Consultant Team made two formal data requests of the RENs, asking for a substantial amount of information. The RENs filled these requests expeditiously. In addition, the Consultant Team made several small, informal requests for information, which the RENs always provided within a reasonable amount of time.
Ability to Mitigate Administrative Challenges	▪ **The BayREN made needed adjustments in its internal structure to clarify decision making.** The BayREN realized early that the original MOUs lacked clarity for decision making and responsibilities. They made needed mid-course corrections that reduced ambiguity. ▪ **The RENs worked to overcome administrative challenges.** The RENs have effectively mastered the administrative challenges primarily by developing inclusive decision-making processes, maintaining frequent communication within their organizations and with the IOUs, and redesigning programs in cooperation with the CPUC. ▪ **The RENs made changes in program implementation as needed.** Improvements in conversion rate data for the BayREN Home Upgrade program support an effective management of program implementation activities. The changes implemented within the SoCalREN Home Upgrade program also indicate effective management of the program.
Coordination with the IOUs	▪ **The RENs are coordinating well with the IOUs.** The RENs entered markets with existing program administrators, such as the IOUs and MCE. Learning how best to cooperate with other stakeholders in California was a necessary hurdle to overcome. Several staff at both RENs mentioned that it was difficult and time-consuming learning how to manage having multiple program administrators in the same space. However, both RENs have developed processes for coordinating with the IOUs to differentiate their products and attempt to create synergies through cooperation. The IOUs and the RENs indicate that regular meetings help with this needed coordination.
Service Delivery (Narrow View)	
Program Participant Satisfaction with RENs	▪ **Program participants have a high level of satisfaction.** The high level of satisfaction noted from surveyed respondents across the three different programs shows effective program service delivery.
REN Communication with Program Participants	▪ **The RENs have regular communication with program participants.** A large share of participants surveyed are in regular communication with the program staff. This regular communication combined with high satisfaction ratings with the communication level supports effective service delivery.
REN Ability to Mitigate Program Participant Challenges	▪ **The RENs help participants overcome challenges.** REN staff implementing the studied programs—i.e., Home Upgrade Advisors and SoCalREN staff—are effectively assisting participants in overcoming the challenges that they encounter planning, procuring for, and completing EE projects.

4.3 Informing CPUC Policy

In addition to gauging the value and effectiveness of the RENs, with this study report, ED staff would like to have new and useful data to provide an update and recommendation to the Commission and other decision makers on the prospects for REN success, scalability, benefit, and related policy issues that remain to be fully addressed. As part of this research, the ED sought knowledge on the pros and cons of the BayREN and SoCalREN models to guide future policy decisions. In this section, the Consultant Team pairs findings from the research activities conducted for this report with additional data sources to examine three aspects of the policy issues that pertain to REN continuation and expansion:

- Scalability of the RENs
- Customer Confusion from REN and IOU Programs
- Comparison of the REN Administrative Models

4.3.1 Scalability of the RENs

The RENs could scale activities by increasing the intensity of their existing programs through additional budget or adding new programs. California could scale the RENs pilot by adding RENs in the future. The Consultant Team explored these areas with REN staff and with the few IOU staff interviewed.

- Scaling Up Existing Programs
- Adding New Programs
- Allowing New RENs

Scaling up of Existing Programs: REN staff identified several programs that would benefit from scaling up. BayREN staff said the oversubscription of the Multifamily program shows a need for a larger program. Similarly, they indicated that participation in their single-family program is growing rapidly and may need to ramp up with more funding to meet demand. SoCalREN staff suggested they should expand the CEEPMS permitting software beyond the pilot agencies. SoCalREN also suggested that, if allowed, they could implement CEEPMS in their full territory.[48]

The management structure of each REN appears to permit the scaling up of any existing small-scale efforts. Using consultants to implement the programs means that the RENs would have to procure additional consulting support, but they have the management capability to do so. In addition, the RENs and their implementing consultants are delivering services well in the three program areas in which the Consultant Team performed primary data collection (BayREN Home Upgrade Advisor Program, BayREN PAYS, and SoCalREN Public Agency Program).

Adding New Programs within Existing RENs: REN staff generally said that the RENs should have the opportunity to implement new programs in areas where they can add value to the IOUs' activities. Examples of potential new programs, provided by the REN staff, include additional support for code compliance (a regional "clearinghouse" for code compliance), small business programs, agriculture, and Integrated Demand Side Management pilots for local governments.

Both RENs could design new programs, but may have difficulty staffing them. SoCalREN may be able to choose a new program more quickly than BayREN simply due to its single decision-making structure. However, both

[48] As stated in Section 3.2.1, SoCalREN offers Home Upgrade only in LA County.

RENs may have difficulty in staffing oversight of a new program with their current structures. For BayREN, a lead agency would need to volunteer to manage any consultant implementing a new program. From the data provided to the Consultant Team, local government staffers within the BayREN are often close to full-time, so they may not be in a position to oversee a new program unless they could fit it into their existing work. SoCalREN could add a consultant (or leverage the current suite of implementing consultants) to implement the new program. However, because there is fewer full-time staff, they may not have the capability to oversee a new program.

Allowing New RENs: A new REN could emerge outside of the geographic locations already served by the existing RENs (geographic areas shown above on p. 7, section 1.1, in Figure 1) or through spinning off a portion of an existing REN. Nearly all REN staff supported the idea of having new RENs in new unserved geographic locations. However, they emphasized that any new REN should not reinvent the wheel, but rather should leverage the experience, program models, and lessons learned from the existing RENs. Further, a few REN staff mentioned that the CPUC should carefully consider which areas the IOUs and LGPs could expand into, rather than create a new program administrator to meet those needs. Lastly, REN staffers were largely skeptical of the idea of allowing a few cities to create a smaller REN within the current REN, indicating that it might lead to duplication of activities.

The few IOU staff who expressed an opinion on this issue were not necessarily opposed to new RENs, but they were unsure that the REN model was a cost-effective way to obtain savings. One IOU staffer indicated that if the CPUC were to consider a new REN, clear standards should be set for what constitutes a REN, and any REN should be subject to the same rules and cost-effectiveness requirements as the IOUs. Another IOU staffer indicated that the multi-layer structure of the RENs requires intensive and close collaboration, which costs time and money.

The existing RENs cover a large part of the IOU service territories, and the major opportunities would be to establish a new REN would be within the areas defined by the central coast, the northern coast, the Sierra, the Central Valley, and San Diego County. Collaboration was a key part of starting the RENs and took considerable time at the beginning, with ongoing efforts required to maintain smoothly running programs. While collaboration can occur via the phone, face-to-face meetings typically are better to work through difficulties, reach agreements, and create a plan for moving forward. The existing REN organizations are located either in the same city as or within an hour drive from where the IOU staffs engaged in EE programs reside (i.e., San Francisco, Los Angeles), or San Diego), which meant that collaboration is relatively convenient. For any new REN based in a remote rural area, in-person meetings with the IOUs would likely be a time-consuming and costly prospect.

Additionally, any new REN incurs costs at several levels. A new organization faces a high cost to become a REN. As described by one interviewee, “They spent a lot of consultant dollars to become a REN,” while another indicated $250,000 in out-of-pocket costs to file (a cost that may be prohibitive to smaller organizations). There are ongoing costs of collaboration among program administrators, which increases program costs. While not a specific cost to the REN, the ED currently has constraints to oversee more REN administrators.

4.3.2 Innovation and Competition between REN and IOU Programs

The ED asked the Consultant Team to examine whether there was duplication of customer-facing activities by the RENs and the IOUs. Duplication of program offerings is detrimental if it leads to customer confusion over which program to participate in or customers choosing to not participate at all and taking a less efficient action than they would otherwise (i.e., losing EE savings). If, however, duplication of efforts leads to innovative and more-efficient programs (and the ultimate demise of the less-efficient programs), the existence of duplication could be beneficial to ratepayers. Through this research, the Consultant Team sought to understand if there is duplication and, if so, whether it affects ratepayers positively or negatively. This report provided information

earlier regarding customer confusion, so it not duplicated here (Please see Section 4.2.2). This section explores whether competition is needed to obtain innovative programs.

Innovative Programs: REN staff identified a number of potential benefits to allowing RENs to compete with IOUs by providing different offerings to the same customers. For example, they suggested that this type of competition would encourage RENs and IOUs to become more efficient and to develop more innovative and attractive programs. However, within the EE portfolio overseen by the CPUC, the ability to undercut a program administrator by obtaining more savings for less money (i.e., being more efficient) is less certain. The CPUC holds all program administrators to a specific set of savings per measure incented, which means that program designs must have higher conversion rates to be considered more efficient.

Competition is not required to obtain (or at least pursue) innovative programs, as previous efforts occurred in periods absent specific competition between the RENs and the IOUs. California has spent time and money in the past decade in the pursuit of more innovative program designs. For example, in the 2004–2005 cycle, SCE funded 13 third-party programs through its Innovative Designs for Energy Efficiency Activities (IDEEA) Program.[49] In the 2013–2014 cycle, PG&E chose five new third-party programs also through an "innovative program" path.[50]

However, RENs have an advantage over the IOUs in their ability to communicate relatively quickly with a set of local governments, which supports efficient marketing. For example, one BayREN member county scheduled a workshop in each of the nine counties. Those counties were responsible for "filling the room" because each has its own network of building owners. The turnout was so high in one county; back-to-back workshops had to be held because the site would not hold everyone. As such, the RENs may be able to draw on these abilities to create programs with higher conversion rates that more efficiently obtain savings.

4.3.3 Comparison of the REN Administrative Models

Any organizational structure has specific points of authority and implementation models.

Points of Authority: The two REN models have different points of authority. As the Consultant Team described earlier (Section 1.2.3), a single organization administers SoCalREN, with advice from 13 local governments. The 13 local governments do not set the programs and activities of SoCalREN, but do advise on all SoCalREN activities. The BayREN has dispersed points of decision-making authority. BayREN has a single organization managing many of the REN activities, with voting privileges for member on the direction and activities of the programs. BayREN's committee members have more weight in decision-making processes compared to SoCalREN's committee members. Specifically, BayREN's Coordinating Circle consists of the nine Bay Area counties plus ABAG (the Administrator); decisions are made by a simple majority vote.

These two models yield different benefits. While SoCalREN considers constituent feedback, as the sole organization deciding on program direction, it can more easily choose to go in a specific direction. The committee organization for BayREN has the benefit of allowing members to vote on activities that directly affect them.

Implementation Models: As described previously, both models use consultants to implement programs, although BayREN also implements some programs directly. BayREN designates a single county as the Lead

[49] Southern California Edison 2004–2005 IDEEA Constituent Program Evaluations (CALMAC ID SCE0234.01).

[50] Four of the five programs focus on retro-commissioning in schools and municipal buildings, most likely to dovetail with the new Prop 39 funds available in the state. The fifth program is on pump overhaul and retro-commissioning in water agencies.

Link of a program, thereby involving those counties in the direct administration of the programs. The Lead Links can change over time, which has unknown consequences.[51] Conversely, SoCalREN contracts with several nongovernmental organizations (the "implementing consultants") to implement the programs.

Both models have an organizational structure with few people between those needing decisions and those making the decisions (a "flat" organizational structure). As discussed previously, the flexibility brought about by this type of accessibility supports quick changes to small program issues.

Implementation success often hinges on good marketing. BayREN has a built-in marketing path with the member counties being responsible for coordination activities with all other local government jurisdictions within their county, members as leads for an LGP, and the business networks of several of their members with other local government organizations. SoCalREN has the potential for a similar type of marketing path, but the Advisory Committee is not obligated to perform the type of coordination required by BayREN. (The Advisory Committee interactions with SoCalREN were outside the scope of this study, so there may be more marketing abilities present than stated here.)

Local Governments as Administrators: The CPUC has no regulatory oversight of local governments apart from the RENs' role as EE program administrators, except for oversight of IOU local government partnerships programs. While the Consultant Team heard nothing that would indicate that the RENs lack commitment to EE,[52] there is a potential for vulnerability should key supporting local governments shift priorities away from supporting EE.[53]

BayREN members can withdraw from the REN with a 30-day notice to the other members. If this were to occur, programs would still be available to residents of that county, although marketing and outreach would be curtailed since much of this work is done by the member agency. If the withdrawing member were a Lead Link, it would be paramount to quickly move the implementation management to a new member, under the assumption that a member was able to support being a Lead Link.

SoCalREN, as a single local government administration design, has no substitute public agency available to take the reins if LA County were to experience a change in its priorities away from sustainability and EE.

Table 43, below, presents the pros and cons of the two REN model based on the information presented in this study. The Consultant Team analyzed information from the RENs to arrive at the information in the table.

[51] The Lead Links changed for two programs at the beginning of 2015, a period outside the scope of the study.

[52] LA County has been involved with the EE of its municipal buildings for at least 10 years. For example, in the 2004–2005 program cycle, they partnered with SCE and SCG to retrofit 70 county buildings (California Measurement Advisory Council [CALMAC] ID SCE0226.01). Both LA County and ABAG implemented ARRA energy programs.

[53] The Consultant Team believes that, because of Assembly Bill 32 (AB32), local governments have a strong desire to reduce GHG emissions. EE is only one way to achieve such reductions, and local governments may choose to shift their focus to other sectors, such as transportation, to reach GHG reduction goals.

Table 43. Pros and Cons of REN Models

BayREN		SoCalREN	
Pro	*Con*	*Pro*	*Con*
▪ Involves multiple local governments, which supports increased local government capacity. ▪ Member voting means that each member matters in decision making. ▪ Flexibility brought about by the accessibility within a flat organizational structure supports quick changes to small program issues. ▪ When REN member counties are also an LGP, there is a natural synergy.	▪ Local governments may have difficulty engaging in the REN and withdraw, causing cascading implementation difficulties.	▪ Single decision maker reduces time to make choices, although the Advisory Committee most likely is included in any major decision, which could slow the process. ▪ Flexibility brought about by the accessibility within a flat organizational structure supports quick changes to small program issues.	▪ Presently housed within LA County. If the administrator county chooses to stop supporting the REN, there is no specific local government to step in.

While outside the scope of this study, a thorough comparison of activities to date versus goals that include 2015 activities would provide a good indication of the differences between the two models. Any evaluator comparing the two models would need to have deep knowledge of each of the programs to determine if differences in goal attainments seen (if any) between BayREN and SoCalREN are because of the models or due to program design. In addition, the energy savings obtained by each model, from both direct implementation and indirect actions, would be most useful if such estimates accounted for savings brought to the IOU programs by the REN contributions. The future impact study report on the RENs will provide additional information in this area.

4.3.4 Summary of Policy Research Questions

The Consultant Team provides insights on the policy research questions in Table 44 below.

Table 44. Summary of Policy Research Questions

Policy Component	Summary
Scalability of the RENs	▪ **Existing programs can scale up.** The management structures of the RENs seem to allow for ramping up of any existing small-scale efforts. The use of consultants to implement the programs means that the RENs must procure additional consulting support, but they have the management capability to do so. In addition, the RENs and their implementing consultants are performing well in the three program areas where the Consultant Team performed primary data collection. ▪ **New programs may have more difficulty.** When considering the addition of new programs, the SoCalREN model may have a slight advantage over the BayREN model since the former has a single decision-making organization. Both RENs may have difficulty in staffing oversight of a new program with their existing structures. For any new program in BayREN, a lead agency would need to volunteer to manage any consultant. Because BayREN member counties indicated that they are often close to full-time, it may be a problem to oversee a new program unless they could fit it into their current work. SoCalREN, with fewer full-time staff, may have a slightly lower ability to oversee a new program. ▪ **No opposition to new RENs, but some considerations present.** The Consultant Team heard no strong opposition to additional RENs. There were, however, several considerations about what a new REN would need to be. According to the RENs, any new REN should leverage the experience, program models, and lessons learned from the existing RENs. From the IOU side, clear standards should be set for what it means to be a REN, and any REN should be subject to the same rules and cost-effectiveness requirements as the IOUs. ▪ **New RENs incur costs at several levels**. Any new REN faces a high cost of entry, which may be prohibitive for smaller agencies. Additionally, the ongoing costs of participating in all regulatory areas and maintaining collaboration with the IOUs increase program costs. ▪ **New RENs may need more support.** Collaboration was a key aspect of starting the RENs and took considerable time at the beginning, with ongoing efforts required to maintain smoothly running programs. While collaboration can occur via the phone, face-to-face meetings typically are better to work through difficulties, reach agreements, and create a plan for moving forward. For any new REN, in-person meetings with the IOUs would be time-consuming and costly.
Customer Confusion from REN and IOU Programs and Competition between RENs and IOUs	▪ **Customer confusion exists, but the full level of confusion is unknown.** Although the RENs worked with the IOUs to ensure non-duplication of existing activities, there is some evidence that the addition of the RENs caused customer confusion. A BayREN member government indicated that a marketing effort with information for both BayREN and the IOU programs fell flat and confused customers. This same member county indicated customer confusion occurs especially in small towns, where customers typically learn about the programs via word-of-mouth. While half of the BayREN Home Upgrade Advisor program customers indicated that they had experienced some level of confusion, they tempered that statement by indicating that the Advisor helped reduce their confusion. Additionally, multiple sources noted the level of coordination required to reduce confusion and include the RENs as a new program administrator was substantial and is an ongoing cost. Thus, there is incomplete information on how deep any customer confusion may be; this should be studied further. ▪ **Competition between RENs and IOUs is not necessary to pursue innovation.** While REN staff brought up that competition could encourage RENs and IOUs to become more efficient and to develop more innovative and attractive programs, the 10-year history of searching for program innovation in California suggests that competition has not been the key pathway to obtain more innovative programs. RENs have an advantage over the IOUs in their ability to communicate relatively quickly with a set of local governments, which could lead to marketing that is more efficient. While RENs are not the only organizations working with local governments, their monthly meetings and ties with other local government organizations are advantageous to information dissemination.
Comparison of the REN Administration Models	▪ **BayREN** has a dispersed point of authority for decision making, with each member having equal voting rights. This organization brings the benefit of members knowing their vote matters. Any member county can withdraw from BayREN with a 30-day notice. While not expected, it this occurred, it would cause difficulties. Some member counties directly implement programs and consultants implement many of the program activities with member county oversight. Member counties can change who is managing a program—an event that occurred in 2015, when oversight of two programs moved to different member counties. The flat organizational structure provides for accessibility to decision makers, which supports quick changes to small program issues. With members involved as LGPs and participating in other local government groups, the marketing for programs is built in with little cost. ▪ **SoCalREN**, with a single point of authority, can easily choose to go in a specific direction. Similar to BayREN, the short organization decision-making structure provides accessibility to decision makers, which supports quick changes to small program issues. Consultants implement all but one program. SoCalREN, as a single local government administration design, has no other specific organization to step in if there is a change in focus in LA County and they chose to not continue supporting the REN.

5. Conclusions and Recommendations

As a pilot, the CPUC needed data to inform whether to continue the RENs as EE program administrators. Specifically, the CPUC wanted to know if the RENs were meeting the expected activities, provided value to the State, and were effective in their actions.

5.1 Conclusions on Value and Effectiveness

5.1.1 The Value of the RENs

The RENs provided technical expertise that was beneficial. Close to two-thirds (64%) of BayREN Home Upgrade Advisor participants described some sort of benefit with the technical expertise provided by the Home Upgrade Advisor. Additionally, participants found the Advisor professional, knowledgeable, and responsive to their needs. All SoCalREN Public Agency Program participants stated that, as a result of the program, they now had access to such technical services as audits, design, or construction management assistance, and 93% of the participants indicated that they had access to EE expertise that their organizations did not have. Three-quarters of participants stated that working with the Public Agency Program reduced the amount of time needed to implement projects. Across the board, participants indicated a high level of knowledge by the SoCalREN team implementing the Public Agency Program (scores from 9.2 to 9.6 on a 0–10 scale where 10 is completely knowledgeable.)

The RENs designed programs that were new to California and, while still small, have the potential to scale up. Additionally, the BayREN PAYS program meets several criteria in Ordering Paragraph 34 of D.12-05-015, as it addresses the water-energy nexus and deploys new and existing technologies. Akin to an on-bill financing program, local water utility customers pay for the implementation of the program. Energy ratepayer funds help design the program and ensure availability of technical assistance when the water agencies begin implementation. The program seeks both water and energy savings on site with resulting reductions in both utility bills As of July 2015, two agencies are implementing PAYS: the Town of Windsor and the City of Hayward.

SoCalREC offers technology development in the form of two software packages – one for tracking energy use; another for online building permitting – that show promise for indirect savings, although their full potential will come only from extensive use, which has not yet occurred. As of the end of 2014, 56 local governments have licensed a software package through SoCalREC that tracks energy use across several facilities and are monitoring close to 150 buildings. The other software package is an online building permitting software that means to build customer awareness of EE upgrades and lends local governments a tool for tracking GHG reductions. SoCalREC has developed two prototypes and one local government has enrolled for product launch.

The RENs and IOUs put forward differing opinions about the value brought by the RENs, which this study acknowledges; the Consultant Team has no strong evidence to support either position. The RENs believe that their relationships with local governments have a high level of credibility and trust that affords them better access to foster community collaboration than the IOUs that eventually leads to higher savings. The IOUs counter that the LGPs program run by the IOUs has similar abilities. The BayREN Multifamily program performed well and achieved higher than expected savings, which one REN staff member attributed to the positive relationship between the REN and the local government. The possibility of this type of impact merits further study, as it is a fundamental component of the value of the RENs.

5.1.2 The Effectiveness of the RENs

The RENs put in place and successfully implemented their $67 million portfolio within an 18-month period. This is commendable, especially given the high level of coordination required between the RENs and the IOUs to determine in how to create and deploy programs that target the same pool of customers[54]. The three programs studied all had high levels of customer satisfaction, which indicates good management and effective service delivery.

The RENs navigated the new regulatory environment with some difficulties to begin with, but are now performing adequately (according to ED staff). A six-month regulatory delay occurred in the start-up of the RENs that the management of both RENs successfully overcame, although the delay made it difficult for the RENs to meet previously planned participation goals.

As in all programs, there are areas of difficulty. For the RENs, beginning to implement programs in areas where the IOUs had been providing programs for years resulted in some customer confusion. However, this study found that the level of confusion did not influence the satisfaction of customers.

Management of the RENs and programs is "sufficiently effective"; however, the information gathered through this study was limited. For the service delivery component, the Consultant Team gathered data from multiple sources to enable a clear determination of effectiveness. For other areas, the only data were self-reported. As such, there is no balancing information from an alternative or outside source.

5.1.3 CPUC Policy Implications

When considering the addition of new programs to the current RENs, the SoCalREN model may have a slight advantage over the BayREN model since the former has a single decision-making organization. Both RENs may have difficulty in staffing oversight of a new program with their existing structures. For any new program in BayREN, a lead agency would need to volunteer to manage any consultant. Because BayREN member counties indicated that they are often close to full-time, it may be a problem to oversee a new program unless they could fit it into their current work. SoCalREN, with fewer full-time staff, may have a slightly lower ability to oversee a new program.

New RENs could come from carving out a portion of the existing RENs or by creating a REN outside of the geographic locations already covered by the existing RENs (shown above on p. 7, section 1.1, in Figure 1).

The existing RENs cover a large part of the IOU service territories and the major opportunities to potentially establish a new REN would be within areas defined by the central coast, the northern coast, the Sierra, the Central Valley, and San Diego County. Collaboration was a key aspect of starting the RENs and took considerable time at the beginning, with ongoing efforts required to maintain smoothly running programs. While collaboration can occur via the phone, face-to-face meetings typically are better to work through difficulties, reach agreements, and create a plan for moving forward. The current REN organizations are located either in the same city or within an hour drive from where the IOU staffs engaged in EE programs reside (i.e., San Francisco, Los Angeles, or San Diego), which meant that collaboration is relatively easy. For any new REN in a rural area, in-person meetings with the IOUs would be time-consuming and costly.

Additionally, any new REN would incur costs at several levels. A new organization can expect significant upfront investment costs with no guarantee of success along with costs of collaborating with IOUs

[54] The SoCalREN program labeled SoCalREC planned for seven programs. During the course of the pilot, SoCalREN discontinued one due to lack of interest and combined two others into a single program. Additionally, the Consultant Team planned to assess two other SoCalREC programs, but they were not yet in a position for evaluation.

The existing RENs have demonstrated value and effectiveness in the course of implementing their programs. A new REN may provide equally valuable and effectively run programs, but it is not an inexpensive proposition. The full impact of the RENs and their ability to increase the level of EE savings across the state over what it would have been absent their presence needs further study to determine if new RENs are a worthwhile addition to California.

5.2 Recommendations

The study supports five specific recommendations and five areas to consider for a new REN.

- **The RENs should continue.** They should continue owing to the value that they demonstrate to their constituencies (within the three programs studied most closely) in several important areas: technical expertise, targeting hard-to-reach markets, and linkages with other utility offerings. While the study found value as described, this study is indeterminate on whether the RENs should continue as program administrators (in either a probationary or a permanent status).
- **The RENs should maintain their new programs and document customer response**. Both the BayREN PAYS program and the two SoCalREN software packages within are new and their full potential is uncertain. SoCalREN software packages are providing value now in the form of new technologies and BayREN's PAYS with savings via a water-energy nexus, but both have few participants. Tracking uptake will help the RENs determine whether customers find the program designs appealing enough to participate or if design changes are necessary.
- **The RENs and IOUs should ensure tracking of key pilot metrics in order to compare activities across program administrators.** The RENs believe that their relationships with local governments (and with community organizations) increase long-term energy savings. For example, looking at BayREN Home Upgrade conversion rates (which increased from 4% in 2013 to 19% in 2014), when compared to conversion rates by SoCalREN and the IOUs, presents a clearer picture of the presence or absence of an advantageous influence of the RENs relationship.
- **A future study should determine the full level of customer and contractor confusion and, if found, provide better approaches to mitigate it.** A BayREN member government indicated that a marketing effort with information for both BayREN and the IOU programs fell flat and confused customers. This same member county indicated customer confusion occurs especially in small towns, where customers typically learn about the programs via word-of-mouth. While half of the BayREN Home Upgrade Advisor program customers indicated confusion, they tempered that statement by indicating that the Advisor helped reduce their confusion. Any future assessment of the RENs should systematically gather additional data specifically about customer confusion and contractor confusion before determining that the RENs caused market confusion.
- **The ED should sponsor additional studies to gauge the long-term effectiveness and viability of the REN program administrator models.** The ED plans for three additional studies on the RENs that will help provide a more complete picture of the value and effectiveness of these two new program administrators. While those studies have a set of research objectives, the Consultant Team suggests the three upcoming studies also consider the following areas noted within this study report, but outside this study's scope.
  - **Multifamily Study:** Is the high number of units under retrofit for BayREN because of close local government ties with BayREN? If so, why does this high number of retrofits not occur in SoCalREN?
  - **RENs Impact Study:** Are more projects moving into IOU resource programs because of the non-resource activities by RENs?

- **RENs Phase II Value and Effectiveness Study** (the several questions presented here will need to be prioritized to fit the Phase II budget):
  - Are Home Upgrade contractors confused by the presence of both the RENs and the IOUs?
  - What are the costs, if any, of changing a BayREN Lead Link for a program? Does changing the Lead Link for a program have any effect on the program?
  - How valuable and easy to use do customers find the SoCalREN EEMIS and CEEPMS software?
  - How does the SoCalREN Advisory Committee interact with SoCalREN and what are its responsibilities?
  - What would be the costs to scale up EEMIS training and what are the prospects for deploying across California?
  - How well does the SoCalREC leverage local government resources and what level of local government capacity is the result of SoCalREC activities?

If the CPUC were to invite applications for new proposed RENs, this study identified several areas to consider. The CPUC could potentially benefit by:

- Creating a set of guidelines regarding the full regulatory processes by which any new proposed REN would be expect to adhere. This would reduce uncertainty about the significant coordination, time, and cost required in becoming a REN.
- Providing seed money to assist a new potential REN with preparing its first set of regulatory filings.
- Allowing for a prudent increase in administrative costs to facilitate collaboration through in-person meetings.
- Assuring that any new REN leverages and borrows from the experience, models, and lessons learned from the existing RENs .
- Reviewing the associated ED staffing requirements of overseeing additional RENs to assure appropriate coverage for ongoing interactions with additional program administrators.