Attachment A

SoCalREN Energy Efficiency Rolling Portfolio Business Plan

(Clean Version)

SoCalREN

Energy Efficiency Business Plan

Energy Efficiency Rolling Portfolio Business Plan, 2018 - 2025

(Clean Version)

Originally filed January 23, 2017

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Energy Efficiency Business Plan

Portfolio Summary Chapter

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SoCalREN Portfolio Framework Snapshot

SoCalREN envisions two main themes as the foundation of its energy efficiency portfolio. Specifically, Public Agency leadership to meet the State's aggressive goals, and driving communities to zero net energy. Figure 1 below, captures the overall portfolio framework, the themes for each of the two core sectors, and the public agency approaches. Furthermore the figure captures how the cross-cutting programs of Codes & Standards (C&S), Workforce Education & Training (WE&T), and Financing will provide the key broad support helping drive the portfolio strategies in each sector.

Figure 1. SoCalREN Portfolio Framework

SoCalREN Portfolio Summary Chapter

A. Portfolio Summary

The California Public Utilities Commission (CPUC) has long recognized the need for a more comprehensive, integrated model for energy efficiency (EE) and has identified new mechanisms to help achieve the state's EE and climate goals. The CPUC is looking to Program Administrators to adopt a conceptual framework that is more comprehensive and forward-looking.

In 2012, the CPUC authorized the piloting of **Regional Energy Networks.**[1] This authority recognized the value of public agency leadership to meet local needs and priorities while pooling energy management resources. In addition, the CPUC acknowledged local governments are likely better positioned to administer EE programs for public agencies, serving as innovators to guide others.

The mission of SoCalREN is to harness the collective action of public agencies to save energy and lead their communities on the pathway to a safe, secure, resilient, affordable and sustainable energy future.

The Southern California Regional Energy Network's (SoCalREN's) portfolio delivers strategies motivating customers to adopt more comprehensive energy efficiency approaches that are characterized by deeper, longer-lasting savings. Comprehensive EE strategies are essential for California to meet aggressive climate action goals. The California Air Resources Board's (CARB's) Scoping Plan relies on large greenhouse gas (GHG) emissions reductions from EE programs to meet California's GHG emissions reduction mandates set in Assembly Bill (AB) 32. AB 758 authorized the California Energy Commission (CEC) to develop a comprehensive statewide program, in collaboration with the CPUC, to achieve greater EE in all residential and non-residential ***existing*** buildings in California.[2] Furthermore, the *California Long Term Energy Efficiency Strategic Plan* set bold retrofit targets for the existing building stock, including (a) 40 percent consumption reduction in residential dwellings by 2020 and (b) 50 percent of commercial buildings meeting Zero Net Energy (ZNE) by 2030.[3] Senate Bill (SB) 350 requires the state to significantly reduce GHGs, and significantly increase renewable energy resources and existing building energy efficiency by 2030. Other influences that helped shaped SoCalREN's EE business plan include evaluation studies, market trends, customer needs, stakeholder input, and program experience.

[1] D.12-11-015, Ordering Paragraph (Op.) 2
[2] California Energy Commission. 2015. Existing Buildings Energy Efficiency Action Plan. September. CEC-400-2015-013-F.
[3] California Public Utilities Commission. 2011. California Energy Efficiency Strategic Plan. Adopted September 2008, updated January 2011.

SoCalREN is administered by the County of Los Angeles. It serves residents, businesses, and public agencies within the Southern California Edison (SCE) and Southern California Gas (SoCalGas) territory, encompassing 12 counties and a population of over 20 million.

SoCalREN's services complement and supplement investor-owned utility (IOU) programs, and they fill gaps and find synergies among approaches to maximize opportunities for customers and other market actors. SoCalREN's goals are listed below.

- Continue the implementation of the California Energy Efficiency Strategic Plan.
- Increase participation of public agencies and their communities in EE programs and strategies.
- Provide technical assistance, resources, expertise, and support to motivate public sector leadership and inspire local energy action.
- Use pooled regional resources and services to achieve economies of scale.
- Overcome barriers and fill gaps to achieve deep retrofits within public buildings and residential housing.
- Leverage ratepayer EE funds with non-ratepayer financing options.
- Support local adoption of model codes, standards, and policies.
- Streamline administrative practices to gain efficiency opportunities within the portfolio.
- Identify the most cost-effective strategies with attributable indirect savings.
- Build the pathway to a ZNE energy future.

B. Portfolio Vision and Goals

SoCalREN envisions a future in which public agencies and their constituents play an active leadership role in shaping ZNE communities that are safe, secure, resilient, affordable, and sustainable. SoCalREN harnesses the collective action of public agencies and their communities to save energy and move forward on the pathway to ZNE. SoCalREN's long-term portfolio fulfills this vision by offering an array of solutions for public agencies and their communities (aligning with the state's energy goals), overcoming barriers, motivating public agencies, and driving community leadership in clean energy solutions.

Public agencies play a critically important role in achieving California's EE and ZNE goals and contributing to meeting the state's aggressive energy and climate goals.[4] Unleashing the potential of the public sector to lead by example and motivate community action is key to charting the pathway to ZNE communities.

By focusing on the design and development of ZNE communities and creating appropriate metrics and milestones to measure progress, public agencies can move beyond individual building-by-building solutions to community-wide solutions that consider all sources and uses of energy within their boundaries, identify the best approaches for coordinated project investments, and leverage broader opportunities and benefits for their citizens.

[4] Rocky Mountain Institute. 2012. Zero Net Energy 2.0. RMI Outlet. March 12.

SoCalREN's portfolio focuses on the newly created public sector market. It will support the public sector to drive the market to ZNE communities through key intervention strategies and cross-cutting support. SoCalREN's portfolio includes strategies that will provide the public sector and its communities with expertise, resources, and support they need to create a safe, secure, and resilient energy future that is decarbonized, diversified, and decentralized.

1. SoCalREN Meeting CPUC REN Goals

Since its launch in 2013, SoCalREN has successfully met the criteria set forth by the CPUC for RENs. In D.12-11-015, the CPUC directed the RENs to deliver programs and activities that met a threshold of criteria:[5]

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

As a peer driven-organization where public agencies learn from one another, SoCalREN brings special expertise and relationships with customers that other administrators or local government partnerships do not possess. SoCalREN successfully complements and supplements the activities of existing Local Government Partnership (LGP) programs as well as other public sector energy efficiency programs administered by SCE and SoCalGas. In addition, SoCalREN is able to add significant depth and value to its service offerings not only by using CPUC ratepayer funds, but also by leveraging non-ratepayer funds from others such as the CEC, the Department of Energy (DOE), and publicly owned utilities. SoCalREN's business plan anticipates increased future opportunities to leverage funds from these sources as well as new funding partners, such as Community Choice Aggregation (CCA) authorities.

2. Goals

Over the next 8 years, 2018–2025, SoCalREN will achieve the goals presented in Tables 1 and 2 to support the implementation of EE strategies and provide the foundation for achievement of a ZNE energy future. In both the residential and public sectors, SoCalREN will provide the needed technical assistance, tools, resources, and community engagement.

Table 1. Energy Savings Goals 2018–2025

Gross Energy Savings Goals	GWh	Therms	MW
Residential	30.32	1,413,062	16.6
Public Sector	120	1,364,000	4
Subtotal	150.32	2,777,062	20.6

[5] D.12-11-015, p. 17.

Table 2. Market Sector Goals

Portfolio Goal	Public	Residential
Save 150 GWh, 21 MW, and 1.5 MM Therms	Save 120 GWh, 4 MW, and 1,364,000 therms over an 8-year period.	Save 16.6 MW, 30 GWh and 1.4 MM therms, focusing on deep retrofit opportunities within multifamily/single-family properties.
Increase public agency engagement and influence a greater proportion of customers	Enroll 40% percent of eligible public agencies in the Energy Network EE program.	Demonstrate public agency actions toward promoting energy efficiency, targeting a goal of more than doubling the number of agencies making energy efficiency commitments
	Increase the ability of public agencies to meet local, regional, and state energy targets and policy goals through (1) creating a regional energy master plan and (2) creating regional energy information databases.	Drive program participation through local outreach and engagement about energy efficiency and ZNE, more than tripling the number of engagements with high potential program participants.
Integrate energy efficiency with other DER options and compliance enhancements to enable a pathway to ZNE future	Increase the percentage of agencies adopting model codes, standards, and policies that support implementation of ZNE communities.	Increase by 1,400% the integration of whole house energy efficiency with other Distributed Energy Resources (DER) options in residential buildings utilizing residential Property Assessed Clean Energy (PACE) over 8eight years
Increase operational efficiency		Increase residential program implementation efficiencies by reducing administrative and marketing costs. Reduce residential energy efficiency program costs of $/kW, $/kWh and $/therm saved by 66% through the use of cost-effective program models.

C. SoCalREN Portfolio Compared to Previous Cycles

Since its inception in 2013, SoCalREN has sought to fill critical gaps and overcome barriers by piloting activities to meet the state's EE and climate goals. This experience has provided context in which lessons learned from experience now inform design of the 2018–2025 portfolio. SoCalREN's portfolio focuses on a comprehensive set of offerings that will drive public sector and residential sector market participants toward ZNE.

SoCalREN's proposed business plan continues the key public sector intervention strategy of EE project delivery. This existing program will be enhanced over time with the integration of DER into

engagement activities to inspire local energy action. Resources that previously supported the Water Energy Nexus and Community Energy Efficiency Permit Management System program have been reallocated to support enhancements to SoCalREN's project delivery and community engagement strategies.

New public sector intervention strategies include the implementation of regional energy planning and databases that are critically important for local energy planning and decision-making. SoCalREN is adding a new intervention strategy to engage and support local governments in adoption of model reach codes, standards, and policies to build the pathway to ZNE. Details on these strategies are included in the Public Sector chapter.

In the residential sector, SoCalREN is continuing its successful multifamily resource program as it remains a significant underserved market. However, over the mid- and long-term, SoCalREN hopes to identify possible new pilots or projects that can help drive more cost-effective approaches and increase customer participation within that segment. Further details are outlined in the Residential Sector chapter.

The portfolio includes a new activity for marketing, education, outreach, and customer support to access residential Property-Assessed Clean Energy (PACE) Program funding. SoCalREN will be establishing residential benchmarking data as a way to enable residential property owners to make informed decisions about energy investments.

In concert with its effort to continually identify areas of duplication and incorporate more cost-effective practices, SoCalREN is discontinuing the implementation of the residential Energy Upgrade California® program (aka Flex Path Incentives) and related incentives since this program can be more effectively integrated with existing IOU programs. SoCalREN intends to transition this program to SCE and SoCalGas by the end of 2017.

D.SoCalREN Portfolio Strategies

SoCalREN's strategies focus on inspiring leadership and action by public agencies and their communities. Each strategy overcomes identified barriers and/or fills gaps in the market. Table 3 provides an overview of these strategies, and details are included in the relevant sector chapters of the business plan.

Table 3. Program Intervention Strategies Overview

Strategy	Residential Sector	Public Sector
Energy efficiency project delivery		Existing and new
Community education and engagement		Modified
Regional energy master plans and databases		New
Energy codes, standards, and policies		New
Coordination with residential PACE program	New	

Establishment of residential benchmarking data	New	
Community engagement to educate property owners	Modified	
Partnering	Existing	
Technical assistance to residential participants	Existing	

E. Portfolio Budget and Cost Effectiveness

Tables 4 and 5 summarize SoCalREN's estimated portfolio budget by sector. As SoCalREN implements the portfolio described in this business plan, the budget will be reevaluated over time to respond to market changes, lessons learned, and regulatory directives. Further details on these changes will be reflected annually in SoCalREN's September Compliance filing as dictated by D. 15-10-028.[6]

In addition, SoCalREN has factored in a 2% increase in funding per year to account for program cost increases typically incurred over a contracts cycle such as cost of labor and materials. While an increase in funding may not be necessary each year based on program performance, participation, and overall REN performance. The annual Advice Letter process will address these issues accordingly.

Table 4. Portfolio Budget by Sector

Sector	2017[7]	2018	2019	2020	2021	2022	2023	2024	2025
Residential	10,577,552	6,540,000	$6,670,800	6,804,216	6,940,300	7,079,106	7,220,688	7,365,102	7,512,404
Public	8,294,198	11,336,000	$11,562,720	11,793,974	12,029,854	12,270,451	12,515,860	12,766,177	13,021,501
Codes and standards	0	1,090,000	1,111,800	1,134,036	1,156,717	1,179,851	1,203,448	1,227,517	1,252,067
Financing	2,779,250	2,180,000	2,223,600	2,268,072	2,313,433	2,359,702	2,406,896	2,455,034	2,504,135
Workforce, Education & Training	0	654,000	667,080	680,422	694,030	707,911	722,069	736,510	751,240
Total	**$21,651,000**	**$21,800,000**	**$22,236,000**	**$22,680,720**	**$23,134,334**	**$23,597,021**	**$24,068,962**	**$24,550,341**	**$25,041,348**

[6] D.15-10-028, Ordering paragraph (Op.) 4.
[7] The budgets for year 2017 reflect the September 1 Compliance Filing Regarding SoCalREN 2017 Energy Efficiency Program Portfolio Changes and Funding Request which is expected be approved Q1 2017.

Table 5. Portfolio Budget % by Sector Compared to Previous Cycles

Sector	2014-2016	2018 - 2025	Change -/+
Residential	50%	30%	-20%
Public	39%	52%	+13%
Codes and standards	0%	5%	+5%
WE&T	12%	10%	-2%

1. Cost Effectiveness

Although it is not a requirement for RENs to achieve a specific cost-effectiveness metric, SoCalREN believes it is important to be as cost-efficient as possible in the use of rate-payer funds. Table 6 shows the cost-effectiveness data for SoCalREN's resource activity anticipated in the residential sector.

Table 6. Cost Effectiveness Portfolio Objective Range for Business Plan Term, 2018-2025

	TRC	PAC	Emissions[8] (lbs of CO2)	kW	kWh	Therms
Resource Portfolio CE[9]	1.01	1.23	5,103	7,446	24,773,113	892,809

2. Administrative Budgets

SoCalREN maintains consistently throughout its portfolio the CPUC guidance that administrative costs should be limited to 10% of the total energy efficiency budget.[10] Although this directive only applies to IOU's, SoCalREN feels it is the most prudent and cost efficient portfolio guideline for utilizing ratepayer funds. SoCalREN's administrative budget consists of administrative costs as authorized in D.09-09-047 and as defined in the Energy Efficiency Policy Manual.[11,12] SoCalREN maintains administrative costs consistent across all PAs.

[8] Emissions value consists of 3,693 of CO2 abatement for electric and 1,410 of CO2 abatement for gas
[9] Cost effectiveness calculations reflect the current resource portion of SoCalREN, specifically its multifamily offerings. These calculations were derived from the latest CPUC CET tool and reflects an estimated portfolio CE for the Business Plan time period.
[10] As adopted in D.12-11-015, p.94
[11] D.09-09-047, p. 49 and Op.13
[12] Energy Efficiency Policy Manual, V5. July 2013. Appendix F

F. Portfolio Metrics

To properly measure and ensure accountability of sector progress toward meeting portfolio objectives, SoCalREN's business plan proposes a set of key metrics for each sector and cross-cutting program activity. To properly monitor progress toward the desired outcome over time, the metrics will rely on qualitative and quantitative data collected, tracked, and verified as part of SoCalREN's data requirements (e.g., number of agencies, customer participation). This data collection will assist in improving the accuracy and timeliness of metric tracking for both the program administrator and the CPUC, while keeping the monitoring costs at reasonable levels. Sector metrics and targets may change over the 8-year rolling portfolio cycle, as SoCalREN and its implementers deliver programs and learn more about market characteristics and responsiveness to intervention strategies.

Table 7 summarizes SoCalREN's metrics by sector and the attributed metric source as well as the expected implementation horizon.

Table 7. Portfolio Metrics by Sector

	SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (2018-2020)	Mid Term Target (2021-2023)	Long Term Target (2024-2025)
RESIDENTIAL SECTOR	Save kWh, kW, and therms	All	Electricity Saved	1,598,566[13]	Annual Gross Savings from Program Tracking	2,951,708 kWh annually	3,758,526 kWh annually	5,095,684 kWh annually
			Demand Saved	1,079		1,613 kW annually	2,054 kW annually	2,785 kW annually
			Therms saved	83,299		137,555 Therms annually	175,154 Therms annually	237,468 Therms annually
	Increase residential program implementation efficiencies/reduce program cost per energy savings	All	$/Electricity Saved	$3.23/kWh[14]	Annual Gross Savings from Program Tracking	40.8% reduction	55.8% reduction	73.1% reduction
			$/Demand Saved	$4,784.30/kW	Annual expenditure reports	26.9% reduction	45.4% reduction	66.8% reduction

[13] Baseline is the average of 2015 and 2016 energy savings reported and projected.
[14] Baseline is the average of 2015 and 2016 annual budget divided by kWh, KW and Therms savings reported and projected.

			$/Therms saved	$61.96/therms		33.8% reduction	50.6% reduction	70.0% reduction
	Demonstrate public agency actions toward promoting energy efficiency, targeting a goal of X [number] of agencies making energy efficiency commitments	Engage Public Agencies to Drive Energy Efficiency in Their Communities Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency	Cumulative number of public agencies committed to energy efficiency	21[15]	Program Tracking Databases	2 new public agencies per year	3 new public agencies per year	4 new public agencies per year
RESIDENTIAL SECTOR	Drive program participation through local outreach and engagement about energy efficiency and ZNE	Engage Public Agencies to Drive Energy Efficiency in Their Communities Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency Offer Technical Assistance to Increase Capacity for Program Participation	Number of engagements with high potential program participants	11,166[16]	Program Tracking Databases	2,000 additional engagements per year	3,000 additional engagements per year	4,000 additional engagements per year
PUBLIC SECTOR	Save kWh, kW, and therms	All	Electricity Saved	10,130,000[17]	Metered energy savings	30 GWh	45 GWh	45 GWh
			Demand Saved	937		750,000 kW	1.25 MW	2 MW
			Therms saved	46,000		132,951 Therms annually	169,291 Therms annually	229,520 Therms annually

[15] Baseline is the number of public agencies engaged in 2016.
[16] Baseline is the number of engagements with high potential program participants in 2016.
[17] Baseline is 2016 Installed Public Sector Program Energy Savings.

	Increase the enrollment by 40% of eligible public agencies in the Energy Network EE Program	All	Cumulative number of public agencies committed to energy efficiency	Total number of eligible SoCalREN agencies as of 2018	SoCalREN Program Tracking Databases	20 new public agencies per year	30 new public agencies per year	45 new public agencies per year
	Increase the percentage of public agencies that engage their communities in energy actions and ZNE strategies, thereby reducing overall community energy consumption.	Engage and Educate communities in Energy programs and Strategies Energy Efficiency Project Delivery Program	Number of ZNE retrofits completed in public agency existing buildings	Currently not tracked; baseline would begin at 0	SoCalREN Program Tracking Databases	4	10	20
PUBLIC SECTOR	Increase the ability of public agencies to meet local, regional, and state energy targets and policy goals through (1) creating a regional energy master plan and (2) creating a regional energy information database.	Regional energy master planning and shared regional database development	Number of energy master plans completed	N/A	SoCalREN Program Tracking Databases	2	4	6 (100%)
			Regional energy database completed	Currently database does not exist; baseline would begin at 0	N/A	N/A	1	N/A
	Increase the percentage of agencies that adopt model codes, standards, and policies that support implementation	Model energy codes, standards and policies development and adoption	Percent of local governments adopting model and reach codes, standards,	220 local governments (permitting authorities) within SoCalREN territory	SoCalREN Program Tracking databases	1%	5%	10%

	of ZNE communities.		and policies.					
CROSS-CUTTING: CODES & STANDARDS SEGMENT	C&S community members are provided with actionable resources that address their specific role in advancing the state's ZNE goals.	Provide targeted resources and tools to C&S stakeholders.	# of C&S resources provided	0	SoCalREN reporting	TBD based on needs assessment	TBD based on needs assessment	TBD based on needs assessment
			% of local governments using C&S resources	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%
	Public agencies and external C&S stakeholders work together to adopt, implement, and enforce advanced energy codes, standards, and policies that pave the way for improved building performance and ZNE new construction.	Develop and adopt model energy codes, standards, and policies.	% of local governments adopting advanced codes, standards, and policies	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%
	Public agencies are using data, collected through enforcement of advanced energy codes and policies that informs energy master plans, regional energy plans, and roadmaps for addressing	Develop and adopt model energy codes, standards, and policies.	% of local governments using energy data to inform C&S activities	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%

	energy and GHG reduction targets and strategies.							
CROSS-CUTTING: WORKFORCE, EDUCATION & TRAINING SEGMENT	Increase workforce and training infrastructure/partnerships, comprising community-based training organizations, K–12 and higher educational institutions, apprenticeship programs, and workforce investment boards, by 25 percent	Expand WE&T Infrastructure and Partnerships Organize Integrated Entry-Level Skills Training and Infrastructure	Percentage of offerings delivered through strategic partnerships with other core education providers	Current percentage of partnership delivery; WE&T program data and documentation	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	20% increase in offerings delivered through strategic partnerships as defined	25% increase in offerings delivered through strategic partnerships as defined
	Increase entry-level skills training and job opportunities for disadvantaged workers by 50 %	SBE/DVBE Training and Technical Assistance Organize Integrated Entry-Level Skills Training and Infrastructure	Percentage of offerings that reach disadvantaged workers	Baseline defined by evaluating WE&T program data and documentation	WE&T program data and documentation	20% increase in offerings that that reach disadvantaged workers	25% increase in offerings that that reach disadvantaged workers	50% increase in offerings that that reach disadvantaged workers
			Percentage of knowledge gain as a result of course participation	Current percentage of knowledge gain; N/A (new metric)	WE&T program data and documentation; pre- and post-course surveys that target key course learning objectives	20% increase in measured knowledge gain as a result of course participation	25% increase in measured knowledge gain as a result of course participation	30% increase in measured knowledge gain as a result of course participation
	Develop a regional energy management training program to increase the operational efficiencies of	Organize Integrated Entry-Level Skills Training and Infrastructure	Training impact, based on number of projects and	N/A (new metric)	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	15% increase in training impact, based on number and contract value	20% increase in training impact, based on number and contract value

	retrofitted projects.		contract value					
CROSS-CUTTING: WORKFORCE, EDUCATION & TRAINING SEGMENT	Standardize local contracting policies and protocols into public bid/solicitation documents across the SoCalREN region to increase capacity and the participation of diverse, small, and disabled veteran–owned businesses in EE work by 25 %	SBE/DVBE Training and Technical Assistance Organize Integrated Entry-Level Skills Training and Infrastructure	Percentage of offerings that target or promote measures and programs that yield savings	N/A (new metric)	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	10% increase in offerings that target or promote measures and programs that yield savings	20% increase in offerings that target or promote measures and programs that yield savings
			Percentage of offerings that DVBE	Baseline defined by evaluating WE&T program data and documentation	WE&T program data and documentation	20% increase in offerings that that reach disadvantaged workers	25% increase in offerings that that reach disadvantaged workers	50% increase in offerings that that reach disadvantaged workers
	Establish a SoCalREN online data and reporting system to collect, monitor, and report workforce and contracting outcomes.	Establish Online Reporting Tool	Completed Data System	N/A (new metric)		N/A	1	N/A

G. Solicitation Strategies

SoCalREN program administration, design, and implementation is currently outsourced to third parties that have been selected through a competitive bidding process by Los Angeles County, the administrator of SoCalREN. Los Angeles County procurement processes are open and transparent, and all contracts are reviewed and executed by the Los Angeles County Board, comprised of elected officials from Los Angeles County respective jurisdictions. Contract approvals are placed on Board Agendas and discussed at public Board meetings that are subject to the Brown Act. Los Angeles County has solicitation process with built in procurement compliance of both state requirements and local rules and procedures related to competitive solicitations.

SoCalREN plans to continue to outsource program administration, design, and implementation. Current contracts are not due to be renewed by the county until 2020. The intent is to continue to outsource virtually all components of program implementation in the future, pursuant to local government procurement and contracting requirements. This outsourcing strategy will provide administrative and operational efficiencies for the REN and alleviate cost burdens to ratepayer funds.

H.SoCalREN Supporting State Policy Goals

The following table 8 is a summary of relevant policies and legislation that affect existing energy efficiency in California and how SoCalREN's sector strategies are helping to aide in successfully meeting those state directives.

Table 8. Summary of Energy Efficiency Policies, Guidance, and SoCalREN Support

Policy	Guidance	SoCalREN's Support	
		Public Sector	Residential Sector
CPUC Guidance Decision (D.12-11-015) for Regional Energy Networks	• Conduct activities that utilities cannot or do not intend to undertake • Conduct pilot activities where there is no current utility offering and where there is potential for scalability to a broader geographic reach, if successful • Conduct pilot activities in hard-to-reach markets, whether or not there is a current utility program that may overlap	SoCalREN is successfully meeting the criteria established by the CPUC. • SoCalREN services address gaps not filled by LGPs. SoCalREN proposes to continue piloting of new program offerings, including implementation of IDSR demonstration projects. • SoCalREN is successfully assisting hard-to-reach markets.	

Policy	Guidance	SoCalREN's Support	
		Public Sector	Residential Sector
		More than 40% of SoCalREN's enrolled agencies encompass disadvantaged communities.	
California Long-Term Energy Efficiency Strategic Plan (CLTEESP)	• Lead by example in their facilities • Lead their communities with innovative energy efficiency programs • Lead adoption of higher energy efficiency standards or "reach" codes • Lead energy code compliance enforcement • Ensure LG energy efficiency expertise becomes widespread and typical • Collect proof of permit closure before paying rebates or incentives to customers or contractors for central air conditioning or heat pumps and their related fans.	• The SoCalREN intervention strategies and tactics directly align with these goals and provide the requisite expertise, support, and knowledge for public agencies to better meet these goals and objectives • Intervention 1: Energy Efficiency Project Delivery Program • Intervention 2: Community Education and Engagement • Intervention 3: Regional Master Planning and Database • Intervention 4: Model Codes, Policies, and Standards	• Educate building departments, contractors and homeowners about the value and need for closed permits for related energy efficiency work • Collect proof permit closure before paying rebates or incentives to customers or contractors.
AB 758 Existing Buildings Energy Efficiency Action Plan (Action Plan)	• Lays out a 10-year roadmap to mobilize market forces and transform California's existing building stock into high-performing and energy-efficient buildings • Establishes requirements for providing energy assessments, benchmarking, energy ratings, cost-effective energy improvements, financing options, public outreach and education, and workforce training. • Encourages local governments to implement innovative efficiency programs and gather	• Provide the foundation for the public sector to benchmark existing buildings, identify best energy retrofit opportunities, implement community-scale programs, and measure impacts • Will promote the adoption of reach codes that will encourage and/or incentivize adherence to AB 758	• Train real estate professionals on the value of energy efficiency • Technical support • Coordinate or create implementation of localized energy programs and services

Policy	Guidance	SoCalREN's Support	
		Public Sector	Residential Sector
	relevant experience for wider application.		
AB 350 Clean Energy and Pollution Reduction Act	• Mandates a 50% renewable energy content in the state's overall electricity mix and a doubling of energy efficiency goals for existing buildings by 2030 • Addresses barriers for low-income customers to EE and weatherization, especially in disadvantaged communities • Requires local governments to participate in efficiency program implementation where appropriate	• Through incorporation of DER resources into one-stop project delivery, agencies will achieve greater adoption and implementation of integrated projects that drive significant GHG reductions in their communities	• Data analytics of customer segmentation to target customers with high savings potential and market transformation needs • Develop community-level initiatives • Education, outreach
SB 375 Sustainable Communities and Climate Protection Act	• Requires local governments to implement long-term integrated planning for land use and transportation • Drives critical public agency initiatives, such as the Southern California Regional Transportation Plan and Sustainable Communities Strategy, to reduce per capita GHG emissions in the Southern California Association of Governments region 8% by 2020, 18% by 2035, and 21% by 2040 against the 2005 baseline year	• Supports implementation of SB 375 by integrating energy planning with transportation and land use planning	
AB 802	• Mandates use of metered data for measurement of impacts from energy efficiency program interventions • Offers local governments a relevant framework to implement building benchmarking and labeling ordinances that accurately reflect what building	• Supports implementation of AB 802 by creating a regional energy plan database that will enable local governments to access actionable data and identify the best opportunities for effective program	• Using data to drive high value customers to incentive programs • More sophisticated audits • Increased standardization

Policy	Guidance	SoCalREN's Support	
		Public Sector	Residential Sector
	operators and tenants see on their energy bills • Program administrators can now receive credit for energy savings from, and provide incentives and support for, EE projects that help public sector entities meet current energy code requirements; previously, program administrators could only count the energy savings from projects where the improvements exceeded code requirements	development and implementation	
AB 32 and AB 197	• Extends carbon emissions reduction target to 40% below 1990 levels by 2030 • Local government CAPs identify how they will comply	• Provide the tools and guidance for public agencies to successfully complete retrofits in their own facilities, support community energy actions, and adopt the regulatory framework to drive adoption of ZNE communities that will significantly reduce GHG emissions	• Residential Energy efficiency offerings
ZNE Legislation	• All new residential construction is required to be ZNE beginning in 2020 (CLTEESP) • All new commercial construction is required to be ZNE beginning in 2030 (CLTEESP) • Up to 50% of existing buildings retrofitted must achieve ZNE by 2030 (CLTEESP)	• SoCalREN's business plan is focused on shepherding the public sector to create ZNE communities • Its four intervention strategies, along with the IDSR demonstration pilots, will provide the roadmap for the public sector to lead compliance with the state's ambitious ZNE legislation and policies	• Leveraging the collective action of local governments and their communities to maximize the energy efficiency of homes across Southern California, focusing on hard-to-reach communities and innovative pilot programs.

Appendix A: Acronym List

Acronym	Definition
AB	Assembly Bill
CARB	California Air Resources Board
CCA	Community Choice Aggregation
CEC	California Energy Commission
CEEPMS	Community Energy Efficiency Permit Management System
CPUC	California Public Utility Commission
DER	Distributed Energy Resources
DOE	Department of Energy
EE	Energy Efficiency
GHG	Greenhouse Gas
IOU	Investor Owned Utility
LGP	Local Government Partnership
PACE	Property Assessed Clean Energy
REN	Regional Energy Network
SB	Senate Bill
SCE	Southern California Edison
SoCalGas	Southern California Gas Company
SoCalREN	Southern California Regional Energy Network
WE&T	Workforce Education & Training
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
Section A.	**Portfolio Summary**	
Section A.	**Executive Summary**	
Section A.	*Company description*	
Section A.	*Definition of market*	
Section A.	*Mission Statement*	
SoCalREN Motion Cover Letter	*Purpose of Business Plan*	
Section A.	**Overview**	
Section A.	*About EE/DSM*	
Section A.	*CA Energy Needs*	
Section A.	*Regulatory Requirements*	
Section A.	*Strategic Plan*	
Section A.	*Legislation (e.g., AB 758, SB 350, AB 802, AB 793)*	
Section B.1.	*IOUs/PAs/CPUC/etc. overall role*	
	Broad socioeconomic and utility industry trends relevant to PA's EE programs (population, economics and markets, technology, environment/climate)	Located within each Sector Chapter
Section B.	*Vision e.g., How PA thinks about and uses EE over next 10 years)*	
Section C.	*Compare/contrast to past cycles*	
Section B. & E.	**Goals & Budget**	
Section B. 2.	*Energy Saving Goals*	
Section E.	*Portfolio Budget (sector and portfolio level per xls checklist)*	
Section E. 1.	*Cost-effectiveness (sector and portfolio level per xls checklist)*	
Section E. 2.	*Explanation of Admin Budgets (e.g., Direct/Indirect Labor, Professional/Admin personnel)*	
	Explanation of accounting practices	
Section D.	**Intervention strategies (high level)**	
	Overall issues/challenges/barriers	Located within each Sector Chapter in detail
Section F	*High level summary of strategies and tools (e.g., AMI data, AB 802, procurement model, up/mid/downstream, etc.)*	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
Section G	**Solicitation plan**	Not applicable to SoCalREN but a section on Solicitation Strategies has been provided
	Solicitation strategies/areas that could be SW	
	Proposal for transitioning the majority of portfolios to be outsourced by the end of 2020.	

SoCalREN

Energy Efficiency Business Plan

Residential Sector Chapter




January 23, 2017

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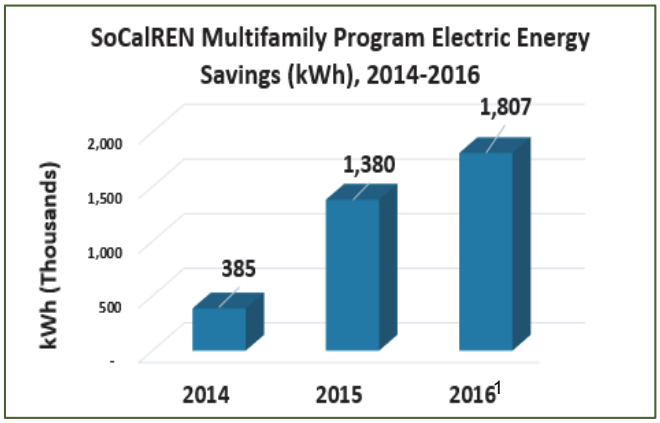
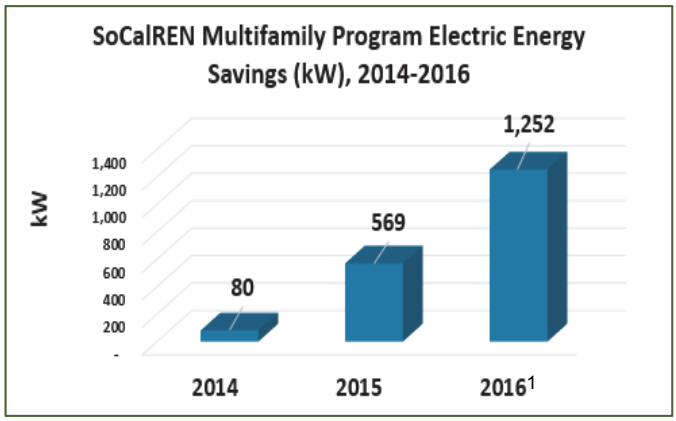
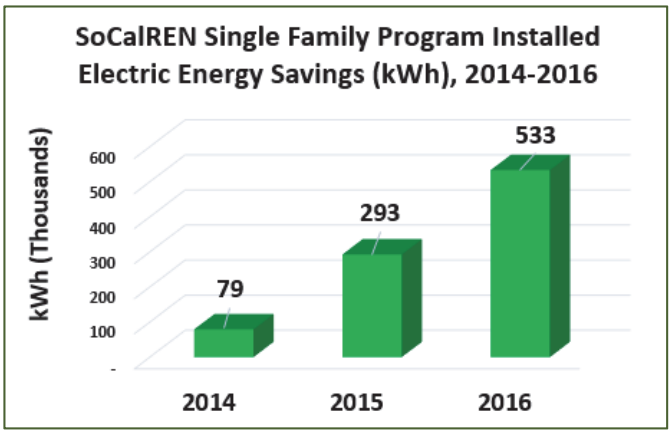
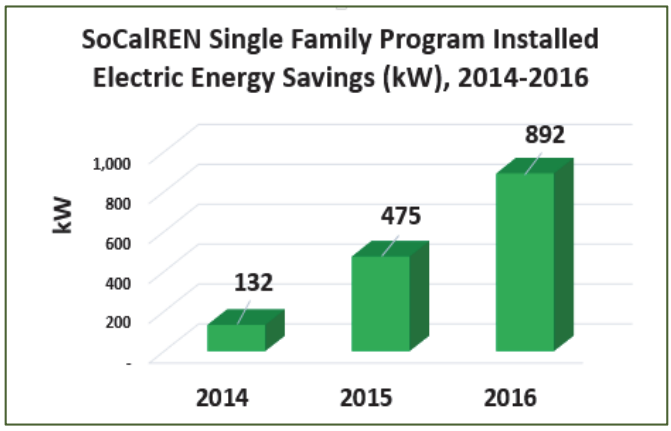
SoCalREN Residential Sector Snapshot

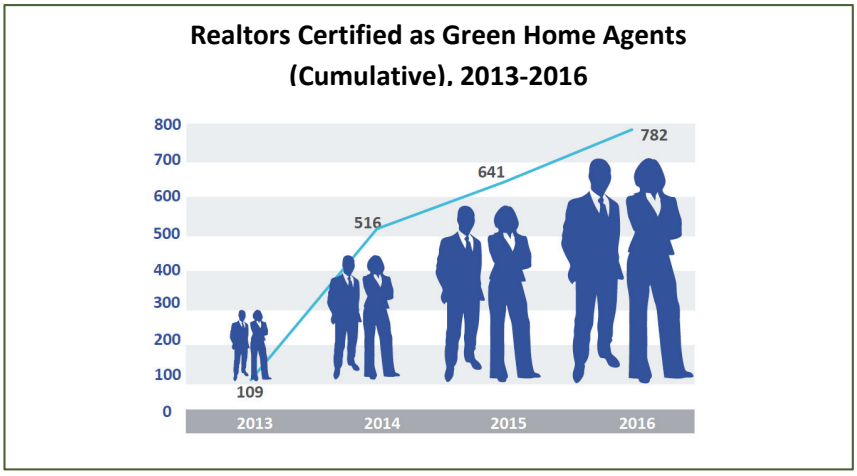








Energy Savings by Year (Therms)	2014	2015	2016[1]	Total
Multifamily	14,650	49,966	58,231	122,847
Single Family	10,989	26,721	48,994	86,704



[1] 2016 Multifamily Program values include installed and committed savings.

RESIDENTIAL SECTOR

SoCalREN Residential Sector Chapter

A. SoCalREN's Residential Sector Vision

The California Energy Efficiency Strategic Plan (Strategic Plan), last updated in 2011, is the key driver behind Southern California Regional Energy Network's (SoCalREN's) residential sector vision and mission. The Strategic Plan describes a future where both existing and new buildings are Zero Net Energy (ZNE), and identifies energy efficiency (EE), with a focus on Market Transformation, as its highest priority. SoCalREN's long-term vision directly flows from the Strategic Plan, with an emphasis on the Southern California region and inclusivity of all residents. The vision also aligns with California's EE standards (Title 24), Assembly Bill (AB) 32, and Senate Bill (SB) 350. SoCalREN's vision for the residential sector is for all Southern California housing stock to be as energy efficient as possible and have zero net impact on the grid. Accordingly, SoCalREN's residential sector vision was developed for the residential market in our service area.

SoCalREN's vision for the residential sector is for all Southern California residents to live in homes that are ZNE or ZNE-ready.

Over the next decade, Californians will face a shifting energy marketplace, including new service providers through Community Choice Aggregation (CCA), increased demand for plug-in electric vehicles, and increased adoption of rooftop solar. SoCalREN sees its role as to establish common efforts that local governments can adopt and nurture to drive EE adoption. Furthermore, SoCalREN believes that its focus on hard-to-reach communities and piloting innovative new programs will help all Californians navigate the steps toward reaching ZNE. Based on guidance from decision (D.)12-11-015,[2] SoCalREN has developed a mission for the residential market in its service area and will align its understanding of the residential market, sector problem statements and barriers, and intervention strategies with this mission.

The SoCalREN Residential mission is to leverage the collective action of local governments and their communities to maximize the energy efficiency of homes across Southern California, focusing on hard-to-reach communities and innovative pilot programs.

The goals and strategies to achieve SoCalREN's mission and vision are discussed below.

[2] D.12-11-015, Ordering Paragraph (Op.) 2

1. SoCalREN's Residential Sector Goals

Over the next 8 years, SoCalREN will seek to achieve the following primary goals:

- Save 24,773,114 kilowatt hours (kWh), 7,446 kW, and 892,809 therms focusing on deep retrofit opportunities within multifamily properties.
- Save 5,548,956 kWh, 9,129 kW, and 520,253 therms focusing on retrofit opportunities within single family properties.

SoCalREN will also include and track the following secondary goals:

- Demonstrate public agency actions toward promoting energy efficiency, targeting a goal of more than doubling the number of agencies[3] making energy efficiency commitments.
- Drive program participation through local outreach and engagement about energy efficiency and ZNE, more than tripling the number of engagements[4] with high potential program participants.
- Increase by 1,400% the integration of whole house energy efficiency with other Distributed Energy Resources (DER) options in residential buildings utilizing residential Property Assessed Clean Energy (PACE) over 8 years.[5]
- Increase residential program implementation efficiencies by reducing administrative and marketing costs. Reduce residential energy efficiency program costs of $/kW, $/kWh and $/therm by over 66% through the use of cost effective program models.

In addition to these goals, SoCalREN is also committed to addressing two of the strategic overarching Big Bold energy efficiency strategies. SoCalREN's efforts seek to:

- Provide low-income customers an opportunity to participate in energy efficiency programs by engaging public agencies to offer EE programming in coordination with existing income-qualified community development programs.
- Transform the Heating Ventilation and Air Conditioning (HVAC) industry to ensure optimal energy performance in California by training 60 contractors annually on energy efficiency, ZNE, and tools available to offer high performance, above-code HVAC upgrades to customers.

B. SoCalREN's Residential Sector Proposal Compared to Prior Cycles

Five major intervention strategies have been identified to meet the goals laid out in the SoCalREN vision. These intervention strategies are summarized below and described below in Section G, SoCalREN's Approach to Achieving Goals. Emphasis will be on programs that can improve cost effectiveness compared to previous cycles and that can scale. SoCalREN will leverage the scale

[3] Doubling the number of public agencies committed from baseline. Baseline is the number of public agencies engaged in 2016.
[4] Tripling the number of engagements with high potential program participants from baseline. Baseline is the number of engagements with high potential program participants in 2016.
[5] Baseline is the average number of projects per year that install solar in addition to at least one Home Upgrade energy efficiency measure in 2015 and 2016.

and reach of local government administered programs whenever possible. The comparison of previous cycles and the current proposal is broken down in Table 1.

1. **Integrate with Residential PACE to Drive Greater Energy Savings**. Residential PACE is transforming how consumers make decisions about home improvement projects; however, as an unregulated program, the projects contain uncaptured energy savings and potentially miss opportunities for greater efficiency and comprehensiveness. SoCalREN proposes to coordinate with local governments and residential PACE providers to co-promote regulated incentive programs and capture reportable energy savings from projects that do not participate in an incentive program.
    - ***Modification from Previous Cycle:*** This approach transitions away from implementation of Home Upgrade by SoCalREN and focuses on greater integration with a scalable home retrofit program. SoCalREN will consider designing a downstream or midstream pilot incentive program that will scale at the same rate as PACE financing. SoCalREN will also consider a program design that eliminates measure incentives altogether and leverages the PACE financing product as the incentive.
2. **Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency**. EE features are largely invisible to the average resident, home buyer, or real estate professional. Continued access to clear, consistent, and reliable data will help buyers identify efficiency attributes and plan for cost-effective home upgrades. Energy benchmarking and monitoring will help address the high cost barrier in multifamily retrofits and demonstrate how efficient equipment improves a building's performance, saves money, and offsets upfront costs. Energy benchmarking and monitoring will help put multifamily buildings on the path to ZNE by providing concrete progress and real-life case studies. This intervention strategy builds on the work accomplished in previous cycles and uses previously completed projects and trained real estate professionals to drive further EE.
3. **Engage Public Agencies to Drive Energy Efficiency in Their Communities**. Partnering with public agencies and their communities was a guiding principle from the California Public Utility Commission (CPUC) when the RENs were established. The focus on public agency engagement is a cornerstone of SoCalREN's path toward reaching its goals. Public agency partnerships are established through written commitments supporting EE in the public agency's community. SoCalREN was authorized to leverage the collective action of local governments, so this is a continuing intervention strategy.
    - ***Modification from Previous Cycle:*** In this program cycle, SoCalREN will build in additional structure to capture metrics and report on collaborative efforts with public agencies. SoCalREN will continue to leverage public agency programs with a focus on serving hard-to-reach communities, including multifamily properties. SoCalREN will add pilot ZNE demonstration projects in this program cycle.
4. **Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency**. Partnerships with local governments will continue to be a strong part of SoCalREN's core service area, and the key to achieving our goals. Similar to engaging with public agencies, having strong partnerships with stakeholders is one of SoCalREN's pillars.

- ***Modification from Previous Cycle:*** In this program cycle, SoCalREN plans to increase the number and deepen the existing partnerships with stakeholders. This plan includes hosting EE workshops during lunch hours for community-based organizations, local employers, financial organizations that offer financing solutions, and real estate professionals that advise property owners. In this program cycle, SoCalREN will also examine partnerships with water agencies to establish new pathways for properties to participate in both water- and energy-saving programs.

5. **Offer Technical Assistance to Increase Capacity for Program Participation**. EE continues to be a challenging concept to understand for most building owners. Offering technical assistance will help building owners overcome the hurdle of limited understanding as they pursue each step in improving their homes and facilities.

    - ***Modification from Previous Cycle:*** Prior program cycles focused on technical assistance for individual property owners and building professionals to enable their potential for discrete program participation. SoCalREN will now include community-level technical assistance on efforts such as ZNE.

Table 1. Interventions: Previous Cycle Compared to Proposal

Intervention	Cycle	Comparison
Integrate with Residential PACE to Drive Greater Energy Savings.	Prior Cycle	Implement statewide Home Upgrade incentive program.
	Proposal	Pilot a program that captures energy savings from unregulated programs like Residential PACE, and is able to scale at the same rate as PACE (approximately 1,000 projects per month).
Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency	Prior Cycle	Train real estate professionals to evaluate energy efficiency.
	Proposal	Continue real estate training and implement benchmarking and monitoring in multifamily buildings.
Engage Public Agencies to Drive Energy Efficiency in Their Communities	Prior Cycle	Develop public agency partnerships to mutually support energy efficiency goals in their communities.
	Proposal	Expand the reach of public agency partnerships in hard-to-reach communities, improve structures to capture the value of such partnerships, and pilot ZNE demonstration projects.
Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency	Prior Cycle	Develop local government partnerships.
	Proposal	Increase the number of local government partnerships and deepen existing partnerships, including expansion to water agencies.
Offer Technical Assistance to Increase Capacity for Program Participation	Prior Cycle	Provide technical assistance to individual property owners and building professionals.
	Proposal	Expand to include technical assistance on the community level for efforts such as ZNE.

1. Key Learnings from Recent Evaluation, Measurement, and Verification Reports of California's Residential Energy Efficiency Programs

There are common themes across evaluation, measurement, and verification (EM&V) reports of the RENs. A common and notable evaluation recommendation was having consistency and alignment with other program administrators (PAs). This recommendation included implementing consistent reporting specifications across PAs, in particular common measure codes, which would enable evaluators to compare PAs. Another common evaluation recommendation was for all PAs to use the same work papers.

Other recommendations focus on strategy. For example, single family programs should focus on natural gas savings because programs like Home Upgrade are the most effective at saving gas. Another reason to focus on natural gas is that the vast majority (95%) of emissions in the residential sector came from natural gas.[6] This percentage has stayed relatively constant since 1980.[7] Given Southern California's climate, SoCalREN should focus on inland regions, which show a greater capacity for savings than milder climates on the coast. This knowledge—and trends like air conditioning becoming the largest contributor to peak demand and recent development occurring inland—shapes SoCalREN's strategy to affect the region.

SoCalREN will consider expanding the information in its database. Evaluation studies specifically recommended adding new tracking fields such as detailed participant information, measure details, pre-existing conditions, property systems, detailed property information, and meter numbers. SoCalREN has been tracking evaluator's recommendations and has identified additional data to track that are not identified in the reports. This is data that is not currently integrated into the database which records more technical details like energy savings. Additional database fields could include the number of trainings, events, promotions, registrations, communications, satisfaction surveys, participant viability, activities supported by participants, referrals, attrition rates, and timelines.

There are many benefits of improved data collection. The improvements will make reporting and future evaluations more meaningful. Improved data collection will also help SoCalREN track progress towards goals, track real time progress, and measure the effect on participant behavior. Additionally, improved data collection can inform program course corrections and future program planning and design.

SoCalREN received recommendations from the authors of the 2013–2014 REN-CCA Impact Assessment Study. Table 2 contains a list of these recommendations and SoCalREN's response.

Table 2. 2013-2014 REN/CCA Impact Assessment Recommendations

EM&V Impact Assessment Recommendation	Response
Improve tracking data. • Ex-ante data should be consistent across all PAs.	All recommendations will be adopted. SoCalREN will align with statewide data and tracking recommendations as are provided by the CPUC or Public Coordination Groups.

[6] US Energy Information Administration.
[7] US Energy Information Administration.

• Check thoroughly before submission. • Financing programs should be differentiated. • Programs should be coded differently. • Well-defined start and stop dates. • Identify and verify electric and gas account numbers. • Identify fuel type if possible.	SoCalREN will work with CPUC staff and data consultants to add flags to differentiate financing programs, as recommended.
Ensure key fields are collected and easily accessible.	SoCalREN has adjusted data collection and tracking to ensure key fields are collected.
Collaborate with investor-owned utilities and agree on methods to estimate measure savings.	SoCalREN will leverage the convening capacity of the Multifamily Home Energy Retrofit Coordinating Committee to develop a task group to identify and define consistent savings calculations.
Collect meter numbers to help match program and billing data.	SoCalREN will capture meter numbers to aggregate and analyze estimated savings and billing data. SoCalREN will leverage AB 802 to do so.
Collect building data to calibrate savings assumptions with actual customer bills.	SoCalREN will use AB 802 to do this.

SoCalREN will also use evaluations of other programs to inform strategy and program design. Financing is a significant factor for achieving major EE projects in the residential market, along with a program design that meets the needs of contractors.[8] SoCalREN will leverage local government partnerships to develop pilots that integrate seamlessly with existing financing programs which fill gaps not currently met through ratepayer programs.

C. Sector-Level Budget

Table 3 contains a summary of SoCalREN's residential sector budget. These values are based on estimates of the proposed strategies outlined in Section G, ***SoCalREN's Approach to Achieving Goals***. SoCalREN has also factored in its Residential Sector Budget a 2% cost increase per year. It should be noted SoCalREN has reduced funding for Residential programs throughout 2018-2025 as we see the opportunity to solicit new program ideas supporting our Public Sector approach in the residential communities. SoCalREN's budget request is slightly lower than previous years as it no longer plans to implement the EUC program Flex Path and will instead solicit a more cost effective approach to serving it's residential customers.

As SoCalREN implements the strategies described in this business plan chapter, the budget will be periodically reevaluated to respond to market changes, needs of the portfolio, and regulatory directives. Further details on these changes will be reflected annually in SoCalREN's September Compliance filing as dictated by D.15-10-028.[9]

[8] See http://www.energydataweb.com/cpucFiles/pdaDocs/1625/HERO%20Program%20Profile_DRAFT%20Final%20Report.pdf

[9] D.15-10-028, Op. 4

Table 3. SoCalREN Residential Sector Level Budget

Budget	2017[10]	2018	2019	2020	2021	2022	2023	2024	2025
Administration	1,149,139	654,000	667,080	680,422	694,030	707,911	722,069	736,510	751,240
Marketing & Outreach	1,967,668	261,600	266,832	272,169	277,612	283,164	288,828	294,604	300,496
DI – Non Incentive	3,342,706	3,624,400	3,736,888	3,851,626	3,968,658	4,088,031	4,209,792	4,333,988	4,460,668
DI - Incentive	4,118,039	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
SECTOR TOTAL	**$10,577,552**	**$6,540,000**	**$6,670,800**	**$ 6,804,216**	**$6,940,300**	**$7,079,106**	**$7,220,688**	**$7,365,102**	**$7,512,404**

1. Cost Effectiveness

Although it is not a requirement for RENs to achieve a specific cost-effectiveness metric, SoCalREN believes it is important to be as cost-efficient as possible in the use of rate-payer funds. Table 4 shows the cost-effectiveness data for SoCalREN's resource activity anticipated in the residential sector.

Table 4. Cost Effectiveness Range for Residential Sector, 2018-2025

	TRC	PAC	Emissions[11] (lbs of CO2)	kW	kWh	Therms
Residential Sector CE[12]	1.01	1.23	5,103	7,446	24,773,113	892,809

D. Annual Net Savings from Potential Study

SoCalREN will aim to contribute to the following net savings residential goals as reported in the 2015 Potential Study.[13]

[10] The budgets for year 2017 reflect the September 1 *Compliance Filing Regarding SoCalREN 2017 Energy Efficiency Program Portfolio Changes and Funding Request* which is expected be approved Q1 2017.
[11] Emissions value consists of 3,693 of CO2 abatement for electric and 1,410 of CO2 abatement for gas
[12] Cost effectiveness calculations reflect the current resource portion of SoCalREN, specifically its multifamily offerings. These calculations were derived from the latest CPUC CET tool and reflects an estimated portfolio CE for the Business Plan time period.
[13] SoCalREN derived the net goals from the 2015 Navigant Potential and Goals study based on Net Savings potential of SCE/SCG

Table 5. Annual Residential Sector Market Potential, SoCalREN Territory[14]

Year	GWh	MW	Million Therms
2018	948.8	205.8	29.4
2019	955.3	209.7	30.6
2020	945.9	211.4	30.6
2021	878.9	200.6	28.6
2022	862.7	201.1	28.5
2023	835.4	200.3	28.2
2024	840.2	202.9	28.1
2025[15]			
Total	6,267.2	1,431.8	204

E. Sector Overview

1. Target Audience

SoCalREN includes some of the most diverse communities in the nation and encompasses the second largest metropolitan region in the country. However, SoCalREN itself is not geographically designated in basic data sources like the United States (U.S.) Census, and SoCalREN does not have access to utility customer data. Therefore, in order to understand the region's target audience, this section looks at geographical stand-ins like Los Angeles County, U.S. Census Metropolitan Statistical Areas (MSAs), and publicly available data on investor-owned utility (IOU) territory.

The SoCalREN region is large and diverse. In 2012, there were an estimated 12.9 million people in the Los Angeles-Long Beach-Santa Ana MSA and 4.2 million households. Over half (50.7%) were female. Seventy-five percent were 18 and over, and the median age was 35.1 years. The largest single age group was 25–29 year olds (7.6% of the population). Fifty-six percent were white (including Latino), 22.1% categorized their race as "other", 16.3% were Asian, and 7.9% were black or African American.[16]

There is considerable energy efficiency market potential in SoCalREN territory as the second largest metropolitan region in the United States. The metropolitan region has over 4.5 million housing units. Los Angeles County alone has 3.4 million. Similar to the demographic breakdown, the housing stock is varied; it is split almost exactly in half between single-family detached (49.7%)

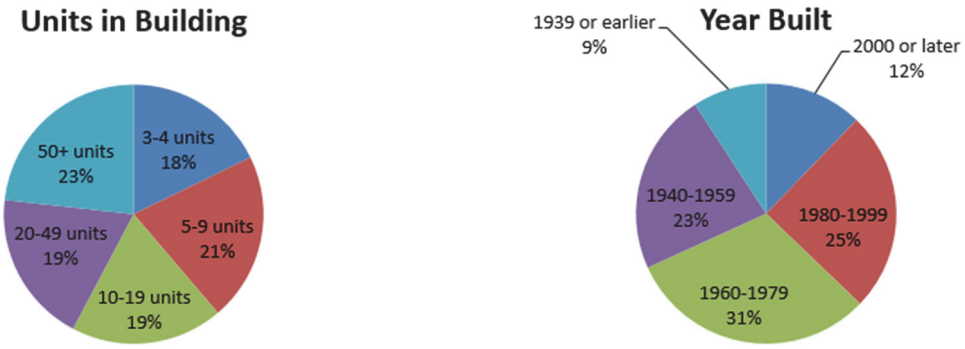
[14] This table reflects the values in the 2015 Navigant Energy Efficiency Potential and Goals Study for SCE total electric savings market potential and SoCalGas gas savings market potential by year
[15] The 2015 Navigant Energy Efficiency Potential and Goals Study covered only years 2016 through 2024.
[16] U.S. Census.

and multifamily (50.4%) units.[17] The housing stock represents historical settlement patterns, with the vast majority of units being built after World War II. Seventy-four percent of the housing units were built after 1950. Housing in the region is also expensive; the median home price in Los Angeles County is $425,100. According to Zillow, the national median home price is $189,400.

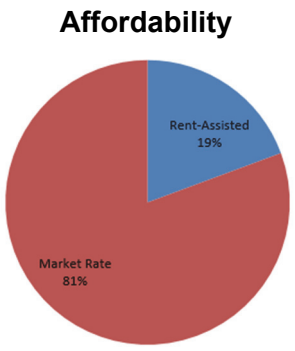
SoCalREN's intervention strategies will consider regional housing characteristics, such as the 46.5% property ownership rate of Los Angeles County, which is lower than the national average of 62.9%.[18] Program and outreach design will reflect that, of owner-occupied units, 82.0% live in a single-unit detached residence. Homeowners earn more than renters, are more likely to live in housing built between 1940 and 1959, and are more likely to use natural gas to heat their home. Renters are more likely to use electricity. Marketing and education materials for homeowners will stress the impact EE measures have on the home's value. SoCalREN will work with real estate professionals who want to support their clients and differentiate themselves by teaching them how to speak to their clients about green/energy and upgrade opportunities.

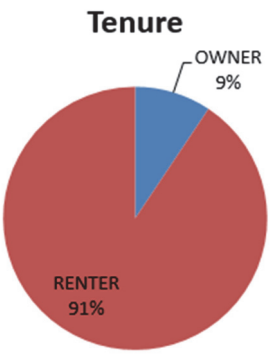
Southern California's multifamily sector is emblematic of the diversity of the region's overall housing stock. The number of units in buildings is relatively evenly distributed and ranges from 3–50 units. Sixty-three percent of multifamily buildings were built before 1980 and the implementation of the state's energy code.[19] Results from SoCalREN's multifamily program mirror the housing stock, with the exception of early program participation, which was weighted towards affordable housing.

Figure 1: Southern California Multifamily Sector



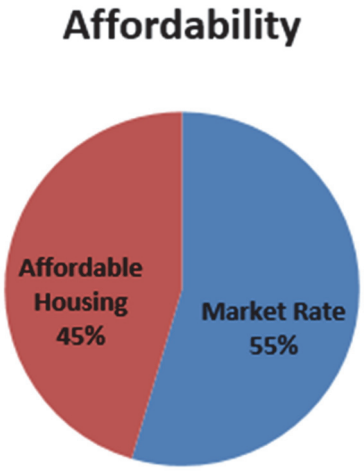
[17] U.S. Census
[18] Ibid.
[19] U.S. Census, 2015 American Community Survey 5-Year Estimates





Source: U.S. Census, 2015 American Community Survey 5-Year Estimates

Figure 2: Affordability Completed Projects



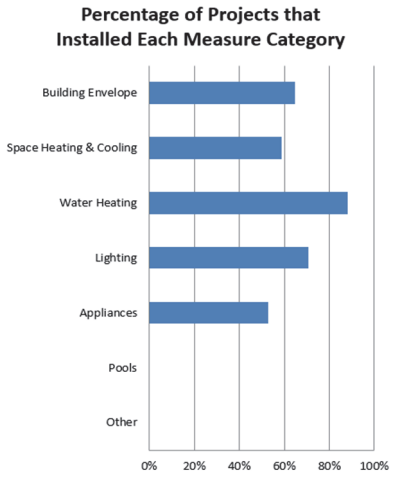
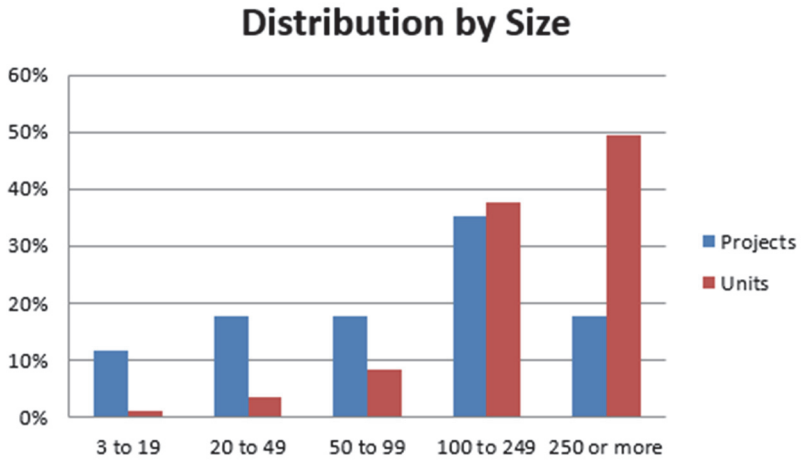


Figure 3: Multifamily Distribution by Size



Source: ESA Program Multifamily Segment Study, Volume 1, p. vi

Multifamily housing in California features four primary types of property owners (program customers):

- Market-rate, individual owner: Concerned with maintaining or improving the value of their property.
- Market-rate, investor-owned: Values making money and providing Return on investment (ROI) to investors—often within a period of a few years.
- Affordable, for-profit owner: May be mission-driven, seeking to support tenants and improve quality of life.
- Affordable, non-profit owner: May be mission-driven, seeking to support tenants and improve quality of life.

The size and diversity mean SoCalREN will have to work hard to engage hard-to-reach residential customers. We refer to the CPUC's EE Policy Manual for definitions of how to define hard-to-reach residential customers: *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*.[20] These barriers are defined as:

- Language – Primary language spoken is other than English, and/or
- Income – Those customers who fall into the moderate income level (income levels less than 400% of the federal poverty guidelines and/or
- Housing Type – Multi-family and Mobile Home Tenants, and/or
- Geographic – Businesses in areas other than the San Francisco Bay Area, San Diego area, Greater Los Angeles Area (Los Angeles, Orange, San Bernardino, Riverside and Ventura counties) or Sacramento, and/or
- Home Ownership – Renters

The scale of the opportunity to save energy suggests IOUs may be in the best position to realize savings. The market capacity represents a great opportunity for SoCalREN to leverage programs and be the drivers of more customers into the EE landscape. Energy intensity, which is a measure of the EE of a nation's economy, improved 2.3% globally in 2014.[21] The greatest effect was on the residential sector, where appliances, lighting, and space heating showed the greatest reductions. Residential buildings account for 74% of global building energy use. In the U.S., of the $90 billion spent in 2014 in the residential and commercial building construction market, 2.4% was invested in building EE, up from 1.9% in 2009.

Much of the single-family building stock in Southern California is old and inefficient, seeing little implementation of EE programs. Three-quarters (75.6%) of structures in Los Angeles County were built before 1980, pre-dating California's EE standards. Approximately 200,000 single family homes statewide have earned a green or energy efficient label, including 163,000 Energy Star, 15,000 GreenPoint Rated, and an estimated 9,000 Leadership in Energy and Environmental Design (LEED) homes. SoCalREN will use this initial group to market high performance homes.

[20] CPUC Energy Efficiency Policy Manual
[21] Pg 16, Energy Efficiency Market Report 2015

The multifamily market is comparable to the single-family building stock. More than 70% of California's multifamily buildings were constructed before 1978, when energy standards were enacted. A 2012 study by the University of Arizona and Fannie Mae found that nationwide, the multifamily sector is engaged in a disproportionately small share of energy efficiency measures. In 2009, the study reported that there were 34% fewer energy efficient features in multifamily rentals compared to other housing types. [22]

The potential for EE programs in California is substantial. The 2012 California Lighting and Appliance Saturation Study sent out nearly 2,000 surveys to IOU customers in California, 793 of which were in Southern California Edison (SCE) territory.[23] The following information is a sample of the study findings.

- Heating Systems
    - 98.2% of homes statewide have one or more heating system.
    - 40.8% are central split forced air.
    - 17.9% are forced air furnaces with no air conditioner.
    - 13.9% are wall furnaces.
    - In SCE territory, 99.2% of systems are less than 90 annual fuel utilization efficiency (AFUE).
- Cooling Systems
    - 66% of homes statewide have some type of cooling system.
    - 50% have central air conditioning; 15% have space conditioning.
    - In SCE territory, 95.1% of systems are less than 14 seasonal energy efficiency ratio (SEER).
- Building Envelopes
    - The average attic R-value is 20.8 statewide.
    - 72% of homes statewide have some type of wall insulation.
    - In SCE territory, 91% of homes have less than R-38 attic insulation.
- Water Heaters
    - 95.6% of water heaters statewide had an EE of 0.639 or below.

A recent development has come from the financing sector through PACE programs. Leaders in this industry include HERO and California FIRST, the former of which reached $1 billion in PACE loans in 2015. PACE represents two opportunities; to integrate PACE programs with other EE programs and to expand the pool of homes that can be marketed as high-performing.

[22] Pg. 1, Pivo, Gary. Energy Efficiency and its Relationship to Household Income in Multifamily Rental Housing. University of Arizona, Tucson. September 2012.
[23] DNV-GL. "WO21: Residential On-site Study: California Lighting and Appliance Saturation Study (CLASS 2012)". May 21, 2014.

2. Segment Overview and Energy Usage

In 2014, the Los Angeles County residential sector alone consumed more electricity (20.76 billion kWh) than the combined sectors of any other county in California.[24] In 2014, the residential sector consumed 29.7% of all electricity in Los Angeles County. In 1990 it was 26.2%.[25] The top five counties for residential electricity consumption were all in Southern California. In descending order they were Los Angeles, Orange, San Diego, Riverside and San Bernardino Counties, and collectively consumed over 46 billion kWh, which is roughly half (51.0%) of California's residential energy consumption.

Los Angeles County was also the largest consumer of natural gas in the California residential sector, consuming over one billion therms in 2014, more than double San Diego and Orange County combined, which ranked second and third respectively (ECDMS)[26]. Five of the top six natural gas consumers by county are in Southern California. In descending order they are Los Angeles, San Diego, Orange, San Bernardino, and Riverside Counties. Unlike electricity, consumption of natural gas in the residential sector in Los Angeles County has declined over time. In 2014 it was about 37.7% of the total in Los Angeles County. In 1990 it was 55.9%.[27] Nevertheless, Los Angeles and neighboring counties in SoCalREN territory represent a substantial opportunity for energy consumption reduction.

Estimated statewide average electricity usage is 7,605 kWh per single-family household. For SCE households the average is 6,444 kWh.[28] Statewide average gas usage is 382 therms per single-family household. For SoCalGas households, the average is 425 therms per household. For multifamily units, the average annual electricity consumption per unit is 4,350 kWh. The average annual natural gas consumption per multifamily unit is 187 therms. The average annual demand per multifamily unit is 1.2 kW[29].

In SCE /SoCalGas territory, the 2,139,455 multifamily units[30] consumed an annual average of 4,350 kWh per unit (over 9.3 billion kWh in total); 187 therms per unit (roughly 400 million therms total); and 1.2 kW of demand per unit (2.6 million kW total). [31]

Growing energy consumption represents a major challenge and opportunity in achieving the state goal of reducing purchased energy by 30% in 75% of existing homes.[32] Bold, innovative programs are needed to reach this goal. SoCalREN, working with public agencies, will leverage the real estate sector to advance these goals while putting communities on the road to a ZNE future.

Reduced energy costs will always be a mainstay benefit of EE, but the urgency of doing so is less than it once was because there has been no dramatic spike in the cost of energy in the last decade. The recent economic recession is largely responsible. The price of gas per therm actually decreased 49% from 2008 to 2009; however, the price of electricity rose modestly in 2009, 2010,

[24] California Energy Consumption Data Management System (http://ecdms.energy.ca.gov/) (ECDMS)
[25] Ibid.
[26] Ibid.
[27] Ibid.
[28] CA Residential Appliance Saturation Survey, 2009
[29] SoCalREN Workpaper.
[30] US Census
[31] SoCalREN Workpaper
[32] Pp. 20, EESP.

and 2011. Since 2006, the price of natural gas per therm has increased by only 1.31%. Electricity prices have increased 7.1%, an average of less than 1% per year.[33]

Energy efficiency programs are an opportunity to reduce greenhouse gas (GHG) emissions. In 2013, California's residential sector emitted 27.7 million metric tons of carbon dioxide (CO2), which was second only to New York, but ranked 39th in per capita emissions. Nearly 95% of CO2 emissions in the residential sector came from natural gas, a proportion that has stayed relatively constant since 1980 (EIA).[34] In SCE/Southern California Gas territory, the GHG emissions associated with multifamily energy consumption is over 5.5 million tons of CO2.[35]

In 2010, Los Angeles County emitted 99.1 million metric tons of CO2, approximately 21.7% of California's total. Per capita emissions were 10.1 metric tons.[36] Building energy usage is the largest single portion (39.2%) of CO2 emissions, followed by on-road transportation (33.5%). Stationary sources (heavy industrial sources) are also a significant contributor (19.7%).[37]

3. Geography

SoCalREN serves the target audience within the geographic region covered by SCE/SoCalGas (see Figure 4, below).

Figure 4: SoCalREN Service Territory

[33] Bureau of Labor Statistics (BLS).
[34] U.S. Energy Information Administration.
[35] Calculated from multifamily projects participating within SoCalREN territory.
[36] "2015 Environmental Report Card for Los Angeles County". UCLA Institute of the Environment and Sustainability.
[37] Ibid.

4. Energy Efficiency Potential

Navigant Energy undertook the 2015 California Potential and Goals Study to inform IOU goals, forecast additional achievable energy efficiency (AAEE) savings, understand how IOU programs can meet AB 32 goals, and provide analysis to support development of a strategic plan. It relied on data from the Database for Energy Efficient Resources (DEER) and evaluation, measurement, and verification studies. Below are findings relevant to SoCalREN programs:

- Cumulative Market Potential projections have decreased since 2013.
- Electric incremental market potential does not exceed 1.2%.
- Natural gas incremental market potential is even less, with no one sector (Residential, Commercial, Industrial, Agricultural, Mining) exceeding 0.8%.
- Residential:
    - For both electricity and natural gas, residential has the greatest incremental market potential of all sectors.
    - Lighting has the greatest potential, followed by appliance plug load, and whole building savings.
    - Whole building savings for natural gas save the most energy initially, but hot water storage is projected to overtake them beginning in 2017.

F. Residential Sector Trends and Challenges

1. Trends

Several trends influence SoCalREN programs and their designs. In the program implementation area, one of the strongest trends observed in Southern California is the unprecedented level of participation in residential PACE programs. Thousands of projects are completed annually that contain uncaptured energy savings and likely offer opportunities for greater efficiency and comprehensiveness. Although historically SoCalREN has implemented traditional incentive programs like Home Upgrade, the market is driving consumers to independent programs like PACE that are outside the CPUC's purview. SoCalREN believes that program implementers can and should shape programs to build on this market acceptance and rapid scale.

At the local government level, SoCalREN continues to observe local governments taking increasing interest in, and ownership of, their environmental footprint and encouraging their constituents to do the same. Driven by a combination of changes in building codes and statewide regulation, local governments appear to want a more active role in energy management. SoCalREN increasingly finds local governments with either part- or full-time staff who are responsible for driving Climate Action Plans, but which lack significant internal funding/resources to accomplish their goals. SoCalREN sees this as a significant opportunity for engaging local governments and disseminating information about single-family and multifamily programs.

The AB 802 energy disclosure will take effect in January 2017. Diagnostic capability is improving as audits become more sophisticated. There is momentum in the national real estate industry to increase standardization of Multiple Listing Services (MLS) systems that are in compliance with the Real Estate Standards Organization's Data Dictionary. This is a significant opportunity for

SoCalREN to advocate for transparent inclusion of EE information into the single most-trusted resource for the residential real estate market, representing the potential to drive a clear connection between energy improvements and property values.

Finally, rapid growth in California has made air conditioning installations among the state's largest contributors to peak demand, and represents a tremendous opportunity for reducing energy consumption. In 1976, 25% of new homes in California had central air conditioning. Today the proportion is 95%. In the summer, air conditioning accounts for 30% of peak demand in California.[38] Additionally, development has also moved into hotter inland regions. As a program implementer serving significant portions of inland California, SoCalREN recognizes its unique role in shaping how homeowners manage energy use in their homes.

2. Challenges

Despite growth in customer demand for EE, residential market transformation is not without its challenges. Some of the largest barriers to program success are described below. SoCalREN's intervention strategies to overcome the challenges are discussed later in the chapter.

- **Housing Affordability**. Over half of renters in Los Angeles County pay 35% or more of their salary in rent. Only 27% of households in Los Angeles County can afford to buy a median-priced house. In Los Angeles County, a prospective home buyer has to earn 172% of the median income to buy a median priced home. The growing share of housing costs eats into a homeowner's ability to pay for upgrades some see as costly and unnecessary. Green financing programs, like Homestyle and PACE, address this challenge, and fit into SoCalREN's emphasis on non-resource solutions.
- **Education**. Lack of knowledge of the benefits of EE is still pervasive. Energy upgrade features are largely unseen by single-family and multifamily residents, and the benefits become obvious only over time. Contractors and other building industry professionals lack training in the benefits of whole building retrofits. After receiving training, many have difficulty integrating EE into their existing business models and have a need for continued training and support. Real estate professionals lack the training to communicate basic, credible information about the value and benefits of green home upgrades. On the sales side, most real estate professionals do not have the training to help sellers capitalize on their home's EE attributes. Inspectors, appraisers, and lenders are often also unaware of the benefits. Multifamily housing professionals do not understand the value of green features, how to evaluate them, or how to incorporate environmental benefits into the rehab process. Planning and documentation require technical skills. SoCalREN programs will be an effective channel through which to disseminate knowledge of EE principles.
- **Misplaced or split incentives**. EE benefits do not always accrue to the person trying to conserve. Rental property owners have inadequate incentive to make green improvements because the benefits go to the tenants. Tenants do not want to make permanent improvements because they do not have a stake in the property and often do not stay long enough to recoup their investment and realize benefits. This is a barrier that multifamily programs address by including incentives for the building owner and benefits to the tenant.

[38] Pg 53, "California Energy Efficiency Strategic Plan". July 2011 Update.

- **Liquidity Constraints and Upfront Costs**. Homeowners are reluctant to take on expensive, comprehensive EE projects, which reduces the need for financing. The average project cost is $15,860 for SoCalREN (Energy Upgrade California Home Upgrade dashboard 2016). The cost of evaluating an existing home to obtain a HERS rating in California currently ranges from $800 to $1,500, which is cost-prohibitive in the context of most home sale transactions or home renovation projects. Simpler approaches to home ratings that can be done for $150 or less will be much more palatable to consumers and the real estate industry. There is limited access to realistic capital limits, particularly in the affordable housing multifamily sector.
- **Market Structure**. Large and established firms may inhibit competitors from engaging in multifamily energy efficiency projects and adoption of cost effective products. Multifamily programs in particular have been a great way to break through entrenched market structure.
- **Risk**. Property owners base their decisions on economic benefit, net cash flow, and/or profits. There is a currently a great degree of perceived and/or real risk that investments in green and energy efficiency upgrades will not translate to the predicted economic benefit. Mortgage lenders in the multifamily segment will often not give consent because holders are unwilling to subordinate their lien positions. Single-family applicants often do not meet the credit score or other underwriting credit requirements to receive attractive rates lowered by rate-payer-funded loan loss reserves. Green real estate programs mitigate the perception of riskby showing customers how their homes increase in value with efficiency upgrades.
- **Lack of Information**. Lack of well-documented business case information and standardized methodologies leave single-family and multifamily property owners ill-equipped to evaluate the technical and economic potential for retrofitting their properties. Multifamily building owners lack easy access to data about energy use and retrofit performance. Although the functional value of green single family home improvements is reasonably well documented in aggregate, the market value of those improvements remains understudied. It remains challenging to predict the economic value of green improvements for a particular property.
- **Credibility**. Decision makers do not know which sources of information to trust and which to discount as potentially biased.
- **Time and Resources**. EE improvements often compete with other priorities, such as capital-intensive projects and maintenance in both single-family and multifamily sectors. For multifamily buildings, the required time and resources of building owners, managers, and occupants can be a challenging barrier. Development times for multifamily projects are very long. The short length of program cycles has impaired the ability of programs to serve the multifamily sector. Commercial PACE financing requires additional steps and various parties (property owner, residential building professional, American Society of Heating, Refrigerating and Air-Conditioning Engineers auditor, mortgage bank, investor, and a County's Treasurer and Tax Collector) to complete a transaction.
- **Scale**. CPUC, stakeholder, and implementer focus on the whole house retrofit approach was expected to result in statewide market transformation of the way that contractors promote and sell replacement equipment and construction products, and lead to consumer demand for high-performing homes. As with Home Performance with Energy Star® (HPwES) on a national level, home performance programs in California have failed to achieve any appreciable scale. SoCalREN recognized that the programs were deeply flawed—hindered by onerous requirements and restrictions—and has worked closely with

Energy Division staff, stakeholders, and IOU staff to facilitate the evolution of home performance programs across California.

SoCalREN's vision to make Southern California's residential sector energy efficient focuses on the unique capabilities of local governments to serve constituents. Barriers to residential energy efficiency may vary only slightly statewide, but the regional differences are great enough that SoCalREN's local solutions create outcomes with impacts that reach underserved communities, create tailored piloting programs that can scale, and provide programs that larger IOUs cannot or will not offer. This local focus also means SoCalREN is well-positioned to drive residents toward a ZNE future.

Table 6. Sector Barriers and SoCalREN Intervention Strategies

Barrier	Problems & Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
Lack of knowledge of energy efficiency benefits among residential workforce	Residents are unfamiliar with EE improvements. Reliance on single certification (e.g. Building Performance Institute). Lack of training offerings and interest • Absence of real estate industry institutional awareness of EE benefits	Customers reluctant to incorporate EE efficiency in home repairs EE standards do not reflect regional climates With unfamiliarity, contractors are hesitant to adopt whole house approach Not enough contractors trained to perform whole house retrofits Contractors in field have limited technical expertise Institutional training does not target real estate professionals	Promote best practice codes and standards across markets Programs that leverage metered data for program evaluation, measurement, and verification Contractors explain how EE upgrades complement existing non-EE needs Simplified rating certification Contractor education. Connect contractors with real estate professionals	• Increase access to improvement data that demonstrates benefits of EE • Offer technical assistance to increase capacity for program participation
Not enough rate payers pursue energy efficient goals	Program complexity Programs change Unfavorable economic environment Suspicion programs are scams	Customers resist EE because of economic anxiety Low consumer demand because programs are confusing Customers perceive	Increase adoption of EE improvements by multifamily segment Increase adoption of EE solutions by SF residential segment	• Integrate with residential PACE to drive greater energy savings • Engage public agencies to drive energy efficiency in

Barrier	Problems & Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
	Low priority relative to non-EE home improvements	programs to be a hassle Missed opportunities for whole house improvements Contractors resist if program changes significantly	Create consolidated and simplified program offer Increase customer confidence through trusted end-to-end advisory and technical assistance services Outreach focusing on economic benefits of EE, stressing simplicity Education on whole house benefits Program consistency	their communities
Pursuing energy efficiency is costly	EE equipment is more expensive than regular equipment High first cost Contractor training is expensive Changing business model is costly Costly because programs require administration support	Payback (ROI) uncertainty Low desire for contractors to participate Marketing program is difficult Difficult to incorporate into existing business models Contractors cannot finish project within allotted time Contractors hire support staff	Prove and capture contributory value of EE improvements to catalyze market transformation Educate contractors about EE benefits Flexibility and incremental approach to encourage adoption into business models Simplify administration	• Integrate with residential PACE to drive greater energy savings • Offer technical assistance to increase capacity for program participation
Energy efficiency efforts are not coordinated.	Residential PACE admins do not coordinate with SoCalREN outreach and advertising Programs take place outside of regulated environment Fragmented program services	Unpermitted improvements Inaccurate or unreported savings Hesitancy to act due to customer confusion Fragmented efforts to upgrade home	Develop mechanisms to integrate multiple programs leading to larger projects, verified energy savings, and deeper EE savings per project Streamline and simplify one-stop program approach to identify,	• Integrate with residential PACE to drive greater energy savings • Engage public agencies to drive energy efficiency in their communities • Increase access to improvement

Barrier	Problems & Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
	Competing, confusing market offerings not consistent with EE principles like loading order Competing goals and demands Lack of project prioritization Customer conflates dishonest and legitimate programs	Misalignment with overreaching efficiency goals Missed upgrade opportunities Residents may follow incorrect loading order, like installing solar before reducing consumption Customers reluctant to participate	implement, and manage programs Develop programs dedicated to providing consistent education across uncoordinated efforts	data that demonstrates benefits of EE
Insufficient incentive for the owners who rent their property (split incentive)	Landlords lack incentive to make EE upgrades that benefit renters Without equity, tenants unwilling to make improvements Lack of communication between tenant and owner	Rental properties are not upgraded Limits type of buildings upgraded Excludes specific types of contractors Disconnect between real estate professionals in the rental market and ownership market Tenant and owner hesitant to work together	Increase the adoption of EE solutions into existing unit-turnover models Develop separate education programs focusing on tenants and owners Outreach focused on communication between tenant and owner Diversify contractor base	• Offer technical assistance to increase capacity for program participation • Increase access to improvement data that demonstrates benefits of EE
Low adoption in hard to reach (HTR) communities	Less existing equipment in HTR communities Focus on incentivizing replacement equipment, therefore programs are biased Access to trained professionals Language barriers Exacerbated financial demands Geographical access to program centers	Customers do not install new equipment Few contractors to communicate with participants Difficult to find a qualified contractor Face to face access with centrally located program representatives	Increase adoption of EE in HTR communities Focus on strategic engagement with HTR stakeholders and decision makers Customized offerings to meet unique challenges such as lack of existing equipment Connect customers with community contractors	• Engage public agencies to drive energy efficiency in their communities • Increase access to improvement data that demonstrates benefits of EE

G. SoCalREN's Approach to Achieving Goals

1. Strategic Interventions: Overview

SoCalREN's vision to educate and support building owners in their communities' path to ZNE includes a number of intervention strategies that address multiple barriers. SoCalREN intends to use the same intervention strategy to address a variety of market barriers.

2. Intervention 1 – Integrate with Residential PACE to Drive Greater Energy Savings

Residential PACE is transforming how consumers make decisions about home improvement projects. However, as an independent program outside the CPUC's purview, the energy savings from these EE projects are not captured. SoCalREN proposes to coordinate with local governments and residential PACE providers to co-promote regulated incentive programs, capture reportable energy savings from projects that do not participate in an incentive program, and drive upgrades to above-code efficiency levels.

Unregulated energy programs, including residential PACE as offered by HERO and CaliforniaFIRST, have had a substantial effect in the SoCalREN territory. As shown in Figure 5, the rate of uptake for residential PACE in Los Angeles County has outpaced regulated programs quickly by a large magnitude. In effect, residential PACE is taking the first step in transforming the market for EE upgrades and adoption of renewable energy resources, but there is some uncertainty regarding how many measures installed are above code, and actual energy efficiency gains achieved. Residential PACE finances comprehensive home audits, heating and air conditioning, windows, skylights, doors, cool roofs, HVAC ducts and ventilation fans, insulation for attics/walls/floors, air sealing, lighting and control systems, high-efficiency water heaters, pool pumps and much more. Many of the measures that PACE finances are eligible for ratepayer funded incentives and many others could be added, but most residential PACE contractors do not want to participate in rebate programs and do not rely on incentives to sell PACE projects. For these projects, the financing product itself is the incentive. With a properly designed program that leverages existing PACE and Home Upgrade participating contractors and limits officious regulatory requirements, SoCalREN believes that contractors can be influenced to sell up to higher levels of efficiency and more comprehensive projects. A calculation based on the approved Home Upgrade calculator shows the attributable energy savings potential to be 2,460,555.80 kWh, 4,674.96 kW, and 304,479.30 therms for just those measures that are in both Home Upgrade and HERO programs.[39]

In collaboration with Interventions 3 and 4 described below, SoCalREN sees Residential PACE integration as a significant opportunity to achieve energy efficiency. Since May 2015, Los Angeles County has seen over 16,000 measures installed under the residential PACE program that align with typical ratepayer funded incentives. SoCalREN can provide the data necessary to analyze current program trends and develop tactics that will be most effective in increasing efficiency and capturing unreported savings. By engaging the appropriate public agencies and strategically

[39] Please see Appendix C Additional Supportive Data Material

strengthening stakeholder relationships, SoCalREN will implement a pilot that appeals to residential PACE participants, homeowners, and contractors, and is delivered through existing, trusted channels.

To implement a successful program as measured by verified energy savings, SoCalREN must provide a program that is intuitive, simple to use, and does not interfere with the flow of residential PACE projects. A transformative product such as PACE requires a program design far outside the status quo. In line with this directive, SoCalREN will maintain a prescriptive design, utilizing a combination of DEER values and the approved work papers for Home Upgrade. In keeping with the scale and scalability of residential PACE, the program will not add project requirements such as a minimum number of measures, scaled or tiered incentives, or loading order-based upgrades. SoCalREN's goal is for the program to fit seamlessly in the residential PACE process and capture the existing energy savings and encourage projects to shift existing measures to above-code installations. SoCalREN envisions a cost effective PACE companion program that is a hybrid design of Home Upgrade and a typical Energy Efficient Measure (EEMs) program. The program would establish communications with each participant that would inform and encourage them to take further steps toward a whole house upgrade. SoCalREN is considering a downstream and midstream incentive program model, and also a program model with no incentives except the financing itself. The purpose of any "PACE Plus" program would be to drive EE above code, and increase the comprehensiveness of an EE project.

As uptake trends indicate, the growth of residential PACE will continue in SoCalREN territory and throughout the state. Two of the original goals for RENs are to pilot programs that IOUs cannot or will not undertake and initiate programs that could be replicated statewide. SoCalREN is in a key position to develop a pilot to capture savings from this transformative financing program and refine a program design that can follow the progression of residential PACE uptake throughout the state so that energy savings are never stranded.

Figure 5. SoCalREN Home Upgrade vs. LAC Residential PACE Participation

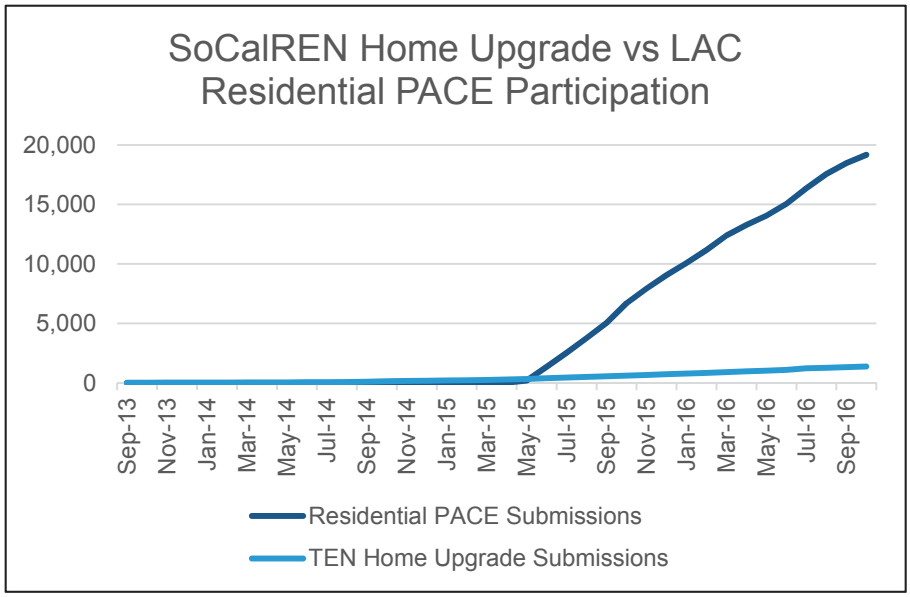


Table 7. Intervention 1 – Integrate with Residential PACE to Drive Greater Energy Savings

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Integrate with Residential PACE to Drive Greater Energy Savings	Programs take place outside of regulated environment	Coordinate with local governments to develop pilot programs that capture verified energy savings for projects going through residential PACE financing	N	S, M, L
		Coordinate with local community development and housing departments to offer whole home retrofits alongside rehabilitation programs	E	S, M, L
		Joint outreach and co-branded literature	N	S, M, L
Partners: residential PACE providers, contractors, community development and housing departments				

3. Intervention 2 – Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency

EE features are largely invisible to the average person and difficult to financially evaluate. Developing reliable data on the value of EE and ways to communicate that data will help property owners and potential buyers make informed decisions.

SoCalREN aims to apply this intervention in two main areas:

- **Transparency and Standardized Data**. Energy efficiency features are largely invisible to the average resident, home buyer, or real estate professional. Clear, consistent, and reliable data will help home buyers factor in efficiency attributes and plan for cost-effective home upgrades. Many real estate data aggregators such as CoreLogic, consumer websites such as Zillow, and MLS systems are not set up to accept green building asset information for a listing. Nationwide and statewide efforts are underway to change this through a central registry that will collect information on EE improvements and distribute it to the above real estate resources. Making EE improvements visible to consumers and real estate professionals and supporting their proper valuation by lenders will help capture increased value at time of sale, which would create a new value stream. In programs concerning larger projects, such as multifamily, the diverse ownership structure and building configurations result in costly customization for building owners.
- **Energy Benchmarking and Monitoring**. Residential building professionals and participants are often uncertain of EE's benefits. The high cost barrier will be addressed by energy benchmarking and monitoring by SoCalREN that will demonstrate how efficient equipment improves a building's performance, saves money, and offsets upfront costs. Energy

benchmarking and monitoring will help put buildings on the path to ZNE by providing concrete progress and real life case studies. This data strategy aligns with the Strategic Plan's goal to apply whole house energy solutions in the residential sector of transforming home improvement markets. Benchmarking is an effective way to show how whole house interactive effects impact energy savings, comfort, and indoor air quality.

Table 8. Intervention 2 – Establish Benchmarking Data

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency	High cost of participation and uncertainty of energy efficiency's benefits Inaccurate or unreported savings	Conduct valuation studies of single family and multifamily buildings that have undergone energy efficiency improvements to demonstrate that they have greater operating income and value than unimproved buildings	N	S, M, L
		Develop detailed profiles of residential building professionals and customers	N	S, M, L
		Integrate energy efficiency project data with real estate databases	N	S, M, L
Partners: Multiple listing agencies, property owners, real estate professionals				

4. Intervention 3 – Engage Public Agencies to Drive Energy Efficiency in Their Communities

Partnering with public agencies and their communities was a guiding principle from the CPUC when the RENs were established. The focus on public agency engagement is a cornerstone of SoCalREN's approach toward achieving its goals. Public agency partnerships are established through written commitments supporting EE in the public agency's community. These agency-offered commitments can take a range of forms, and will enable SoCalREN to either coordinate or create the implementation of localized energy programs/services, and to support reach building standards by providing technical support for development and implementation. Aligning priorities early encourages trust, cooperation, processing runs smoother, and miscommunication is less likely. Local government partnerships also broaden a city's or county's access to public-facing energy information, and expand the reach of SoCalREN marketing and outreach through the government's existing communication channels. These partnerships allow SoCalREN and public

agencies to develop, launch, monitor, and continuously improve campaigns to raise local demand for energy efficient homes, including home energy and/or carbon labeling programs.

These public agency partnerships will be largely used to target hard-to-reach and disadvantaged communities, reflecting the Strategic Plan goal of giving low-income households the opportunity to participate in EE programs. Many local governments have housing assistance programs for residents. Participation in these programs is conducive to learning about EE and performing upgrades in conjunction with the housing program. SoCalREN will use its resources and local expertise to leverage local government agencies' housing and community development programs. SoCalREN will also organize events that explain EE benefits and connect low-income residents with the education and resources needed to take action.

This intervention also continues SoCalREN's work of offering incentives to end-user participants, largely focusing on hard-to-reach audiences in both single- and multifamily markets. Downstream incentives increase participation in EE programs by stimulating demand and reducing up-front cost, which is a proven strategy to encourage residents to install above-code energy efficient equipment. The more efficient equipment that participants install because of incentives will lead to less emissions and contribute to goals related to AB 32.

SoCalREN has continuously delivered a whole building EE program in the hard-to-reach multifamily market since 2010. The County of Los Angeles launched a U.S. Department of Energy-funded pilot version of the program in 2010 that was the first of its type in California. The pilot program's whole building approach modeled energy savings and tiered incentives; it became the template used by other program administrators to design their own programs. The pilot program was expanded into a full program and has been delivered continuously since 2013 with the launch of SoCalREN. The program has seen increasing momentum from the hard-to-reach and underserved multifamily segment. There are nearly 17,000 units enrolled in the program with 2,000 units completely ZNE. SoCalREN supports continuation and expansion of this program based on its success in catalyzing market transformation; specific approaches to expansion will be addressed in the appropriate Implementation Plan. In contrast, SCE and SoCalGas have only delivered a limited pilot program. In 2013, SCE and SoCalGas jointly launched a whole building multifamily program based on SoCalREN's program design with a limited target of 1,700 units complete; however, the IOU pilot program concluded in 2015 and their future delivery of a whole building multifamily program is uncertain.

SoCalREN proposes to complete demonstration pilot projects to further the development of ZNE in hard-to-reach communities. Pilot projects can vary in structure, but are a core part of SoCalREN's mission and goals to test strategies and tactics that can be replicated throughout the region to drive EE. The goal is to partner with a public agency to demonstrate the benefits of the investment in energy efficiency to the surrounding community. An example might be showcasing a home or building that has recently undergone an energy retrofit, such as SoCalREN's current collaboration with South Claremont's Advanced Energy Communities project that will design a ZNE community that fits the definition of a disadvantaged community. Pilot projects more broadly involve responding to broadly observable trends in a selected area, testing actions that drive energy savings, and building case studies so that the energy saving actions can be replicated elsewhere. Pilots projects will examine what changes can be made in test areas and provide conclusions for broader implementation.

Table 9. Intervention 3 – Engage Public Agencies to Drive Energy Efficiency in Their Communities

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Engage Public Agencies to Drive Energy Efficiency in Their Communities	Program complexity and lack of familiarity among property owners Low consumer demand among hard-to-reach audiences High cost of energy efficiency Difficult to engage low income communities in ZNE efforts due to high cost barriers	Organize events that explain the benefits of energy efficiency	E	S, M, L
		Partner with community development agencies to develop business processes that promote joint participation in energy efficiency and home rehabilitation programs	M	S, M, L
		Multifamily downstream incentives to property owners	E	S, M, L
		Create ZNE community pilot projects in hard-to-reach community and create a case study	N	S, M, L
Partners: Local governments and their agencies, community based organizations				

5. Intervention 4 – Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency

SoCalREN also sees the importance of partnering with key non-governmental stakeholders that affect the adoption of EE.

First, above and beyond the program commitments established with public agencies to support hard-to-reach audiences, SoCalREN will establish Memorandums of Understanding (MOUs) with water utilities. This will address the problem of the high cost of EE by facilitating projects' ability to leverage multiple programs at one time, receiving streamlined support for both energy and water measures. These MOUs will help put projects on the path to ZNE by facilitating participation in multiple programs over several years.

Additional partnerships with supply-chain players will provide opportunities for midstream incentives to increase the adoption of energy efficient measures. Midstream incentives expand approaches that SoCalREN has already implemented with downstream customers to encourage EE adoption. By stimulating midstream market actors to promote energy efficient products, SoCalREN can influence more of the supply chain towards market transformation. Midstream incentives will expand potential partners to include contractors, distributors, and retailers. They

will also counter market structures that may favor large, entrenched businesses that do not prioritize EE. Midstream incentives will introduce a greater range of market actors who collectively can influence the direction of energy consumption.

SoCalREN can also pilot midstream incentive programs that the IOUs are unable to administer by leveraging local government programs such as residential PACE. Contractors working in this high volume program can be incentivized to submit projects through a pilot designed to work seamlessly with the PACE financing option. By routing non-ratepayer funded projects through an approved pilot, SoCalREN can claim verifiable energy savings that have previously gone unverified.

Given the broad array of EE and water-saving measures available for PACE financing, SoCalREN can develop an important testbed for addressing the water-energy nexus as it relates to residential end uses. SoCalREN will be collecting project-level data for energy and water efficiency measures and working with the IOUs and Metropolitan Water District (MWD) to explore ways to leverage utility incentives with PACE. SoCalREN is in a unique position to influence homeowners to participate in a simple, straightforward program that encourages them to go above code using PACE financing.

Financing addresses the challenge of paying for equipment up front with little or no out of pocket expense. Financing offsets the initial cost of energy efficiency by spreading it over the life of the equipment. Although statewide financing pilots exist, SoCalREN currently provides a specific loan loss reserve product that is streamlined specifically to support whole house projects, serving a unique market needs. SoCalREN will continue to offer below market rate loans to customers until a statewide product is available to serve that demand.

SoCalREN will also partner with trusted sources to provide education on EE resources. SoCalREN will partner with real estate professionals and contractor industry organizations to provide education that can be relayed to their customer base. SoCalREN will also target property owners through partnerships with community-based organizations and local employers to hold educational events, including lunch-and-learns, meetings at community centers, and presentations by speakers who are experts in the EE field.

Table 10. Intervention 4 – Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency	Program complexity Inconsistent funding sources for power and water utilities High up-front costs for comprehensive	Partner with industry organizations to provide a comprehensive, market-based approach to educating the residential program participants and workforce	M	S, M, L
		Establish MOUs with water agencies to layer programs for both power and water	N	S, M, L

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
	Projects	Loan loss reserve financing	E	S, M, L
	Perception programs are a hassle	Partner with local employers and organizations to host educational workshops for homeowners about the value and best-practices for energy efficiency improvements	E	S, M, L
Partners: Public agencies, industry organizations, financial institutions, community based organizations				

6. Intervention 5 – Offer Technical Assistance to Increase Capacity for Program Participation

Property owners, both single-family and multifamily, are largely unaware of the energy savings potential of their properties. They are similarly unaware of the resources available to help them realize those savings. SoCalREN will continue its practice of offering technical assistance to residential participants. Technical assistance, generally implemented in the form of "Energy Advisor" services, helps property owners overcome the perceived cost barrier of EE by providing an evaluation of their project potential. In hard-to-reach communities where property owners may not independently seek out this information, technical assistance programs bring resources to the property owner, driving action that may not have occurred otherwise. Technical assistance programs can also direct property owners to resources to help offset or finance project costs if they choose to proceed. This facilitates the path to ZNE by charting how a project achieves ZNE over time and the resources available to support improvements.

SoCalREN focuses on providing technical assistance both upon request and by marketing it as a service to attract potential building owners to make upgrades. To market technical assistance services, SoCalREN begins by identifying audiences with participation potential, contacting them with program information that is relevant and actionable, and following up to support participation. This targeted approach aims to overcome the low rate of adoption of EE improvements while managing marketing costs. Although tactics will be defined in the implementation plan, SoCalREN will strategically leverage its access to both public and proprietary datasets that can be used to identify property owners likely to participate in programs. Initial contact can be made through targeted outreach, including direct mail, paid media, and community-based outreach through organizations and local governments. SoCalREN also targets customers who are at certain trigger points in their home improvement process, such as searching for HVAC equipment or preparing a home for sale. Finally, follow-up is provided based on the consumer need and preference. This intervention extends to the building professionals that SoCalREN serves by providing them with resources, such as marketing toolkits, that support their growth with EE programs. Building professionals are onsite messengers who help increase the adoption rate of EE improvements by providing clients with information at key trigger points, such as time of remodel, point of sale, or other transactions.

For example, the Green Real Estate Working Group meeting is a collaboration of green home and EE program implementers and sponsors across California. It is specifically market-driven coordination that engages with the real estate community to increase awareness and opportunities. The goal is to continue to build on the goodwill and spirit of collaboration established over the past few years, and to maintain a strong service level for ratepayers seeking technical assistance.

Table 11. Intervention 5 – Offer Technical Assistance

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Offer Technical Assistance	Property owners unaware of resources available to achieve savings	Employ "Energy Advisor" services	M	S
	Property owners in hard to reach communities don't seek out information on their own	Provide trainings to the residential workforce on energy efficiency, whole house retrofits, sales, and marketing that helps transition the workforce from current practices to building science-based practices.	M	S, M
Partners: Community based organizations, contractors, local governments				

7. SoCalREN Residential Programs/Incentives Targeted by Intervention Strategies

Table 12. SoCalREN Sector Programs/Incentives by Strategy

	Single Family	Multifamily Incentives	PACE Integration	Single Family Financing	Energy Advisor
Coordination with Residential PACE	X		X		X
Establish Benchmarking Data		X			X
Engage Communities			X		X
Provide Incentives	X	X	X		X
Expand and Establish Partnerships			X		
Offer Technical Assistance	X	X	X		X

Within Section G, SoCalREN's Approach to Achieving Goals, SoCalREN describes new and innovative strategies and tactics, some of which will lead to pilot efforts at the program level. SoCalREN believes these strategies are essential to innovation and the ability to meet aggressive goals such as reducing purchased energy by 30% in 75% of homes. SoCalREN will address the Strategic Plan's goal of tailoring HVAC programs to address Southern California climates. Pilot programs will give SoCalREN opportunities to experiment with new programs on limited implementation runs. They are an opportunity to test strategies such as how and where to focus efforts, and how to engage contractors and other delivery channels. In addition, pilot programs provide tangible examples of specific customer segments achieving EE improvements, thereby addressing the problem of high cost. Pilot programs will likely include examples of how single- and multifamily buildings can achieve ZNE and programs that integrate residential PACE. SoCalREN will explore the development and implementation a home rating system pilot for EE projects.

SoCalREN will describe any unique and innovative aspects of each program, as well as any pilots contemplated or underway, within its program-level implementation plans.

H. Leveraging Cross-Cutting Resources

SoCalREN plans to make use of the following cross-cutting resources to achieve our goals.

1. Codes & Standards

While the Residential program offers services that aim to make EE improvements seem more enticing and available, the Codes & Standards program aims to clarify and ease adoption of the actual mandated energy efficiency requirements. These interrelated goals provide several opportunities for cross-cutting support. The greatest area of interaction is under the residential Intervention Strategy 3, which will engage public agencies. Under the Codes & Standards program, SoCalREN will contact public agencies to offer support and training for code compliance, a perfect opportunity to introduce opportunities for public agencies to promote residential EE programs. Additionally, as SB 1414 requirements make permit closure a requirement for HVAC incentive programs, the Codes & Standards program will deliver key education to public agencies that supports residential incentives. Codes & Standards will also be leveraged under SoCalREN's Intervention Strategy 5, which offers technical assistance to property owners and contractors seeking information on how to best complete EE projects. Under the Codes & Standards program, SoCalREN will produce an online resource library that can be leveraged to support residential audiences in completing projects that meet updated code & standard requirements. The Residential program will provide Codes & Standards materials to contractors navigating residential programs, mutually supporting their capacity for participating and Codes & Standards' compliance enhancement activities.

2. Financing

For the residential sector, financing is a key agent of cross-cutting coordination. Financing programs have typically supported other incentive-based programs in their goals to capture energy savings. Support from financing cross-cutting resources will bolster SoCalREN's

residential Intervention Strategy 1, Coordination with Residential PACE, and Intervention Strategy 2, Establish Benchmarking Data. SoCalREN sees the greatest potential for residential PACE integration with incentive programs, which allows residents to financing energy improvements while simultaneously participating in ratepayer-funded downstream rebate programs.

3. Workforce Education & Training (WE&T)

SoCalREN believes that the continuing education elements of WE&T will support Intervention 5. Often residential building professionals receive training but do not have time to apply it, which leads to a loss of knowledge. Continuing education means supplemental education for training already completed. It also means maintaining relationships with contractors, raters and residential building professionals over time and developing expertise in designing education programs. Continuing education contributes to market transformation by instilling in building professionals lasting lessons that become a permanent part of the culture and business plan. It sets communities on the path to ZNE by building the workforce necessary to implement such projects.

4. Marketing, Education, and Outreach (ME&O)

Broad-based marketing is expensive, but property owners need additional support in identifying programs and converting into participants that produce verified energy savings. While SoCalREN plans a more targeted outreach approach to engage homeowners and communities, these targeted efforts will leverage the broad-reaching marketing executed by the statewide ME&O team that is designed to build awareness of energy management practices and drive leads to specific programs.

I. Integrated Demand Side Management (IDSM)

Integrated demand side management (IDSM) is an essential set of energy solutions that will be leveraged in SoCalREN's public agency approach in the residential and multifamily markets. IDSM integrates EE, distributed generation, storage, and demand response in order to ensure system reliability and address grid constraints. SoCalREN will identify communities that are affected by constrained substations and will focus marketing, education, and outreach to single-family homeowners and multifamily building owners to increase awareness and drive them to utility programs. SoCalREN will work with public agencies, cities, and councils of government to identify EE opportunities, and provide information about other IDSM solutions. IDSM will be a cohesive theme across all SoCalREN public agency activities, particularly as it relates to grid constraints and the transition to ZNE communities.

1. Residential Market and Targeted Demand Side Management (TDSM)

As part of its outreach to residential and multifamily customers, SoCalREN will highlight the importance of energy efficiency and other IDSM solutions in moving the community toward a ZNE future. Residential PACE will play a key role in advancing the adoption of EE and distributed generation in the residential market. SoCalREN will work with contractors and solar installers to

ensure that residential customers receive the greatest benefit from combining EE measures with the installation of a solar system. SoCalREN will work with SCE to incorporate messaging about Time-Of-Use (TOU) rates as needed.

The recognition that EE is a valuable grid resource and partners effectively with demand response programs led SoCalREN to develop the Targeted Demand Side Management (TDSM) Program. This effort integrates both EE and demand response tools that partner to defer investments in transmission and distribution capacity, which in turn frees capital to fund other investments to ensure system-wide safety and reliability. To date, the residential EE programs have contributed to meeting load needs in more than 10 regions across the service territory.

2. Residential and Distributed Energy Resources (DER)

The IDSM effort is conduit to better integrate controls and the power of data analytics into the operations of SoCalREN customers. SoCalREN leverages several programs. Demand Response (DR) programs can take advantage of new controls to better integrate residential customers into DR programs building a more robust response to potential grid events and leveraging control over localized residential activities. Understanding the residential customer mix is important in offering the right DR program for their needs. Distributed Generation (DG) program participation has been on the rise in the residential segment, specifically as it relates to solar. SoCalREN will continue to support the interconnection of solar systems in the residential market and as solar continues to rise; storage will be an important element to maintain transmission reliability. Storage is one area where SoCalREN is preparing for future growth. As peak demand hours are shifting past the sunny times of the day, storage will help keep the transmission lines less constrained so the customer can pull from the on-site energy storage directly. SoCalREN anticipates that the residential segment will be active in this emerging technology.

J. SoCalREN and State Policy Goals

SoCalREN will continue to respond to specific policy objectives set forth in CPUC documents, state legislation, and the Strategic Plan. The Strategic Plan names EE as its highest priority. In direct response to this, SoCalREN will continue to promote both IOU and SoCalREN single family and multifamily programs and commit resources and time to customer engagement, outreach and training.

SoCalREN will address two of the Strategic Plan's overarching four "Big Bold" energy efficiency strategies. The first strategy is "Heating, Ventilation and Air Conditioning (HVAC) will be transformed to ensure that its energy performance is optimal for California's climate". Historically, this has been a central focus for SoCalREN's residential sector programs. Future efforts will continue to ensure homeowners install the best, above-code equipment for their climate zone through marketing, education, and outreach to residential building owners. Outreach and training will include technical staff speaking to homeowners and residential building professionals to educate them about which measures make the most sense for their location. SoCalREN will develop programs to capture unverified energy savings achieved through non-ratepayer funded programs. These programs have historically outside the purview of IOUs. By leveraging the efforts of local governments, SoCalREN is uniquely capable of providing this service.

SoCalREN will respond to the second bold strategy, which is, “all eligible low-income customers will be given the opportunity to participate in the low income energy efficiency program by 2020”. SoCalREN will provide support to eligible low income and hard-to-reach customers to participate in ratepayer funded programs. The remaining two goals relate to new construction, which currently fall outside of SoCalREN’s focus.

SoCalREN will address the goals set forth in the Residential Section of the Strategic Plan, and in particular, Goal Number 2: “Transform home improvement markets to apply whole house energy solutions to existing homes”. The goal lists shell upgrades, high efficiency HVAC units, financing, and moving focus from widget upgrades to whole house retrofits. SoCalREN will work with local governments to coordinate and encourage uptake of these EE efforts within their existing networks. SoCalREN will complement available rebates with financing and continue to educate residential building professionals through educational and information materials explaining the importance of a whole house approach.

SoCalREN will focus on and educate customers eligible for programs designed for low-income and hard-to-reach communities. SoCalREN has an established history of collaborating with IOUs and governments to share data and funds and will continue those efforts.

SoCalREN responds to specific goals in the HVAC section, including a goal of 50% improvement in efficiency by 2020 and a 75% improvement by 2030. SoCalREN already has qualified technicians in Southern California and recruits and educates new ones. SoCalREN will expand efforts to ensure quality installation and maintenance become the norm, thus supporting the needs of local governments to have in place a workforce educated on and capable of meeting ZNE goals. Educating and training both contractors and real estate professionals about whole house design and ZNE will help reduce heating and cooling loads. An outreach team will coordinate and engage stakeholders in the residential retrofit, building performance industry, and HVAC supply chain.

SoCalREN responds to many of the goals set forth in the California Energy Commission’s Existing Building Action Plan as follows:

- Strategy 1.7 Local Government Leadership: Engage and recruit local governments to demonstrate leadership in energy efficiency through various programs, activities, and mechanisms.
- Strategy 3.1 Streamlined and Profitable Industry: Promote a sustainable and robust energy efficiency marketplace by providing effective program delivery and industry partner programs.
- Strategy 3.3.4 Efficiency Marketing Included in Workforce Training: Train contractors, real estate professionals and other market actors to sell energy efficiency. Integrate customer acquisition, the provision of financing options, and other marketing activities into industry business models.
- Strategy 4.1 Real Estate Value: Work collaboratively with real estate industry, underwriters, and financial agents to adopt property asset-related energy characteristics in building valuation and to integrate energy efficiency into all transactions. Work with industry agents to advocate and expand the inclusion of the value of energy in appraisals. Incorporate energy efficiency into property and lease listings. Include energy asset ratings as soon as is practical.

- Strategy 5.2 Asset-Based Financing: Foster the development of easy-to-access financing mechanisms tied to building asset. Advocate for energy efficiency to be incorporated into the mortgage valuation and underwriting process. Promote and expand the use of energy efficiency mortgages by establishing a standard rating or value for underwriters. Support the implementation of Property Assessed Clean Energy financing (PACE) for residential and commercial properties. Assess and encourage new cost recovery mechanisms such as surcharge on tenant meters or "green leases" to surmount "split incentive" dilemma.
- Strategy 5.7 Establish Deeper Subsidies for Full Participation by Low-Income Households Integrate low-income household services with building owner eligibility for regular energy efficiency programs to increase efficiency levels in multifamily buildings with low-income occupants.

These efforts also address broader goals set forth in legislation. AB 32 requires California to reduce GHG emissions to 1990 levels by 2020. SB 350 requires GHG emissions reductions of 40 percent from 1990 levels by 2030. All programs will conform to Title 24 standards, which aim to reduce energy consumption by establishing minimum technical standards for design, construction, and operation of residential and non-residential buildings. SoCalREN will work closely with city and county governments, which are responsible for the vast majority of Title 24 enforcement. SoCalREN programs will work to meet SB 350, which mandates doubling of statewide EE savings in electricity and natural gas end uses by 2030.

Table 13. SoCalREN State Policy Support

Policy Drivers	Guidance Given	SoCalREN's Support for Policy
SB 350	• Double energy efficiency savings by 2030 Address barriers for low-income customers to energy efficiency and weatherization investments Include hard to reach and low income communities	• Data analytics of customer segmentation to target customers with high savings potential and market transformation needs • Develop community-level initiatives • Education, outreach
AB 32	• Reduce GHGs to 1990 levels by 2020	• Energy efficiency programs
AB 802	• Benchmarking • Provide financial incentives and assistance for high opportunity projects • Expands mandated energy disclosure to multifamily properties, making it easier to collect and report energy consumption data from utility companies.	• Using data to drive high value customers to incentive programs • More sophisticated audits • Increased standardization
AB 793	• Educate on energy management technologies • Help customers understand and manage energy	• Target education and outreach will help customers understand efficiency technology
AB 758	• Access to data, partnering to increase awareness • Recognized value of energy efficiency upgrades	• Train real estate professionals on the value of energy efficiency • Technical support

Policy Drivers	Guidance Given	SoCalREN's Support for Policy
		• Coordinate or create implementation of localized energy programs and services
SB 1414	• Collect proof of permit closure before paying rebates or incentives to customers or contractors for central air conditioning or heat pumps and their related fans.	• Educate building departments, contractors and homeowners about the value and need for closed permits for related energy efficiency work • Collect proof permit closure before paying rebates or incentives to customers or contractors.
LTEESP	• Collect proof of permit closure before paying rebates or incentives to customers or contractors for central air conditioning or heat pumps and their related fans.	• Educate building departments, contractors and homeowners about the value and need for closed permits for related energy efficiency work • Collect proof permit closure before paying rebates or incentives to customers or contractors.

K. SoCalREN's Partners and Commitment to Coordination

Partnering is listed as one of SoCalREN's intervention strategies, but it's also a pillar of SoCalREN's operations. Since launching incentive programs in 2013 and developing a full calendar year of implementation in 2014, SoCalREN has successfully established an Advisory Committee comprised of key stakeholders across the region, as well as critical partnerships with industry organizations that shape the residential energy marketplace. However, these first steps are just that: initial relationships. Partnering is a key component of SoCalREN's activities for the foreseeable future in order to continue successfully piloting programs and supporting hard-to-reach audiences, and to strengthen the regional nature of SoCalREN. Table 14 provides a summary list reflecting both existing and potential partners.

Table 14. SoCalREN's Existing and Potential Partners

Partner Type	Existing Partners * Reflects existing relationships	Potential Partners * Representative only
Statewide	Statewide ME&O, CPUC, CEC	
Regulated Program Administrators	SCE, SoCalGas, SDG&E, PG&E, BayREN	Public Utilities, CCAs
Unregulated Energy Programs	HERO (Renovate America), California FIRST	
Industry Organizations	National Association of REALTORS®	Appraisers, brokers, inspectors, Multiple Listing Services

Partner Type	Existing Partners * Reflects existing relationships	Potential Partners * Representative only
Building Professionals	SoCalREN's own Home Upgrade Participating Contractors, Efficiency First, IHACI	Trade organizations, manufacturers, distributors
County Government	Ventura County, Los Angeles County, Orange County	San Bernardino County, Inyo County
Councils of Government	South Bay Cities COG, San Gabriel Valley COG, Gateway Cities COG, Coachella Valley Association of Governments, Western Riverside COG, San Bernardino Association of Governments	Tulare County Association of Governments, Eastern Sierra Council of Governments
City Government	Culver City, Palmdale, Huntington Beach, Lakewood, Santa Clarita, Santa Monica	Tulare, Covina, Irvine
Water Agencies and Water Districts	Santa Ana Watershed Protection Authority	West Basin Municipal Water District, Orange County Water District
Community Based Organizations and Non-Profits	San Joaquin Valley Clean Energy Organization, Sustainable Claremont, CHERP, Sustainable Whittier	Repair Café, Sierra Club, Neighborhood and City-Specific Non-Profits

Partnerships are critical to SoCalREN's success in implementing its intervention strategies; however, having multiple program implementers in similar geographies can introduce the potential for duplication of efforts, and thus requires additional coordination. To avoid duplication of efforts with potential partners, SoCalREN will continue to work proactively with its partners to ensure clear lines of communication and program differentiation. These tactical communication methods are summarized by stakeholder group below, and in the following table.

1. Statewide

SoCalREN will continue to work with the CPUC and regulators during planning, execution and evaluation stages of its programs, using this business plan as a guiding document. The design of the REN program structure provides the CPUC the unique opportunity to establish direction and provide feedback. SoCalREN sees this as part of its core, and its vision and mission are directly shaped by the CPUC's Strategic Plan.

SoCalREN will also leverage the Statewide Marketing, Education and Outreach (SW ME&O) plans executed at the statewide level on the local level, drawing connections between awareness and program participation. However, there is a risk of potentially confusing stakeholders if SW ME&O and program implementers do not maintain clear lines of internal communication, and external program differentiation. SoCalREN will continue to participate in the regular SW ME&O monthly and quarterly meetings to ensure that consistent and clear messaging reaches property owners, public agency stakeholders, and non-governmental market actors such as non-profits and participating contractors. This participation will ensure that a consistent message will be

deployed for residential audiences, although there may be several concurrent energy management campaigns in progress.

2. Program Administrators

The REN focus on partnership coordination with regulated energy program administrators is critical to SoCalREN success. SoCalREN fundamentally operates in the service of ratepayers, and adds value to property owners by providing information and referrals to programs across all program implementers, including those outside SoCalREN's implementation focus. This requires positive mutual relationships with program implementers across the region. It also requires that the program administrators establish clear messaging to differentiate, but complement, the suite of available energy management services. SoCalREN plans to continue its monthly collaboration meetings with IOU program implementers, as well as participation in program PCGs, with the goal of reaffirming clearly-defined program goals and messaging. This collaboration will minimize confusion for property owners, public agency stakeholders, and non-governmental market actors.

Data sharing will be a key focus across the program administrator coordination process. For example, when utility providers host continuing education courses for contractors, SoCalREN promotes these classes, enabling participation across territories and maximizing resources for mutual impact. SoCalREN also sees an opportunity in data-sharing across program implementers to identify potential focus areas for targeted marketing and outreach.

Additionally, SoCalREN realizes an opportunity to continue and deepen coordination to serve the multifamily segment. Coordination with other program administrators' multifamily programs has the potential to lead to deeper EE retrofits by combining their offerings with SoCalREN's whole building program. There is also a particular opportunity for program administrators to refer multifamily projects to SoCalREN, facilitating participation in the whole building program for projects which may not qualify for Energy Savings Assistance (ESA).

However, privacy concerns constrain this coordination potential. Additionally, data sharing with unregulated programs such as those operated by Renovate America and California FIRST offers significant opportunity for capturing and verifying achieved energy savings. Addressing this data sharing concern is an area of significant opportunity for SoCalREN.

As CCAs and public utilities enter the realm of program administration, SoCalREN anticipates opportunities for coordination with these key stakeholders as well.

3. Market Actors

As touched upon in the intervention strategies, SoCalREN plans to develop relationships with new partners who can open up opportunities for innovative programs and expansions. This includes market actors like unregulated energy programs including residential PACE. SoCalREN can also work to quantify the energy savings achieved through these programs, capturing energy savings information that may not have been verified previously.

SoCalREN also identifies building professionals and other industry stakeholders as critical relationships when shaping the residential marketplace. On the homeowner outreach side, real estate professionals continue to be a strong referral source for homeowners seeking home improvements, including energy improvements. On the contractor-facing side, manufacturers and

distributors represent a new opportunity for SoCalREN. While partnerships with them in the past have been limited, SoCalREN has identified this as an area for expansion as it designs programs for different parts of the production and supply chain.

4. Stakeholders

Local governments including counties, councils of government, and city governments, are SoCalREN's foremost partnership types, and the key to reaching its goals. There are 88 cities in Los Angeles County alone, with hundreds of cities beyond, and each locality's objectives are as diverse as the communities they represent. These cities are largely responsible for Title 24 enforcement through permitting, and programs that go beyond Title 24. They regulate the point-of-sale ordinances that are common in EE mortgages and they have the authority to provide incentives or disincentives through zoning. Local governments can lead by example by leveraging scale in government facilities to catalyze programs in the private market. They are the natural choices to provide energy leadership in communities and adopt residential energy conservation ordinances (RECOs). Specific departments within local governments, such as Housing Departments and Authorities, can likewise have tremendous influence.

SoCalREN also identifies local water agencies as a key partner for future efforts. Strategically, drawing connections between energy- and water-saving programs increases the perceived value of each program, and improves the likelihood of participation across the board. Tactically, SoCalREN plans to explore partnerships with local water agencies to pilot bundling water and energy rebates, potentially using energy rebate participation as a lead generator for water rebate participation (or vice versa, depending on program strengths). However, the first step to identifying the tactic for implementation is focusing on building relationships with water agencies that serve the SoCalREN audiences.

5. Disadvantaged Communities

Part of SoCalREN's mission is to serve hard-to-reach communities by leveraging the power of local government partnerships. SoCalREN has a track record of success in partnering with local government agencies to implement localized outreach efforts and to connect low-income residents to incentive programs. SoCalREN has also identified partnerships with non-profit and local community-based organizations as a means to serve disadvantaged communities better by tapping into recognized and trusted sources. SoCalREN has worked with California Housing Partnership and Energy Efficiency for All to promote its multifamily program. SoCalREN will continue and strengthen this partnership to bring EE resources to low income multifamily buildings with a particular emphasis on properties which may not qualify under the new ESA program.

Table 15. SoCalREN Coordination with Partners, Intervention Strategies 1–3

Partner Type	Intervention 1: Integrate with Residential PACE	Intervention 2: Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency	Intervention 3: Engage Public Agencies to Drive Energy Efficiency in Their Communities
Statewide Regulators, Statewide ME&O	Limited/no potential for duplication. SoCalREN will be the bridge between Residential PACE administrators and the regulated programs, offering energy savings data from unregulated programs.	Regular communication through email, formal filings and stakeholder meetings will ensure SoCalREN and stakeholders have mutual access to published data, and studies in progress.	SoCalREN will work closely with SWME&O program implementers to ensure that any public agency coordination is appropriately differentiated, reducing confusion for public agencies.
Regulated Program Administrators (IOUs)	Limited/no potential for duplication. SoCalREN will be the bridge between Residential PACE administrators and regulated programs, offering energy savings data from unregulated programs.	Regular communication through email, formal filings and stakeholder meetings will ensure SoCalREN and stakeholders have mutual access to published data, and studies in progress.	SoCalREN will work closely with IOU LGP program implementers to ensure differentiated service offerings. Any areas of potential duplication must be addressed, or confirmed as serving hard-to-reach audiences and/or pilot program needs. This is particularly critical in areas where there may be overlapping service territories.
Unregulated Energy Programs (PACE)	Limited/no potential for duplication. SoCalREN will be the bridge between Residential PACE administrators and regulated programs, offering energy savings data from unregulated programs.	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.
Market Actor Stakeholders (Industry Organizations, Building Professionals, Community-Based Organizations, Non-Profits)	Limited/no potential for duplication. SoCalREN will offer support for both regulated and unregulated energy programs.	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.	With coordinated communication efforts with SW ME&O and IOU program implementers, limited/no potential for duplication.
Governmental Stakeholders (County Government,	Limited/no potential for duplication. SoCalREN will offer support for	Limited/no potential for duplication. Coordination will occur	SoCalREN will work closely with SWME&O and IOU LGP program

Partner Type	Intervention 1: Integrate with Residential PACE	Intervention 2: Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency	Intervention 3: Engage Public Agencies to Drive Energy Efficiency in Their Communities
Councils of Government, City Government, Water Agencies and Districts)	both regulated and unregulated energy programs.	as-needed through email and scheduled meetings.	implementers to ensure that any public agency coordination is appropriately differentiated, reducing confusion for public agencies. This is particularly critical in areas where there may be overlapping service territories.

Table 16. SoCalREN Coordination with Partners, Intervention Strategies 4–5

Partner Type	Intervention 4: Increase & Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency	Intervention 5: Offer Technical Assistance to Increase Capacity for Program Participation
Statewide Regulators, Statewide ME&O	SoCalREN will work closely with SWME&O program implementers to ensure that stakeholder engagement activities are appropriately differentiated, reducing confusion for stakeholders.	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.
Regulated Program Administrators (IOUs)	SoCalREN will work closely with IOU program implementers to ensure differentiated service offerings. Any areas of potential duplication must be addressed, or confirmed as serving hard-to-reach audiences and/or pilot program needs. This is particularly critical in areas where there may be overlapping service territories.	SoCalREN will work closely with IOU program implementers to ensure differentiated service offerings. Any areas of potential duplication must be addressed, or confirmed as serving hard-to-reach audiences and/or pilot program needs. This is particularly critical in areas where there may be overlapping service territories.
Unregulated Energy Programs (PACE)	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.	Limited/no potential for duplication. Coordination will occur as-needed through email and scheduled meetings.
Market Actor Stakeholders (Industry Organizations, Building Professionals, Community-Based Organizations, Non-Profits)	With coordinated communication efforts with SWME&O and IOU program implementers, limited potential for duplication.	With coordinated communication efforts with SWME&O and IOU program implementers, limited/no potential for duplication.
Governmental Stakeholders (County Government, Councils	With coordinated communication efforts with	Limited/minimal potential for duplication. Coordination will

Partner Type	Intervention 4: Increase & Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency	Intervention 5: Offer Technical Assistance to Increase Capacity for Program Participation
of Government, City Government, Water Agencies and Districts)	SWME&O and IOU program implementers, limited potential for duplication.	occur as-needed through email and scheduled meetings.

L. Metrics and EM&V Considerations

Through its tenure as a program administrator, SoCalREN has recognized the value of quality metrics to EM&V, accurate tracking, and clear representation of programs. SoCalREN will continue to coordinate with CPUC and EM&V staff to hone the metrics collected and reported for the benefit of all stakeholders.

Evaluating SoCalREN is challenging within the traditional EM&V framework. By its very reason for existence, SoCalREN adopts programs that traditional IOUs are either unable or unwilling to undertake. Therefore, traditional EM&Vs, which have developed around evaluating decades-old IOUS, may not be able to capture the full value of the SoCalREN. Often, EM&V efforts focus on energy saved from resource programs. Historically, the bulk of SoCalREN programs have been non-resource, technically generating no energy savings yet having an undeniable influence on resource programs; this characteristic is expected to continue. Therefore, SoCalREN will work with EM&V evaluators and IOUs to develop methodology that captures the full impact of non-resource programs on their resource counterparts.

1. Direct Effects from SoCalREN Efforts

Table 17. SoCalREN Residential Sector Goals, Intervention Strategies and Metrics

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (2018 - 2020)	Mid Term Target (2021 - 2023)	Long Term Target (2024 - 2025)
Save kWh, kW, and therms	All	Electricity Saved	1,598,566[40]	Annual Gross Savings from Program Tracking	2,951,708 kWh annually	3,758,526 kWh annually	5,095,684 kWh annually
		Demand Saved	1,079		1,613 kW annually	2,054 kW annually	2,785 kW annually
		Therms saved	83,299		137,555 Therms annually	175,154 Therms annually	237,468 Therms annually
Increase residential program implementation efficiencies/reduce program cost per energy savings	All	$/Electricity Saved	$3.23/kWh[41]	Annual Gross from Program Tracking Annual expenditure reports	40.8% reduction	55.8% reduction	73.1% reduction
		$/Demand Saved	$4,784.30/kW		26.9% reduction	45.4% reduction	66.8% reduction
		$/Therms saved	$61.96/therms		33.8% reduction	50.6% reduction	70.0% reduction
Demonstrate public agency actions toward promoting energy efficiency, targeting a goal of X [number] of agencies making	Engage Public Agencies to Drive Energy Efficiency in Their Communities Increase and Deepen	Cumulative number of public agencies committed to energy efficiency	21[42]	Program Tracking Databases	2 new public agencies per year	3 new public agencies per year	4 new public agencies per year

[40] Baseline is the average of 2015 and 2016 energy savings reported and projected.
[41] Baseline is the average of 2015 and 2016 annual budget divided by kWh, KW and Therms savings reported and projected.
[42] Baseline is the number of public agencies engaged in 2016.

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (2018 - 2020)	Mid Term Target (2021 - 2023)	Long Term Target (2024 - 2025)
energy efficiency commitments	Partnerships with Stakeholders to Drive Adoption of Energy Efficiency						
Drive program participation through local outreach and engagement about energy efficiency and ZNE	Engage Public Agencies to Drive Energy Efficiency in Their Communities Increase and Deepen Partnerships with Stakeholders to Drive Adoption of Energy Efficiency Offer Technical Assistance to Increase Capacity for Program Participation	Number of engagements with high potential program participants	11,166[43]	Program Tracking Databases	2,000 additional engagements per year	3,000 additional engagements per year	4,000 additional engagements per year

[43] Baseline is the number of engagements with high potential program participants in 2016.

As a Regional Energy Network with a much narrower scope of programing and focus than traditional IOUs, SoCalREN's metrics do not primarily revolve around verified energy savings. SoCalREN's mission of leveraging local governments, focusing on hard-to-reach communities and innovative pilot programs better lends itself to secondary metrics that demonstrate the influence SoCalREN has on energy saving actions region wide. These energy savings may not be directly attributable to SoCalREN within conventional IOU reporting frameworks.

2. Overall Statewide Market Effects within the Sector

As part of a statewide effort to improve energy efficiency in California, some market level cannot be evaluated exclusively on SoCalREN's efforts. While contributing in part, the following table suggests metrics that should be evaluated based on statewide efforts.

Table 18. Residential Market Effects and SoCalREN Strategies

Market Level Goals	Intervention Strategies	Market Effect Indicator	Baseline	Metric Source	Notes on Indicators
Assist in reaching the LTEESP goal of ZNE for 50% of existing residential buildings by 2030.	Technical Assistance and Tools	Proportion of existing buildings by 2030.	<1% in 2015	EM&V Study	Revised potential study by 2025

M. EM&V Preparedness and Research Needs

SoCalREN will collaborate with CPUC and evaluation consultants to identify and collect the most appropriate and valuable data, along with close coordination on reporting such data. SoCalREN identifies a need for evaluators to improve measuring the impact of SoCalREN programs. By the spirit of its very creation, SoCalREN runs programs traditional administrators are either unable, or unwilling, to run themselves. The bulk of past evaluation efforts focused on traditional resource programs. Evaluators did not have as much experience evaluating the type of programs SoCalREN runs, and less experience measuring the impact of non-resource programs on resource programs. Therefore, there must be a conscious effort by evaluators to adapt established evaluation methodology for the purpose of capturing the full effect of SoCalREN.

1. Data Collection Needs

SoCalREN will track and report the following residential sector data to apprise the CPUC and stakeholders of its progress, starting with monitoring efforts:

Monitoring: These efforts will focus on sector-level spending, sector-level savings, participation among single-family and multifamily customers, partnerships with local governments, and progress towards metrics.

Embedded Evaluation: Program monitoring and evaluation is systematically incorporated into SoCalREN's established organizational structure to inform program design and direction for successful third party EM&V. This supports EM&V preparedness on an ongoing basis rather than toward the end or after a program cycle. The SoCalREN team will evaluate individual programs both independently and in relation to other SoCalREN programs. Specifically, SoCalREN will monitor, coordinate, and evaluate project activities and milestones, and key metrics that inform progress, such as budget, program impacts and risks, cost-effectiveness, and results verification against the metrics identified in this Business Plan.

2. Anticipated Study Needs

Preceding 2016, The RENs as pilots were ineligible to direct their own ratepayer-funded EM&V work. In August 2016, the CPUC revised its rules to codify and allow for a funding stream for RENs to conduct their own process evaluations.[44] The Energy Division currently has an in-progress EM&V study that will assesses the RENs' value and effectiveness for PY 2013-2015 program activities and that study is being overseen by the Energy Division. SoCalREN anticipates in addition to the already led Energy Division staff assessment and with the new allocation of funds for the REN to conduct its own program evaluation, SoCalREN will initiate in 2018 various the following Study:

- PY 2016-2017 Process Study of SoCalREN Energy EE Programs: This study would conduct evaluations that seek to verify the non-resource benefits of programs and identify the overall effectiveness of program operations. In addition, SoCalREN may seek to identify processes and procedures that would allow current non-resource programs (e.g., PACE) to transition to resource programs.

SoCalREN efforts to study processes and overall effectiveness through the Business Plan cycle outlined in this Business Plan. As additional potential future study questions arise for RENs, SoCalREN will continue to identify studies it can conduct and work with Energy Division staff to have those completed.

[44] D.16-08-019, August 18, 2016, Conclusions of Law No. 70, p. 107

Appendix A: Acronym List

Acronym	Definition
AAEE	Additional Achievable Energy Efficiency
AFUE	Annual Fuel Utilization Efficiency
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BayREN	Bay Area Regional Energy Network
BPI	Building Performance Institute
CCA	Community Choice Aggregation
CEC	California Energy Commission
CHERP	Claremont Home Energy Retrofit Project
COG	Council of Governments
CPUC	California Public Utility Commission
DEER	Database for Energy Efficient Resources
DER	Distributed Energy Resources
DG	Distributed Generation
DR	Demand Response
ECDMS	California Energy Consumption Data Management System
EE	Energy Efficiency
EEM	Energy Efficient Measure
EM&V	Evaluation, Measurement, and Verification
ESA	Energy Savings Assistance
GHG	Greenhouse Gas
HERO	Home Energy Renovation Opportunity
HPwES	Home Performance with Energy Star®
HTR	Hard-to-Reach
HVAC	Heating Ventilation and Air Conditioning
IDSM	Integrated Demand Side Management
IHACI	Institute of Heating and Air Conditioning Industries
IOU	Investor Owned Utility
LAC	Los Angeles County
LGP	Local Government Partnership
LTEESP	Long Term Energy Efficiency Strategic Plan
ME&O	Marketing, Education, and Outreach
MF HERCC	Multifamily Home Energy Retrofit Coordinating Committee
MLS	Multiple Listing Service
MOU	Memorandum of Understanding
MSAs	Metropolitan Statistical Areas
MWD	Metropolitan Water District

PA	Program Administrator
PACE	Property Assessed Clean Energy
PCG	Project Coordination Group
PG&E	Pacific Gas and Electric Company
RECOs	Residential Energy Conservation Ordinances
RENs	Regional Energy Networks
ROI	Return on Investment
SCE	Southern California Edison
SCG	Southern California Gas Company
SDG&E	San Diego Gas & Electric
SEER	Seasonal Energy Efficiency Ratio
SF	Single Family
SoCalGas	Southern California Gas Company
SoCalREN	Southern California Regional Energy Network
SWME&O	Statewide Marketing, Education and Outreach
TDSM	Targeted Demand Side Management
TOU	Time-Of-Use
WE&T	Workforce Education & Training
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Chapter: Residential Sector	
	Summary tables	
Section C.	Table with CE, TRC, PAC, emissions, savings, budget	
Section L.	Metrics for sector	
Section E.	**Market characterization (overview and market/gap and other analysis)**	
Section E. 2.	Electricity/NG	
Section J.	State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)	
Section E.	EE potential and goals	
Section F.	Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)	
Section F.	Major future trends that are key for the PA and its customers	
Section G.	Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)	
	Description of overarching approach to the sector	
Section A and G	Goals/strategies/approaches	
Section G	How portfolio meets Commission guidance	
Section G.	Description of how this chapter addresses the performance challenges/barriers	
Section G.	**Intervention strategies (detailed)**	
Section G	What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)	
Section G	Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)	
Section F	How approaches advance goals discussed above	
Section B	How strategies use lessons learned from past cycles and EM&V	
Section B	How will interventions support/augment current approaches or solve challenges	
Section O.	Explanation for how these strategies address legislative mandates from AB 802, SB350, and	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	AB 793, as well as other Commission directives for this sector, including strategic plan.	
Section O.	Future expectations for intervention strategies	
Section G.	Description of pilots	
Section K	Key Partners	
	Compare/contrast to past cycles	
Section C.	Budget changes as appropriate	
Section B.	Modification to sector strategies	
Section H	Cross-cutting (sector chapters and ME&0)	
Section H. 4.	Program Administrator marketing and integration with SW MEO as applicable	
Section H. 3.	Workforce, education, and training	
	Emerging Technologies	
Section H. 1.	Codes & Standards	
	Cross PA and Offering Coordination	
Section K.	How strategies are coordination among regional PAs	
Section K.	Proposal of statewide program administrator/approaches for this sector	
Section K.	How the sector strategies are coordinated with statewide program activities	
Section K.	How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)	
Section L.	EM&V Considerations (statement of needs)	
Section L.	Data collection needs	
Section L.	Anticipated study needs	
Section I.	Demand Response	
Section I.	How EE measures use up-to-date DR enabling technologies to be "DR ready"	
Section I.	How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	
Section I.	How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	
	Residential Rate Reform	Not Applicable to SoCalREN
	How BPs will help reduce load during TOU periods	
	How BP will diminish barriers to load reduction during TOU periods	
	How strategies will provide info to customers and/or provide a tool to show how program may	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	impact customer energy usage during different TOU periods	
	How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	
	ME&O re: rate reform	
Section I.	Integrated Demand Side Resources	
	Zero-Emission Vehicles(EVs)	
Section I.	Energy Savings Assistance (Multi-family Focused)	
Appendices	Appendices	
Appendix C.	Additional Customer Data	
	Cited research	
	CAEECC stakeholder input resolution	Please see Attachment A-1 Chapter

Appendix C: Residential PACE Energy Savings Data

Table C-1. List the Residential PACE energy savings potential based on projects in Los Angeles County since June 2015 participating the HERO program. Savings are calculated using the approved Home Upgrade calculator with the following assumptions: Climate Zone 9, Vintage of Pre-1978, Crawlspace Floor Construction, single story, and 1,600 square feet of conditioned combined floor area.

PACE Measure Name	Home Upgrade Measure Name	PACE Data Record Count	kWh	kW	Therms
Exterior Windows	Windows (U-Factor ≤ 0.32, SHGC ≤ 0.25)	5,057	624,539.50	1,633.41	128,953.50
Central Air Conditioner	Central Air Conditioner (≥ SEER 15)	2,020	1,226,544.00	2,009.90	(3,030.00)
Duct Replacement	Duct Sealing (≤ 6%)	1,778	363,245.40	709.42	38,404.80
Attic Insulation	Attic Insulation and Plane Sealing (≥ R-44)	1,222	266,884.80	172.30	57,556.20
Wall Insulation	Wall Insulation (≥ R-13)	577	(7,385.60)	113.67	28,330.70
Gas Tankless Water Heater	Gas Tankless Water Heater (EF ≥ 0.82)	359	-	-	37,695.00
Furnace	Central Furnace (≥ 95 AFUE)	304	(12,403.20)	-	9,971.20
Air Sealing	Whole Building Air Sealing (≥ 30%)	147	2,690.10	9.85	2,175.60
Under Floor Insulation	Floor Insulation (≥ R-19)	138	(16,684.20)	0.83	2,484.00
Duct Sealing	Duct Sealing (≤ 10%)	75	13,125.00	25.58	1,387.50
Natural Gas Storage Water Heater	Gas Storage Water Heater (≥ EF 70)	12	-	-	550.80
Electric Heat Pump Water Heater	Electric Water Heater (EF ≥ 2.00)	2	-	-	-
Total		**11,691**	**2,460,555.80**	**4,674.96**	**304,479.30**

SoCalREN

Energy Efficiency Business Plan

Public Sector Chapter




January 23, 2017

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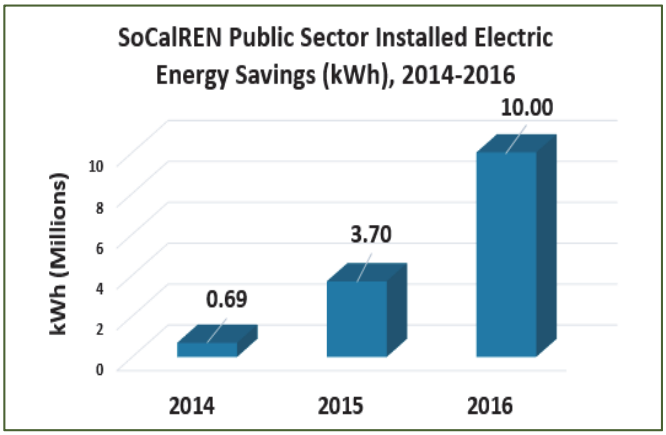
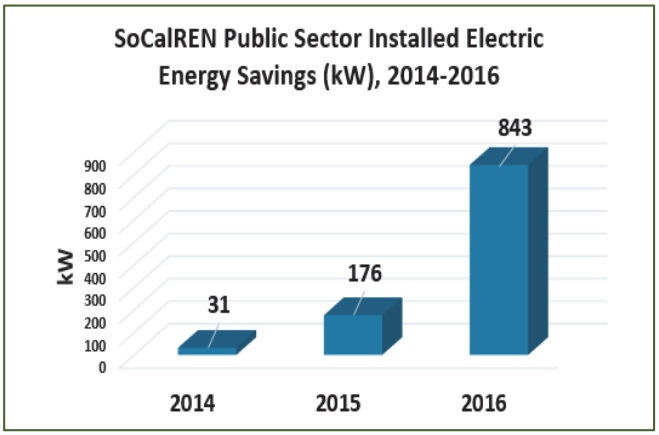
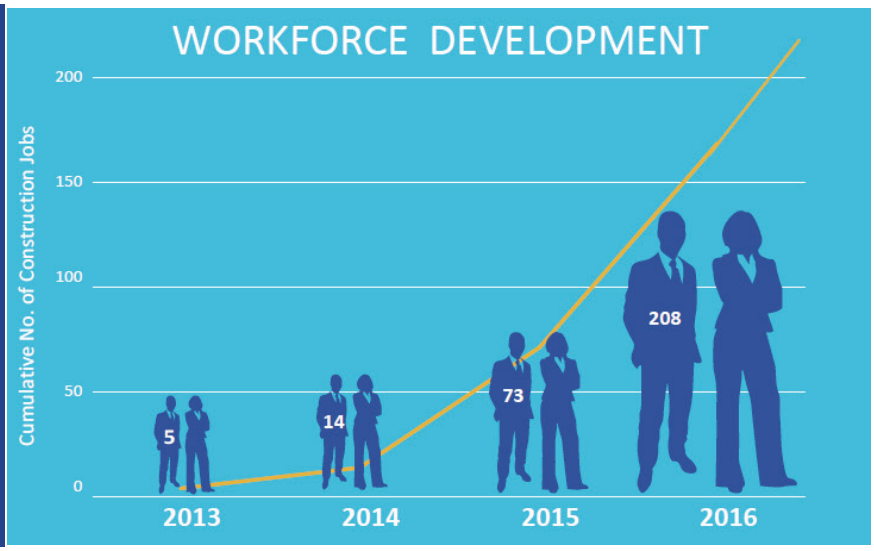
SoCalREN Public Sector Snapshot





SoCalREN Public Sector Installed Energy Savings	2014	2015	2016	Total
Therms	0	24,251	30,750	55,001



PUBLIC SECTOR

SoCalREN Public Sector Chapter

A. SoCalREN Public Sector Vision

SoCalREN envisions a future in which public agencies and their constituents play an active leadership role in shaping ZNE communities that are safe, secure, resilient, affordable, and sustainable.

California's Zero Net Energy (ZNE) future is fast approaching. ZNE drives energy resource integration, comprehensive energy savings, and reductions in greenhouse gas (GHG) emissions. Public agencies play a critically important role in achieving ZNE goals and meeting the state's aggressive energy and climate goals.[1] Unleashing the potential of the public sector to lead by example and motivate community action is key to charting the pathway to ZNE communities.

By focusing on the design and development of ZNE communities and creating appropriate metrics and milestones to measure progress, public agencies can move beyond individual building-by-building solutions to community-wide solutions that consider all sources and uses of energy within their boundaries, identify the best approaches for coordinated project investments, and leverage broader opportunities and benefits for their citizens.[2]

A ZNE community offsets its annual energy usage through equivalent generation of renewable energy and intelligent management of energy demand to achieve a low- to zero-carbon footprint.[1]

The Southern California Regional Energy Network (SoCalREN) is helping realize its vision by providing public agencies with the expertise, resources, and support they need to create a safe, secure, and resilient energy future that is decarbonized, diversified, and decentralized.

Public agencies can achieve ZNE communities by implementing energy efficiency (EE) and distributed energy resource (DER) measures in their own facilities and assets, educating and engaging communities in energy programs and strategies, undertaking energy master planning, and adopting local regulations, codes, and standards that support a ZNE future.[3]

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[1] Rocky Mountain Institute. 2012. *Zero Net Energy 2.0*. RMI Outlet. March 12.
[2] National Renewable Energy Laboratory. 2016. *From Zero Energy Buildings to Zero Energy Districts.* NREL abstract, ACEEE white paper.
[3] President's Council of Advisors on Science and Technology. 2016. *Report to the President: Technology and the Future of Cities*. Executive Office of the President. Washington, DC.

Public Agency Milestones on the Pathway to ZNE

- Agency is knowledgeable and actively engaged in supporting energy efficiency and ZNE
- Agency has completed energy efficiency and DER upgrades in its own facilities and assets
- Agency has developed a local or community energy master plan and coordinated with a regional energy plan as a roadmap for action to address energy and GHG reduction targets and strategies
- Agency is promoting energy efficiency and ZNE awareness and engagement in its community
- Agency has adopted model codes, standards, and policies that support ZNE and is effectively achieving code compliance

Achieving this vision requires a focus on the distinctive needs and requirements of the public agency customer. Public agencies face unique challenges and barriers that include limited technical resources to identify, develop, and implement projects; inadequate and limited access to data about building performance; financing hurdles; unique procurement requirements; protracted decision-making processes; and managing within a political environment, among others.[4]

As an entity that is managed by the public sector for the public sector, SoCalREN is uniquely suited to overcome these barriers and unlock the potential for public agency energy leadership and collective energy actions.

The SoCalREN target market is a sub-group of the newly created public sector market segment. It includes more than 730 cities, counties, tribes, K–12 schools, local government hospitals and hospital districts, water districts, wastewater districts, sanitation districts, ports, airports, and special districts within the Southern California Edison (SCE) and Southern California Gas (SoCalGas) service territories.

The mission of the SoCalREN is to shepherd public agencies to increase energy efficiency adoption and lead their communities on the pathway to ZNE.

1. Goals

Over the next 8 years, SoCalREN will seek to achieve the following goals:

- Save 120 gigawatt hours (GWh), 4 megawatts (MW), and 112 thousand therms over an 8-year period.
- Enroll 40 percent of eligible public agencies in the Energy Network EE program.
- Increase the percentage of public agencies that engage their communities in energy actions and ZNE strategies, thereby reducing overall community energy consumption.

[4]Bain, R., and L. Rothschild. 2016. *Driving Energy Efficiency in the Public Sector*. ACEEE white paper.

- Increase the ability of public agencies to meet local, regional, and state energy targets and policy goals through (1) creating a regional energy master plan and (2) creating a regional energy information database.
- Increase the percentage of agencies that adopt model codes, standards, and policies that support implementation of ZNE communities.

Details regarding the intervention strategies to support these goals can be found in ***Section G, SoCalREN's Approach to Achieving Goals***.

B. SoCalREN's Public Sector Proposal Compared to Prior Program Cycles

In previous program cycles, the SoCalREN public sector program has successfully provided comprehensive one-stop energy efficiency services to increase adoption of energy efficiency by public agencies. This program (formerly called SoCalREC) is expanding in the 2018–2025 program cycle to reach many more agencies and include targeted DER services. In addition, the 2018–2025 business plan adds new and modified program offerings that build public agency capacity and expertise to lead by example in their communities, as described in ***Section G. SoCalREN's Approach to Achieving Goals***.

Compared to prior program cycles, the Public Agency (SoCalREC) budget has been changed to enable the public sector to drive the market to ZNE communities. Resources that previously supported the Water-Energy Nexus pilot, the Community Energy Efficiency Permit Management System (CEEPMS), the Public Agency Revolving Loan Fund, and the Public Agency Loan Loss Reserve have been reallocated to SoCalREN's Public Sector Business Plan intervention strategies. This realignment is based on a combination of factors, including completion of tasks, integration of some tasks into the existing programs, as well as elimination of tasks based on implementation experience.

1. Key Learnings from Recent Evaluation, Measurement, and Verification Reports of California's Public Sector Energy Efficiency Programs

Few evaluation studies on the public sector have been completed. Studies have been done on the IOU LGP programs that indicate that local governments need assistance in identifying supplemental funding sources, overcoming staff capacity challenges, and compiling and analyzing energy use data. In addition, more technical support is needed to identify and implement projects.

In 2016, Opinion Dynamics completed a process evaluation of the Energy Efficiency Project Delivery program (formerly called SoCalREC). "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 percent% 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." In addition, Opinion Dynamics found that "Public Agency Program participants were pleased with the services provided by the implementer; 86 percent% said that staff met or exceeded their expectations, and 71 percent% said that staff always met their needs. A very high proportion of Public Agency Program participants indicated having received beneficial support from the SoCalREN program. 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."

The evaluation concluded:

- "Public agency program participants were pleased with the services provided by SoCalREN."
- "86 percent% of the enrolled public agencies said the program staff met or exceeded their expectations."
- "A very high proportion of participants indicated having received beneficial support from the SoCalREN public agency program."
- "The satisfaction levels and proportion of beneficial support are very high and indicative of an effective program that is meeting the need of its participants."
- "Program participants said that the SoCalREN helps with building capacity among their staff by increasing their staff's ability to improve EE within municipal buildings."

In addition to evaluations already completed, SoCalREN utilizes research and findings from evaluations of other programs to inform strategy and program design, such as evaluations in local government partnerships. These findings have help shaped the next phase of SoCalREN's sector strategies.

C. Sector-Level Budget

SoCalREN is reallocating some of its existing portfolio budget to fund its enhanced public sector intervention strategies. SoCalREN has increased the levels of funding in its Public Sector area to provide new programs further driving the transition to Zero Net Energy communities. SoCalREN plans to fully embrace the Public Agencies to help deliver new programs, expertise, and services to the agencies they serve and SoCalREN will leverage its Residential Sector funding to further reach into Residential communities. In addition, SoCalREN has factored in a 2% cost increase per year to account for program cost increases.

Table 1 is a summary of SoCalREN's public sector budget. These values are based on estimates of the proposed strategies outlined in Section G. As SoCalREN implements the strategies described in this business plan chapter, the budget will be evaluated over time to respond to market changes, the needs of the portfolio, and regulatory directives. Further details on these

changes will be reflected annually in SoCalREN's September compliance filing, as dictated by D.15-10-028.[5]

Table 1. Sector-Level Budget

Budget[6]	2017[7]	2018	2019	2020	2021	2022	2023	2024	2025
Administration	602,733	1,133,600	1,156,272	1,179,397	1,202,985	1,227,045	1,251,586	1,276,618	1,302,150
Marketing & Outreach	532,813	453,440	462,509	471,759	481,194	490,818	500,634	510,647	520,860
DI – Non Incentive	7,158,652	9,748,960	9,943,939	10,142,818	10,345,674	10,552,588	10,763,640	10,978,912	11,198,491
DI - Incentive	0	0	0	0	0	0	0	0	0
SECTOR TOTAL	**$8,294,198**	**$11,336,000**	**$11,562,720**	**$11,793,974**	**$12,029,854**	**$12,270,451**	**$12,515,860**	**$12,766,177**	**$13,021,501**

D.Sector Overview

1. Target Audience

The newly designated public sector customer segment is composed of local, state, and federal government; K–12 and higher education; and special districts (Table 2).

Table 2. Public Sector Customer Segments

Local	State	Federal	Education
• Cities • Counties • Special districts • Solid waste facilities • Water districts • Wastewater districts • Hospitals • Correctional facilities	• Buildings • Park facilities • Hospitals • Correctional facilities	• Buildings • Postal service • Hospitals • Military bases • Correctional facilities	• K–12 school districts • Higher education (UC/CSU, community colleges, teaching hospitals)

The **SoCalREN target audience is a sub-segment** within the SCE and SoCalGas service territories that includes cities, counties, tribes, K–12 schools, local government hospitals and hospital districts, water districts, wastewater districts, sanitation districts, ports, airports, and other special districts. Currently, SoCalREN-eligible agencies comprise:

[5] D.15-10-028, Op. 4
[6] DI - Direct Implementation
[7] The budgets for year 2017 reflect the September 1 Compliance Filing Regarding Southern California Energy Network *2017 EE Program Portfolio Changes and Funding Reques* which is expected be approved Q1 2017.

- 220 cities, townships, and tribes
- 12 counties
- 150 water districts, wastewater districts, and other special districts
- 348 K–12 school districts

2. Segment Overview

Public sector agencies represent a significant group of energy end users through the operation of facilities and public amenities, ranging from police stations and schools to wastewater treatment plants and streetlights.[8] A report submitted to the California Environmental Protection Agency (CalEPA) by the Green Building Initiative Task Force in 2004 stated that, based on floor space, an average of 18 percent of all buildings are owned by the public sector and that, in California, publically owned buildings are estimated to consume 10 percent of the state's non-residential energy.[9] As a result, public agencies have unique potential to "lead by example" by creating cost savings that benefit the local economy and inspiring local action. The California Public Utilities Commission (CPUC) recognizes this potential. As part of the Rolling Portfolio process, the CPUC established the public sector as a distinct market segment in 2015. This action provides the opportunity to design and tailor approaches that enable public agencies to fully participate in helping the state attain its aggressive climate action goals.[10]

The California Long-Term Energy Efficiency Strategic Plan (CLTEESP) calls for local governments to play a greater leadership role in energy efficiency to meet state goals.[11] The CLTEESP calls for local governments to lead by example in their own facilities, with energy use practices that promote innovative energy efficiency programs, the adoption of higher energy efficiency standards ("reach codes"), and energy code compliance enforcement in their communities, thereby ensuring that local government energy efficiency expertise becomes widespread and typical.[12]

The California Energy Efficiency Strategic Plan

Vision for Local Governments

"By 2020, California's local governments will be leaders in using energy efficiency to reduce energy use and global warming emissions both in their own facilities and in their communities."

The Value Proposition. Because public agencies are accountable for ensuring the overall safety and security of their communities, they have a related interest in ensuring a safe, secure, reliable, and affordable energy supply. When energy reliability is compromised, such as when grid service fails, the consequences to communities are significant, disruptive, and costly. Public agencies are

[8] Bain, R., and L. Rothschild. 2016. *Driving Energy Efficiency in the Public Sector*. ACEEE white paper.
[9] Green Building Initiative Task Force. 2004. *Green Building Action Plan*. September.
[10] Administrative Law Judge Edmister. 2015. *Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues, 13-11-005*. October 22, 2015.
[11] California Public Utilities Commission and California Energy Commission. 2011. *California Energy Efficiency Strategic Plan*. January.
[12] "Ibid.

the “first responders” to deal with the consequences of power outages and brownouts. The costs of response for the agency can be significant, and the effects on communities, particularly disadvantaged communities, can be catastrophic. [13] As such, public agencies have an increasingly critical stake in improving the resiliency and performance of the energy systems that serve them, which includes mobilizing community and business resources to implement decentralized, community-scale energy solutions.

As technology, economics, and environmental concerns drive inevitably toward a more integrated, decentralized, community-scale energy future, public agencies have a critically important role to play.[14] They have significant influence in shaping energy outcomes in their communities through their own actions to reduce energy, their regulatory authority to adopt new energy codes and standards, and their ability to establish effective programs and incentives to inspire voluntary actions within their communities.

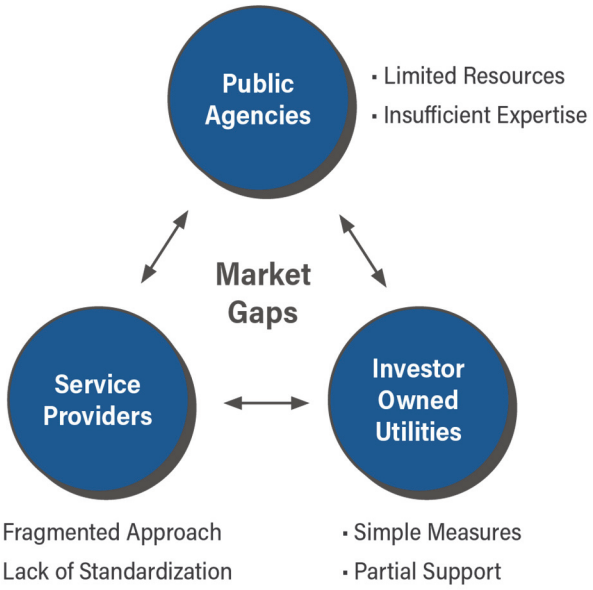
Perhaps most important, the transformation of energy resources required to achieve California’s energy and environmental targets necessitates a central role for local governments to bring market actors together. As the proliferation of DER drives an industry paradigm shift, local governments will increasingly play a key role in creating partnerships of developers, vendors, and utilities with local communities and governmental entities that support local resilience, energy security, and sustainability goals.[15]

[13] Bain, R., and L. Rothschild. 2016. *Driving Energy Efficiency in the Public Sector*. ACEEE white paper.
[14] Vance, C., and C. Perkins. 2014. *Scaling Up Fast and Transforming Markets with Regional Energy Networks.* The American Council for an Energy-Efficient Economy.
[15] Mans, Ulrich. 2012. *Role of Local Governments in Promoting Renewable Energy Businesses*. ICLEI Global Reports.

3. Market Gaps

Within Southern California, the public sector landscape consists of three significant participants: public agencies, service providers, and investor-owned utilities (IOUs) (***Figure 1***). Public agencies represent the demand or need in the market as customers. The IOUs, SoCalGas and SCE, not only provide energy services but also incentives and financing programs for public agencies to reduce their energy usage and demand. They also administer local government partnership (LGP) programs that offer additional financial incentives and technical assistance for participating public agencies. Consultant service providers include a variety of industry players, such as engineering firms, contractors, third-party financing firms, and full-suite turnkey service providers, such as energy performance contracting (EPC) companies and energy service companies (ESCOs), that offer "a la carte" services. These consultants provide technical services such as audits, project design, project financing, and/or construction services to complete projects.

Figure 1: Public Sector Participants and Market Gaps



Each of these participants represents a unique perspective. For example, many service providers drive for large investments from their customers by bundling projects and measures across multiple sites to create a more long-term, cost-effective proposal. Risk-averse public agencies are challenged with justifying all the costs and possibly shelving all the projects as a result. IOU's design and deliver programs that are based on broad customer categories, such as small business, industrial, and large commercial. Local governments own and operate a variety of building types, which may not be properly targeted by utility programs, and own assets, such as streetlights, that do not fit the mold of a typical utility program.[16] In addition, several common public agency characteristics, including those listed below, contribute to the creation of market gaps.[17]

- Need for transparency
- Complex decision-making process
- Multiple constituencies and stakeholders
- Multiple and competing goals
- Aversion to risk

[16] Bain, R., and L. Rothschild. 2016. *Driving Energy Efficiency in the Public Sector*. ACEEE white paper.
[17] Chamberlin, B., J. Lahr, M. Nushwat. 2008. *Streamlining EE in the Local Government Sectors*. ACEEE abstract.

- Diversity in priorities and needs
- Political dynamics
- Unique funding constraints
- Hard-to-reach communities

Resource constraints, usually in the form of budget and staff constraints, are common in the public agency sector. Although the private sector has recovered from similar losses during the recession of 2008, the public sector has not, resulting in more work for fewer people and further straining existing resources. Nonetheless, public agencies remain interested in implementing energy efficiency projects and programs. In fact, public agency representatives have a growing appreciation for the complexity of project implementation and recognize the need for additional support and guidance through the process. This is due to their experiences with time delays associated with obtaining the necessary funding as well as construction inconsistencies.

Service providers, in most cases, have the specific knowledge and expertise to support key aspects of energy efficiency project implementation. However, these services are not always contiguous; customers are often required to engage several different firms, representing the various trades, for a single project. For example, one project may have three different firms, representing engineering, architecture, and contracting. This results in a fragmented approach to services and a lack of ownership and accountability. EPC companies and ESCOs offer a consolidated solution, but the lack of transparency, limited procurement control, and high costs associated with these options often make them untenable for public agencies.[18]

IOUs in Southern California provide support to public agency energy efficiency projects in three ways: 1) financial incentives, rebates, and on-bill financing (OBF); 2) limited advisory support; and 3) partial technical support. Financial support for energy efficiency projects through incentives, rebates, and OBF is important but generally favors projects with discrete, simple measures. This causes more complex projects to be delayed or stall indefinitely. SoCalGas and SCE also provide advisory and administrative support for public agencies by dedicating account representatives to each customer. Some public agencies receive further support during project development, such as benchmarking, audits, and additional incentive payments for projects, through their LGPs. Although these services are useful for public agencies, they are not offered consistently, can be difficult to access, and do not comprehensively address all agency barriers and needs.

In addition to market gaps related to energy efficiency project delivery, there is also a significant market gap in regional energy planning and access to actionable energy data for decision-making.

4. Snapshot of Usage

Overall, the public sector makes up approximately 15 percent (8,200 GWh) of total non-residential electricity usage within the SCE territory and approximately 11 percent (146 million therms) of total natural gas usage within the SoCalGas territory.[19]

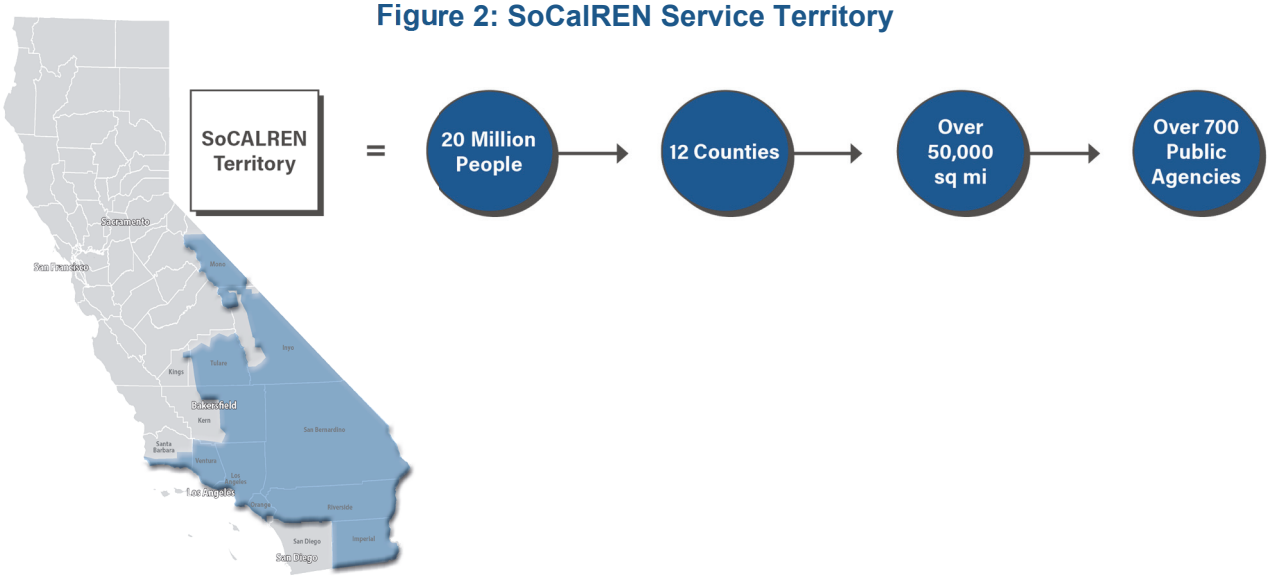
[18] Bain, R., and L. Rothschild.2016. *Driving Energy Efficiency in the Public Sector*. ACEEE white paper.
[19] Southern California Edison and Southern California Gas. 2016. *Draft Business Plans*. Public agency chapters (October 18, 2016 [SoCalGas], and October 28, 2016 [SCE]).

Local government and K–12 schools are responsible for 75 percent of public sector electricity consumption and approximately 65 percent of public sector natural gas consumption,[20] constituting the sector's most diverse customer group. Local government and K–12 school customer accounts include a broad diversity of building types and infrastructure, such as offices, classrooms, auditoriums, water production and treatment facilities, ports, airports, health care facilities, and street and park lighting. Although some of these types of public sector facilities have counterparts in the commercial sector, there are very significant and unique differences in the ways in which public sector buildings and facilities are constructed, occupied, operated, managed, repaired, and upgraded. The design and implementation of energy efficiency programs to serve the public sector must therefore be tailored to meet these unique public sector characteristics and needs to successfully reach the sector's energy efficiency potential.

5. Geography

SoCalREN serves the target audience within the geographic region covered by SCE/SoCalGas (see ***Figure 2***, below).

Figure 2: SoCalREN Service Territory



6. Energy Efficiency Potential

Because the public sector is a newly created market segment in the energy efficiency Rolling Portfolio, there are no comprehensive studies on public sector characteristics, goals, and market potential. In the most recent goals and potential study completed in 2015 by Navigant Consulting,

[20] Natural gas usage for K–12 is extrapolated from the SoCalGas "public sector" chapter because its "education" segment usage is not categorized.

the energy efficiency potential for the public sector was included within the commercial sector.[21] Although no definitive studies have yet been undertaken to measure the public sector energy savings potential within the SoCalREN service area, based on its 3 years of public sector customer energy analysis and program implementation experiences, SoCalREN is confident that there exists tremendous untapped energy efficiency potential within the newly created public sector market segment. It is anticipated that a specific public sector energy efficiency goals and potential study led by the CPUC and covering the SCE, SoCalGas, and SoCalREN territories will be completed by 2018. These future studies will be extremely useful in further defining and refining SoCalREN's public sector program approaches to maximize effectiveness.

In their draft public sector chapters, both SCE and SoCalGas propose an interim sector potential calculation methodology that uses percent of commercial sector potential as a proxy for public sector potential. Although an expedient approach, SoCalREN believes that the proposed methodology would result in an inaccurate assessment of public sector potential because many of the buildings and facilities, as well as infrastructure, that are owned and managed by public agencies have few analogies in the commercial sector (e.g., water production and treatment facilities, wastewater conveyance and treatment facilities, streetlights, ports, airports, correctional facilities, transportation systems and depots, parks, K–12 classrooms and educational facilities, etc.).

Given these unique attributes for public sector buildings and facilities, it would be prudent to exercise caution in extrapolating energy efficiency potential in the absence of directed analysis. In addition, current potential studies that exist for the commercial sector do not incorporate the needed changes and updates that are mandated by Senate Bill (SB) 350 and Assembly Bill (AB) 802 related to doubling existing building energy efficiency by 2030 as well as energy savings from measurements at the meter to include "to code" potential.

E. Public Sector Market Trends and Challenges

Several important market trends are influencing the public sector. These include the growing requirement for public agencies to help achieve the state's climate goals, growing demand from communities for cleaner energy solutions, and new opportunities for local governments to shape energy use driven by emerging technologies and new policies.

Regulatory and Legislative Goals. Public agencies are increasingly accountable for reducing GHG emissions and helping to achieve the state's aggressive climate goals. Many public agencies are adopting climate action plans as a roadmap for reducing GHG emissions. In many cases, they include targets that are more stringent than those required by the state. These plans will become increasingly important as the energy industry transforms and more responsibility for energy resiliency and safety shifts to local governments.

Technology Driving Community-Scale Energy Solutions. This represents a major trend that affects the public sector market and considers the effects of emerging technologies and the

[21] Navigant Consulting. 2012. *Statewide Institutional IOU Energy Efficiency Partnership Programs*. Prepared for the California Public Utilities Commission, California Investor-Owned Utilities, and Itron Program Assessments Study. Draft report, October 9.

changing energy environment, which enable the implementation of integrated, decentralized community-scale energy systems.[22] More and more, public agencies are looking at technologies such as self-generation, storage, sophisticated energy management systems, and microgrids. Increasingly, local governments will be motivated less by cheaper energy and more by local flexibility, environmental and resilience objectives, and greater customer choice. Working collectively, local governments will drive the development of renewable resources and resilient microgrids and integrate with other services, such as water and wastewater services.

Local Control of Energy Delivery. In addition to regulatory requirements and technological advances, other trends that affect local governments include community choice aggregation (CCA).[23] CCA's give local governments more control over the types and amounts of energy consumed by their communities, both to support renewable generation and to control costs. Through a CCA, a local government can develop a generation portfolio that diversifies fuel and technology types, reduces environmental impacts, and is more stable in cost. The CCA can choose to develop its own energy resources and thereby decide which resources will be developed and where. A CCA's local perspective and its primary mission to serve its constituents rather than maximize profits for shareholders puts it in a position to 1) implement energy efficiency programs in order to lower overall energy costs for the community and 2) develop potentially more expensive renewable energy projects to meet local demand.[24]

Locally Led Energy Financing. Property Assessed Clean Energy (PACE) is a financing mechanism that local governments are able to provide through partnerships with financing agencies.[25] PACE enables property owners to pay for energy efficiency and DER retrofits through their property taxes. Local governments can develop PACE as a means to drive greater energy efficiency and clean energy projects in their communities. Other financing options include SoCalREN's energy lease financing and construction loan fund.

Growing Variety of Funding Sources Driving More Opportunities. Cap-and-trade funds, California Energy Commission, green bonds, new financing mechanisms from the banking industry, community energy projects, and federal funds (Department of Energy [DOE]), among others, are making it more feasible for public agencies to fund energy solutions for their communities.

Growing Community Demand for Energy Sustainability. Many public agencies are experiencing growing interest and demand from their constituents to provide clean, reliable, affordable energy resources. Communities are coming together to take more control of the energy they use, both to cut their gas and electricity bills and to help combat climate change. Engagement

[22] Farrell, J. 2014. Beyond Utility 2.0 to Energy Democracy. Institute for Local Self-Reliance.
[23] Hunt, Tam. 2015. Growing Community Energy Efforts Shifting the Utility Model in California. GreenTech Media. March 4.
[24] Farrell, John. 2014. Advantage Local – Why Local Energy Ownership Matters. Institute for Local Self-Reliance. September.
[25] National Renewable Energy Laboratory. 2010. Property Assessed Clean Energy (PACE) Financing of Renewables and Efficiency. NREL energy analysis. July.

and education by public agencies will enable communities and individuals to exercise real market power and add a further dimension to wider energy market reforms.[26]

Increasing Requirement for Energy Equity and Social Justice. Ensuring energy affordability and broader access to energy efficiency and DER by diverse communities with approaches that address the needs of disadvantaged community members is critically important.[27] As the adoption of more advanced distributed energy technologies by residents and businesses accelerates, public agencies will serve an essential role in ensuring that disadvantaged communities benefit and are not left behind in the energy system transformation that is rapidly occurring.

1. K–12 Education

Proposition 39 Funding. More than two-thirds of public school buildings statewide are more than 25 years old. Proposition 39 provides almost $400 million for schools to retrofit and modernize their facilities. According to the Proposition 39 K–12 Snapshot, the estimated energy cost savings from Proposition 39 projects is nearly $60 million, equivalent to more than 200 million pounds of avoided carbon. Schools are taking advantage of Proposition 39 funds, completing lighting; heating, ventilation, and air-conditioning (HVAC); and control measures; however, project completion is constrained by limited expertise, staffing, and resources for implementation.[28]

2. Barriers and Challenges

Although the public agency sector may be rife with opportunity, capturing the savings is not always straightforward. Public agencies face unique challenges and barriers to action. The designation of the public sector as a separate market segment was based, in part, on the recognition of these unique barriers and the need to tailor program offerings to overcome them. These barriers to action include limitations on technical, financial, data, and procurement resources, as described in Table 3.

[26] Harvey, M. 2011. Community-Based Innovations in Energy Efficiency. Massachusetts Institute of Technology, Energy Efficiency Strategy Report, April 29.
[27] Ettenson, L., and C. Heavey. 2015. California's Golden Energy Efficiency Opportunity: Ramping UP Success to Save Billions and Meet Climate Goals. National Resources Defense Council, August.
[28] California Energy Commission. 2017. *Proposition 39 K–12 Snapshot*. Available: http://www.energy.ca.gov/efficiency/proposition39/index.html.

Table 3. Public Sector Barriers and Solutions

Barriers	Problems and Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
Public sector customers lack capacity and expertise	• Limited technical expertise and knowledge of energy projects and issues[29] • No clearly defined role for public agencies in energy leadership • Energy management not a core competency	• "Cream skimming" project selection • Inability to identify and evaluate relative merits of various energy project opportunities and delayed action or non-action on those opportunities • Failure to understand the public benefits of energy efficiency • Difficulties with energy project management and construction oversight • Risk aversion[30]	• Provide comprehensive whole building efficiency and IDER solutions • Implement staff education and training program to promote Strategic Energy Management (SEM) • Create consolidated and simplified program offer • Increase customer confidence through trusted end-to-end advisory and technical assistance services • Design building for public agency staff and community through engaging and accessible education modules that are delivered through a web portal that is customized for each agency/community, resulting in increased energy awareness and support for ZNE project opportunities	Refer to: • Energy Efficiency Project Delivery • Engage and Educate Communities in Energy Programs and Strategies
Siloed markets	• Siloed nature of available energy services and funding causes confusion and slows action • Fragmented policies and proceedings	• Customer confusion and reluctance to act • Disincentives for holistic and longer-term energy solutions • Weak or misaligned strategic goals	• Integrate program offerings to encompass all resource types and promote IDER solutions • Continue streamlined and simplified one-stop program approach to help agency staff better identify, implement, and manage projects	Refer to: • Energy Efficiency Project Delivery • Engage and Educate Communities in Energy Programs and Strategies

[29] Opinion Dynamics. n.d. *Local Government Partnerships Value and Effectiveness Study Final Report.*
[30] Clark, Anna Fountain. 2016. *Toward an Entrepreneurial Public Sector*. Public Personnel Management. September.

Barriers	Problems and Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
	• Fragmented, competing, and confusing program offers • Siloes within public agencies cause different departments to have competing goals and demands	• Many promising project opportunities are not pursued	• Advocate for policies that integrate public sector customer issues across proceedings • Coordinate offerings by providing access to resources through customized web portal • Promote customer behavior change actions • Establish clear local goals and targets that resonate with community while aligning with state policies	
Inadequate access to customer data	• PAs and implementers lack customer data • Limited access to actionable energy data for informed decision-making • Lack of regional/statewide energy information system • Lack of resources for local and regional benchmarking and building labeling	• Absence of comprehensive energy master plan to guide decision-making • Reluctance to develop and adopt model energy codes, standards, and policies • Less effective locational and temporal EE and DER deployment • Non-productive investment of time and effort by PAs/PIs	• Create regional energy master plans and database • Promote best practice codes, standards, and policies across public agencies in the region • Draft and promote model local ordinances on energy usage disclosure and building benchmarking • Design program that will leverage metered data for program evaluation, measurement, and verification	Refer to: • Develop Regional Energy Master Plans and Regional Energy Database • Develop and Adopt Model Energy Codes, Standards, and Policies
Public sector unique challenges	• Performance uncertainties contributing to risk aversion • Hesitation to try unproven services or products • Extensive requirements for public and transparent procurement processes	• Current programs do not fully appreciate or meet public sector needs • Lack of attention to risk reduction and public stakeholder buy-in	• Focus on strategic engagement with public sector stakeholders and public sector decision-makers • Provide customized and turn-key offerings to meet unique needs of public agencies	Refer to: • Energy Efficiency Project Delivery • Engage and Educate communities in Energy Programs and Strategies

Barriers	Problems and Challenges	Observed Impacts from Barriers	Potential Solutions	Intervention Strategies
	• Lengthy decision-making timelines • Competing and politically sensitive priorities			
Financial challenges	• Multiple and competing demands for limited financial resources[31] • Short-term budget planning horizons • Rigid funding and budget requirements/restrictions • Inability by some agencies to use multi-year financing for projects	• PAs and PIs "out of synch" with project funding and approval requirements and timelines • PA financial support through incentives, rebates, and OBF generally favors projects with simple, discrete measures, thereby leaving more holistic and complex projects to be delayed or ignored	• Develop project schedule and funding approaches/options that align with public sector fiscal calendar and decision-making processes • Develop and offer new financing options, such as revolving loan funds and energy lease financing, for public agencies • Work with private market actors to develop energy savings–related guarantee financing agreements that are customized to public sector needs	Refer to: • Energy Efficiency Project Delivery
Strict procurement requirements	• Strict project procurement and bidding requirements for public agencies • Slow and complex procurement cycle[32]	• Projects may be delayed or dropped • Staff may not have the capacity and resources to initiate and stay on top of a lengthy public procurement process	• Offer procurement and project management options, such as job order contracting and turn-key project management assistance, that overcome institutional barriers and accelerate project completion	Refer to: • Energy Efficiency Project Delivery

[31] Energy Star. 2003. *Financing Energy Efficiency Projects*. Government Finance Review. February.
[32] SoCalREN. 2013. *Local Government Energy Efficiency Resources Guidebook 4: Project Procurement*. September.

F. SoCalREN's Approach to Achieving Goals

The public sector needs the right assistance, resources, and support if it is to successfully lead communities to a ZNE future. SoCalREN addresses this challenge, fills public sector market gaps, and directly supports the goals of the CLTEESP through four key intervention strategies (***Figure 3***).

Figure 3: SoCalREN's Key Strategies

1. One-Stop Service Delivery

SoCalREN's services are provided through one-stop end-to-end service delivery that improves the customer experience, builds capacity and expertise, and inspires a level of public agency awareness and confidence that motivates action (***Figure 4***).

Figure 4: SoCalREN's One-Stop Services

- **Streamlined, Integrated Services.** By delivering integrated services that address the full range of needs and requirements of public agencies, SoCalREN is able to help them understand their choices and drive greater participation and higher adoption of energy efficiency programs.
- **Shared Resources and Learning.** SoCalREN provides agencies with customized tools and resources that they otherwise would have to develop on their own, saving them time, money, and staffing resources. Agencies engage with one another and learn from one another, resulting in higher adoption rates, better results, and increased expertise. SoCalREN connects agencies through peer-to-peer workshops and training, provides access to shared online resources, and participates in subject matter–related online learning communities.
- **Impartial Advice.** Often public agencies are approached by IOUs, private vendors, ESCOs, and others to implement projects or participate in energy savings programs, and often they do not know how to weigh the benefits and risks of various options. As a public entity, SoCalREN is able to offer valuable third-party advice to agencies as a trusted advisor, without concern from the agency about conflicts of interest or up- selling of other products and services.
- **Side-by-Side Guidance.** SoCalREN has learned through experience that side-by-side guidance and support is perhaps the most important driver with respect to agencies adopting energy efficiency actions at a much higher rate. SoCalREN assists agencies much like a sherpa supports a climber while ascending a mountain. Using this metaphor, SoCalREN climbs the mountain with the agency; at the same time, the agency learns best practices from the other sherpas while doing similar work with other agencies. Collectively, agencies move up the mountain faster than they would alone and, in the process, gain valuable expertise and access to resources along the way. The program provides a set of tools and templates and continuously works to incorporate market changes and ensure that agencies are taking the most effective route to the top. Ultimately, public agencies will have climbed up the mountain enough times so that one day they will have the expertise and capacity to do it on their own.

2. Intervention 1 – Energy Efficiency Project Delivery

SoCalREN's Energy Efficiency Project Delivery Program fills market gaps and provides public agencies with an integrated, objective, and comprehensive energy efficiency solution. Services include, but are not limited to, energy planning, energy use analysis, investment-grade audits, designs for scopes of work, incentive and financing support, financial analysis, and procurement assistance, bid analysis, and construction management support. In addition, public agencies receive project management services to guide them through the entire process.

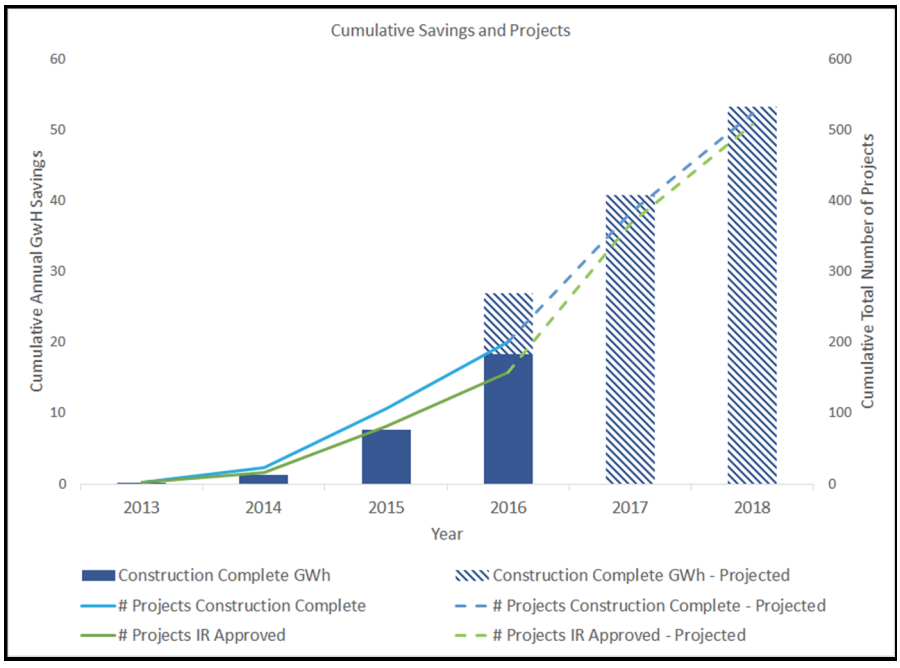
SoCalREN continuously refines its program services to assist agencies with their key challenges, such as choosing the right technology, developing accurate cost proposals, and accessing financing, procurement, and construction support. One of the most effective aspects of the program is that it expands and contracts to meet each agency's needs with customized services. The program focuses on a whole-building, deep-retrofit approach.

The program focuses on reaching disadvantaged communities. The program currently maintains almost 40 percent participation from agencies with disadvantaged communities and strives to serve customers in geographically remote areas. In addition, the program is coordinating efforts with 12 LGP programs. Each agency type and partnership requires a flexible approach that must be adapted with a unique set of services, often on a project-by-project basis.

Since its launch in September 2013, SoCalREN has developed and refined its approach and core principles to ensure significant results in the form of energy savings. The Project Delivery Program has identified more than 550 energy efficiency–related project opportunities, including mechanical, retro-commissioning, lighting, street lighting, water pumping, and process optimization opportunities. To date, the program has completed construction on more than 200 of these projects. In addition to electric savings, the program has also been able to show the successful completion of projects with savings that total 1,445 kilowatts and more than 99,000 therms. By the end of 2018, the program anticipates having achieved an annual electric savings of 53 GWh over its first 5 years.

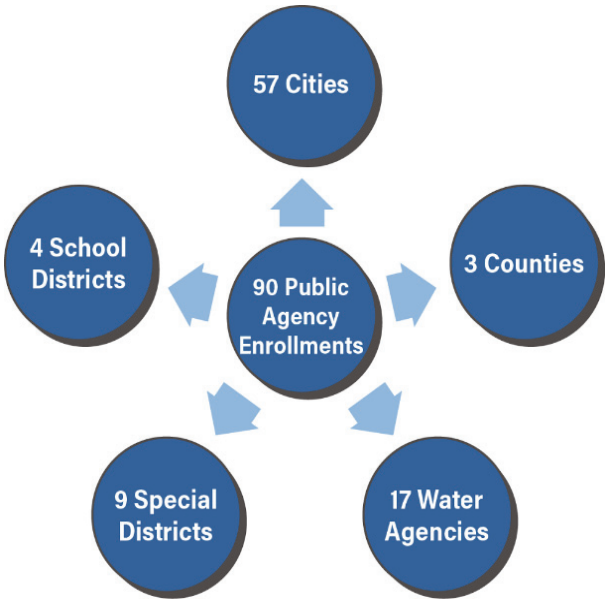
Chart 1 shows the trend in performance for completed projects and energy savings year over year since the program launch in late 2013. The year 2016 starts a sharp trajectory that is maintained in the 2017 and 2018 calendar years as the program evolves to become even more cost effective and efficient.

Chart 1: Cumulative Savings and Projects



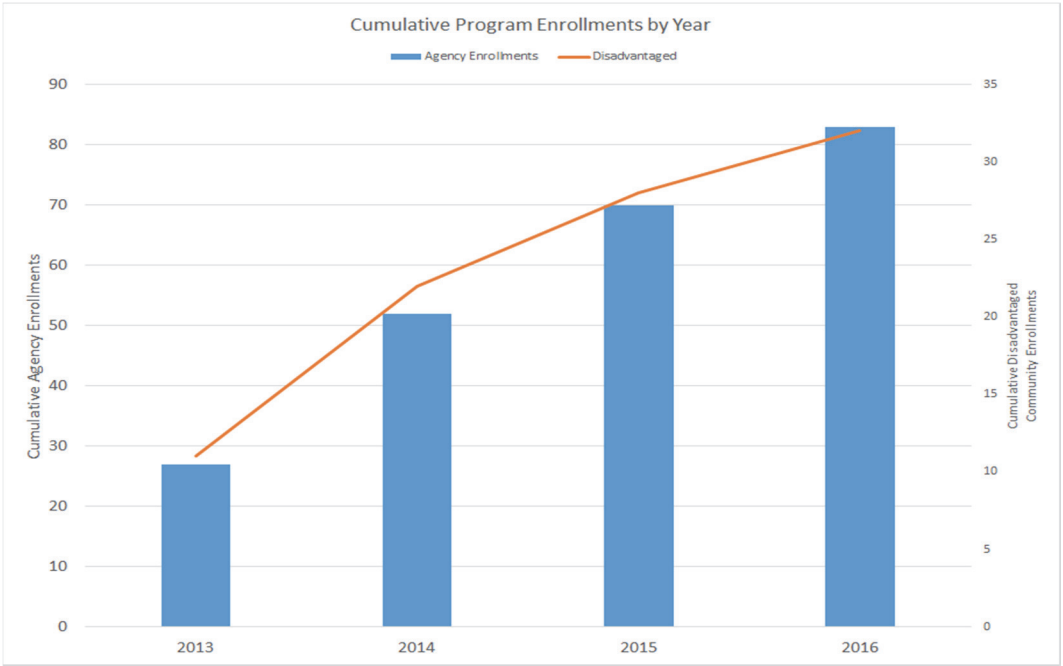
Agency Participation. Currently, 90 agencies are enrolled in the program. The program has a proven track record of engaging communities, particularly those that do not typically implement energy efficiency projects or are underserved. The program is in high demand from new agencies, which ensures it will continue its strong trajectory of growth. Agency participation has increased annually in both quantity as well as diversity of agency type. ***Figure 5*** shows the different public agency sub-segments that are currently enrolled in the program. Each agency sub-segment has unique requirements for its buildings and infrastructure and therefore needs customized services.

Figure 5: SoCalREN's Current Enrollments



The 90 agencies represent more than 10 percent of the eligible public agency sector market in the SoCalREN territory, a region that is equivalent in population to Arizona, Massachusetts, and Indiana combined. The program currently serves more than five different agency types, including cities, counties, special districts, school districts, and water agencies. Each of these segments has unique requirements for their buildings and infrastructure. ***Chart 2*** shows program enrollment year over year.

Chart 2: Cumulative Program Enrollments by Year



Local Economic Development. As the program identifies and implements energy retrofits with public agencies, it also helps create socioeconomic wealth for their communities. The program works to leverage utility incentive dollars that promote project construction spending and ultimately create new jobs. By the end of 2017, nearly 500 construction jobs will have been created through program activity. Construction jobs are calculated by using the project's construction value and estimating that $92,000 in project costs will equate to one construction job. ***Chart 3*** shows the trend in job creation over the years. It shows a significant increase in the 2016 calendar year, which is a function of the large number of projects being completed. Calendar year 2017 is another jump in the program's upward trend.

Chart 3: Cumulative Construction Jobs

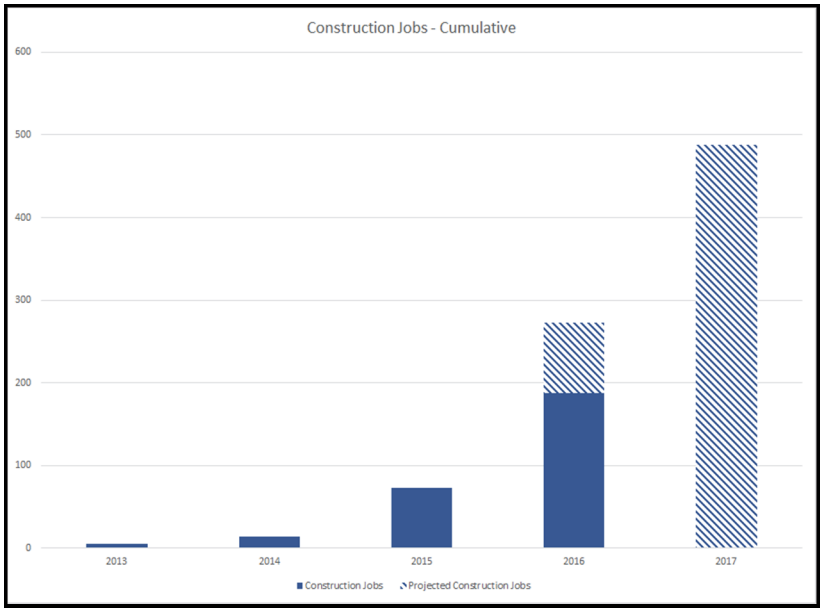


Table 4 describes the barriers, example tactics, and implementation timeline for Intervention 1.

Table 4. Intervention 1 – Project Delivery

Intervention strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid-, Long Term
Energy Efficiency Project Delivery	• Limited internal capacity and expertise • Limited access to resources • Strict procurement requirements • Difficulty understanding complex offerings • Difficulty navigating IOU processes and requirements • Increasingly complex energy management • Lack of access to financing • Siloed energy efficiency and DERs limit GHG emissions reduction potential	Energy planning	Existing	S, M, L
		Energy use analysis	Existing	S, M, L
		Investment-grade audits	Existing	S, M, L
		Design scopes of work	Existing	S, M, L
		Incentives and financing support	Existing	S, M, L
		Financial analysis	Existing	S, M, L
		Procurement assistance	Existing	S, M, L
		Bid analysis	Existing	S, M, L
		Construction management support	Existing	S, M, L
		Strategic energy management	Existing	S, M, L
		Construction loan fund	New	S, M, L
		Side-by-side technical assistance	Existing	S, M, L
		Tools and templates	Existing	S, M, L
		Peer-to-peer learning and best practices	Existing	S, M, L
		Expand one-stop EE project delivery to include Integrated Demand-Side Management (IDSM) audits and recommendations	New	M, L
Partners: Public sector customers, engineering firms, National Joint Powers Authority (NJPA), Gordian Group, IOUs, publically owned utilities				

3. Intervention 2 – Engage and Educate Communities in Energy Programs and Strategies

The community energy engagement intervention strategy positions public agencies as leaders in conveying the value of energy efficiency and GHG reduction strategies and programs. SoCalREN seeks to position public agencies to lead community awareness campaigns; engage stakeholders; build public awareness of local, regional, and state efforts; and drive participation

in utility core programs. SoCalREN will enroll public agencies to engage their constituents about energy and ZNE programs and strategies, with a focus on disadvantaged and hard-to-reach communities.

Effective community engagement is a key tool for driving widespread adoption of energy efficiency.[33] Once there is the will to act, communities can get involved in a variety of ways, including adopting energy-saving behaviors, supporting local projects, and supporting policy advocacy. However, numerous obstacles can prevent involvement, such as the problem of energy poverty, as well as other pressing priorities within the local community. Despite the challenges, more and more communities are coming together to take greater control of the energy they use, both to cut their gas and electricity bills and help combat climate change. In addition, jurisdictions that are more participatory and have high levels of civic engagement are more likely to engage in sustainability activities.[34]

SoCalREN's intervention strategy aims to help public agencies lead and inspire communities to engage in clean energy solutions. Public agencies can tap into community enthusiasm and commitment, whether it is helping people who are struggling with energy bills or playing a part in reducing carbon intensity in buildings and transportation. Community leaders as well as local grassroots organizations can be motivated to support energy efficiency for public benefits, including the economic well being of community members, and community carbon mitigation goals. Leaders and groups can build awareness and add credibility for utility programs and local innovative energy initiatives.

Although most existing programs encourage individual action, achieving deep energy efficiency is achievable only with a collective commitment by communities, aided by targeted services, information tools, and financial resources. Underlying this is evidence that local governments and community groups may provide a critical platform of trust, social networks, innovative ideas, and the expanded capacity required to achieve more effective efficiency campaigns.[35]

A goal of a community-based educational campaign is for the public agency to engage trusted community networks to create excitement and commitment for adopting energy efficiency.[36] Creating a community campaign will include these elements:

- Standardized information about programs and processes for efficient access
- Data about individuals and communities to heighten awareness of and learning about their energy usage and encourage behavior change through competition
- A flexible campaign platform that is customizable and based on community goals, including adjustable incentives and an agency-specific look and feel

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[33] Michaels, Harvey. 2011. *Community Engagement: A Potential Transformative Path to Greater Energy Efficiency.* Massachusetts Institute of Technology Energy Efficiency Project white paper. August.
[34] Portney, K.E., and J.M. Berry. 2010. Participation and the Pursuit of Sustainability in U.S. Cities. *Urban Affairs Review* 46:1, pp. 119–139.
[35] Alliance for Innovation. 2010. *The Connected Community: Local Governments as Partners in Citizen Engagement and Community Building.* October 15.
[36] Collaborative Project Team (David Hewitt, Jeff Pratt, and Gary Smith: Independent Consultants; Blair Hamilton, Chris Neme, and David Hill: Efficiency Vermont; Scott Bernstein and Jen McGraw: Center for Neighborhood Technology; Paul Berkowitz: Conservation Services Group, Inc.). 2005. *Recommendations for Community Based Energy Program Strategies.* Developed for the Energy Trust of Oregon. Final project report. June.

- Tapping into local networks, word of mouth, and community action to build trust and enthusiasm for local energy strategies and utility core programs
- Rewards, competition, and incentives to generate enthusiasm for energy efficiency

The strategy will result in greater community education and engagement by removing the participating agencies' burden of having to create their own resources. Through access to proven model engagement strategies; customizable tools and templates; a web-based, customizable engagement and education platform; project management services; and shared learning, community leaders and local organizations will be motivated to support energy efficiency for its public benefits, including the economic well being of community members, and its contribution to carbon mitigation goals. Table 5 describes the barriers, example tactics, and implementation timeline for Intervention 2.

Table 5. Intervention 2 – Community Education and Engagement

Barriers	Example Tactics	Existing, Modified or New	Short, Mid-, Long Term
• Limited awareness of benefits of community engagement in EE • Limited capacity and expertise to promote awareness and engagement • Limited capacity and expertise to develop tools, templates, and community engagement strategies • Limited ability to learn from other agencies about best practices	Work with agencies to build awareness and design customized community education strategies and engagement campaigns	Modified	S, M, L
	Provide project management services to assist with all aspects of plan implementation	New	S, M, L
	Provide technical assistance to design and execute community engagement strategies	Existing	S, M, L
	Provide access to an online resource library with community engagement information and create customizable templates	Modified	S, M, L
	Encourage peer-to-peer training and workshops, an online community, shared case studies, best practices, and training	Existing	S, M, L
Partners: All public agencies, LGPs, community stakeholders, IOUs			

4. Intervention 3 – Develop Regional Energy Master Plans and Regional Energy Database

By definition, energy systems, such as transportation systems, are regional in scale. To design and implement the most effective energy programs at the local level, it is important to understand energy use and energy opportunities within a region.

At present, no entity is undertaking regional-scale energy master planning for the public sector in Southern California. Energy planning is carried out in a fragmented and sporadic fashion. Energy planning at the local level, if done at all, is typically part of a local climate action plan (CAP) or

energy action plan (EAP). Local CAPs and EAPs are not connected or coordinated in any comprehensive way, and their data are not accessible or readily shared among agencies to inform decision-making. Variability with respect to the scope and specificity of CAPs and EAPs, combined with incomplete information and subjectivity across jurisdictions, inhibits the ability to maximize understanding of energy and climate program impacts.[37] In addition, sub-regional energy planning is undertaken in varying degrees by associations of governments and councils of government, such as the Southern California Association of Governments, San Bernardino County Association of Governments, Coachella Valley Association of Governments, San Gabriel Valley Council of Governments, South Bay Council of Governments, and Western Riverside Council of Governments. Not every government association or council of government does energy planning, and those that do typically do not have readily accessible or usable data for local government action.[38] In addition, some higher education institutions are providing some of the data tools for regional energy planning, such as the Energy Atlas led by UCLA; however, Energy Atlas currently covers only Los Angeles County. Local governments are in a unique position and can lead the process because they are close to their constituents and understand their needs and interests, play an important role in affecting citizen and business attitudes about energy use, and have significant powers to improve the way energy is used (e.g., policy creation and enforcement, direct financial support).[39]

Because public agencies need a consistent and systematic framework for transforming their community to a ZNE future, SoCalREN proposes to lead the development of regional energy master plans and a regional energy database. A regional energy master plan provides the context required to guide near-term to long-term strategic decisions on energy demand, energy supply, and energy efficiency as well as DER opportunities. It provides a public agencies with a framework to identify and inform community-wide and regional activities that support state, regional, and local energy and GHG goals.[40] It also helps ensure that the application and investment of scarce staff and financial resources are coordinated with a data-driven understanding of which opportunities are best to pursue and what regional synergies and efficiencies can be leveraged to achieve the right local and regional energy initiatives. Particularly in a time of tightening budgets and rising energy costs, developing a community energy strategic plan can be an important component of good governance, and it can also put governments in a prime position to capture future funding opportunities as they arise because they have proactively identified their goals and priority actions.[41]

A regional energy master plan identifies energy usage patterns (i.e., where energy is coming from, both centralized and distributed; how much is used; who uses it; when they use it) and identifies the best opportunities for regional energy efficiency actions, regional DER actions, and regional

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[37] Anzar, A., M. Day, E. Doris, and S. Mathur. 2015. *City-Level Energy Decision-Making: Data Use in Energy Planning, Implementation, and Evaluation in U.S. Cities*. National Renewable Energy Lab technical report. July.
[38] Ibid.
[39] Zaleski, S., and M. Lunn. 2013. Guide to Community Energy Strategic Planning. U.S. Department of Energy. March.
[40] Gilleo, A., and D. Riberio. 2016. *Regional Energy Efficiency Efforts: Energy for the Power of 32 Region and Beyond.* ACEEE white paper. March.
[41] Zaleski, S., and M. Lunn. 2013. *Guide to Community Energy Strategic Planning*. U.S. Department of Energy. March.

GHG mitigation actions. Regional plans provide a context for identifying appropriate local action, focusing on efforts that will return the most positive impact for the greatest number of citizens/customers and helping to identify how public agencies can take collective action to implement more cost-effective energy solutions. The regional energy master plan is also essential in engaging public agencies to take collective action to address locational grid constraints or weaknesses and develop optimum solutions that benefit both the grid and their communities.[42]

Local governments need energy data to complete CAPs, track performance with respect to meeting climate and energy goals, and identify significant energy demand reduction opportunities in their communities. A regional building information database and an energy usage tracking and benchmarking platform will provide agencies with a standardized profile of their energy use that allows comparison to other agencies. It will also provide an inexpensive way to understand energy use in general, support the prioritization of actions, and provide the foundation for analytical work that investigates city morphologies and their energy and emission profiles.[43]

SoCalREN will work with UCLA and other stakeholders/partners to create a regional energy information database. Table 6 describes the barriers, example tactics, and implementation timeline for Intervention Strategy 3.

Table 6. Intervention 3 – Energy Master Plans and Energy Database

Intervention Strategy	Barriers	Example Tactics	Existing, Modified or New	Short, Mid-, Long Term
Develop Regional Energy Master Plans and a Regional Energy Database	• No entity doing regional energy master planning for public agencies • No systematic, region-wide platform for implementing ZNE strategies • No connection among local CAPs to inform local and regional decision-making • Limited access to data for decision-making and benchmarking • Lack of integrated regional database for identifying regional and shared EE and Integrated	Develop regional energy master plans	New	M, L
		Provide project management services to assist local agencies with energy plan development	New	S, M, L
		Enable local governments to access information from the regional master plans and database to identify energy efficiency and energy project opportunities	New	M, L
		Provide access to an online resource library with information and materials to support	New	S, M, L

[42] Ibid.
[43] Ibid.

Intervention Strategy	Barriers	Example Tactics	Existing, Modified or New	Short, Mid-, Long Term
	Demand-Side Resources (IDSR)	local energy planning–related capacity building and expertise		
		Host peer-to-peer training and workshops; provide case studies, best practices, training, and webinars	New	S, M, L
		Provide streamlined access to energy data for benchmarking and other energy planning purposes	Modified	S, M, L
		Provide development and support to expand regional tools such as UCLA's Energy Atlas	Modified	S, M, L
		Link data among sources such as SEED, utility billing data, LGP energy programs, and SoCalREN	New	S, M, L
		Support DOE to support BEDES and help agencies make energy investment decisions	Existing	S, M, L
		Implement searchable web-based energy mapping system to display agency EE project details and support the aggregation of a region-wide GHG inventory baseline	New	S, M, L
Partners: All public agencies, UCLA, California Energy Commission (CEC), and DOE				

5. Intervention 4 – Develop and Adopt Model Energy Codes, Standards, and Policies

Reach codes allow local governments to aggressively pursue local sustainable energy actions and the CPUC's goal of achieving ZNE. The reach codes are meant to anticipate the next round of codes so that the market and stakeholders are prepared. Reach codes provide an opportunity to test the effectiveness of increasing the stringency of existing codes at the local level prior to disseminating the code on a statewide basis. Additionally, reach codes help to transform the marketplace and shape the development of future model codes by bringing high-performing buildings into the mainstream.[44]

SoCalREN will provide the 200-plus local governments within its territory with one-stop, end-to-end support to design and adopt energy reach codes (see ***SoCalREN Cross-Cutting Chapter: Codes and Standards*****).** Through this strategy, SoCalREN seeks to accelerate local government implementation of energy efficiency, ZNE, and GHG emissions reduction goals and standards through the use of its regulatory authority. This includes developing, adopting, and implementing model policies and programs that focus on improving the energy efficiency of existing buildings as well as ZNE building energy policies and codes (on both a mandatory and voluntary basis) that focus on new construction.

SoCalREN's model energy codes, standards, and policies promote the adoption of codes that address:

- Better compliance with and enforcement of state and local energy code requirements
- Benchmarking
- Retrofit-upon-sale requirements
- Electric Vehicle-ready policies and standards
- ZNE new construction requirements
- ZNE policies, standards, and incentives for existing buildings
- Policies that encourage and support actions to design and develop decentralized ZNE communities

SoCalREN's reach code strategy provides access to critically important technical assistance, customized and actionable energy and GHG emissions data and reporting for its jurisdictions, and expert advisory and training services that support enhanced code development and enforcement activities. This strategy will drive greater energy code compliance, enhanced code enforcement, and innovative regional approaches to successfully develop and adopt energy reach codes.

SoCalREN will support codes and standards enforcement and compliance through collaboration with the Solar Energy Action Committee (SEAC), led by the County of Los Angeles. The group is working with industry and local governments to design streamlined processes and manuals that achieve consistency and better code compliance. The program is also expanding to include other DER energy measures. Table 7 describes the barriers, example tactics, and implementation timeline for Intervention 4.

[44] National Trust of Historic Preservation. Working Paper. *Energy Codes 101: Primer for Sustainability Policy Makers*. January 2010. p. 10.

Table 7. Intervention 4 – Model Energy Codes, Standards, and Policies

	Barriers	Example Tactics	Existing, Modified or New	Short, Mid-, Long Term
Develop and Adopt Model Energy Codes, Standards, and Policies	• Limited capacity, expertise, and resources • Complex and changing regulatory environment that is difficult to navigate • Lack of access to the energy data necessary for effective code development • Limited building department and code development budgets • Risk-averse political environments	Model code identification and planning	New	S, M, L
		Reach code development services to draft and adopt codes	New	S, M, L
		Provide technical assistance to compile, analyze, and provide access to actionable energy data	New	S, M, L
		Technical assistance in measuring, collecting, and tracking data following adoption of model codes to document impacts	New	S, M, L
		Provide access to online resource portal to support model code evaluation, development, and adoption	New	S, M, L
		Organize local government peer-to-peer workshops and training in codes	New	S, M, L
Partners: All public agencies, building officials, California Building Officials (CALBO), SEAC				

6. Anticipated Pilots

Public agencies are increasingly realizing the benefits and opportunities of decentralized energy systems to support energy and GHG goals, energy reliability and security, and more equitable and affordable energy resources for their communities. Public agencies are able to bring together various market actors, including the private sector, community stakeholders, IOUs, and other governmental entities to accelerate these positive changes. SoCalREN provides the platform to test ZNE community strategies.

SoCalREN will design and develop ZNE demonstration projects to inform the pathway to a sustainable, resilient energy future. The demonstration projects will identify and develop the best technical knowledge, approaches, and practices for public agencies to engage stakeholders and form strategic partnerships that create community energy districts. They will also help identify

technical, economic, and regulatory barriers that need to be addressed and overcome for these ZNE community projects to achieve widespread realization.

The demonstration projects will test assumptions and evaluate results to guide development of future decentralized energy prototypes and incorporate the lessons learned into future program design. The demonstration projects will aim to identify key enabling tools and processes for public agency planning and implementation of ZNE. Analytical tools for community energy assessment and concepts for ZNE communities will be tested and validated through design and implementation of these selected pilot projects.

SoCalREN will ensure that development of these demonstration projects will be coordinated with SCE, SoCalGas, and all other key stakeholders that need to participate in the design and implementation process. The demonstration projects will complement and build on the work being performed under the CEC's Advanced Energy Communities (AEC) grants. SoCalREN is currently a partner with UCLA on one of the AEC project grants awarded by the CEC. SoCalREN's demonstration projects will align with CPUC and CEC direction to move toward a ZNE future and focus on the greater benefits and synergies that can be achieved from decentralized and community-scale energy district design approaches.

G. Leveraging Cross-Cutting Resources

SoCalREN's cross-cutting sectors support the adoption of energy efficiency in public agencies. The following is a brief description of how the cross-cutting initiatives fit into the public sector strategy.

1. Financing

Funding has historically been one of the biggest barriers to energy retrofits.[45] Agencies either do not have the funding available to complete projects or do not have the expertise to successfully submit financing applications. SoCalREN provides services that address both of these challenges to assist public agencies in implementing energy retrofit projects. These financing-related services are offered alone or in conjunction with the program's other services, such as project management and other technical assistance, through the comprehensive project delivery process.

SoCalREN's approach provides specialized information and expert analysis that is objective and transparent. SoCalREN offers customized financial advisory services to ensure projects are bundled appropriately and all available funding sources are considered, including the Energy Lease Financing (ELF) product offered by the program. SoCalREN provides assistance in completing and monitoring financing applications to ensure the maximum amount of funding is secured for the agency. This approach involves a coordinated effort with utilities and ongoing implementation of best practices and lessons learned. In addition, using (non-rate payer) ARRA funds, SoCalREN offers a revolving loan fund to provide project construction-period financing to public agencies. This fund helps overcome the limitation in OBF programs that do not disburse

[45] Harcourt Brown and Carey, Inc. 2011. *Energy Efficiency Financing in California: Needs and Gaps*. July 8.

any funds to the agency until after construction is finished and a project is certified as complete by the IOU. This can be a major impediment to OBF utilization by public agencies.

SoCalREN will continue to increase awareness of financing through the implementation of targeted and general outreach efforts, including the hosting of various types of events to attract the complete spectrum of public agency property owners, contractors, and financial industry professionals. For additional details on SoCalREN's financing strategies please see Cross-Cutting Chapter – Financing.

2. Workforce, Education, and Training

SoCalREN is committed to efforts that ensure energy efficiency measures are properly installed, operated, and maintained by a skilled and trained workforce in order to increase energy savings by reducing lost or foregone energy savings. SoCalREN is also committed to efforts that will help workers from minority, low-income, and disadvantaged communities gain better access to career-track opportunities in the energy economy and defined pathways for advancement into higher-skilled and higher-wage jobs. SoCalREN recognizes the significant local economic development and workforce development benefits that can be generated from proper planning and execution of public agency energy efficiency and ZNE projects, both in their own buildings and facilities and within their communities.

Emerald Cities is the SoCalREN partner on workforce development. Its high-level objectives are to:

- Ensure high-quality work standards are embedded into public agency energy projects.
- Enable underrepresented workers and companies to participate more in public and private sector energy projects.
- Connect the various workforce development stakeholders to help achieve the above objectives.

The SoCalREN public sector program will continue to collaborate with Emerald Cities in implementing the work plan to make progress toward these objectives and strive to expand public agency understanding and utilization of the local and disadvantaged workforce when planning and implementing energy projects. In addition, SoCalREN will maintain consistency with the workforce education and training goals of California's Existing Buildings Energy Efficiency Acton Plan (AB 758) by supporting the development and employment of a high-performance industry for every level of professional involved in energy efficiency transactions. SoCalREN will also support SB 350 in its directive to "coordinate with the California Workforce Investment Board, the Employment Training Panel, the California Community Colleges, and other entities to ensure a qualified, well-trained workforce is available to implement the program requirements."

For additional details on SoCalREN's WE&T strategies please see ***Cross-Cutting Chapter – WE&T***.

3. Marketing

SoCalREN provides local marketing, education, and outreach to public agencies to increase awareness and encourage program participation. Marketing is focused on driving growth and sustainability, engaging hard-to-reach and disadvantaged communities, assessing program

satisfaction, and delivering tools and information that build agency awareness, capacity, and expertise.

4. Codes and Standards

For details on SoCalREN's intervention strategies for code and standards please see ***Cross-Cutting Chapter – Codes and Standards***.

H.Integrated Demand-Side Resources

1. Targeted Demand-Side Resources

In alignment with future regulatory direction from the CPUC, SoCalREN will design and implement program enhancements to the Energy Efficiency Project Delivery platform to include DER audit, analysis, and project recommendation services. SoCalREN has learned that for most public agencies that are enrolled in the program, energy efficiency retrofits are just the beginning. Many want to achieve deeper energy savings and greater energy self-reliance through renewable generation, energy storage, and sophisticated energy management systems as well as greater water efficiency savings. The proposed DER program enhancements, once implemented, promise to harness even greater energy savings and reduce GHG emissions from public agencies.[46] Elements of this program enhancement will include:

- Design a DER services portfolio to include integration of renewables, energy storage, demand response, energy management, and water efficiency optimization for public agencies
- Develop a methodology of integrating DER activities into the program's one-stop process
- Develop the specific strategies, tools, and templates and integrate best industry standards into the project delivery manual
- Identify the technical expertise required for each of the DER resource areas and manage a competitive process to assemble the best team of expert consultants and practitioners
- Build expertise among SoCalREN staff members and sub-consultants through training and development related to best practices protocols across all DER energy service areas
- Develop new public agency marketing and outreach collateral materials to reflect the new DER program offerings
- Engage with key stakeholders, including utilities, in the design and implementation of the DER program
- Define and launch a pilot phase to the DER public agency program to test and demonstrate essential components of the new project delivery systems and approaches prior to full program implementation.

[46] California Energy Commission. 2015. *2015 Integrated Energy Policy Report*. Publication Number EC-100-2015-001-CMF.

2. Electric Vehicles and Demand Response

As part of its proposed targeted IDSR services, SoCalREN will incorporate an analysis of integrated project elements related to the expanding market penetration from electric vehicles and the need for additional electric vehicle charging infrastructure within every California community. Cities and counties are ideally suited to integrating and deploying electric vehicle charging stations as part of developing low-carbon ZNE communities. SoCalREN will work with public agencies to design, incentivize, and deliver electric vehicle infrastructure through its regional and local energy master planning processes.

I. SoCalREN Helping to Meet State Policy Goals

Table 8. Summary of Relevant Energy Efficiency Policies, Guidance, and SoCalREN Support

Policy	Guidance	SoCalREN's Support
CPUC Guidance Decision (D.12-11-015) for Regional Energy Networks	• Conduct activities that utilities cannot or do not intend to undertake • Conduct pilot activities where there is no current utility offering and where there is potential for scalability to a broader geographic reach, if successful • Conduct pilot activities in hard-to-reach markets, whether or not there is a current utility program that may overlap	SoCalREN is successfully meeting the criteria established by the CPUC. • SoCalREN proposes to continue piloting of new program offerings, including implementation of IDSR demonstration projects. • SoCalREN is successfully assisting hard-to-reach markets. More than 40% of SoCalREN's enrolled agencies encompass disadvantaged communities.
California Long-Term Energy Efficiency Strategic Plan (CLTEESP)	• Lead by example in their facilities • Lead their communities with innovative energy efficiency programs • Lead adoption of higher energy efficiency standards or "reach" codes • Lead energy code compliance enforcement • Ensure Local Government energy efficiency expertise becomes widespread and typical	• The SoCalREN intervention strategies and tactics directly align with these goals and provide the requisite expertise, support, and knowledge for public agencies to better meet these goals and objectives • Intervention 1: Energy Efficiency Project Delivery Program • Intervention 2: Community Education and Engagement • Intervention 3: Regional Master Planning and Database • Intervention 4: Model Codes, Policies, and Standards
AB 758 Existing Buildings Energy Efficiency Action Plan (Action Plan)	• Lays out a 10-year roadmap to mobilize market forces and transform California's existing building stock into high-performing and energy-efficient buildings	• **Intervention Strategy 3: Regional Master Planning and Database** provides the foundation for the public sector to benchmark existing buildings, identify best energy retrofit opportunities,

Policy	Guidance	SoCalREN's Support
	• Establishes requirements for providing energy assessments, benchmarking, energy ratings, cost-effective energy improvements, financing options, public outreach and education, and workforce training. • Encourages local governments to implement innovative efficiency programs and gather relevant experience for wider application.	implement community-scale programs, and measure impacts • **Intervention Strategy 4: Model Codes, Policies, and Standards** will promote the adoption of reach codes that will encourage and/or incentivize adherence to AB 758
AB 350 Clean Energy and Pollution Reduction Act	• Mandates a 50% renewable energy content in the state's overall electricity mix and a doubling of energy efficiency goals for existing buildings by 2030 • Addresses barriers for low-income customers to EE and weatherization, especially in disadvantaged communities • Requires local governments to participate in efficiency program implementation where appropriate	• **Implementation Strategy 1: Project Delivery; IDSR Demonstration Pilot Projects** – Through incorporation of DER resources into one-stop project delivery, agencies will achieve greater adoption and implementation of integrated projects that drive significant GHG reductions in their communities
SB 375 Sustainable Communities and Climate Protection Act	• Requires local governments to implement long-term integrated planning for land use and transportation • Drives critical public agency initiatives, such as the Southern California Regional Transportation Plan and Sustainable Communities Strategy, to reduce per capita GHG emissions in the Southern California Association of Governments region 8% by 2020, 18% by 2035, and 21% by 2040 against the 2005 baseline year	• **Intervention Strategy 3: Regional Master Planning and Database** supports implementation of SB 375 by integrating energy planning with transportation and land use planning
AB 802	• Mandates use of metered data for measurement of impacts from energy efficiency program interventions • Offers local governments a relevant framework to implement building benchmarking and labeling ordinances that accurately reflect what building operators and tenants see on their energy bills • Program administrators can now receive credit for energy savings	• **Intervention Strategy 3: Regional Master Planning and Database** supports implementation of AB 802 by creating a regional energy plan database that will enable local governments to access actionable data and identify the best opportunities for effective program development and implementation

Policy	Guidance	SoCalREN's Support
	from, and provide incentives and support for, EE projects that help public sector entities meet current energy code requirements; previously, program administrators could only count the energy savings from projects where the improvements exceeded code requirements	
AB 32 and AB 197	• Extends carbon emissions reduction target to 40% below 1990 levels by 2030 • Local government CAPs identify how they will comply	• **Intervention Strategies 1 through 4** provide the tools and guidance for public agencies to successfully complete retrofits in their own facilities, support community energy actions, and adopt the regulatory framework to drive adoption of ZNE communities that will significantly reduce GHG emissions
ZNE Legislation	• All new residential construction is required to be ZNE beginning in 2020 (CLTEESP) • All new commercial construction is required to be ZNE beginning in 2030 (CLTEESP) • Up to 50% of existing buildings retrofitted must achieve ZNE by 2030 (CLTEESP)	• SoCalREN's business plan is focused on shepherding the public sector to create ZNE communities • Its four intervention strategies, along with the IDSR demonstration pilots, will provide the roadmap for the public sector to lead compliance with the state's ambitious ZNE legislation and policies

J. SoCalREN's Partners and Commitment to Coordination

To effectively fulfill its mission, SoCalREN actively works with public agencies, non-governmental organizations, private sector organizations, utilities, and state and federal agencies, as shown in Table 9 (partial list).

Table 9. SoCalREN's Partners

Partner Type	Organization
Local and Regional Agencies	• 220 cities, townships, and tribes • 12 counties • 150 water, wastewater and special districts • 348 K–12 school districts • Councils of government • Local Government Partnerships (LGPs) • National Joint Powers Authority (NJPA)

Partner Type	Organization
	• Solar Energy Action Committee (SEAC) • Community Choice Aggregators (CCAs)
State and Federal Agencies	• University of California Los Angeles (UCLA) • California Energy Commission (CEC) • Department of Energy (DOE) • National Renewable Energy Laboratory (NREL) • Lawrence Berkeley National Laboratory (LBNL) Pacific Northwest National Laboratory (PNNL)
Non-Governmental Organizations	• The Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) • Emerald Cities Collaborative
Utilities	• Southern California Edison • Southern California Gas • Publicly-owned utilities
Private Sector	• The Gordian Group • Private sector financiers and lenders • Energy engineering firms • Energy project contractors

1. Commitment to Coordination

1.1 IOU Coordination

SoCalREN coordinates closely with SCE and SoCalGas to ensure seamless customer communication and avoid duplication of services. The Opinion Dynamics EM&V study of the Regional Energy Networks (RENs) found that "the RENs and the IOUs have coordinated well." [47] Working together, SoCalREN, SCE, and SoCalGas have established a coordination strategy for engaging LGPs and other public agencies to ensure a seamless customer experience for the agency and avoid confusion about roles and responsibilities. As a non-resource program, all the work of the SoCalREN public sector programs ultimately accrues as attribution to the IOUs. SoCalREN works closely with the IOUs to ensure that SoCalREN tracks the activities it provides agencies that support completion of energy efficiency projects. SoCalREN will bring this same level of coordination and cooperation as the program expands into the new and enhanced services outlined in its business plan, thereby ensuring that SoCalREN's services will continue to be complementary and not duplicative of IOU programs.

1.2 Local Government Partnership Coordination

SoCalREN complements and fills the gap of the services provided by the other CPUC-funded programs that are available to public agencies. SoCalREN and the LGPs work harmoniously to provide services to local governments by filling gaps and meeting needs.

[47] Opinion Dynamics Corporation. 2016. PY 2013–2014 Regional Energy Networks Value and Effectiveness Study, p. 62. January 5.

By design, SoCalREN complements and supplements the work of IOU LGPs. As a program of the IOUs, LGPs provide assistance and resources to local governments to help them implement energy efficiency projects in their own facilities. Within the SCE/SoCalGas territory, there are 25 partnership groups, serving just under half of cities and counties within the territory. LGPs do not serve schools districts, water districts, sanitation districts, or other special districts. SoCalREN is able to fill this gap and reach the more than 100 cities and counties, as well as the other public agencies, that are not reached by the LGP program. SoCalREN also provides deeper and more comprehensive one-stop services, including more sophisticated building and facility audits, project management, competitive procurement, construction management support, additional non-ratepayer funding and financing options, and completion of incentive and financing applications on behalf of the agencies.

The Opinion Dynamics EM&V study observed that "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."[48] In addition, Opinion Dynamics stated that "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. 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.' [49] 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) 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."[50]

Table 10 compares and lists the services available to public agencies in SCE and SoCalGas service territories through both LGPs and SoCalREN.

[48] Ibid. p. 70.
[49] Ibid., p. 44
[50] Ibid., p.47

Table 10. Comparison of LGP and SoCalREN Services

Services	SCE/SoCalGas Local Government Partnerships	SoCalREN
Types of Public Agencies Served	• Cities • Counties	• Cities • Counties • Water/wastewater districts • K–12 schools • Special districts • Community colleges
Date Program Started	• 1997	• 2013
Target Market	• 200 Cities and counties	• 730 public agencies
Market Served to Date	• 100 Cities and counties	• 90 public agencies
Procurement Assistance	• None	• Access and extensive support to both customized and turnkey procurement approaches for energy projects • Bid analysis
Integration with Distributed Energy Resources (DER)	• Limited to EE and DR only	• Ability to leverage non-rate payer funds to integrate DER and water efficiency
Technical Assistance	• Limited technical assistance to identify projects that have potential downstream incentives/rebates	• Customized technical support from project identification to completion, including investment-grade audits to identify all energy saving opportunities, design scopes of work, and provide construction management support
Energy Planning	• Templates and funding to develop local energy action plans for municipal operations, with a focus on EE electric and gas savings	• Lead development of regional and sub-regional energy master planning towards ZNE
Financial Support	• 0% on-bill financing • Enhanced incentives for participation in downstream utility programs	• Financial analysis for projects to compare different financing options • Support with financing and incentive applications and process • Assistance with Energy Lease Financing (ELF) • Proposition 39 support

Services	SCE/SoCalGas Local Government Partnerships	SoCalREN
		• Construction Loan Revolving Fund (non-ratepayer funds)
Access to Energy Data	• Municipal-level data on request • Aggregate community-level data on request	• To obtain data, SoCalREN assists individual agencies in requesting data from IOUs in an agreed-upon format and then forwards the data to SoCalREN • SoCalREN works with UCLA to enhance existing database to provide reliable community- and municipal-level data.
Energy Project Expertise to Implement Projects	• Account representatives provide limited project support to partnership cities and counties	• Provides dedicated support at every stage to each participating agency through an assigned project manager along with access to engineering and construction support
Community Energy Projects	• None	• Develop and implement ZNE demonstration pilot projects with selected agencies
Community Outreach	• Co-branded marketing to promote utility core programs	• Development and sharing of tools and resources to inspire local energy action • Customized support to engage community stakeholders and inspire local energy action
Codes and Standards	• T24 building code training for local governments • Cost-effectiveness study for adoption of reach codes • Funding to develop reach code	• End-to-end support to design and adopt energy reach codes
Sharing of Best Practices for Sustainability Efforts	• SEEC annual best practices forum • Regular communication with regional partnership	• Sub-regional peer-to-peer workshops and training on relevant topics • Access to shared online resources and learning communities

1.3 Coordination with RENs and CCAs

SoCalREN holds periodic conference calls and meetings with BayREN and Marin Clean Energy to share information, reports, and program data. There is close collaboration as well on lessons learned, potential program enhancements, and REN-related policies and approaches.

K.Metrics and EM&V Considerations

As a non-resource program, SoCalREN success metrics encompass a range of measures, including energy savings (from IOU incentive-eligible projects), continued program growth and expansion to reach the majority of the public sector market, customer satisfaction, service to hard-to-reach and disadvantaged communities, workforce development support, public sector capacity and expertise, and alignment with CPUC, CEC, and state goals.

1. Direct Effects from SoCalREN Efforts

Table 11: SoCalREN Public Sector Goals, Intervention Strategies and Metrics

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (2018 - 2020)	Mid Term Target (2021 - 2023)	Long Term Target (2024 - 2025)
Save kWh, kW, and therms	All	Electricity Saved	10,130,000[51]	Metered energy savings	30 GWh	45 GWh	45 GWh
		Demand Saved	937		750,000 kW	1.25 MW	2 MW
		Therms saved	46,000		132,951 Therms annually	169,291 Therms annually	229,520 Therms annually
Increase the enrollment by 40% of eligible public agencies in the Energy Network EE Program	All	Cumulative number of public agencies committed to energy efficiency	Total number of eligible SoCalREN agencies as of 2018	SoCalREN Program Tracking Databases	20 new public agencies per year	30 new public agencies per year	45 new public agencies per year
Increase the percentage of public agencies that engage their communities in energy actions and ZNE strategies, thereby reducing overall community energy consumption.	Engage and Educate communities in Energy programs and Strategies Energy Efficiency Project Delivery Program	Number of ZNE retrofits completed in public agency existing buildings	Currently not tracked; baseline would begin at 0	SoCalREN Program Tracking Databases	4	10	20

[51] Baseline is 2016 Installed Public Sector Program Energy Savings.

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (2018 - 2020)	Mid Term Target (2021 - 2023)	Long Term Target (2024 - 2025)
Increase the ability of public agencies to meet local, regional, and state energy targets and policy goals through (1) creating a regional energy master plan and (2) creating a regional energy information database.	Regional energy master planning and shared regional database development	Number of energy master plans completed	N/A	SoCalREN Program Tracking Databases	2	4	6 (100%)
		Regional energy database completed	Currently database does not exist; baseline would begin at 0	N/A	N/A	1	N/A
Increase the percentage of agencies that adopt model codes, standards, and policies that support implementation of ZNE communities.	Model energy codes, standards and policies development and adoption	Percent of local governments adopting model and reach codes, standards, and policies.	220 local governments (permitting authorities) within SoCalREN territory	SoCalREN Program Tracking databases	1%	5%	10%

L. EM&V Preparedness and Research Needs

As previously mentioned, few evaluation studies on the public sector have been completed, however a process evaluation of the Energy Efficiency Project Delivery program (formerly called SoCalREC) had been completed by Opinion Dynamics in 2016. This study provided meaningful insights to the program as well as recommendations to the next phase of EM&V studies the SoCalREN should initiate. These recommendations suggest evaluating how well SoCalREN leverages local government resources and what level of local government capacity is the result of SoCalREN activities.[52]

1. Data Collection Needs

SoCalREN will track and report the following public sector data to apprise the CPUC and stakeholders of its progress, starting with monitoring efforts:

- Monitoring: These efforts will focus on sector-level spending, sector-level savings, participation among public agencies and their communities, partnerships with local governments, and progress towards metrics.
- Embedded Evaluation: Program monitoring and evaluation is systematically incorporated into SoCalREN's established organizational structure to inform program design and direction for successful third party EM&V. This supports EM&V preparedness on an ongoing basis rather than toward the end or after a program cycle. The SoCalREN team will evaluate individual programs both independently and in relation to other SoCalREN programs. Specifically, SoCalREN will monitor, coordinate, and evaluate project activities and milestones, and key metrics that inform progress, such as budget, program impacts and risks, cost-effectiveness, and results verification against the metrics identified in this Business Plan.

2. Anticipated Study Needs

Preceding 2016, The RENs as pilots were ineligible to direct their own ratepayer-funded EM&V work. In August 2016, the CPUC revised its rules to codify and allow for a funding stream for RENs to conduct their own process evaluations.[53] The Energy Division currently has an in-progress EM&V study that will assesses the RENs' value and effectiveness for PY 2013-2015 program activities and that study is being overseen by the Energy Division. SoCalREN anticipates in addition to the already led Energy Division staff assessment and SoCalREN will initiate in 2018 the following Study:

- PY 2016-2017 Process Study of SoCalREN Energy EE Programs: This study would conduct evaluations that seek to verify the non-resource benefits of programs and identify the overall effectiveness of program operations. In addition, SoCalREN may seek to

[52] Opinion Dynamics Corporation. 2016. *PY 2013–2014 Regional Energy Networks Value and Effectiveness Study,* pp. 79 and 80. January 5.
[53] D.16-08-019, August 18, 2016, Conclusions of Law No. 70, p. 107

identify processes and procedures that would allow current non-resource programs (e.g., PACE) to transition to resource programs.

In addition, SoCalREN will seek out future evaluations which may include but are not limited to:

- Customer satisfaction surveys and ratings
- Ascertain how effective the program is in prompting energy efficiency actions by public agencies and in driving public agencies to participate in IOU incentive programs
- Measure how the program is leading to adoption of model codes, standards, and policies supporting EE and ZNE by local governments
- Assess the extent to which program actions are assisting local governments in mobilizing and supporting EE and ZNE actions by their constituents

Appendix A: Acronym List

Acronym	Definition
AEC	Advanced Energy Communities
ARRA	American Recovery and Reinvestment Act
BayREN	Bay Area Regional Energy Network
BEDES	Building Energy Data Exchange Specification
Cal EPA	California Environmental Protection Agency
CALBO	California Building Officials
CAP	Climate Action Plan
CCA	Community Choice Aggregation
CEC	California Energy Commission
CEEPMS	Community Energy Efficiency Permit Management System
CEESP	California Energy Efficiency Strategic Plan
CLTEESP	California Long Term Energy Efficiency Strategic Plan
COG	Council of Governments
CPUC	California Public Utility Commission
CVAG	Coachella Valley Association of Governments
DER	Distributed Energy Resources
DOE	Department of Energy
DR	Demand Response
DSR	Demand Side Resources
EAP	Energy Action Plan
EE	Energy Efficiency
ELF	Energy Lease Financing
EM&V	Evaluation, Measurement, and Verification
EPC	Energy Performance Contracting
ESCOs	Energy Service Companies
EV	Electric Vehicle
GHG	Greenhouse Gas
HVAC	Heating Ventilation and Air Conditioning
IDER	Integrated Distributed Energy Resources
IDSM	Integrated Demand Side Management
IDSR	Integrated Demand Side Resources
IOU	Investor Owned Utility
LARC	Los Angeles Regional Collaborative for Climate Action and Sustainability
LBNL	Lawrence Berkeley National Laboratory
LG	Local Governments

LGP	Local Government Partnership
MCE	Marin Clean Energy
NGO	Non-Governmental Organization
NJPA	National Joint Powers Authority
NREL	National Renewable Energy Laboratory
OBF	On-bill Financing
PA	Program Administrator
PACE	Property Assessed Clean Energy
PDM	Project Delivery Manual
PI	Program Implementers
PNNL	Pacific Northwest National Laboratory
PS	Public Sector
RENs	Regional Energy Networks
SANBAG	San Bernardino Associated Governments
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCG	Southern California Gas Company
SDG&E	San Diego Gas & Electric
SEAC	Solar Energy Action Committee
SEEC	Statewide Energy Efficiency Collaborative
SEED	Standard Energy Efficiency Data
SEM	Strategic Energy Management
SoCalREN	Southern California Regional Energy Network
UCLA	University of California Los Angeles
WE&T	Workforce Education & Training
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
Sector Chapter: Public Sector		
Summary tables		
Sections C & D	*Table with CE, TRC, PAC, emissions, savings, budget*	
Section N	*Metrics for sector*	
Market characterization (overview and market/gap and other analysis)		
Section E.4	*Electricity/NG*	
Section J.	*State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)*	
	EE potential and goals	Not currently applicable to the Public Sector
Section E.1, E.2 and E.5	*Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)*	
Section F.1	*Major future trends that are key for the PA and its customers*	
Section F.2	*Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)*	
Description of overarching approach to the sector		
Section A.2 and Section G.	*Goals/strategies/approaches*	
Section J.	*How portfolio meets Commission guidance*	
Section F.2 and Section G.	*Description of how this chapter addresses the performance challenges/barriers*	
Intervention strategies (detailed)		
Section G.	*What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)*	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
Section G.	*Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)*	
Section G.and Section J.	*How approaches advance goals discussed above*	
Sections B.and Section O.	*How strategies use lessons learned from past cycles and EM&V*	
Sections F. and Section G.	*How will interventions support/augment current approaches or solve challenges*	
Section J.	*Explanation for how these strategies address legislative mandates from AB 802, SB350, and AB 793, as well as other Commission directives for this sector, including strategic plan.*	
Section N.	*Future expectations for intervention strategies*	
Section G.3.	*Description of pilots*	
Section K.	*Key Partners*	
Compare/contrast to past cycles		
Section C.	*Budget changes as appropriate*	
Section B.	*Modification to sector strategies*	
Cross-cutting (sector chapters and ME&0)		
Section H.3.	*Program Administrator marketing and integration with SW MEO as applicable*	
Section H.2.	*Workforce, education, and training*	
	Emerging Technologies	Not Applicable
Section H.4.	*Codes & Standards*	
Cross PA and Offering Coordination		
Section K.1.d.	*How strategies are coordination among regional PAs*	
	Proposal of statewide program administrator/approaches for this sector	Not Applicable

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	How the sector strategies are coordinated with statewide program activities	Not Applicable
Section J.	*How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)*	
EM&V Considerations (statement of needs)		
Section M.	*Data collection needs*	
Section M.	*Anticipated study needs*	
Demand Response		
	How EE measures use up-to-date DR enabling technologies to be "DR ready"	
	How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	
	How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	
Residential Rate Reform		
	How BPs will help reduce load during TOU periods	
	How BP will diminish barriers to load reduction during TOU periods	
	How strategies will provide info to customers and/or provide a tool to show how program may impact customer energy usage during different TOU periods	
	How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	
	ME&O re: rate reform	
Section I.1.	**Integrated Demand Side Resources**	
Section I.1.	**Zero-Emission Vehicles(EVs)**	
	Energy Savings Assistance (Multi-family Focused)	
	Appendices	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Additional Customer Data	
	Cited research	
Located in Attachment A-1 Chapter	*CAEECC stakeholder input resolution*	

SoCalREN

Energy Efficiency Business Plan

Cross-Cutting Segment Chapter:
Codes & Standards




January 23, 2017

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SoCalREN Cross-Cutting Segment Chapter: Codes and Standards

A. SoCalREN Compliance Enhancement Vision

California's Energy Efficiency Strategic Plan includes goals to achieve Zero Net Energy (ZNE) in all new residential construction by 2020, all new commercial construction by 2030, and 50 percent of existing commercial buildings by 2030. Senate Bill (SB) 350 calls for a doubling of building energy efficiency (EE) by 2030. The codes and standards (C&S) landscape is rapidly evolving at the state and local levels in response to these and other initiatives. State and local standards are paving a clear path to achieving ZNE goals and greenhouse gas (GHG) reductions. The C&S community—namely planning and building department staff, developers, and contractors—plays a pivotal role in ensuring compliance with standards so that SoCalREN's goals can be realized.

SoCalREN's C&S program envisions a future in which the C&S community effectively delivers fundamental and contributory co-benefits of proper permitting and compliance at a scale needed to achieve the state's energy goals for new and existing construction.

The C&S community needs help navigating the rapidly advancing landscape of policies, programs, and resources available to help it meet and exceed state mandates, and integrating resources and strategies to achieve cost-effective ZNE buildings and communities. The Southern California Regional Energy Network's (SoCalREN's) vision of ZNE communities will rely heavily on advancement of C&S and an increased focus on using data to inform decisions. SoCalREN will work to ensure the C&S community is equipped with a deep understanding of building energy codes and tools that enable it to implement the standards with ease, and SoCalREN is using building performance data to inform advanced policies that lead the state toward its ZNE goals.

Given the long history of successful C&S–related efforts achieved by the Statewide Independently Owned Utilities (IOUs) C&S Program and, more recently, the Bay Area Regional Energy Network (BayREN), SoCalREN anticipates that the RENs and IOUs will work collaboratively and pool resources so that all stakeholders receive targeted, substantive resources that will harness their unique change-making potential.

1. SoCalREN's Compliance Enhancement Goals

Achieving SoCalREN's vision for C&S will require a suite of concurrent activities that address the sector's wide breadth of stakeholders and a multi-technology focus that will move the region toward the ZNE future in an integrated way. Specific goals include the following:

- C&S community members are provided with actionable resources that address their specific role in advancing the state's ZNE goals.

- Public agencies and external C&S stakeholders work together to adopt, implement, and enforce advanced energy codes, standards, and policies that pave the way for improved building performance and ZNE new construction.
- Public agencies use data, collected through enforcement of advanced codes that informs energy master plans, regional energy plans, and roadmaps for addressing energy and GHG reduction targets and strategies.

B. Codes and Standards Proposal Compared to Prior Program Cycles

Because this is SoCalREN's first experience with C&S activities, it is not possible to make comparisons to prior program cycles.

C. Sector-Level Budget

Table 1 summarizes SoCalREN's cross-cutting compliance enhancements budget. These values are based on estimates of the proposed strategies outlined in ***Section F, Approach to Achieving Compliance Enhancement Goals***. SoCalREN sees a strong opportunity to assist our IOU partners in supporting the implementation of new codes and standards including developing reach codes for agencies SoCalREN supports. This is a growing area of focus for SoCalREN, therefore resulting in a slightly higher budget request than prior years. In addition, SoCalREN has factored in a 2% cost increase per year to account for program costs.

As SoCalREN implements the strategies described in this business plan chapter, the budget will be reevaluated over time to respond to market changes, needs of the portfolio, and regulatory directives. Further details on these changes will be reflected annually in SoCalREN's September compliance filing, as dictated by California Public Utilities Commission (CPUC) Decision (D.)15-10-028.[1]

Table 1. Sector Level Annual Budget

Budget	2017[2]	2018	2019	2020	2021	2022	2023	2024	2025
Administration	0	109,000	111,180	113,404	115,672	117,985	120,345	122,752	125,207
Marketing & Outreach	0	43,600	44,472	45,361	46,269	47,194	48,138	49,101	50,083
DI – Non Incentive	0	937,400	956,148	975,271	994,776	1,014,672	1,034,965	1,055,665	1,076,778
DI - Incentive	0	0	0	0	0	0	0	0	0
SECTOR TOTAL	**0**	**$ 1,090,000**	**$ 1,111,800**	**$ 1,134,036**	**$1,156,717**	**$ 1,179,851**	**$1,203,448**	**$ 1,227,517**	**$1,252,067**

[1] D.15-10-028, Ordering paragraph (Op.) 4.
[2] Cross-Cutting compliance enhancements will be a new offering within the SoCalREN portfolio, if approved 2018 will be the first funding year.

D. Codes and Standards Annual Net Savings from 2015 Potential and Goals Study

Navigant's 2015 Potential & Goals Study references C&S activities as driving savings to IOUs. SoCalREN's activities will drive compliance, and therefore savings, associated with Title 24, Part 6. Specifically, the SoCalREN Compliance Enhancement Program will likely improve compliance for C&S that are "on the books" and "expected" as described below.

- On the books – SoCalREN activities will increase compliance with codes that have been adopted by local jurisdictions but have less than perfect compliance rates.
- Expected – SoCalREN activities will help local agencies adopt and implement in advance codes that are in the rulemaking phase (e.g., ZNE new residential construction).

Navigant's 2015 Potential & Goals Study identifies net C&S savings, or those savings that can be attributed to the advocacy work of the IOU's C&S programs and that account for normal market adoption of code-compliant equipment and utility attribution factors, such as 522.4 GWh and 108.5 MW in 2017 alone in the Southern California Edison (SCE) territory. Similarly, the study identifies 12.2 MMTherms associated with net C&S savings in 2017 in Southern California Gas Company (SoCalGas) territory.[3]

E. Codes and Standards Landscape

The C&S landscape is broad, encompassing a large number of stakeholders. From architects and planners, to building department staff, to developers, contractors, and building operators, nearly every market actor is affected by building energy codes and energy performance policies. Similarly, nearly every market actor stands to affect change within the C&S landscape and to be a champion for compliance and advanced energy solutions.

While the majority of the SoCalREN C&S activities will be targeted to local governments, SoCalREN will engage additional stakeholders in the compliance process in an attempt to gather and share best practices developed by partners across the state. This comprehensive approach will more effectively achieve regional code compliance and enforcement by increasing capacity for compliance on both sides of the permit desk. See Appendix C for a table describing the C&S community that will be targeted by the SoCalREN Compliance Enhancement Program.

1. Trends

SoCalREN's C&S community is subject to several trends that will help inform C&S activities going forward, including:

- **Swift ramping up of efficiency standards.** California's Energy Efficiency Building Standards are updated every 3 years. As SoCalREN approaches 2020 and 2030 and the associated ZNE goals for new construction, this trend signifies increasingly stringent, and likely more complicated, standards that all stakeholders must learn and implement.

[3] Navigant. Energy Efficiency Potential and Goals Study for 2015 and Beyond. September 25, 2015.

- **Increasing focus on data to comply with and inform adoption of standards.** Data is the basis for a growing number of tools and initiatives to save energy in the building sector. While local government access to building level data has been limited, legislation like Assembly Bill (AB) 802 is making data more and more critical to achieving compliance. Similarly, as energy data becomes more accessible thanks to mandatory reporting requirements, local governments will have a wealth of information that can help steer advanced energy codes and policy adoption.

2. Gaps/Barriers

Local governments play a critical role in achieving the state's ZNE goals. Local development services staff (i.e., planning and building department staff) have the ability to directly inform and steer the energy performance of every development and redevelopment project that comes across their desks. Further, they have data from permitted projects that provide a wealth of information that can inform energy leadership efforts and progress toward climate goals. However, local governments are resource-constrained, limited by complex and constantly changing codes, and largely unable to take advantage of their unique ability to steer their communities toward a ZNE future. Local government building departments constitute a hard-to-reach community given the inability, thus far, of PAs to successfully address their barriers and tap into their change-making potential.

Similarly, external C&S partners, including architects, planners, developers, consultants, and contractors, are driven by their bottom line and behave reactively, rather than proactively, with regard to C&S. These limitations deter this stakeholder group from pushing the boundaries that will help the state achieve its lofty EE and ZNE goals.

As an entity managed by the public sector for the public sector, SoCalREN is uniquely suited to overcome these barriers and enable public agency energy leadership and collective action to save energy.

F. Approach to Achieving Compliance Enhancement Goals

SoCalREN will frame all C&S interventions within the ZNE communities framework. SoCalREN seeks to accelerate local government implementation of EE, ZNE and GHG reduction goals and standards through the use of their regulatory authority. This would include developing, adopting, and implementing model policies and programs focusing on improving the EE of existing buildings and on ZNE building energy policies and codes (on both a mandatory and voluntary basis) focused on new construction.

SoCalREN's model energy codes, standards, and policy support includes promoting the adoption of codes that address:

- Better compliance with and enforcement of state and local energy code requirements
- Building benchmarking
- Retrofit upon sale requirements

- Electric vehicle–ready policies and standards
- ZNE new construction requirements
- ZNE policies, standards, and incentives for existing buildings
- Policies that encourage and support actions to design and develop decentralized ZNE communities

The SoCalREN Compliance Enhancement Program will supplement, not duplicate, the efforts of the statewide IOU C&S program. While the statewide IOU C&S program is providing tools and resources for a large number of stakeholders, the C&S landscape is sufficiently large to warrant supplemental activities. For example, statewide IOU C&S building department training courses cannot be attended by large numbers of building department staff simply because of staff's limited resources and ability to leave their day-to-day duties. Similarly, oftentimes only one staff member can attend these trainings and is expected to impart an entire day's knowledge to the rest of the department, which is not typically feasible or widely practiced. SoCalREN's Energy Code Coach proposal, outlined below, speaks directly to these gaps, and others, and seeks to address barriers that IOU programs have been unable to adequately address. Additionally, the SoCalREN approach is to develop a comprehensive Compliance Enhancement Program that addresses the entire spectrum of compliance, from building design to operation, and prepares the compliance community for the quickly approaching ZNE and EE mandates.

1. Intervention 1 – Provide Targeted Resources and Tools to C&S Stakeholders

SoCalREN will take a multi-pronged approach to designing and implementing compliance enhancement activities (Table 2). This approach involves first assessing specific gaps in code enforcement capacity among compliance stakeholders, then providing both regionally based and targeted outreach, education, and tools to address the gaps and barriers identified in the assessment. While the primary audience for this task is local government staff (i.e., staff in development services/building and planning departments), an assessment of the larger compliance stakeholder group (see Appendix C) will result in a comprehensive approach that more effectively achieves regional code compliance and enforcement by better equipping all stakeholders with compliance tools, creating a smoother compliance process from start to finish.

In addition, SoCalREN will organize local government peer-to-peer workshops and training (in-person and online) to discuss energy codes, reach codes, benchmarking and disclosure, outcome-based codes, performance measurement, and code compliance; share case studies, best practices, and lessons learned related to code development, adoption, and implementation throughout the United States; and coordinate with relevant state and federal initiatives and best practices that align with local compliance enhancement activities.

Table 2. Intervention 1 – Compliance Enhancement Activities

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Provide targeted resources and tools to C&S stakeholders	Complicated codes, burdensome compliance	Needs assessment to identify C&S gaps and barriers	New	Short

	processes, and competing priorities among C&S stakeholders	Targeted compliance enhancement activities	New	All
		Energy Code coach for building department staff	New	Short, mid
		Peer-to-peer learning	New	All
Partners: Local government leadership and code enforcement, IOUs, California Energy Commission, and local stakeholders who participate in compliance activities – See Appendix C.				

2. Intervention 2 – Develop and Adopt Model Energy Codes, Standards, and Policies

SoCalREN will provide the over 200 local governments within its territory with one-stop end-to-end support to design and adopt energy reach codes and ordinances. To improve building efficiency in existing and new buildings in their communities, local governments must play a greater leadership role through their regulatory authority, including adopting energy codes, standards, and ordinances that support greater building EE.

Reach codes allow local governments to aggressively pursue local sustainable energy actions as well as the CPUC's long-term goal of achieving ZNE. SoCalREN will provide the 200+ local governments within its territory with one-stop end-to-end support to design and adopt energy reach codes. SoCalREN will work with local governments in the region to assess community needs and assist in the development of relevant model reach codes, standards, and policies. Additionally, SoCalREN will provide code development services to assist with drafting, promulgation, and adoption of model codes, including assistance with educating and engaging local elected officials and stakeholders; drafting staff reports and advocacy information; making presentations to community groups, property owners, business groups, and others; and coordinating with other local governments in the region.

SoCalREN's reach code strategy provides access to critically important technical assistance, customized and actionable energy and GHG emissions data and reporting for their jurisdictions, and expert advisory and training services that support enhanced code development and enforcement activities. This strategy will drive greater energy code compliance, enhanced code enforcement, and innovative regional approaches to successfully develop and adopt energy reach codes.

SoCalREN will support C&S enforcement and compliance through collaboration with the Solar Energy Action Committee (SEAC), led by the County of Los Angeles. The group is working with industry and local governments to design streamlined processes and manuals to achieve consistency and better code compliance. The program is also expanding to include other DER energy measures.

SoCalREN will provide technical assistance to compile and analyze community energy data that identifies best model code approaches and substantiates the anticipated code impacts in affected

jurisdictions. SoCalREN will also assist local governments in the measurement, collection, and tracking of data following adoption of model codes to ascertain and document actual impacts from code implementation.

Taking advantage of its online infrastructure, SoCalREN will provide access to its Online Resource Portal to provide relevant information, data resources, and other materials to support model code evaluation, development, and adoption, including compilation of the best examples of existing model codes on energy disclosure, benchmarking, and other topics. The portal will provide a one-stop source for the tools, templates, regional and local data sources, customizable collateral materials, and other information that can be used by local governments to reach out to building owners, community members, and other stakeholders during the code development and adoption process.

SoCalREN will coordinate its activities with SCE's related reach code program activities, including anticipated performance-based and prescriptive-based cost-effectiveness studies for all climate zones in California. SoCalREN will work collaboratively with SCE to leverage voluntary measures incorporated in CalGreen Tiers as primary sources for prescriptive-based reach code ordinances to enhance regional consistency and implementation effectiveness. To improve building efficiency in existing and new buildings in their communities, local governments must play a greater leadership role through their regulatory authority, including adopting energy codes, standards, and ordinances that support greater building EE.

Table 3. Intervention 2 – Develop/Adopt Model Energy Codes & Standards

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Develop and adopt model energy codes, standards, and policies	Local governments lack awareness of the opportunity to lead by example with model codes and ordinances, and they lack resources to implement adopted standards	Model code identification and planning	New	All
		Reach code development services	New	All
		Data-driven technical assistance	New	All
		Online tools, templates, and resources	Modified	All
Partners: Local government leadership and code enforcement, IOUs, California Energy Commission, and local stakeholders who will be affected by advanced codes and policies – see Appendix C.				

G. Metrics and EM&V Considerations

As a non-resource program that drives energy savings to SCE and SoCalGas, SoCalREN's C&S evaluation, measurement, and valuation (EM&V) efforts will focus on qualitative metrics associated with established goals. The specific goals of the SoCalREN Compliance Enhancement Program are to:

- Provide C&S community members with actionable resources that address their specific role in advancing the state's ZNE goals.
- Support public agencies and external C&S stakeholders to adopt, implement, and enforce advanced energy codes, standards, and policies that pave the way for improved building performance and ZNE new construction.
- Assist public agencies in collecting and using C&S–related data to inform adoption and implementation of advanced energy codes and policies.

To first assess the needs of C&S community members, SoCalREN will perform a needs assessment similar to BayREN's 2013 C&S program. Assessing specific gaps in code enforcement capacity among compliance stakeholders will establish a baseline on which EM&V will be based in subsequent years. As SoCalREN begins to develop resources to address identified gaps, the following will be tracked:

- The amount of outreach, education, and tools (i.e., resources) provided to C&S stakeholders.
- The percent of local governments in SoCalREN territory that consistently use the resources provided.
- The percent of local governments in SoCalREN territory that adopt and implement advanced codes and use energy and C&S–related data to inform adoption and implementation of such standards.

Table 4. SoCalREN Cross-Cutting C&S Compliance Enhancement Goals, Intervention Strategies and Metrics

SoCalREN's Goals	Intervention Strategies	Metric	Baseline (or Benchmark)	Metric Source	Short Term Target (2018-2020)	Mid Term Target (2021-2023)	Long Term Target (2024-2025)
C&S community members are provided with actionable resources that address their specific role in advancing the state's ZNE goals.	Provide targeted resources and tools to C&S stakeholders.	# of C&S resources provided	0	SoCalREN reporting	TBD based on needs assessment	TBD based on needs assessment	TBD based on needs assessment
		% of local governments using C&S resources	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%
Public agencies and external C&S stakeholders work together to adopt, implement, and enforce advanced energy codes, standards, and policies that pave the way for improved building performance and ZNE new construction.	Develop and adopt model energy codes, standards, and policies.	% of local governments adopting advanced codes, standards, and policies	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%
Public agencies are using data, collected through enforcement of advanced energy codes and policies that informs energy master plans, regional energy plans, and roadmaps for addressing energy and GHG reduction targets and strategies.	Develop and adopt model energy codes, standards, and policies.	% of local governments using energy data to inform C&S activities	228 local governments in SoCalREN territory	Agency activities	10%	20%	30%

H. EM&V Preparedness and Research Needs

1. Anticipated Study Needs

EM&V of SoCalREN compliance enhancement activities will involve establishment of a baseline for compliance capacity among the C&S community members in the region via survey, followed by establishment of specific, actionable goals and deliverables that will help move the region toward increased compliance. SoCalREN will conduct ongoing EM&V to assess progress toward goals and adjust tactics as necessary to ensure continued, verifiable success.

SoCalREN's C&S team will work collaboratively with BayREN and other C&S PAs to inform statewide EM&V roadmaps and plans to ensure they are informed by C&S stakeholders. Similarly, SoCalREN's C&S team will work with C&S PAs, the Energy Division, and the California Energy Commission to determine the best ways to evaluate and learn from SoCalREN C&S activities as the state continues on the path to ZNE buildings. SoCalREN, along with BayREN, is interested in working with fellow C&S implementers to develop appropriate expectations and processes for conducting EM&V in the C&S landscape.

Appendix A: Acronym List

Acronym	Definition
AB	Assembly Bill
BayREN	Bay Area Regional Energy Network
C&S	Codes and Standards
CEC	California Energy Commission
CPUC	California Public Utility Commission
DER	Distributed Energy Resources
EE	Energy Efficiency
EM&V	Evaluation, Measurement, and Verification
EV	Electric Vehicle
GHG	Greenhouse Gas
IOU	Investor Owned Utility
PA	Program Administrator
REN	Regional Energy Network
SB	Senate Bill
SCE	Southern California Edison
SEAC	Solar Energy Action Committee
SoCalREN	Southern California Regional Energy Network
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Sector Chapter: Cross Cutting - Codes & Standards	
	Summary tables	
Budget on page 4, section C	*Table with CE, TRC, PAC, emissions, savings, budget*	
P 9-11, Section G	*Metrics for sector*	
	Market characterization (overview and market/gap and other analysis)	
N/A to C&S	*Electricity/NG*	
P1, section A	*State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)*	
P 4, Section D	*EE potential and goals*	
P 5, Section E	*Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)*	
P 5, section E.1.	*Major future trends that are key for the PA and its customers*	
P 5, section E.2.	*Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)*	
	Description of overarching approach to the sector	
Goals p 3, section1 Strategies/Approaches p 6, section F	*Goals/strategies/approaches*	
	How portfolio meets Commission guidance	
P 7-9, section F	*Description of how this chapter addresses the performance challenges/barriers*	
	Intervention strategies (detailed)	
P 7-9, section F	*What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)*	
P 7-9, section F	*Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)*	
P 7-9, section F	*How approaches advance goals discussed above*	
	How strategies use lessons learned from past cycles and EM&V	
	How will interventions support/augment current approaches or solve challenges	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
P 5, Section E **P 7-9, section F**	*Explanation for how these strategies address legislative mandates from AB 802, SB350, and AB 793, as well as other Commission directives for this sector, including strategic plan.*	
P 7-9, Section F	*Future expectations for intervention strategies*	
P 7-9, Section F	*Description of pilots*	
P 7-9, Section F	*Key Partners*	
	Compare/contrast to past cycles	
	Budget changes as appropriate	
	Modification to sector strategies	
	Cross-cutting (sector chapters and ME&0)	
	Program Administrator marketing and integration with SW MEO as applicable	
	Workforce, education, and training	
	Emerging Technologies	
	Codes & Standards	
	Cross PA and Offering Coordination	
	How strategies are coordination among regional PAs	
	Proposal of statewide program administrator/approaches for this sector	
P 6	*How the sector strategies are coordinated with statewide program activities*	
P 7-9, Section F	*How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)*	
	EM&V Considerations (statement of needs)	
P 9-11, section G	*Data collection needs*	
P 9-11, section G	*Anticipated study needs*	
	Demand Response	
	How EE measures use up-to-date DR enabling technologies to be "DR ready"	
	How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	
	How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	
	Residential Rate Reform	
	How BPs will help reduce load during TOU periods	
	How BP will diminish barriers to load reduction during TOU periods	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	How strategies will provide info to customers and/or provide a tool to show how program may impact customer energy usage during different TOU periods	
	How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	
	ME&O re: rate reform	
	Integrated Demand Side Resources	
	Zero-Emission Vehicles(EVs)	
	Energy Savings Assistance (Multi-family Focused)	
	Appendices	
	Additional Customer Data	
	Cited research	
	CAEECC stakeholder input resolution	Attachment A-1 Chapter

Appendix C: Codes & Standards Stakeholders

Stakeholder	Role	Compliance Responsibilities
CBOs (LG)	Oversee activities of building department staff, determine priorities, staffing and budget needs for department.	Guides counter techs, plans examiners and inspectors in setting priorities for project review, designating importance of Title 24, Part 6 and 11 among other C&S Sets priority for training among staff Informs decisions around infrastructure projects including online permitting platforms
Planners (LG)	Review projects for compliance with general plans and CEQA, issues entitlements.	Peripheral role in reviewing energy-related aspects of projects such as siting for renewables, grid impacts, transportation impacts, and CEQA compliance associated with EE (Appendix F)
Counter Techs (LG)	Review permit submittal package for appropriate forms and components.	Review permit submittal package for appropriate forms and components (all codes, not just EE)
Plans Examiners (LG)	Review complete permit submittal package for code compliance, health and safety, etc.	Reviews plans for all code compliance, not just EE Issues permit
Building Inspectors (LG)	Physically inspects installation of building features for code compliance, health and safety	Makes multiple site visits to verify code compliant and proper installation of features (all codes, not just EE) Closes permit Issues certificate of occupancy
Architects	Designs projects, manages design team including owner and design engineers.	Specifies products Develops system layouts and floorplans Draws project plan sections and details Completes compliance forms and uploads to HERS registries Compiles permit application submittal package Some construction-phase duties
Design Engineers	Electrical, mechanical, and plumbing designers design project components to meet code compliance and owner desires.	Specifies products and performance requirements for applicable components Develops applicable system layouts Draws sections/details for applicable components Completes applicable compliance forms Completes permit application submittal package

Stakeholder	Role	Compliance Responsibilities
Energy Consultants	Advises design team on energy code requirements, performs energy modeling, and completes compliance documentation to meet code requirements.	Performs energy modeling and load calculations Advises design team on compliant project approach Complete forms and upload to HERS registry
Builders/ General Contractors	Coordinates construction and manages project schedule and budget to complete project to specified design.	Coordinates with design team and installers to install project features Determines which forms to post onsite for inspections Completes forms on HERS registry Coordinates inspections with HERS raters, ATTS, building inspector Provides owner with complete package of completed forms
HERS Raters	Performs field verification and diagnostic testing to confirm compliance with T24, Part 6, and that systems are installed and functioning properly.	Performs field verification and diagnostic testing to confirm compliance on projects that trigger HERS requirements. Signs and uploads compliance docs to HERS registry.
Acceptance Technicians	Performs field verification to certify lighting controls as properly installed and operational	Performs field verification to certify compliance on commercial lighting projects Completes and submits Acceptance Test forms
Cx Agents	Commission building systems prior to permit closure/certificate of occupancy issuance	Completes and submits commissioning report to owner for display at final inspection.
Residential, Commercial, Multi-Family Building Owners, Operators & Portfolio Managers	Hires design and construction team to build project. Helps define project scope, schedule, and budget. Responsible for energy benchmarking and management.	Benchmarking operational performance Defines project design elements/approach Ultimately responsible for obtaining permits Owner's Project Requirements (OPR) Commissioning requirements Receives Certificate of Occupancy
Home Inspectors	Perform residential inspections at time of sale; provide inspection report to prospective home buyer to inform of code infractions, safety concerns, and structural deficiencies.	Informs prospective buyers of code infractions (ex: non-permitted additions) at time of sale.

SoCalREN

Energy Efficiency Business Plan

Cross-Cutting Segment Chapter:
Financing

January 23, 2017

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SoCalREN Cross-Cutting Segment Chapter: Financing

A. SoCalREN's Energy Efficiency Financing Vision

Financing tools are becoming increasingly important to the success of energy efficiency (EE) programs. The California Public Utility Commission (CPUC) already mandates that investor-owned utilities (IOUs) implement On Bill Financing. SoCalREN will embrace the growing role of EE financing by building on the success of existing products. Energy-efficient mortgages, for example, are already growing in popularity. Products like Fannie Mae's HomeStyle Mortgage and Property-Assessed Clean Energy (PACE) Program financing will make it easier for home and building owners to afford efficiency improvements. Options for all property types are increasing, like multifamily, with Multifamily Green Building Certification Pricing Break, Green Rewards, and Green Preservation Plus.

The California Long-Term Energy Efficiency Strategic Plan (LTEESP) exerts the greatest influence on SoCalREN EE programs in the residential and commercial sectors because, unlike some other policy documents, it specifically identifies financing as a key strategy for achieving Zero Net Energy (ZNE) in the commercial sector.

> The Strategic Plan Financing Cross-Cutting Mission - *To leverage the collective action of local governments to maximize the energy efficiency of residential and commercial buildings across Southern California, focusing on hard-to-reach communities and innovative pilot programs not offered by traditional utilities.*

SoCalREN's financing cross-cutting vision is to leverage the collective action of public agencies and their communities in order to maximize the EE of residential and commercial buildings across Southern California, focusing on hard-to-reach communities and innovative pilot programs not offered by traditional utilities.

Over the next 8 years, SoCalREN will seek to achieve the following goals:

1. Finance 342 residential projects and support 318 non-residential PACE projects.
2. Host 260 events, meetings, and workshops to educate stakeholders about non-residential PACE financing products.
3. Engage customers in non-residential PACE financing products as measured by customer inquiries of over 1,300 and event attendance of over 2,100.

SoCalREN envisions residential financing not only as a fundamental tool for enabling property owners to make ZNE and ZNE-ready improvements, but also as an opportunity to parlay improvements into future growth. Unregulated EE financing tools are not always a good fit for property owners. Energy savings is increasingly becoming a marketing tool. Property owners want to report and advertise savings from financed improvements. However, the reporting methodology in the private sector varies from program to program, undercutting the data's legitimacy and its value as a marketing tool. By becoming the conduit through which property owners connect with traditional financing, SoCalREN will increase the number of projects that actually report energy

savings and will assist in standardizing reporting methodology. SoCalREN will work specifically with residential PACE providers to increase the number of projects reporting data and improve the quality of the data.

In the commercial sector, SoCalREN envisions focusing on the unique capabilities of public sector agencies to serve their constituents. Although there is no shortage of financing options for commercial property owners, they often face constraints when it comes to having the time, resources, and know-how needed to make the best selection among available options. This is where SoCalREN will be able to help. SoCalREN has the expertise to match owners with the right financing by factoring in circumstances that are unique to the owner, such as climate zone, demographics, and building stock. By tailoring services to the needs of commercial property owners, SoCalREN's local focus will drive the region and its sectors toward ZNE.

B. SoCalREN's Energy Efficiency Financing Proposal Compared to Past Program Cycles

Financing plays a significant role in SoCalREN's approach to transforming the market because the lack of funding is one of the most common barriers to pursuing EE. In addition to continuing commercial PACE and more conventional residential financing, SoCalREN will expand financing offerings by promoting above-code retrofits and capitalizing on the recent success of programs like residential PACE.

Launched in July 2011, SoCalREN's Home Energy Loans (HEL) program is a traditional unsecured loan product that offers competitive financing to residents participating in Home Upgrade or Advance Home Upgrade in the SoCalREN territory. Five years later, the California Hub for Energy Efficiency Financing launched the Residential Energy Efficiency Loan (REEL) program statewide. Although these two programs may appear similar, they serve two very distinct markets.

HEL finances EE measures and, in some cases where non-CPUC funds can be leveraged, solar panel installation. REEL can finance non-EE work and projects that do not receive ratepayer-funded incentives. For this reason, SoCalREN contractors prefer REEL for projects undergoing cosmetic renovations in addition to EE upgrades, or for projects that are ineligible for an incentive program. Together, HEL and REEL provide financing to a broader swath of ratepayers by serving customers across two distinct sets of circumstances.

Commercial financing options are limited to unsecured loans, energy service agreements, and IOUs' On Bill Financing programs. SoCalREN has administered a non-residential PACE financing program that will continue to identify and support the completion of more EE projects.

Commercial PACE currently finances improvements that are permanently affixed to the property and conserve energy or water, or generate renewable energy. Commercial PACE financing offers an innovative solution to "split incentives," which, as the LTEESP notes, is one of the biggest barriers to ZNE in commercial buildings. Split incentives refer to misaligned rental property incentives, where owners pay up-front capital expenses but tenants receive the benefits, most often in the form of reduced utility costs. Non-residential PACE allows owners to pass the debt service to tenants via a tax pass clause in lease agreements. SoCalREN hopes to leverage and

expand its finance offerings in the commercial sector. Further details of this strategy are described in ***Section F, SoCalREN's Approach to Achieving Goals***.

1. Key Learnings from Recent Evaluation, Measurement, and Valuation Reports of California's Financing Programs

SoCalREN originally offered financing because it was a local government response to the up-front costs of EE. Since then, Evaluation, Measurement, and Valuation (EM&V) reports have observed that financing continues to successfully address this and other barriers.[1] SoCalREN has increased its financing offerings since 2011, seeing growth in both ratepayer-funded and non-ratepayer-funded EE financing programs.

SoCalREN can apply key learnings from the medium-to-large business focus group to understand the commercial sector. They demonstrate the following characteristics and preferences of prospective borrowers:[2]

- Possess limited awareness and knowledge of energy-efficiency financing
- Are uncertain about the difficulty of obtaining loans for EE
- Prefer to learn about loan options as early as possible in the decision-making process
- Regard interest rates as very important when considering a loan
- Prefer fixed interest rates
- Use home mortgages and car loans (which are typically secured and have single digit rates) as benchmarks for interest rates
- Value repayment period options
    - Prefer longer periods with smaller monthly payments
    - Want the option to pay off the loan early
- Generally undertake upgrades when equipment fails
- Prefer to work with a lender, but are also comfortable with outreach from PAs
- Are willing to accept modest fees but prefer to have fees rolled into the loan
- Prefer flexible loans that cover improvements that help their business become more energy efficient
- Like loans that do not preclude them from rebates
- Are motivated by the prospect of energy savings to help offset monthly loan payments

Key learnings applicable to the residential sector:[3]

- Possess limited awareness and knowledge of EE financing
- Rarely use loans/financing for EE
- Prefer to learn about loan options as early as possible in the decision-making process
- Prefer unsecured loans
- Regard interest rates as very important when considering a loan
- Prefer a fixed interest rate

[1] Mulholland, Carol, Linda Dethman, Allie Marshall, and Cynthia Kan. 2013. Energy-Efficiency Financing Customer Research Focus Group Findings. Boston, MA: The Cadmus Group. June.
[2] Ibid.
[3] Ibid.

- Use home mortgages and car loans (which are typically secured and have single digit rates) as benchmarks for interest rates
- Value repayment period options
  - Prefer longer periods with smaller monthly payments
  - Want the option to pay off the loan early
- Prefer to use internal business capital
- Will upgrade equipment under these three scenarios:
  - Planned replacement
  - Equipment fails
  - Excessive discomfort in the home
- Are more likely at act when rebates are available
  - Favor loans that do not preclude them from rebates
- Distrust contractors to accurately represent loan opportunities
- Prefer to work with a lender but are also comfortable with outreach from PAs
- Are comfortable with a traditional credit review
- Will accept modest fees but prefer fees to be rolled into the loan
- Prefer flexible loans that cover improvements needed to help their home become more energy efficient

C. Sector Level Budget

Table 1 summarizes SoCalREN's cross-cutting financing budget. These values are based on estimates of the proposed strategies outlined in Section F, ***SoCalREN's Approach to Achieving Goals***. SoCalREN sees greater opportunities in Public Sector financing options for the agencies it serves. While the requested budget does not represent an increase from previous budgets, the strategy is to solicit and support a wider range of financing options. In addition, SoCalREN has factored in a 2% cost increase per year to account for increases in program costs.

As SoCalREN implements the strategies described in this business plan chapter, the budget will be reevaluated over time to respond to market changes, needs of the portfolio, and regulatory directives. Further details on these changes will be reflected annually in SoCalREN's September compliance filing, as dictated by California Public Utilities Commission (CPUC) Decision (D.)15-10-028.[4]

[4] D.15-10-028, Ordering paragraph (Op.) 4.

Table 1. Financing Sector Level Budget

Budget	2017[5]	2018	2019	2020	2021	2022	2023	2024	2025
Administration	477,991	218,000	222,360	226,807	231,343	235,970	240,690	245,503	250,413
Marketing & Outreach	698,688	87,200	88,944	90,723	92,537	94,388	96,276	98,201	100,165
DI – Non Incentive	325,595	1,874,800	1,912,296	1,950,542	1,989,553	2,029,344	2,069,931	2,111,329	2,153,556
DI - Incentive	1,276,976	0	0	0	0	0	0	0	0
SECTOR TOTAL	**$2,779,250**	**$2,180,000**	**$2,223,600**	**$2,268,072**	**$2,313,433**	**$2,359,702**	**$2,406,896**	**$2,455,034**	**$2,504,135**

D. Market Overview

All market sectors can enjoy a diverse array of financing opportunities to stimulate EE investments.

1. Residential Sector

The need for EE financing in Southern California has never been greater. While substantial resources have been expended to determine how homeowner incentives can transform the market for residential home performance, the market transformation accompanying the meteoric rise of PACE has been roundly ignored. Since April 2015, over 18,000 PACE loans have been funded in Los Angeles County alone, which averages out to 1,000 new loans generated each month. Most PACE loans are not paired with an EE incentive. This disconnect represents a tremendous opportunity for SoCalREN.

The potential for EE financing is considerable. An estimated 40 percent of homeowners will make energy-related upgrades within the next 2 years, and 27 percent are likely to use financing.[6] However, not all of these potential customers are eligible for PACE. Despite tremendous uptake, residential PACE does not serve the entire residential sector. Some residents do not qualify for loans on the basis of poor credit. Frequently, these residents can still pursue traditional (i.e., non-PACE) unsecured loan products.[7] As noted in the Key Learnings above, limited awareness and knowledge is a leading reason why many residents do not pursue EE financing. Therefore, the opportunity to educate the residential sector is significant.

Navigant Energy undertook the 2015 California Potential and Goals Study to inform IOU goals, forecast AAEE savings, understand how IOU programs can meet AB 32 goals, and provide

[5] The budgets for year 2017 reflect the September 1 Compliance Filing Regarding SoCalREN 2017 Energy Efficiency Program Portfolio Changes and Funding Request which is expected to be approved Q1 2017.
[6] Opinion Dynamics and Dunsky Energy Consulting. 2016. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March.
[7] SoCalREN 10/27/16 Contractor Focus Group.

analysis to support the development of a strategic plan. This study relied on data from the DEER and on EM&V studies. Below are findings relevant to SoCalREN financing programs:[8]

- The Navigant Study updated data in the 2015 study. Updated figures include:
  - Single-family interest rate is now 8 percent. The study collected over 400 interest rate quotes from California banks and credit unions.
  - Single-family eligible population is now 98 percent. The new rate increased significantly from 63 percent in the 2013 study. Eligibility is determined by credit data.
  - Single-family implied discount rate is now 14 percent. The rate in the 2015 study represents a higher proportion of residential customers who cite upfront costs as a market barrier. It was 11 percent in the 2013 study.
  - Multifamily implied discount rate is now 20 percent. It was 13 percent in the 2013 study.
  - Major conclusions related to financing:
  - Over the 2016–2024 period, financing would increase residential sector incremental electric savings by an average of 4.5 percent, and gas savings by 20.8 percent.
  - The impact of financing is more prominent for the residential sector than the commercial sector.

2. Commercial Sector

Although SoCalREN's territory encompasses most of Southern California, the focus of the commercial financing sector is principally on Los Angeles County. The commercial sector includes, but is not limited to, office buildings, multifamily residences with five or more units, retail, restaurants, hotels, warehouses, and industrial facilities.

Commercial buildings consume more electricity than any other end-use sector in California. In aggregate, commercial buildings account for 38 percent of the state's power consumption and over 25 percent of natural gas consumption. Lighting, cooling, refrigeration, and ventilation account for 75 percent of all commercial electric use. Space heating, water heating, and cooking account for over 90 percent of commercial gas use.[9] Office buildings consume the most electricity, accounting for nearly 25 percent. Restaurants have a comparable share among gas consumers, accounting for 25 percent.[10] Table 2,

Table 4,

Table 4, and Table 5 provide more detail on energy consumption by end use and facility type.

[8] Navigant. 2015 California Potential and Goals Study. September 25, 2015.
[9] California Energy Efficiency Strategic Plan – January 2011 Update.
[10] *Ibid*.

Table 2. Profile of Electricity Consumption by End Use Type

End Use	Electric %	Cumulative Electric %
Lighting—interior and exterior	34.5	34.5
Cooling	14.9	49.4
Refrigeration	13.4	62.8
Ventilation	11.9	74.7
Office equipment	7.1	81.8
Source: California End Use Survey 2006.		

Table 3. Profile of Gas Consumption by End Use Type

End Use	Electric %	Cumulative Electric %
Space heating	36.4	36.4
Water heating	31.8	68.2
Cooking	22.6	90.8
Process	5.9	96.7
Misc.	1.8	98.5
Source: California End Use Survey 2006.		

Table 4. Profile of Electricity Consumption by Facility Type

Facility Type	Electric %	Cumulative Electric %
Office	24.5	24.5
Retail	14.7	39.2
Restaurant	8.9	48.1
Food store	8.8	56.9
School and college	8.8	65.7
Health	6.8	72.5
Lodging	4.9	77.4
Unrefrigerated warehouse	3.7	81.1
Source: California End Use Survey, 2006.		

Table 5. Profile of Gas Consumption by Facility Type

Facility Type	Electric %	Cumulative Electric %
Restaurant	24.5	24.5
Health	13.7	38.2
Office	13.3	51.5
School and college	11.1	62.6
Lodging	9.0	71.6
Food store	3.1	74.7
Retail	2.5	77.2
Unrefrigerated warehouse	1.3	78.5
Source: California End Use Survey, 2006.		

Although large commercial properties collectively represent the greatest opportunity for energy savings, the typical energy costs for such properties represent only 2–4 percent of their operating budget. Generally, these large businesses prefer to use capital to support core business operations instead of pursuing energy savings. Therefore, financing opportunities for EE in large commercial properties tend to be limited because of low demand.

Financing can have more impact on small commercial properties where typical energy costs are proportionally higher to overall budgets, but even then there are constraints. Lenders are more concerned about default because small businesses face higher levels of debt. This in turn results in higher interest rates and transaction costs, discouraging property owners from pursing financing at all.

E. Trends and Challenges

SoCalREN has identified six overarching financial barriers for EE projects:

- **Property owners are not confident about** EE **savings:** Despite California's leadership in EE legislation, it is difficult to persuade property owners to take make buildings energy efficient. Savings are difficult to quantify because utility rates and end user consumption are unpredictable. Uncertainty is an anathema for any business, and property owners are no exception. They demand a steady return on investment, and seeing EE as an investment is still a relatively new concept. Most owners perceive it as a luxury. Combined with the perceived uncertainty surrounding rate of return, owners remain hesitant to pursue EE building improvements.
- **Property owners lack interest in financing offerings:** The primary challenge financing programs encounter is low customer demand, not access to attractive capital. Programs such as On Bill Financing face low demand despite offering a rate of 0 percent. Those in the commercial sector, like large businesses and corporations, tend not to spend capital on building improvements. They reinvest in core business to stay competitive. Often, large corporations do not even need to rely on financing. If improvements are unavoidable, they self-finance.

- **High rates and administrative costs make funding projects difficult:** Property owners who need financing the most are those who are must difficult to fund. Small businesses and low-income homeowners are most in need of capital, but lending institutions do not regard them as safe candidates for loans. For participants, high rates, underwriting, and administrative costs make the low loan amounts not worth the effort.
- **Complex financing requirements and building capital structures:** Financing options often require complicated analysis and underwriting that discourage, or outright exclude, potential customers. For example, PACE programs must notify primary mortgage holders, who must give consent before new debt is authorized. Mortgage holders rarely give consent because PACE may undermine the repayment of their own loans.
- **Financing efforts are not coordinated across program providers:** Many financing options are available, but they are often ignored by property owners because providers do not coordinate. For example, several PACE programs actively promote in Southern California, but rapid expansion and aggressive and uncoordinated marketing tactics create confusion. Property owners confuse programs sponsored by SoCalREN or the CPUC with those offered by private companies. When fees and terms do not match across products, they distrust the entire industry.
- **Rental properties face split incentive barriers:** Most commercial and multifamily properties are rental properties, and rental properties face unique barriers to EE upgrades. As investments, owners make decisions based on return. The bulk of return on investment from efficiency upgrades comes from utility cost savings in tenant-occupied spaces. The owner, who paid for the improvement, sees no return and therefore has no incentive to invest in EE improvements. Tenants, on the other hand, do not want to invest in permanent EE improvements because tenure is short and short-term utility savings will not justify upfront costs. Further, with no equity stake, tenants miss out on the benefit of capital improvement. This misalignment of incentives is commonly referred to as the split incentive barrier.

F. SoCalREN's Approach to Achieving Goals

SoCalREN's vision to educate and support constituents in communities' path to ZNE includes a number of intervention strategies that address multiple barriers. SoCalREN intends to use the following intervention strategies to address different market barriers:

- Expand access to financing products.
- Coordinate with relevant programs.
- Pursue partnering opportunities.
- Conduct targeted marketing and outreach.

After 5 years of implementing financing programs, SoCalREN believes the following intervention strategies and example tactics will be the most cost-effective methods to increase financed projects. These intervention strategies will address continued barriers that interfere with greater adoption of financing mechanisms for achieving greater EE and more comprehensive projects.

1. Intervention 1 – Increase Access to Financing Products

SoCalREN will continue to offer traditional low-cost financing products to customers with good credit and will simplify coordination between financing and retrofit programs.[11]

SoCalREN currently offers one commercial and two residential PACE programs in Los Angeles County, and each program has its own provider. Competition between two residential PACE providers is beneficial to residents by driving down costs and allowing for competition between products. SoCalREN would like to apply the same logic to commercial PACE programs by bringing in additional providers. Rates and fees will drop, making smaller projects more affordable.

SoCalREN would also like to expand Los Angeles County PACE programs to include all improvements that are eligible under California state law, including measures such as seismic strengthening and solar leases. Having more options will increase flexibility. Table 6 summarizes tactics for increasing access to financing programs.

Table 6. Intervention 1 – Increase Access to Financing Products

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Expand access to financing products.	• High rates and startup costs make funding smaller projects difficult. • Property owners have insufficient incentive to improve buildings occupied by tenants (split incentive).	Continue to offer traditional residential financing to customers with good credit.	E	S, M, L
		Increase the number of PACE providers. This will create competition and facilitate better products for owners.	M	S, M
		Expand measures that can be financed to be consistent with California law.	N	S, M, L
		Implement and promote PACE financing so that costs of improvements can be passed on to renters.	E	S, M, L
Partners: CAEFTA, Matadors Community Credit Union, PACE Administrators, LAC BOS				

[11] Improvements financed through PACE lower energy costs and increase property values. However, because owners can share costs with tenants, PACE can eliminate the split incentive barrier. With PACE, owners can use building equity to finance improvements, regardless of the property owner's credit worthiness. PACE also allows flexible loan terms of up to 20 years and with zero upfront capital investment. PACE's long-term financing allows owners to realize immediate positive cash flow.

2. Intervention 2 – Coordinate with Relevant Programs and Organizations

SoCalREN has built relationships with public agencies and its communities, IOUs, financial institutions, and other PACE providers to ensure stakeholders receive consistent support. However, future coordination with Southern California PACE providers is particularly vital. Multiple providers create confusion in the market, so one important task is for SoCalREN to provide a unified point of contact. Historically, SoCalREN has directed customer leads to other PACE implementers who provide more cost-effective financing options. In areas where they do not operate, private PACE providers have directed leads to SoCalREN. SoCalREN sees growing this coordination as a component to encouraging PACE participation.

SoCalREN will accomplish this by fostering dialogue among providers and staying in regular contact through meetings. SoCalREN has worked with public agencies and its communities to sponsor and host educational workshops on project development and financing for property owners. In addition, SoCalREN has sponsored and become an active contributor in local outreach plans.

Traditional financing, which requires participation in a rate payer incentive program, will continue to serve participants for whom PACE financing is not appropriate. Customers who perform EE upgrades outside an incentive program have historically been underserved, so SoCalREN will work with the CHEEF to promote the other statewide programs such as REEL.[12]

SoCalREN also works closely with IOUs in Southern California to provide financing. Leads that are not the best fit for PACE will be directed to utilities to enroll in their programs, with the added benefit that utility participation will ensure that potential energy savings capacity is captured and data are collected. Table 7 summarizes tactics for coordinating with relevant programs and organizations.

[12] The REEL Assistance Program enrolled its first loan in July, 2016. REEL is available to borrowers who are interested in completing an energy efficiency project and occupy a single family residence of 1-4 units where the utility service is provided by an IOU (PG&E, SCE, SCG and/or SDG&E).

Table 7. Intervention 2 – Coordinate with Relevant Programs and Organizations

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Coordinate with relevant programs and organizations.	• Property owners lack interest in financing offerings. • High rates and startup costs make funding smaller projects difficult. • Financing efforts are not coordinated among program providers.	Partner with PACE providers to facilitate financing projects in areas that they currently do not serve, making additional financing tools available.	M	S, M, L
		Partner with public agencies and their communities to host educational workshops on EE financing solutions, marketing to their commercial stakeholders.	E	S, M, L
		Host collaborative webinars, workshops, and events with PACE providers, establishing a single reliable source for information about PACE.	E	S, M
		Coordinate commercial PACE projects with utility counterparts to enroll projects in available utility programs.	M	S, M, L
		Serve as a single point-of-contact for commercial PACE inquiries and provide potential project leads to utilities and other PACE providers.	N	S, M, L
		Coordinate with statewide financing (CHEEF REEL program) to educate homeowners on all available financing options.	N	S, M
Partners: IOUs, PACE Administrators, Council of Governments, Financial Institutions				

3. Intervention 3 – Expand and Establish Additional Partnerships for a Comprehensive Financing Product

SoCalREN will collaborate with private Southern California PACE providers to collect energy savings data and encourage participation in IOU and CPUC programs. Having basic information about improvements and how building owners finance projects will improve understanding of the impact of PACE financing in Southern California.

SoCalREN has been working with the Environmental Defense Fund's ICP, which certifies EE savings by standardizing technical requirements with national protocols that align with industry best practices and software tools.[13] This nationwide standard will give property owners confidence regarding their EE project's energy savings and return-on-investment. Table 8 summarizes tactics for increased partnering for data improvements.

Table 8. Intervention 3 – Expand and Establish Additional Partnerships for a Comprehensive Financing Product

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Expand and establish additional partnerships for a comprehensive financing product.	• Property owners lack confidence in EE savings.	Partner with PACE providers to capture energy savings from improvements financed.	N	S, M, L
		Partner with ICP to standardize energy savings and return-on-investment of improvements financed.	M	S, M, L
Partners: IOUs, PACE Providers, ICP				

4. Intervention 4 – Targeted Marketing and Outreach to Leverage Existing Networks and Resources

Marketing and outreach are critical for informing property owners who do not participate in energy programs because many are unaware of the resources available to them. To avoid cost-prohibitive broad-based marketing and education approaches, SoCalREN will identify consumers who can benefit from the available programs. This strategy will focus on hard-to-reach communities and commercial businesses that are not interested in working with the IOUs.

[13] http://www.eeperformance.org/icp-for-programs.html

SoCalREN will continue to nurture interest and leads for traditional EE financing programs such as HEL. Like incentive programs, financing is contractor-driven, so SoCalREN will educate contractors about the benefits of HEL and how to incorporate them into their own marketing efforts.

Marketing and outreach will explain how PACE addresses the split incentive barrier. Special care will be given to ensure that both property owners and tenants understand the implications for all parties.

Targeted marketing will familiarize the existing mortgage holder with PACE financing and its benefits. Engagement with lenders is essential in order to obtain approval for PACE financing on the property. Table 9 summarizes tactics for employing targeted marketing and outreach to leverage existing networks and resources.

Table 9. Intervention 4 — Targeted Marketing and Outreach to Leverage Existing Networks and Resources

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Targeted marketing and outreach to leverage existing networks and resources.	• EE efforts are not coordinated across program providers. • Complex financing requirements and building capital structures.	Develop and promote case studies demonstrating the value of EE improvements.	E	S, M, L
		Host regular educational events and webinars on PACE, targeting commercial market stakeholders and establishing a reliable source for information about PACE.	E	S, M, L
		Engage with mortgage lenders to inform them of the benefits of PACE.	E	S, M, L
		Educate contractors on available financing options and how to integrate them into business models.	E	S, M
Partners: IOUs, PACE Providers, Council of Governments, Lenders				

G. SoCalREN's Partners and Commitment to Coordination

SoCalREN has built relationships with public agencies and its community partners, IOUs, and other PACE providers to ensure commercial stakeholders receive the best support possible. Opportunities for growth occur as SoCalREN partners with councils of government, financial institutions, trade organizations, and program implementers. Table 10 lists SoCalREN's existing and potential providers.

Table 10. Partners

Type of Partner	Existing Partners	Potential Partners ** Representative only*
Statewide	CPUC, CEC	Statewide residential financing program administrator
County government	Los Angeles County	Orange County, San Bernardino County, Riverside County
City government	84 out of 88 cities in LA County	Additional cities as county partnerships increase
Councils of government	South Bay Council of Governments (COG), San Gabriel Valley COG	Gateway COG
Program implementers/ financial institutions	Renovate America (HERO), CaliforniaFIRST, Samas Capital PACE, FigTree Financing, AllianceNRG, CleanFund, Ygrene, PACENation	PACE Funding, Spruce, Energy Efficient Equity
Trade organizations	International Brotherhood of Electrical Workers (IBEW), ICP	

H. Metrics and EM&V Considerations

As a non-resource program, SoCalREN is limited in what it can report because financing does not generate energy savings. Currently, SoCalREN reports only absolute participation rates and loan characteristics. However, because financing significantly influences homeowners' decisions to make EE upgrades, a portion of energy savings should be attributable to the financing program.[14] Developing a methodology to capture this influence would require direction from the CPUC. SoCalREN believes it would be beneficial to undertake this effort.

In the absence of such attribution and in the short term, SoCalREN will collect the following data:

- Number of participants
- Loan terms
- Coordination with partner programs
- Marketing, Education & Outreach efforts

I. EM&V Preparedness and Research Needs

As SoCalREN's residential financing programs grow, so does the need for EM&V to determine how to attribute claim savings. With significant participation in residential PACE, EM&V will help assess the impact and value of collaborating with non-ratepayer financing. Data are available to support such efforts because SoCalREN has close partnerships with public agencies, SoCalREN's communities, and financial institutions.

[14] Horkitz, Karen, Pat McGuckin, Laura James, Christopher Frye, and Hugh Ratcliffe. 2016. HERO Program Profile: Draft Final Report. Boston, MA: The Cadmus Group. August.

SoCalREN is preparing for evaluation of the commercial sector and the intervention strategies proposed above. Given the number of private PACE providers in Southern California, a coordinating body will need to capture energy savings and report to the CPUC. Established relationships with administrators position SoCalREN to capture otherwise unreported savings.

Appendix A: Acronym List

Acronym	Definition
AAEE	Additional Achievable Energy Efficiency
AB	Assembly Bill
CAEATFA	California Alternative Energy and Advanced Transportation Financing Authority
CEC	California Energy Commission
CHEEF	California Hub for Energy Efficiency Financing
COG	Council of Governments
CPUC	California Public Utility Commission
DEER	Database for Energy Efficient Resources
EE	Energy Efficiency
EM&V	Evaluation, Measurement, and Verification
HEL	Home Energy Loans
HERO	Home Energy Renovation Opportunity
ICP	Investor Confidence Project
IOU	Investor Owned Utility
LAC BOS	Los Angeles County Board of Supervisors
LTEESP	Long-Term Energy Efficiency Strategic Plan
ME&O	Marketing, Education, and Outreach
PA	Program Administrator
PACE	Property Assessed Clean Energy
REEL	Residential Energy Efficiency Loan
SoCalREN	Southern California Regional Energy Network
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Sector Chapter: Cross Cutting - Financing	
	Summary tables	
	Table with CE, TRC, PAC, emissions, savings, budget	
	Metrics for sector	
Section D.	**Market characterization (overview and market/gap and other analysis)**	
	Electricity/NG	
	State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)	
	EE potential and goals	
Section E.	*Customer landscape (e.g., segments/sub segments, major end uses, participation rates, etc.)*	
Section E.	*Major future trends that are key for the PA and its customers*	
Section E.	*Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)*	
Section F.	**Description of overarching approach to the sector**	
Section F.	*Goals/strategies/approaches*	
	How portfolio meets Commission guidance	
Section F. Intervention Tables 1-4	*Description of how this chapter addresses the performance challenges/barriers*	
Section F.	**Intervention strategies (detailed)**	
Section F. Intervention Tables 1-4	*What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)*	
Section F. Sub Sections Interventions 1-4	*Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)*	
Section F. Sub Sections Interventions 1-4	*How approaches advance goals discussed above*	
	How strategies use lessons learned from past cycles and EM&V	
Section B.	*How will interventions support/augment current approaches or solve challenges*	
	Explanation for how these strategies address legislative mandates from AB 802, SB350, and AB 793, as well as	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	other Commission directives for this sector, including strategic plan.	
	Future expectations for intervention strategies	
	Description of pilots	
Section G.	*Key Partners*	
Section B.	**Compare/contrast to past cycles**	
Section C.	*Budget changes as appropriate*	
Section B.	*Modification to sector strategies*	
	Cross-cutting (sector chapters and ME&0)	
	Program Administrator marketing and integration with SW MEO as applicable	
	Workforce, education, and training	
	Emerging Technologies	
	Codes & Standards	
Section G.	**Cross PA and Offering Coordination**	
	How strategies are coordination among regional PAs	
	Proposal of statewide program administrator/approaches for this sector	
	How the sector strategies are coordinated with statewide program activities	
	How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)	
Section H.	**EM&V Considerations (statement of needs)**	
Section I.	*Data collection needs*	
Section I.	*Anticipated study needs*	
	Demand Response	
	How EE measures use up-to-date DR enabling technologies to be "DR ready"	
	How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	
	How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	
	Residential Rate Reform	
	How BPs will help reduce load during TOU periods	
	How BP will diminish barriers to load reduction during TOU periods	
	How strategies will provide info to customers and/or provide a tool to show how program may impact customer energy usage during different TOU periods	
	How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	ME&O re: rate reform	
	Integrated Demand Side Resources	
	Zero-Emission Vehicles(EVs)	
	Energy Savings Assistance (Multifamily Focused)	
	Appendices	
	Additional Customer Data	
Located in Footnotes of Chapter	*Cited research*	
Attachment A-1	*CAEECC stakeholder input resolution*	

SoCalREN

Energy Efficiency Business Plan

Cross-Cutting Segment Chapter:
Workforce Education & Training




January 23, 2017

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SoCalREN Cross-Cutting Segment Chapter: Workforce Education & Training

A. SoCalREN WE&T Vision

The Southern California Regional Energy Network (SoCalREN) is committed to efforts that will ensure that energy efficiency (EE)[1] *measures will* be properly installed, operated, and maintained by a skilled and trained workforce in order to increase energy savings by reducing lost or foregone energy savings. SoCalREN is also committed to efforts that will help workers from minority, low-income, and disadvantaged communities gain better access to career-track opportunities in the energy economy as well as defined pathways for advancement into higher-skilled and higher-wage jobs. SoCalREN recognizes the significant local economic development and workforce development benefits that can be generated from proper planning and execution of public agency EE and Zero Net Energy (ZNE) projects, both in its buildings and facilities and within its communities.

SoCalREN envisions a reliable, diverse, and highly skilled labor force, one that is able to deliver high-quality EE services to all segments of the Southern California ratepayer community as a result of a comprehensive regional and effective workforce education and training infrastructure.

1. SoCalREN's Workforce Education and Training Goals

SoCalREN's overarching goal for workforce education and training (WE&T) is to increase the size, skills, and diversity of the EE labor force in the Southern California region to ensure effective implementation of the state's EE goals. This SoCalREN goal aligns with and leverages public-sector economic development resources and capacities to maximize two of the inclusion goals and policies of the California Public Utilities Commission (CPUC):

- General Order (DO) 156 – a supplier diversity ruling that requires a 25 percent disadvantaged business enterprise/women business enterprise/disabled-veteran business enterprise (DBE/WBE/DVBE) contracting goal for all expenditures,[2] and
- The 2011 Energy Efficiency Strategic Plan goal for "minority, low-income, and disadvantaged communities [to] fully participate in training and education programs at all levels of the DSM and EE industry."[3]

Specifically, SoCalREN will leverage its public-sector economic development knowledge, networks, and capacities to achieve the following specific objectives:

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[1] We use *energy efficiency*, or EE, as a catch-all term that also includes demand response and distributed generation (e.g., solar panels on a home or office building).
[2] CPUC G.O. 156
[3] California Energy Efficiency Strategic Update. January 2011. p. 70.

- Increase Southern California regional workforce and training infrastructure/partnerships, comprising community-based training organizations, K–12 and higher educational institutions, apprenticeship programs, and workforce investment boards, by 25 percent to increase the quantity and skills of entry-level and incumbent workers in all levels of the demand-side management (DSM) and EE industry.
- Increase entry-level skills training and job opportunities for disadvantaged workers by 50 percent.
- Develop a regional energy management training program to increase the operational efficiencies of retrofitted projects.
- Standardize local contracting policies and protocols into public bid/solicitation documents across the SoCalREN region to increase capacity and the participation of diverse, small, and disabled veteran–owned businesses in EE work by 25 percent.
- Establish a SoCalREN online data and reporting system to collect, monitor, and report workforce and contracting outcomes.

B. SoCalREN's WE&T Proposal Compared to Prior Program Cycles

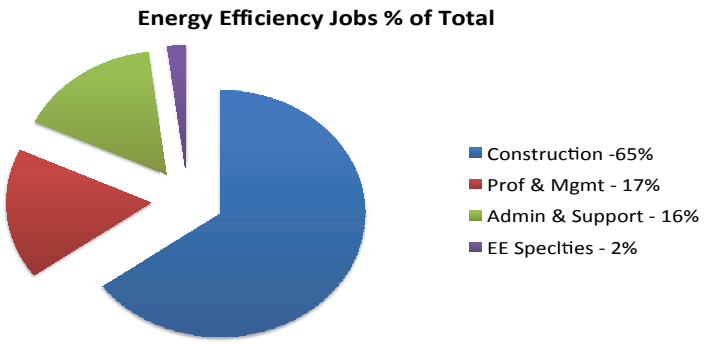
Since 2012, SoCalREN has utilized policies and instruments for local hiring and workforce partnerships and developed infrastructure for minority contractors to use to access clean energy investments. The number of DBE/WBE/DVBEs pre-qualified during the pilot phase for Los Angeles County energy construction work has increased six-fold since SoCalREN's inception. In addition, these contracts were won without local procurement requirements, demonstrating the value of capacity-building investments. Moreover, the training increased the overall knowledge and competitiveness of small, minority-owned and women-owned contractors to bid and win energy projects throughout the region.

In short, SoCalREN has 1) mapped the demand- and supply-side needs and capacities of the DSM and EE industry, with a specific focus on the municipality, university, schools, and hospitals (MUSH) sector; 2) developed economic inclusion protocols and instruments to increase supplier diversity and local hiring on SoCalREN projects and implemented/tested them on Los Angeles County energy projects; 3) trained pre-qualified contractors on economic inclusion standards; and 4) developed a DBE/WBE/DVBE contractor training program to increase their competitiveness with respect to pre-qualifying and bidding on public-sector energy projects.

SoCalREN plans to expand its initial WE&T pilot program offerings, which were established in the first round, into a robust regional workforce education and training infrastructure to support CPUC goals. The primary outcomes of this next cycle will be 1) an organized, comprehensive regional workforce education and training partnership and resource network for disadvantaged workers and contractors at all skill levels; 2) entry-level workforce skills training infrastructure; 3) a DBE/WBE/DVBE contractor training program; and 4) a regional data reporting system.

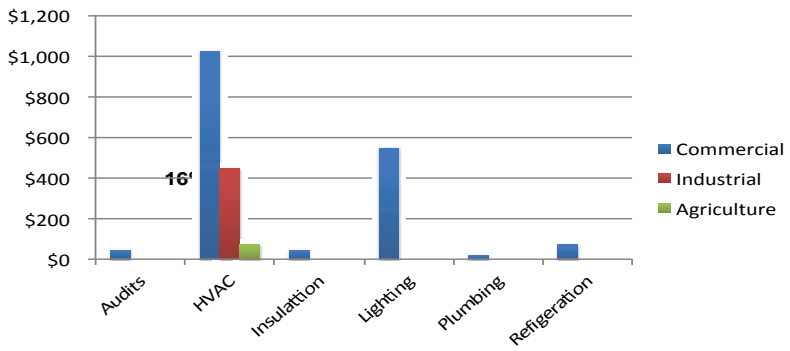
Technical Education and Training: The Donald Vial Center for Employment in the Green Economy at the University of California, Berkeley found that more than 65 percent of all EE jobs are construction jobs, with only 2 percent in EE specialties.

OCCUPATIONAL DISTRIBUTION OF DIRECT EE JOBS

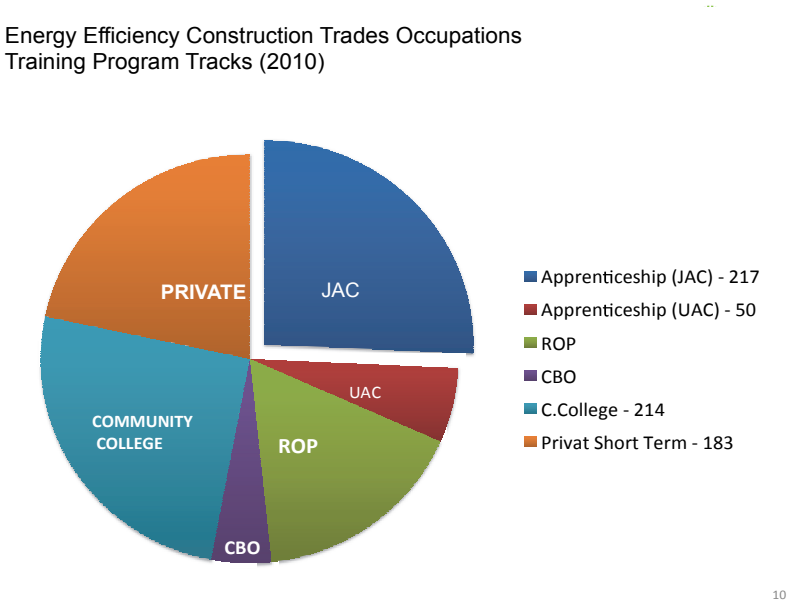


The construction trades that are most relevant to the EE sector are the electrical and HVAC trades, which demand a high level of technical training and experience.

EE INVESTMENTS BY OCCUPATIONAL DISTRIBUTION



Most of the training resources for these jobs, while broadly distributed across public- and private-sector organizations, are found in labor apprenticeship training programs across the state.



Using the data it has captured, SoCalREN intends to leverage the resources of its vast regional workforce system to provide technical education and training at all levels of the DSM and EE industry. This includes 4-year institutions, community colleges, labor unions, and the public-sector workforce. To date, these resources have not been consistently and effectively harnessed to meet the labor force needs of the energy sector. Enhancements to the existing curricula will be required to meet deep training demands. Of particular importance is working with labor unions and community colleges to build a reservoir of skilled workers in the mechanical trades.

Dedicated efforts will focus on skills training for entry-level positions and facilities management. These are the areas with the most underdeveloped programs in the SoCalREN marketplace. Community-based training partners, such as the regional YouthBuild networks, provide life skills and introductory construction skills training to their members. They also have access to the nationally approved pre-apprenticeship program curriculum of the construction labor unions, the Multi-Craft Core Curriculum, which exposes young people to construction trades and apprenticeship programs. However, there is no program outside of Los Angeles that transitions participants from an introductory exposure to hard skills training and preparation for apprenticeships or jobs in the energy sector.

SoCalREN will work to build a better skills pipeline for both out-of-school and in-school youth. The emphasis will be on deepening the science, engineering, and math and technical skills specific to construction and building sciences. These programs will also require case management support to ensure participant success.

Another critical need is related to facilities management training. Although building efficiencies are increasing, the operational efficiencies of the retrofitted building stock will be compromised without continuing education for janitors, operating engineers, and facilities managers. An initial study was conducted in the first cycle, demonstrating the importance of and need for considerable development work, which is being proposed under this cycle of SoCalREN.

Finally, with respect to contractor training, SoCalREN will leverage the training resources/centers of the IOUs and community colleges within the region to increase the skills of incumbent workers

and contractors with respect to new technologies. These exceptional continuing education programs help contractors stay current.

SoCalREN has launched and intends to expand its specialized program for small contractors to learn the public bidding process, participate in its programs, and migrate from residential one-measure installations to green building science.

Partnerships for Core Education and Career Readiness: SoCalREN has established a working partnership of more than 25 of workforce and small business stakeholders (see Section H) to support the supply-side work of our EE efforts. This partnership will be expanded as we broaden the number of SoCalREN participating agencies in the economic inclusion platform. These committees will meet regularly to design a supply-side platform and be staffed and supported by SoCalREN to minimize the disconnect that often occurs between demand-side labor force needs and supply-side services.

K–12 Energy Education and Career Awareness Activities: Through its partnership with Emerald Cities Collaborative, SoCalREN is proposing to support its Architecture Construction Engineering Students (ACES) Engineering Pathway Program, a career and experiential learning program that is currently operating in various traditional high schools and charter schools that serve severely disadvantaged youth. The ACES program aims to increase the diversity of students who pursue academic pathways in design and construction disciplines and develop mentoring between industry professionals and students. The ACES program creates academic pathways, regardless of the participants' GPAs and socio-economic challenges, by employing a collaborative, proactive case management approach that engages high school principals and teachers, community college faculty members and administrators, charter school executive directors, and counselors at Boyle Heights Youth Technology Center.

Besides taking introductory college course in science, technology, engineering, art, and math (STEAM), ACES go on field visits to construction sites and universities and attend seminars that prepare them for summer internships with industry partners. Thanks to the ACES program, more than 300 Los Angeles–area young people from diverse backgrounds are exploring and getting a head-start on careers in STEAM. ACES also earn community college course credits that are transferrable to campuses within the California State University and University of California systems and, during paid summer internships, gain hands-on work experience alongside industry professionals.

The ACES program works in collaboration with campuses in the Los Angeles Community College District, including East Los Angeles College, Los Angeles City College, and Los Angeles Trade Technical College. It also works with industry partners and local schools, including Alhambra High School, Legacy High School, Robert F. Kennedy Community Schools, San Gabrielino High School, Mark Keppel High School, SIATech Charter School, YouthBuild Boyle Heights Charter School, and Five Keys Charter School. Working in partnership with Cerritos College, the ACES program is currently in the preliminary phase of starting courses at Norwalk High School, thereby further increasing its footprint within the SoCalREN area of participating agencies. SoCalREN is uniquely able to develop specific modules and learning experience in the EE and clean energy sectors for this and an even broader network of institutions.

C. WE&T Sector Overview

1. Energy and Customer Landscape

The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) requires the state to reduce its greenhouse gas emissions to 1990 levels by 2020. Following the passage of AB 32, California charted an ambitious course for reducing emissions, with EE as one of the state's key strategies. Most EE work in California—more than $1 billion per year—is funded by utility ratepayers through incentive and rebate programs. These programs are regulated by the CPUC and administered chiefly by the state's investor-owned utilities (IOUs) (e.g., Southern California Edison).[4]

Standards have been upgraded to be more aggressive. For example, public buildings must meet ZNE standards, and other sectors will be coming online in time to meet the new Title 24 compliance standards that were established in 2016. Industry and property owners need to now go beyond light bulbs, shower heads, and energy-saving appliances. The standards now require deeper retrofits for building stock and a more skilled labor force to meet the new requirements. Considerable investment will be needed to increase the number of skilled workers and contractors to carry out building retrofits as well as install and maintain energy efficient equipment.

The state is guided by its desire to capture the benefits of its EE investment and support low-income and other disadvantaged communities. The CPUC's Long-Term Energy Efficiency Strategic Plan, California's roadmap for achieving EE targets through 2020 and beyond, includes a goal that ensures that minority, low-income, and disadvantaged communities will have an opportunity to enter rewarding careers in the EE industry.[5] Although policymakers and stakeholders have recognized the opportunity this creates, they have not yet implemented a comprehensive strategy or the benchmarks that would make it possible.[6] This has resulted in significant untapped potential with respect to leveraging California's sizable EE investments to help businesses grow and generate jobs in underserved areas.

[4] IOUs provide utility service to 73% of California's residential and commercial customers, while publicly owned utilities (POUs) serve 27%. Zabin, C. et al. 2011. *California Workforce Education and Training Needs Assessment for Energy Efficiency, Distributed Generation, and Demand Response*, p. 53. Donald Vial Center on Employment in the Green Economy and the Institute for Research on Labor and Employment. University of California, Berkeley. Available: http://irle.berkeley.edu/vial/publications/ca_workforce_needs_assessment.html.

[5] California Public Utilities Commission. 2008 (updated 2011). *California Long-Term Energy Efficiency Strategic Plan*, p. 70. Available: http://www.cpuc.ca.gov/NR/rdonlyres/A54B59C2-D571-440D-9477-3363726F573A/0/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

[6] Zabin, C. et al. 2014. *Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities*, p. 105. Donald Vial Center on Employment in the Green Economy. University of California, Berkeley. Available: http://irle.berkeley.edu/vial/publications/ca-workforce-issues-energy-efficiency-programs14.html.

D. Trends and Challenges

1. Challenges

The major challenge to realizing the mandate for reducing greenhouse gases is building the pipeline of skilled workers and contractors who can meet the demand within the Southern California market. Labor force opportunities/needs in the SoCalREN territory are substantial. If the state is to realize the ZNE mandates established in the last decade, then more than 177,000 direct jobs will need to be created as well as an additional 118,000 construction jobs (see chart below).

Projected Employment to Achieve ZNE in SoCalREN MUSH Sector

Investment Type	Total Investment (Billions)	Total Job-Years (Direct, Indirect & Induced)	Direct Job-Years	Construction Job-Years	Apprentice Job-Years	First-Year Apprentice Job-Years
Energy Efficiency (6.2 direct job-years per million; multiplier = 2.3)						
Scenario 1	$14.1	201,066	87,420	58,280	9,908	2,477
Scenario 2	$10.6	151,156	65,720	43,813	7,448	1,862
On-Site Solar PV (4.2 direct job-years per million; multiplier = 2.9)						
Scenario 1	$21.4	260,652	89,880	59,920	10,186	2,547
Scenario 2	$29.4	358,092	123,480	82,320	13,994	3,499
Combined Total Investment						
Scenario 1	**$35.5**	**461,718**	**177,300**	**118,200**	**20,094**	**5,024**
Scenario 2	**$40.0**	**509,248**	**189,200**	**126,133**	**21,443**	**5,361**

Numerous studies have indicated a shortage with respect to construction workers and an even greater dearth of skilled contractors and construction managers with green building skills. Despite the impending gap between supply and demand, there are structural barriers to achieving the manpower needs of the industry, even with the expressed interest of the CPUC to solve the problem. Some of the key workforce development challenges include:

- Case development for including non-energy benefits (i.e., economic and equity goals) in the cost-effectiveness test regarding the use of ratepayer funds.
- Limited or small-scale financing for accelerating job creation has made it difficult to attract and maintain a reliable workforce.
- No pass-through supplier diversity or disadvantaged-worker mandates from the CPUC to the Regional Energy Networks, thereby leaving it to the political discretion of local governments. Without clear guidance from the CPUC, economic inclusion and diversity goals will get snagged in local politics. These policy goals also require a strong voice from ratepayers themselves.
- Lack of a public policy commitment for union labor, which has a proven record of quality construction work and spends more than a $1 billion a year on training.
- Use of the job order contracting (JOC) project delivery model, which traditionally hinders the job and contracting opportunities of the target population of interest.

- Fragmented workforce system, not tailored to the needs of the energy sector.
- A small contractor sector that is not trained in green building science and public-sector contracting, as required by SoCalREN.

SoCalREN seeks to improve the workforce infrastructure within its region as well as the larger structural issues—inputs, processes, and outcomes—which can sub-optimize the value of its WE&T program.

E. Sector-Level Budget

Table 1 summarizes SoCalREN's cross-cutting compliance enhancements budget. These values are based on estimates of the proposed strategies outlined in Section F below, ***Approach to Achieving Compliance Enhancement Goals***. SoCalREN sees a strong opportunity to further enhance its portfolio through the implementation of additional non-resources strategies such as WE&T. This is a growing area of support for SoCalREN, therefore resulting in a slightly higher budget request than prior years. In addition, SoCalREN has factored in a 2% cost increase per year.

As SoCalREN implements the strategies described in this business plan chapter, the budget will be reevaluated over time to respond to market changes, needs of the portfolio, and regulatory directives. Further details on these changes will be reflected annually in SoCalREN's September Compliance filing, as dictated by the California Public Utilities Commission (CPUC) Decision (D.)15-10-028.[7]

Table 1. Sector Budget

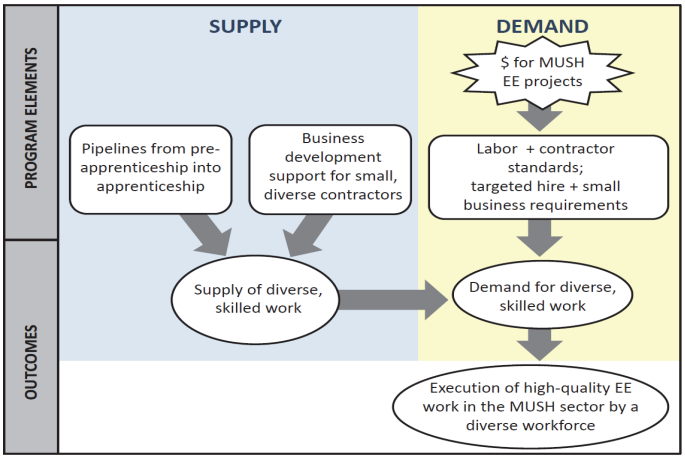
Budget	2018	2019	2020	2021	2022	2023	2024	2025
Administration	65,400	66,708	68,042	69,403	70,791	72,207	73,651	75,124
Marketing & Outreach	26,160	26,683	27,217	27,761	28,316	28,883	29,460	30,050
DI – Non Incentive	562,440	573,689	585,163	596,866	608,803	620,979	633,399	646,067
DI - Incentive	0	0	0	0	0	0	0	0
SECTOR TOTAL	**$654,000**	**$667,080**	**$680,422**	**$694,030**	**$707,911**	**$722,069**	**$736,510**	**$751,240**

F. SoCalREN's Approach to Achieving Goals

In order to meet the SoCalREN and CPUC energy savings and inclusion goals, a high-road program model was developed to move from inclusion goals to implementation. The model included a supply-side strategy to build a pipeline of skilled craftspeople and businesses from low- and moderate-income communities of color.

[7] D.15-10-028, Ordering paragraph (Op.) 4.

High Road Program Model



SoCalREN plans to utilize the following fundamental intervention strategies to expand regional workforce education and training infrastructure, facilitate access, and eliminate barriers to entry-level and mid-level technical training for communities of color. An expanded network of training opportunities, provided by partners such as craft unions, community colleges, other educational institutions, and community-based organizations, will be interconnected through collaboration. Barriers to entry will be addressed through a continuum of resource providers, such as WorkSource Centers and community-based organizations that will assist potential trainees and workers with fundamental support services and address barriers such as child care, transportation, tools, and training stipends.

A similar intervention strategy will be used to address barriers and skills capacity for diverse small business enterprise (SBE) and DVBE firms to compete for and perform SoCalREN EE and renewable energy projects.

1. Intervention 1 – Expand WE&T Infrastructure and Partnerships

Table 2. Intervention 1 – Expand WE&T Infrastructure and Partnerships

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short-, Mid-, Long-Term
Expand regional workforce education and training infrastructure/partnerships to help build capacity	Lack of skills training in the field	A regional directory of education and training programs	M	M
		Activate, expand, and staff SoCalREN workforce development and small business committees; meet regularly to design and implement workforce programs that meet industry demands for skilled labor	N	L

		Provide ongoing planning and technical assistance to SoCalREN members regarding organizing and implementing an economic inclusion program	M	L
		Work with the SoCalREN finance/project team to effectively integrate economic inclusion standards into projects/bid documents.	M	L
Partnerships: Los Angeles/Orange County Building and Construction Trades Council, Los Angeles Trade Technical College, Los Angeles Community College District Build Program, Los Angeles Unified School District "We Build" Program, YouthBuild, Flintridge Center Apprenticeship Preparation Program, HireLAX, Los Angeles/Orange County WorkSource Centers, Black Worker Center, and Hub Cities Consortium.				

2. Intervention 2 – SBE/DVBE Training and Technical Assistance

Table 3. Intervention 2 – SBE/DVBE Training and Technical Assistance

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short-, Mid-, Long-Term
SBE/DVBE Training and Technical Assistance	Minorities least represented in the EE workforce	Conduct Level 1 E-Contractor training	E	L
		Provide ongoing technical assistance/coaching for E-Contractor graduates related to the development of prequalification packages	M	L
		Provide training graduates with prime/sub/partnering and upcoming contract opportunities	E	L
		Facilitate and establish opportunities to collaborate with other agencies, including K–14 institutions, to promote procurement efficiencies, maximize use of Los Angeles County's Master Agreement, and increase the pool of competitive, qualified contractors.	M	L
Partnerships: Los Angeles County Office of Small Business, Los Angeles Community College District, Los Angeles Unified School District, DVBE Alliance, National Association of Minority Contractors,				

Chinese American Construction Professionals, and local surety bond brokers and bond assistance program.

3. Intervention 3 – Organize Integrated Entry-Level Skills Training and Infrastructure

Table 4. Intervention 3 – Organize Integrated Entry-Level Skills Training and Infrastructure

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short-, Mid-, Long-Term
Organize integrated entry-level skills training and infrastructure and fund curricula design and implementation	Lack of entry level skills training in EE	Assess competency of existing programs and determine assets and gaps, including K–12, community-based, and community college programs	E	M
		Establish a community-based workforce opportunity hub (WOH) to facilitate multiple pathways into a centralized EE boot camp for training	N	L
		Improve the partner capacity of the pre-apprenticeship training program to meet EE skilled worker demand	M	L
		Connect skilled workers to contractors	N	L
Partnerships: Los Angeles/Orange County Building and Construction Trades Council, Los Angeles Trade Technical College, Los Angeles Community College District Build Program, Los Angeles Unified School District "We Build" Program, YouthBuild, Flintridge Center Apprenticeship Preparation Program, HireLAX, Los Angeles/Orange County WorkSource Centers, Black Worker Center, and Hub Cities Consortium.				

4. Intervention 4 – Establish Online Reporting Tool

Table 5. Intervention 4 – Establish Online Reporting Tool

Intervention Strategy	Barriers	Example Tactics	Existing, Modified, or New	Short, Mid, Long-term
Establish a SoCalREN online data and reporting system to	Lack of representative data from these segments	Develop workforce management and referral system to connect pre-apprenticeship training graduates to EE opportunities	N	L

collect, monitor, and report workforce and contracting outcomes		Provide technical assistance and training related to SBE and Workforce Compliance Administration Services for regional partners to integrate into contracting and compliance procedures	N	M
		Provide technical assistance and training related to the use of contracting and labor compliance systems for regional partners to monitor compliance and track participation outcomes	N	M
		Provide technical assistance and training related to online contracting and labor reporting systems for contractors	E	M
Partnerships: Online Data Reporting System providers, Los Angeles County, and SoCalREN agencies.				

5. WE&T Intervention Strategies Support SoCalREN's Energy Efficiency Portfolio

In addition to the barriers addressed, WE&T intervention strategies play a pivotal role in supporting SoCalREN's energy efficiency portfolio.

WE&T will continue to provide education and training to various market actors in each of the market sectors. WE&T will develop and deliver energy efficiency technical offerings that focus on specific technologies, skills, and energy-saving strategies that are most appropriate for the sectors' goals. WE&T will also collaborate to leverage professional, trade, and industry organizations for their insight regarding trainings, and how to best reach their members.

Table 6 outlines the WE&T initiatives that will be utilized to support SoCalREN's market sectors.

Table 6. Market-Sector WE&T Initiatives

Sector	
Residential Sector	• Provide SBE, DVBE, and minority contractors with access to Building Performance Institute (BPI) training to perform residential energy audits. • Expand SBE, DVBE, and minority contractor awareness of Property Assessed Clean Energy (PACE) contracting opportunities. • Provide SBE, DVBE, and minority contractors with access to skilled labor from partner organizations and community colleges. • Provide SBE, DVBE, and minority contractors with access to financing, bonding, and technical assistance.

Sector	
Public Sector	• Support SoCalREN programs by examining, assessing, and implementing workforce development opportunities in the Municipal, Utility, Schools and Hospitals (MUSH) and other building sectors. • Provide SBE, DVBE, and minority contractors with training to prequalify and compete for MUSH-sector contracting opportunities. • Participate in California Public Utilities Commission or other California regulatory agency proceedings, workshops, meetings, and activities regarding clean energy workforce development. • Participate in SoCalREN Advisory Committee and other SoCalREN meetings regarding clean energy workforce development. • Engage and leverage community workforce development stakeholders regarding outreach, training, hiring, and tracking the utilization of clean energy workforce participants. • Prepare for expanding the Local Worker Hiring Program into SoCalREN projects. • Provide training to SoCalREN agency participants about the Local Worker Hiring Program and the online data reporting software tool used to monitor and track local hiring efforts and accomplishments. • Monitor Local Worker Hiring Program progress and accomplishments. • Develop approach for community engagement, worker skills training, and SBE, DVBE, and minority contractor training to acquire qualifications and knowledge about various project delivery methods. • Develop plan for tracking graduate training accomplishments in obtaining clean energy jobs as well as the performance of disadvantaged and under-represented work groups in obtaining clean energy jobs. • Provide SBE, DVBE, and minority contractors with access to financing, bonding, and technical assistance. • Provide SBE, DVBE, and minority contractors with training related to California labor compliance and prevailing wage requirements as well as the use of online data reporting systems to comply with certified payroll report submissions. • Provide SBE, DVBE, and minority contractors with access to skilled labor from partner organizations and community colleges.

Since WE&T's target audience includes market actors (designers, engineers, contractors, building operators, technicians) as well as customers and building owners, WE&T is in a position to not only support cross-cutting sectors with subject matter expertise, but also to inform market actors and customers about the cross-cutting sectors' programs.

Table 7 outlines the WE&T initiatives that will be utilized to support SoCalREN's cross-cutting segments.

Table 7. Cross-Cutting WE&T Initiatives

Sector	
Codes & Standards	• Collaborate with community colleges to develop a curriculum that provides training on code compliance to ensure that SBE, DVBE, and minority contractors improve their capacity to deliver quality EE projects that meet efficiency goals. • Provide SBE, DVBE, and minority contractors with access to training on code compliance to ensure quality installation standards and achieve EE goals. • Provide community-based training partners with access to training on code compliance to help define the training curriculum for disadvantaged workers, meet installation standards, and achieve EE goals.
Financing	• Provide SBE, DVBE, and minority contractors with access to training on EE and renewable energy financing options to improve their ability to compete in the public-sector and residential energy-sector market. • Provide community-based training partners with access to training on public- and private-sector EE financing options to increase awareness and knowledge in disadvantaged communities and increase EE in the residential market.
Emerging Technologies	• Facilitate as necessary the creation or modification of training curricula by community colleges to help develop the skills necessary to take emerging technologies to market. • Provide SBE, DVBE, and minority contractors with access to training on emerging technologies to ensure their ability to compete in the energy-sector market. • Provide community-based training partners with access to training on emerging technologies to help define a training curriculum for disadvantaged workers that will meet industry skill requirements. • Facilitate the collaboration between manufacturers and community colleges to create awareness of emerging technologies and create a demand for new skills.

G. SoCalREN's Partners and Commitment to Coordination

Partnering is key to SoCalREN's intervention strategies, specifically, the efforts related to WE&T. In 2013, a Workforce Advisory Committee and Small Business Advisory Committee were formed to create the framework for a collaboration and partnership that would enable SoCalREN to address barriers to education and training for entry- and mid-level workers as well as competition and skills training for diverse SBE and DVBE firms. These partnership collaborations include labor, industry associations, community-based organizations, community colleges, and participating agencies. An expansion of these partnerships is ongoing to facilitate regional access as well as access within local communities.

Table 8. SoCalREN Partners

Partner Type	Existing Partners	Potential Partners
Workforce Education and Training Organizations	Los Angeles/Orange County Building and Construction Trades Council, IBEW Local 11, Laborers Local 300, Roofers and Waterproofers Local 36, Sheet Metal Local 105, Southern California Pipe Trades District Council 16, East Los Angeles College, Los Angeles Trade Technical College, Los Angeles Community College District Build Program, Los Angeles Unified School District "We Build" Program, Antelope Valley YouthBuild, YouthBuild Boyle Heights, Century Center for Economic Opportunity YouthBuild, Compton YouthBuild, Flintridge Center Apprenticeship Preparation Program, HireLAX, University of California, Berkeley Donald Vial Center	Advanced Technology and Education Park, Cerritos College, Coastline Community College, Cypress College, El Camino Community College, Fullerton Community College, Glendale Community College, Grid Alternatives, Irvine Community College, Mt. San Antonio College, Rio Hondo Community College, Pasadena City College, Santa Ana College, Santiago Canyon College, Santa Monica Community College, Women In Non-Traditional Employment Roles (WINTER)
Workforce Support Services	Los Angeles County WorkSource Centers, Black Worker Center, Hub Cities Consortium, Los Angeles Urban League	Orange County WorkSource Centers, The Good Seed, Second Call, Playa Vista Jobs, CDTech, West Angeles Community Development Corporation
SBE/DVBE Training	Los Angeles County Office of Small Business, Los Angeles Community College District, Los Angeles Unified School District, Small Business Development Centers, USC Minority Business Enterprise Center, and local surety bond brokers	Los Angeles Community College District campuses, North Orange County Community College District campuses
SBE/DVBE Technical Assistance	USC Minority Business Enterprise Center, PACE Small Business Development Center, Los Angeles Bond Assistance Program	Orange County Small Business Development Centers, Los Angeles Business Source Centers
SBE/DVBE Associations	DVBE Alliance, National Association of Minority Contractors, Chinese American Construction Professionals, Society of Hispanic Professional Engineers	Asian Business Association, Latin Business Association, Associated General Contractors, Southern California Subcontractors Association, National Organization of Minority Architects

Partner Type	Existing Partners	Potential Partners
Online Data Reporting	Online Data Reporting System providers, Los Angeles County	Participating SoCalREN agencies

H.Metrics and EM&V Considerations

As a non-resource strategy that drives energy savings to SCE and SoCalGas, SoCalREN's WE&T efforts will focus on qualitative metrics associated with established goals.

1. Direct Effects from SoCalREN WE&T Efforts

Table 9. SoCalREN Cross-Cutting WE&T Goals, Intervention Strategies and Metrics

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (1-3 years)	Mid Term Target (4-6 years)	Long Term Target (7-8+ years)
Increase workforce and training infrastructure/partnerships, comprising community-based training organizations, K–12 and higher educational institutions, apprenticeship programs, and workforce investment boards, by 25 percent	Expand WE&T Infrastructure and Partnerships Organize Integrated Entry-Level Skills Training and Infrastructure	Percentage of offerings delivered through strategic partnerships with other core education providers	Current percentage of partnership delivery; WE&T program data and documentation	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	20% increase in offerings delivered through strategic partnerships as defined	25% increase in offerings delivered through strategic partnerships as defined
Increase entry-level skills training and job opportunities for disadvantaged workers by 50 %	SBE/DVBE Training and Technical Assistance Organize Integrated	Percentage of offerings that reach disadvantaged workers	Baseline defined by evaluating WE&T program data and documentation	WE&T program data and documentation	20% increase in offerings that that reach disadvantaged workers	25% increase in offerings that that reach disadvantaged workers	50% increase in offerings that that reach disadvantaged workers

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (1-3 years)	Mid Term Target (4-6 years)	Long Term Target (7-8+ years)
	Entry-Level Skills Training and Infrastructure	Percentage of knowledge gain as a result of course participation	Current percentage of knowledge gain; N/A (new metric)	WE&T program data and documentation; pre- and post-course surveys that target key course learning objectives	20% increase in measured knowledge gain as a result of course participation	25% increase in measured knowledge gain as a result of course participation	30% increase in measured knowledge gain as a result of course participation
Develop a regional energy management training program to increase the operational efficiencies of retrofitted projects.	Organize Integrated Entry-Level Skills Training and Infrastructure	Training impact, based on number of projects and contract value	N/A (new metric)	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	15% increase in training impact, based on number and contract value	20% increase in training impact, based on number and contract value
Standardize local contracting policies and protocols into public bid/solicitation documents across the SoCalREN region to increase capacity and the participation of diverse, small, and disabled veteran–owned businesses in EE work by 25 %	SBE/DVBE Training and Technical Assistance Organize Integrated Entry-Level Skills Training and Infrastructure	Percentage of offerings that target or promote measures and programs that yield savings	N/A (new metric)	WE&T program data and documentation	Evaluation criteria defined and measurement to establish baseline begins	10% increase in offerings that target or promote measures and programs that yield savings	20% increase in offerings that target or promote measures and programs that yield savings
		Percentage of offerings that DVBE	Baseline defined by evaluating WE&T program data and documentation	WE&T program data and documentation	20% increase in offerings that that reach disadvantaged workers	25% increase in offerings that that reach disadvantaged workers	50% increase in offerings that that reach disadvantage d workers

SoCalREN Goals	Intervention Strategies	Metrics	Baseline (or Benchmark)	Metric Source	Short Term Target (1-3 years)	Mid Term Target (4-6 years)	Long Term Target (7-8+ years)
Establish a SoCalREN online data and reporting system to collect, monitor, and report workforce and contracting outcomes.	Establish Online Reporting Tool	Completed Data System	N/A (new metric)		N/A	1	N/A

I. EM&V Preparedness and Research Needs

1. Data Collection and Anticipated Study Needs

Several EM&V studies, process evaluations, and impact evaluations have informed and shaped IOU's WE&T strategies. However there has been no evaluations on WE&T REN impacts and processes. SoCalREN, given the new authority to conduct its own evaluations, is interested in conducting studies to better understand how the material or course impacted, or were relevant to, jobs following WE&T coursework, and aligning the results with ongoing program development. Knowing if WE&T participants are applying the skills and/or using the information they received would be very useful in assessing the course content and in designing or redesigning future courses. Furthermore, SoCalREN would benefit from EM&V studies that captured workforce market data focused on energy efficiency. SoCalREN will seek opportunities within the next roadmap update to identify relevant WE&T program impact studies.

Appendix A: Acronym List

Acronym	Definition
AB	Assembly Bill
ACES	Architecture Construction Engineering Students
BPI	Building Performance Institute
CPUC	California Public Utility Commission
DBE	Disadvantaged Business Enterprise
DO	Directive Order
DSM	Demand Side Management
DVBE	Disabled-Veteran Business Enterprise
EE	Energy Efficiency
GPA	Grade Point Average
IBEW	International Brotherhood of Electrical Workers
IOU	Investor Owned Utility
JOC	Job Order Contracting
MUSH	Municipality, University, Schools, and Hospitals
PACE	Property Assessed Clean Energy
SBE	Small Business Enterprise
SoCalREN	Southern California Regional Energy Network
STEAM	Science, Technology, Engineering, Art, and Math
USC	University of Southern California
WBE	Women Business Enterprise
WE&T	Workforce Education & Training
WINTER	Women In Non-Traditional Employment Roles
WOH	Workforce Opportunity Hub
ZNE	Zero Net Energy

Appendix B: Compliance Checklist

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Cross-Cutting Chapter: Workforce, Education & Training	
	Summary tables	
Section E.	Table with CE, TRC, PAC, emissions, savings, budget	Budgets only
Section H.	Metrics for sector	
Section C.	Market characterization (overview and market/gap and other analysis)	
	Electricity/NG	
	State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)	
Section A.	EE potential and goals	
Section C.	Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)	
Section D.	Major future trends that are key for the PA and its customers	
Section D.	Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)	
Section F.	Description of overarching approach to the sector	
Section F.	Goals/strategies/approaches	
	How portfolio meets Commission guidance	
Section F.	Description of how this chapter addresses the performance challenges/barriers	
	Intervention strategies (detailed)	
Section F.	What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)	
Section F.	Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)	
Section F.	How approaches advance goals discussed above	
	How strategies use lessons learned from past cycles and EM&V	
Section F.	How will interventions support/augment current approaches or solve challenges	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	Explanation for how these strategies address legislative mandates from AB 802, SB350, and AB 793, as well as other Commission directives for this sector, including strategic plan.	
	Future expectations for intervention strategies	
	Description of pilots	
Section G.	Key Partners	
	Compare/contrast to past cycles	
Section E.	Budget changes as appropriate	
Section B.	Modification to sector strategies	
	Cross-cutting (sector chapters and ME&0)	
	Program Administrator marketing and integration with SW MEO as applicable	
	Workforce, education, and training	
Section F. 5.	Emerging Technologies	
Section F. 5.	Codes & Standards	
	Cross PA and Offering Coordination	
Section G.	How strategies are coordination among regional PAs	
	Proposal of statewide program administrator/approaches for this sector	
	How the sector strategies are coordinated with statewide program activities	
	How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)	
	EM&V Considerations (statement of needs)	
Section I.	Data collection needs	
Section I.	Anticipated study needs	
	Demand Response	
	How EE measures use up-to-date DR enabling technologies to be "DR ready"	
	How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	
	How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	
	Residential Rate Reform	
	How BPs will help reduce load during TOU periods	
	How BP will diminish barriers to load reduction during TOU periods	

Reference Section/Page # in SoCalREN BP	Business Plan Element	SoCalREN Notes
	How strategies will provide info to customers and/or provide a tool to show how program may impact customer energy usage during different TOU periods	
	How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	
	ME&O re: rate reform	
	Integrated Demand Side Resources	
	Zero-Emission Vehicles(EVs)	
	Energy Savings Assistance (Multi-family Focused)	
	Appendices	
	Additional Customer Data	
	Cited research	
Attachment A-1 Chapter	CAEECC stakeholder input resolution	

SoCalREN

Energy Efficiency Business Plan

Attachment A-1: CAEECC Stakeholder Input

January 23, 2017

A. CAEECC Stakeholder Feedback

In D.15-10-028, the Commission adopted a stakeholder process associated with business plans. A statewide committee was established in January 2015 and was designated the California Energy Efficiency Coordinating Committee (CAEECC). Through the CAEECC forum, stakeholders provided ongoing input into the development of the Program Administrators' energy efficiency business plans as drafts were published on the CAEECC website. SoCalREN received input from 17 stakeholders and thoroughly reviewed each comment. Table 1 below captures the input applicable to the SoCalREN portfolio and provides notes to each comment. Comments were addressed individually and were applied as applicable to SoCalREN's approach to meeting its energy efficiency rolling portfolio objectives.

Table 1. Stakeholder Feedback Submitted to SoCalREN Business Plan Draft

Issue #	Sector	Topic	Issue	Reference Page #/Note
1	Residential	Business Plan Topic	Inclusion of consideration for AB 793 (energy management technology) in Business Plan	SoCalREN will educate ratepayers about energy management technology in its outreach to homeowners.
2	Residential	Business Plan Topic	Re MF programs--Does public housing belongs in the public or MF sectors?	If the public housing element is a multifamily building, it is served as part of the multifamily program sector.
3	Residential	Business Plan Topic	"Can we look at differential variations by climate zone in the Business Plan description of the challenges and solutions.	SoCalREN's Business Plan considers climate zone differences in reviewing proposed intervention strategies.
4	Residential	Market Barrier	A major market barrier to whole house upgrades is lack of consumer understanding of their benefits. Please quantify the monetary benefits for the average home owner for doing a whole house upgrade.	SoCalREN aims to quantify the monetary benefits of energy efficiency upgrades as part of the Business Plan intervention strategies.
5	Residential	Budgets	Proposed budgets need to align with program metrics	SoCalREN will align proposed budgets with program metrics in its Business Plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
6	Residential	Assertions of Fact	Assertions of fact or policy need to be fully supported by evidence and citation, not simply opinion	SoCalREN includes citations and evidence of claims in its Business Plan.
7	Residential	Market Barriers	Characterizations of market barriers and program attributes/accomplishments are vague, and asserted without documentation.	Where feasible and/or where quantified data exists, SoCalREN cites characterizations of market barriers in its Business Plan.
8	Residential	Metrics	Metrics are oriented to intermediate program outcomes but not to broader market effects	SoCalREN aims to address this in the business plan
9	Residential	Intervention Strategies	Intervention strategies are less specific. They either largely mirror ongoing activities and/or could be outside PAs ability to implement	SoCalREN aims to focus its intervention strategies on what can be accomplished over the 10-year Business Plan period.
10	Residential	Third Party Implementation	THE DRAFT BP'S DO NOT INCORPORATE THIRD PARTY PROCUREMENT REQUIREMENTS LAID OUT IN D.16-08-019.	Not applicable to Regional Energy Networks.
11	Residential	Metrics	In almost every draft chapter, the metrics (where they were addressed at all) lack clear definition, fail to focus on desired outcomes, lack targets and require data that may not be regularly available	SoCalREN has aimed to address this in the business plan.
12	Residential	Strategies	THE BUSINESS PLANS SHOULD PROVIDE A ROAD MAP FOR EACH PA'S STRATEGY DEVELOPING ENERGY EFFICIENCY PROGRAMS, AND PROVIDE CLEAR METRICS AND MILESTONES TO ALLOW FOR MEANINGFUL REVIEW.	The Business Plan is SoCalREN's roadmap to developing energy efficiency programs. Metrics and milestones for specific programs will be established in Program Implementation Plans.
13	Residential	Justification	Coherency, clear reasoning, and justification for activities, I am confused on how THIS BP works in relation to the IOU Service area BP – e.g. where some program activities are offered by the REN and perhaps other activities for the same market segment(s) are offered by IOUs. Further, how do these 2 relate to a "statewide" residential sector strategy?	SoCalREN has clarified areas where potential overlap may occur, and how the RENs and IOUs interact with the statewide residential sector activities.
14	Residential	Strategies	Not all the strategies are "key strategies" and in fact some sound like supporting activities. Nest or bundling as appropriate, and indicate where you have certain implementing tactics or supporting activities.	SoCalREN aims to distill intervention strategies to their core, listing specific tactics underneath those strategies, in the Business Plan.

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15	Residential	Multifamily	In Multifamily we need to know more about ownership profiles relative to the strategy for pursuing on-going relationships – would this be for a specific building, or with owners who have portfolios of buildings? I look forward to seeing more about how market demand will be driven via traction and success on green labels and MLS data.	SoCalREN believes this question is best addressed on a programmatic level as part of Program Implementation Plans. However, study of green labels and MLS data is included as part of the Business Plan intervention strategies.
16	Residential	LTSEEP	PA Business Plans should identify strategies to advance Strategic Plan / market transformation objectives (and other policy guidance), particularly as advanced in upstream/midstream interventions.	SoCalREN's Business Plan clearly identifies how our strategies advance the Strategic Plan.
17	Residential		Business Plans should clearly outline anticipated connections between SW up/mid-stream initiatives and long-term SW C&S initiatives, and how they will collaborate in support of the SP MT goals.	Not applicable to Regional Energy Networks.
18	Residential	LTSEEP	Clarify terminology in Plans to cite specific SP MT goals where these are discussed, rather than a general desire for market transformation.	SoCalREN's Business Plan clearly denotes when specific market transformation goals are discussed.
19	Residential	LTSEEP	For each SP MT goal that the PAs plan to promote, provide specific information on the investment level needed to achieve which SP MT goals via which specific strategies as outlined in the two Commission guidance documents cited above.	SoCalREN has aimed to address this in its business plan
20	Residential	Market Assessment & Gaps Analysis Issue	PAs residential business plans should explicitly address the idea of real estate engagement. There has been substantial investment in this area over the last 5 years, particularly through the RENs and it's highlighted in the Energy Commission's Existing Buildings Energy Efficiency Action Plan (strategy 4.1). Not clear in Market Assessments and Gaps that IOUs are considering this.	SoCalREN's Business Plan continues to identify opportunity in real estate engagement.
21	Residential	Intervention Strategies & Metrics	Suggestion of several "trigger points" to be considered in assessing residential market strategies	Although this will be covered in more detail in program Implementation Plans, SoCalREN does include a limited discussion of trigger points in its Business Plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
22	Residential	Intervention Strategies & Metrics	The volume and pace of residential EE retrofits is low compared to California's ambitious energy reduction goals as set forth in SB 350, AB 32, AB 802, AB 758, the California Long-Term Energy Efficiency Strategic Plan. If California is to realistically 23achieve its long term goals, the current approach to realizing energy efficiency in the residential sector will need significant overhaul. Increased commitment to workforce education and training whether as part of a Market Transformation program or a WE&T program. Strategies might include improving access to technical training, job shadowing, mentoring, sales training, process improvement consulting, and other consultative activities. In addition, use program funding for Loan Loss Reserve (LLR) in order to buy down interest rate for homeowners and drive deeper market penetration. Similar programs have fixed interest rates starting at 2.75% APR. Appropriate Metrics: Penetration of market, participating contractors, savings per site on a segmented basis.	SoCalREN includes a Loan Loss Reserve program in its Business Plan.
23	Residential	Market Assessment & Gaps Analysis Issue	PAs residential business plans should explicitly address the idea of real estate engagement. There has been substantial investment in this area over the last 5 years, particularly through the RENs and it's highlighted in the Energy Commission's Existing Buildings Energy Efficiency Action Plan (strategy 4.1). Not clear in Market Assessments and Gaps that IOUs are considering this.	SoCalREN's Business Plan continues to identify opportunity in real estate engagement.
24	Residential	Market Assessment & Gaps Analysis Issue	PAs residential business plans should explicitly address the idea of real estate engagement. There has been substantial investment in this area over the last 5 years, particularly through the RENs and it's highlighted in the Energy Commission's Existing Buildings Energy Efficiency Action Plan (strategy 4.1). Not clear in Market Assessments and Gaps that IOUs are considering this.	SoCalREN's Business Plan continues to identify opportunity in real estate engagement.

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25	Residential	Re: Residential/ Multifamily	While we understand many of the details for the other Program Administrators will be developed as part of the implementation plan, we want to draw attention to the BayREN multifamily recommendations as a model example for future efforts. We recommend that the PAs review the following sections: • Suggest reviewing BayREN entire multifamily section (pg. 2.21-2.30), as an example of a multifamily residential section that includes data, strategies, barriers and opportunities for the sector, and expand scope to include low income. • Suggest reviewing BayREN Figure 5 (Pg. 2.23) for example of characterizing multifamily. • Suggest reviewing BayREN Business Plan Figure 6 for example of program metrics (See p. 2.25, "BAMBE Completed Projects"). • Suggest reviewing SoCalREN p. 7 for characterization of different multifamily market segments	E. Sector Overview, Target Audience
26	Residential	Residential/ Multifamily	SoCalREN (p.8): Missing citations for footnote 14 and 15.	Citations added to E. Sector Overview

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27	Residential	Re: Residential/ Multifamily	We acknowledge that the BPs are for general efficiency programs, but given the ESAP direction on OBF and the requirement that general EE coordinate with ESAP multifamily efforts, it would be an informative and necessary strategy to include these characteristics. • Include market characteristics on multifamily residential sector, including low income multifamily. These characterizations could help inform a more descriptive approach to coordinating with the ESAP multifamily offerings (see CHPC-EEFA comment #8 for more information) • The general EE portfolio programs should serve those Low Income Multifamily buildings that are not eligible for new ESA program, and understanding the market is an important aspect of outreach to the sector. • See ESA decision p.206, re: buildings that will be served under new ESA multifamily whole building programs: Eligible properties must meet the partial definition of deed-restricted in California Public Utilities Code Section 2852 (a)(A) further modified here. For this ESA Program multifamily effort, a property must be a multifamily residential complex financed with low-income housing tax credits, tax-exempt mortgage revenue bonds, general obligation bonds, or local, state, or federal loans or grants. The property must also house at least 65% of tenants with incomes at or below 200% Federal Poverty Guidelines, per ESA Program rules.	K. SoCalREN's Partners and Commitment to Coordination, Disadvantaged Communities
28	Residential	Re: Residential/ Multifamily	The annual program timelines for Energy Upgrade California Home Upgrade Multifamily Program and lack of secured long-term funding is a barrier to participation, and has the potential to impact the perception of the program's success. Further, whole building energy efficiency projects for large multi-family take considerable time to develop; for example, in affordable housing properties, a large scale EE retrofit would be developed and implemented over the course of 1.5 - 3 years. PG&E and SDG&E's EUC multifamily whole building programs currently have waiting lists, and uncertainty about the programs delays the pipeline, thus preventing households from being served.	Statement

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			Business Plans should provide for guaranteed funding allocations for 3-5 years and work with CPUC and annual advice letter process to make this possible. This change will provide more market certainty for potential program participants. All Business Plans should include as a barrier: Multifamily projects take longer to cultivate and implement. See pp. 23-25 of the Cadmus Multifamily Study, http://www.energydataweb.com/cpucFiles/pdaDocs/1000/ESA%20MF%20Segment%20Study%20-%20Volume%201%20Final%20Report%2012-04-13.pdf, citing timing of upgrades and long-term planning as critical needs for owners and barriers presented by existing programs.	
29	Residential	Residential/ Multifamily	While recognizing the constraints posed by existing cost-effectiveness requirements, Business Plans should support the continuation and expansion of EUC multifamily whole building programs.	G. SoCalREN's Approach to Achieving Goals, Intervention 3 – Engage Public Agencies to Drive Energy Efficiency in Their Communities
30	Residential	Residential/ Multifamily	"All Business Plans should include strategies for coordinating with ESA multifamily programs. Given that some multifamily buildings will be excluded from the ESAP comprehensive MF offerings, we recommend PAs coordinate with the ESA program to leverage single end use offerings and	K. SoCalREN's Partners and Commitment to Coordination, Program Administrators
31	Residential	Re: Residential	Regions served by multiple PAs experience a profound lack of coordination and discordant messaging in regards to establishing priorities and implementing programs. Overlapping PA service territories creates additional administration costs and conflicting messaging to participating contractors and trade partners. Moreover, interpretation and implementation of state policy is often not aligned in overlapping territories causing confusion for implementers, contractors, and homeowners.	K. SoCalREN's Partners and Commitment to Coordination, Disadvantaged Communities, Table SoCalREN Coordination with Partners, Intervention Strategies 1-3 and Statewide
32	Residential	Missing issues and details	The REN Business Plans fail to address (or even identify) all the issues set forth in the applicable guidance decisions and raised by the CAEECC stakeholder process. (See e.g., D.15-10-028 at p. 47). In addition, numerous sections of the Business Plans are either cursory in nature, incomplete or entirely blank. As a result, the draft Business Plans are lacking in sufficient detail or content to allow for meaningful stakeholder input on a number of key issues. Examples of issues missing from the REN Business Plans include:	Comments noted and have been applied where applicable

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			1. Business Plans fail to identify strategies to address the issue of poor workforce and installation quality resulting in underperforming energy efficiency measures and stranded savings opportunities. (See Guidance Decision D.16-08-019 at p. 63, fn. 24.) 2. Business Plans fail to address the recommendations for increasing the demand for skilled workers set forth in the 2014 University of California, Berkeley, Donald Vial Center for Employment in the Green Economy (UCB-DVC) report, "Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities." (See D.1410-046 at p. 102.) 3. Business Plans fail to identify goals, strategies or approaches to incorporate workforce diversity and inclusion goals into the contractor selection process. (D.12-11-015, Decision Approving 2013-2014 Energy Efficiency Programs and Budgets, at p. 84 (ordering IOUs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process; see Guidance Decision D.16-08-019 at p. 63, fn. 24 (affirming continued applicability of prior workforce orders).) 4. Business Plans ignore Decision's recommendation to track measure installation quality over time as a metric. (D.15-10-028 at p. 52.) 5. Business Plans fail to include transition plans to demonstrate the minimum level of third party delivery required by the Guidance decision. (Guidance Decision D.16-08019 at p. 74.) 6. The Business Plans fail to identify which strategies will be coordinated statewide or regionally and who will be the lead administrators. (Guidance Decision D.16-08-019 at p. 102-103; D.15-10-028 at p. 47.) 7. Business Plans fail to identify at least four downstream programs to be piloted on a statewide basis, including proposed lead administrator and other program details. (Guidance Decision D.16-08-019 at p. 111.) 8. Business Plans fail to describe how collection strategies are embedded in the design of the program or intervention to ensure ease of reporting and near term feedback, and how performance will be analyzed during deployment. (D.15-10-028 at p. 47-48.) 9. The Business Plans fail to identify or address inherent free ridership concerns with incentive programs. (See CEE-3).	

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			10. Business Plans fail to respond to prior comments and input provided by the CEE, including the CEE's comments on the Draft Business Plan Chapters. 11. Business Plans fail to describe the stakeholder process that will be associated with implementation plan preparation and fails to provide a proposal for oversight. (D.1510-0208, at p. 64; D.16-08-019 at p. 75.)	
33	Residential	Statewide Administration	The Coalition supports the Commission's move towards statewide administration of upstream and midstream programs. This shift is a move in the right direction to improve customer participation and access, reduce transaction costs for customers and market actors, and increase in energy efficiency savings. The Coalition supports this effort and agrees that this transition will reduce portfolio overhead by eliminating redundant capacity and can potentially provide a bridge to more collaboration with the California Energy Commission (Energy Commission), California Air Resources Board (ARB), and public and municipal utilities. We further support the Commission's decision to allow non-utility PAs to lead statewide programs.	
34	Residential	SB 1414 Compliance	Require HVAC equipment whose sale, purchase or installation has been subsidized by an incentive program to provide proof of code and permit compliance. Stakeholders have been recommending this for years, but it has taken the adoption of SB 1414 to get the PAs to agree to this requirement.	J. SoCalREN and State Policy Goals, Table: SoCalREN State Policy Support
35	Residential	Re: pg. 17-18	Residential PACE financing proposal Residential PACE financing leverage and integration with HUP offerings sounds like a smart approach. Would be even more valuable to CPUC if REN were able to provide some quantitative estimate tracking the magnitude of this "unregulated" financing sector.	G. SoCalREN's Approach to Achieving Goals, Intervention 1 – Integrate with Residential PACE to Drive Greater Energy Savings
36	Residential	Re: pg. 19-20	"improvement data" proposal. What about persuading Zillow and others to offer a feature indicating EE improvement investment and estimated annual utility cost and comparing this with the average similar home in the area? What about taking the annual expected utility bill to the banks and federal mortgage regulators to have lower bills factored into formula for how large a mortgage a household can afford?	G. SoCalREN's Approach to Achieving Goals, Intervention 2 – Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency and Table 7. Intervention 2 – Establish Benchmarking Data

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37	Residential	Re: pg. 30	Strategy 4.1 Real Estate Value. Work collaboratively with real estate industry, underwriters, and financial agents to adopt property asset-related energy characteristics in building valuation and to integrate energy efficiency into all transactions. What about persuading Zillow and others to offer a feature indicating EE improvement investment and estimated annual utility cost and comparing this with the average similar home in the area? What about taking the annual expected utility bill to the banks and federal mortgage regulators to have lower bills factored into formula for how large a mortgage a household can afford?	G. SoCalREN's Approach to Achieving Goals, Intervention 2 – Increase Access to Improvement Data that Demonstrates Benefits of Energy Efficiency
38	Residential	Re: pg. 23	"PACE proposal. ""SoCalREN can also pilot midstream incentive programs that the IOUs are unable to administer by leveraging local government programs such as residential PACE. Contractors working in this high volume program can be incentivized to submit projects through a pilot designed to work seamlessly with the PACE financing option. By routing non-ratepayer funded projects through an approved pilot, SoCalREN can claim verifiable energy savings that have previously gone unverified." Proposal to track savings and receive credit sounds promising.	Comment appreciated
39	Residential	Re: pg. 36	P. 36 "Therefore, there must be a conscious effort by evaluators to adapt established evaluation methodology to the end of capturing the full impact of SoCalREN. " The CPUC has unlocked funding to allow the RENs to lead by example by conducting their own evaluation. One benefit of this would be to advance commonly accepted methodology for these niche PAs. What is SoCalREN doing to expedite its ability to embrace this opportunity. When will SoCalREN be ready to commit to undertaking evaluation activities?	In 2018 SoCalREN will seek EM&V study opportunities
40	Residential	Residential	"Please note that "REALTOR®" is a collective membership mark owned by the National Association of REALTORS® and is used by C.A.R. with permission. Guidelines for using "REALTOR®" can be found on the National Association of REALTORS®'	E. Sector Overview, Target Audience
41	Residential		Business Plans (BPs) should discuss all current and anticipated energy efficiency (EE) procurement activities, including those occurring outside of the EE programs funded through the BP application. The discussion should include potential overlapping	SoCalREN has aimed to address this in its business plan as applicable

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			activities; safeguards against arbitrage, double payment and double counting; whether additional EE procurements will count towards EE goals, cost-effectiveness requirements, and other metrics; and whether additional EE procurements will conform with Commission guidance in relevant proceedings including R.13- 11-005. o Potential procurement activities relevant to the BP include (but are not limited to) all-source solicitations, Integrated Distributed Energy Resources (IDER)proceeding procurements, and PG&E's Diablo Canyon application. o Methods for evaluating and measuring savings for any EE procured should be consistent regardless of whether it is funded through the BP applications or not. Any deviations must be justified.	
42	Residential		Solicitation strategies should be robust and sufficiently detailed to allow for meaningful review and oversight. o The solicitation strategies included in the introductory and sector chapters should include a discussion of not only the sectors that will be bid out and the schedule of the anticipated scope, size, structure, and phasing of solicitations and how the proposed solicitation strategy will meet Commission and program administrator (PA) objectives. o Solicitation strategies should provide analysis and rationale for the proposed bidding schedule and associated details.	Is addressed in Section G of its Portfolio Summary
43	Residential		BP applications should include detailed budget testimony that is sufficient to determine the reasonableness of the budget request. The budget testimony should include all elements PAs expect to record to the EE balancing account using a General Rate Case-type forecast and explain the basis for that forecasting sufficient detail to demonstrate the costs are reasonable. PAs should submit their testimony using a common format and common budget categories that are reasonable for EE program activities. Budget proposals should align with the objectives, vision, and strategies outlined in the BPs.	Budgets are included in each Chapter of SoCalREN's business plan
44	Residential	Re: Residential	All Res BPs are insufficient in recognizing geography based barriers and barriers related to population density. Access to services in these regions is significant enough to warrant specific intervention strategies and alternative key performance indicators to more comprehensively measure program effectiveness.	Statement

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45	Residential	Re: Solicitation Plans	The PAs were directed by the California Public Utilities Commission (CPUC) to outsource a minimum of 60 percent of their portfolio by 2020. This will likely result in a major shift in how programs are developed and will have a significant impact on procurement approaches. Only two PAs, Southern California Edison and San Diego Gas and Electric (SDG&E), provided draft language on this topic and then only with limited detail. The Efficiency Council respectfully requests all the PAs (investor-owned utilities (IOUs), regional energy networks, community choice aggregators, and local governments) add the material below to a solicitation-process section in the business plans. Inclusion of this information will allow market actors to effectively prepare to respond to solicitations and support a vibrant and competitive market that can offer viable and cost-effective solutions. We believe that it is in the interest of the PAs, ratepayers and third parties to facilitate a robust market for energy efficiency services. The information requested is critical for the market to prepare to deliver the resources where and when they are anticipated to be needed by the PAs. Only by planning ahead with clear roles, processes, and schedules, can we efficiently bid and process virtually the entire California energy efficiency portfolio in the next three years. A big cost to all parties would be to have the solicitation and contracting processes derail due to poor planning. California Energy Efficiency 1535 Farmers Lane, Suite 312 Telephone 503-810-1155 Industry Council Santa Rosa, California 95405 www.efficiencycouncil.org. Another big cost would be if current programs are disrupted because of lack of adherence to contracting and transition schedules. Consequently we urge the PAs to work with the procurement (or peer) review groups (PRGs) and the CAEECC to clearly delineate the “existing program to new activities” piece of the transition. In California, the acronym “PA” means “program administrator.” However, given the clear direction to move toward third-party design and implementation of programs, and the ever increasing importance of utilities (and others) as administrators, we urge PAs to think of themselves as “portfolio administrators.” No other entities are assigned with the responsibility and task of managing the portfolio of programs and research on behalf of ratepayers. As such, thinking deeply about when and how to acquire the desired	Not applicable to Regional Energy Networks.

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			resources is a crucial piece of a PA's performance – yet less than three pages of the business plans address this subject in the thousands that were produced for the draft plans. Similarly, the IOUs have executed energy efficiency solicitation and contracting for years, but there is no mention in the business plans of how the new solicitations will be conducted over the next three years, what kind of peer or procurement review process will prevail, and an estimate or template of a schedule. We summarize below requests made by both the Efficiency Council and other stakeholders during prior CAEECC meetings with some supplemental recommendations for information that should be included in the solicitation section for each PA's plan: Explanation of the overall strategy. For example, is the PA going for big volume/low cost first? How will it fill niches? Replacing oldest programs first or underperforming areas? A clear schedule of when procurement solicitations will be released in each area, and when the solicitation process is expected to be completed. SDG&E's schedule shown on page 12 is a good start but additional detail is requested to inform the market; A description of the types of solicitations planned over the schedule (e.g. open program requests for proposals (RFPs), targeted program RFPs, request for offers RFOs, master-service agreements or other vehicles). This would also include the types of requirements that a bid might contain, such as any guarantees; An estimate of the desired savings and budget (at an appropriate level) for each area over the next three years to achieve at least 60 percent third-party implementation; An estimate of the cumulative third party program percentage anticipated each year through 2020 as programs and services are contracted to reach more than 60%; An explanation of which activities will be held internally and why; A description of procurement for emerging technologies and new innovations over time (for example, will funds be reserved for this every year? If so, how much and when will the solicitations happen?); and • A commitment that all RFPs will be publicly posted on the "Proposal Evaluation & Proposal Management Application" web	

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			site, even if they are also posted elsewhere. There need to be one guaranteed location where all bidders can find the RFPs.	
46	Residential	Re: Moving bids to contracts	"The Efficiency Council is particularly concerned about ensuring a smooth and fair process to move from bids to contracts. While a CAEECC subcommittee is working on this issue, including the role of a peer or procurement review group and an "independent evaluator," the PA's business plans should outline how the PAs will move from bids to signed contracts on an expedient schedule with the right level of CPUC and stakeholder oversight. The "bid to contract" schedule as a template and the roles and responsibilities of invested parties is crucial to have settled as soon as possible ahead of business plan approval since it will likely take well over a year to execute the solicitation process after approval. Now is the time to describe the process at a "template" level in the business plans.	Not applicable to Regional Energy Networks.
47	Residential	Re: Reducing costs by combining and standardizing efforts	We would like to see each PA commit to working with the other PAs to standardize some aspects of the solicitation effort. For example the basic solicitations could have the same structure and request the same types of information at the general level, thus reducing the cost of market actors to respond.	Not applicable to Regional Energy Networks.
48	Residential	Re: Strategic energy mgmt.	The Efficiency Council greatly appreciates the PAs choice to remove Strategic Energy Management (SEM) from the list of statewide (SW) downstream programs. As we have previously commented we continue to urge the PAs to develop SEM as a tool or approach that can be used by any implementer to work with customers to deliver savings. We hope that the final business plans reflect this opportunity. We would also urge the PAs to include opportunities for implementers to participate in discussions on how to get SEM off the ground throughout the state, since they will have valuable input on the structure of the approach.	Comment noted
49		Re: clarification on purpose of statewide downstream pilot	The current draft plans do not include a description of the SW downstream pilots because the energy efficiency target area and lead PA were identified very late in the process. However, when the downstream pilots are included in the January filings, we encourage the PAs to facilitate a discussion with the CPUC and stakeholders on the purpose of the "pilot." Our interpretation of	Comment noted

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			D.16-08-019 is that that the intent is to ensure that SW programs are "uniform" and reduce costs, but we suspect there may be other attributes that the pilot is intended to test. It would be helpful to know the hypothesis being tested in piloting downstream programs before they start so that the success of the pilots can be properly evaluated.	
50	Public	Market Assessment & Gaps Analysis Issue	SCE owns over 80% of the streetlights in the WRCOG sub-region. My question is simply this "How will the business plan reflect an energy savings potential of an opportunity (retrofit of streetlight, for example) that local jurisdictions do not have any control over.	Question should be addressed to SCE because it refers to LS1 streetlights owned by them.
51	Public	Market Assessment & Gaps Analysis Issue	The Rural Hard to Reach working group (RHTR) drafted recommendations for the Public Sector Business Plan (PSBP) is to provide Program Administrators (PA) specific feedback on barriers and drivers observed while serving rural. The recommendations identify three key barriers in delivering energy efficiency services to the public sector in rural areas. The PSBP must capture program design elements that support improved program delivery that addresses the key attributes of the public sector while limiting the creation of new barriers. In the short term, RHTR agrees the proposed barriers and associated drivers are applicable to the represented territories. RHTR has identified three key barriers in delivering energy efficiency services to the public sector in rural areas. The PSBP must capture program design elements that support improved program delivery that addresses the key attributes of the public sector while limiting the creation of new barriers.	SoCalREN agrees that new barriers should not be created and as designed its program accordingly.
52	Public	Intervention Strategies & Metrics	K-12 Public Schools often lack the resources and expertise needed to execute efficiency projects. Schools are currently being "touched" and approached by many entities (utilities, third party programs, government partnerships, solar companies, ESCO's, construction management companies, etc.) with overlapping or competing offerings creating confusion for school districts to know which path to take to improve facilities and spend Prop 39 funds. This leads to slower uptake of projects and slower disbursement of Prop 39 funds, and in some cases lost opportunities.	SoCalREN's public sector Intervention Strategies 1 and 2 directly address this comment. SoCalREN's one-stop, integrated solution addresses the unique needs of for K-12 schools to complete energy efficiency projects build the platform for ZNE.

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			PA's should be considering a more streamlined approach with fewer overlapping and competing offerings and incentives to help schools navigate this complex landscape. Some of the offerings that schools will be approached with by outside entities (solar companies, ESCO's, construction management companies) will not be something the PA's can control, but streamlining PA offerings including partnership and third party programs will help. Even with streamlined programs the range of projects options available to schools will still be complex and varied. Supporting schools' energy project planning can accelerate program participation by prioritizing efforts and ensuring budget and resources are available. Strategic Energy Management (SEM) is one type of approach that can address this need, by offering consultant support to assess current operations and set goals, determine the full range of potential improvements, and support the development and implementation of a multi-year energy plan. The energy plan would be comprehensive (all measure types) enabling the school district to create a long-term plan with short-term milestones. The SEM umbrella might also help in addressing the differing energy savings estimation approaches between the various programs. This strategy would strongly benefit from longer program cycles to ensure long term program success and help support longer lead time projects with small installation windows. Finally, an SEM approach over a longer term would help ensure that the value and benefits that have accrued to schools through the Prop 39 mandate are sustained beyond the end of the funding provisions and life of the Prop 39 initiative.	
53	Public	Intervention Strategies & Metrics	With respect to retro commissioning programs targeting the public sector (including analytic software-enabled programs), project results have been very encouraging but overall market penetration is still very low and project throughput is often slow. In addition there is evidence that savings are being stranded by the current program/regulatory approach. 1. Intervention strategy #1: Provide holistic support for public sector energy management & project planning.	SoCalREN incorporates retro-commissioning support for public agencies as part of its Public Sector Intervention Strategy 1.

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			2. Intervention Strategy #2: Collaborate with public sector and other agencies such as the Energy Commission to establish funding (such as a revolving loan fund) to support public sector equipment repairs that are ineligible for utility program funding. 3. Intervention Strategy #3: Workforce development initiative to train HVAC contractors to deliver operational savings to small public buildings in rural areas. 4. Intervention Strategy #4: Provide incentives for meter installation on master-metered campuses and/or allow meter costs to be included in customers' project costs for comprehensive projects (such as RCx).	
54	Public	Intervention Strategies & Metrics	A) Moving Targets. Continuous rule, practice, and incentive revisions impairs the ability of Public Sector customers like UC and CSU to create strong financial proposals to successfully compete for limited funding to implement energy efficiency projects. B) Decreasing Incentive Levels. Eligible incentive dollars per project cost dollars spent have been decreasing over the last five years for higher education customers, which has decreased the volume of energy efficiency accomplishments at a time when statute requires a doubling of energy efficiency goals. These reductions have effectively forced the Universities to make their energy efficiency programs less comprehensive. C) Self-generation. Public Sector customers with significant self-generation (primarily cogeneration, an ARB recognized carbon reducing technology) have become ineligible for program resources due to administrative revisions to eligibility tests (annual vs. hourly). This exclusion has stranded UC and CSU campuses with large cogeneration systems from full program participation.	SoCalREN does not serve the higher education market. This is a statewide program led by SCE.

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			A) Moving Targets. UC and CSU recommend that during a program cycle, the base policy rules and incentive eligibility determinations remain stable for Public Sector customers once a project application is approved. In addition, to the extent any work papers are applicable, specific EUL, IMC and energy savings values should be established for Public Sector customers. B) Decreasing Incentive Levels. In compliance with AB 802 and SB 350, programs would transition to meter-based savings from existing conditions with incentives that are not impacted by uncertain administrative mid-stream adjustments. In addition, UC and CSU recommend that a public sector factor should be developed and applied to any remaining deemed energy savings measures implemented in the public sector to account for the higher costs of implementing construction projects in the Public Sector. C) Self-generation. In compliance with AB 802 and SB 350, programs would measure savings at the meter, which would provide real savings to the customer with a more straightforward accounting methodology, as opposed to limiting eligibility before a project begins based on a static baseline projection, and excluding carbon reducing and valuable preferred resources to the grid mix.	
55	Public	Intervention Strategies & Metrics	To address the rural communities, could there be “rural adders” where companies get an added bump when they serve that community? Also need	SoCalREN does not provide incentives nor does it certify contractors.

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			contractors who are certified to do the work well. How can we address this?	
56	Public	Market Assessment & Gaps Analysis Issue	In response to statements by the Coalition that there are major unmet needs for EE in the MUSH market, the PAs asked for data to support the statements. There do not appear to be Commission-sanctioned potential studies that address the PAs' precise questions, because the recent potential studies have used the Title 24 and Industrial Standard Practice baselines, and so identify only a fraction of the available EE resource. Also please note that my goal in presenting this data is not to disparage or challenge the work of the PAs, whose program portfolios have been restricted within the confines imposed by Title 24. But I think we need to take a step back from those confines to see the true market potential that has been made available by AB 802.	SoCalREN agrees there is significant unmet potential.
57	Public	Market Assessment & Gaps Analysis Issue	There are major unmet needs for EE and EE funding in key MUSH market sub-sectors. See document PS0259 on CAEECC	SoCalREN agrees.

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			website for details on large gaps between various MUSH sector EE funding requirements versus funding available from PA programs, historically.	
58	Public	Business Plan Topic	Comment confirming that it would be extremely helpful for PAs to identify specific market barriers in documents that get filed with BPs with respect to challenges with MUSH markets. It is recommended that PAs make persuasive arguments to CPUC supporting continuance of certain market transforming programs even if they are not non-costs effective programs. In addition to identifying barriers, PAs should provide alternative mechanisms to remove barriers.	SoCalREN agrees.
59	Public	Business Plan Topic	Public Sector: Business plans should articulate a vision to have this sector lead by example in every possible way. Data-driven ME&O is needed to demonstrate the benefits of efficiency to institutional decision makers. There is great opportunity to use college students and community workforce	SoCalREN's business plan articulates a vision in which the public sector plays an active leadership role in shaping ZNE communities that are safe, secure, resilient, affordable and sustainable. SoCalREN's public sector Intervention Strategies 1 through 4 articulate how this is accomplished by public agencies leading by example and engaging their communities. Intervention 3

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			development participants in WE&T activities such as customer recruitment, project implementation, and data analysis and data infrastructure development. Local and regional organizations could also play a new role as aggregators for community and institutional energy savings bid into IDSM/EE P4P auctions. Creative financing options could be piloted first with the public sector. The CEC is piloting an effort with Sonoma County to provide much better energy savings estimates for the built environment within Sonoma County's climate action planning efforts. The CEC would like to see other local governments leverage the open source data and energy reduction estimation techniques developed in this pilot. The PA business plans should include high level strategies that communicate this important connection to local government GHG reduction mandates.	specifically addresses the need to leverage open source data and shared database, along with regional energy master planning.
60	Public	Business Plan Topic	For all IOU PAs, (see Input Document [PS0295] for more information) Observations	This comment only refers to IOU PAs.

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			• All IOU PAs were effective at identifying unique barriers in the Public Sector • PG&E provided detailed strategies at the sub-segment level (i.e. Higher Education), which is most effective based on the significantly different customer needs by sub-segment • No mention of statewide consistency across IOU PA approaches for the same customer or sub-segment Recommended Action IOU PAs should coordinate strategies based on PG&E's sub-segment approach to address varying customer needs and statewide consistency	
61	Public	Intervention Strategies & Metrics	Give every local government or local government partnership an EE expert or pool together resources to get someone for each region.	SoCalREN's public sector Intervention Strategy 1 specifically addresses this by creating shared access to expertise, tools, project management and other resources that enable agencies to complete energy projects in half the time.
62	Public	Intervention Strategies & Metrics	There were many mentions of strategies to use data for improved and informed decision-making, but these strategies should be outlined in the business plans. BP should highlight the strategies that address or reduce the issues of program timing, uncertainty of funding and long approval processes.	SoCalREN's public sector Intervention Strategy #3 describes the proposed approach to develop regional strategies for improved data and informed decision-making
63	Public	CA Regulator or Policy barrier	Re SDG&E Public Sector & Statewide Public Sector. See SANDAG-1 [PS0302]	This applies only to the SDG&E Business Plan.

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			Request for a Statewide Study on The Influence of Local Climate Action Plans on Energy Efficiency Program Participation. This should look at long- term influence – 5, 10, 20 years. • Within a service territory, the local CAP implementation measures related to energy should be considered during energy efficiency program design, marketing, implementation, and performance monitoring. Specifically, energy efficiency programs should clearly demonstrate how they reduce GHGs and thereby help local governments and others in meeting CAP targets. *Clear direction from the CPUC to the PAs on data-sharing at the jurisdiction/ town code level is needed. GHG reductions should receive equal weighting with energy savings. Energy programs now fall under implementation of state climate goals and laws but treatment of GHG reductions has not been integrated into the way energy programs are decided on at the utilities and CPUC. • Suggestion for both the State and Utility: Progress should be made on integrating distributed energy resources with energy efficiency. Energy efficiency could be further defined as the first measure of DER. Through energy efficiency, additional onsite measures could be sized more economically (e.g., needing fewer solar panels or inverters with reduced energy usage). • Programs should either be designed to include the suite of distributed energy options under one program, or have programs from energy efficiency and DER designed in tandem and become complimentary to each-other (e.g., an energy efficiency program and SGIP). • Suggested Statewide Study: Impacts and Benefits of Expanding the Energy Efficiency Component of the PPP to address a Customer-Side Preferred Loading Order: Integrating Energy Efficiency and Distributed Energy Resource Programs under the PPP. *Request for a Statewide Study: Energy Usage in	

Issue #	Sector	Topic	Issue	Reference Page #/Note
			Older Buildings by Service Territory. See SANDAG-4 in [PS0302]	
64	Public	CA Regulator or Policy barrier	This feedback relates more to Statewide suggestions for the Business Plans and Rolling Portfolio Cycle than to a specific piece of the SDG&E Public Sector Chapter. See [PS0303] Suggest that the Commission should allow PPP funds to be used for the top 3 measures in the Preferred Loading Order. PPP could be applied to a "preferred loading order for the customer- side of the meter." Measures could be prioritized or mandated in order of efficiency to DER. Here again the treatment of GHG reductions along with energy savings plays a role. 1. Energy Efficiency (including performance controls), 2. Demand Response (including performance controls), 3. Distributed Energy Resources (including performance controls). Suggest that the Commission should consider integration of energy efficiency and DER funding in terms of Codes and Standards also. In 2020, the first ZNE code becomes effective. Traditionally the PPP energy efficiency dollars have been used for code compliance, code training, and code development. • When ZNE is code, will the PUC only allow PPP to fund the energy efficiency code component? • What will be the source of funding for the rest of the energy code? See [PS0303] page 3 for three possible solutions to cost effectiveness of Transformational Programs. • Would legislation need to be passed for the Commission to be able to direct PAs to use their PPP energy efficiency funds for energy efficiency, DR, and DER? • It seems that energy policy is coming up to a big merge rather than a fork in the road and • The Commission has the opportunity to break down some silos between proceedings and subsequent silos across PA departments.	SoCalREN agrees that EE program activities need to be integrated with DER activities. Such integration is critical to achieve a ZNE future.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			• The Public Sector is an essential tool for driving market transformation as PAs, Implementers and users of energy efficiency programs. For a greater uptake in program participation by the public sector, the value proposition introduced to public agencies must: • 1) Speak the language of that customer and • 2) Address or connect to that customer class' highest priorities. SDG&E and other PAs should look at the value proposition for public sector while they are designing programs, and structure the programs around that.	
65	Public	Intervention Strategies & Metrics	Re All PAs' Public Sector chapters. See RTHR-1 in [PS0305] PAs should work with stakeholders to develop a statewide framework that allows for program consistency and transparency throughout the state while allowing for localized autonomy for the PA and stakeholders.	The CPUC has not designated public sector programs as statewide.
66	Public	CA Regulator or Policy barrier	RHTR 2 in [PS0305] Use the Societal Cost Test or the California Energy Commissions Savings to Investment (SIR) ratio as incremental steps in the right direction while exploring more robust cost-effectiveness tests that internalizes, for example, the following: • GHG reductions • Human health and safety gains o Reduced environmental impacts Localized economic multipliers	SoCalREN does not have any authority over cost-effectiveness methodology or tests.

Issue #	Sector	Topic	Issue	Reference Page #/Note
67	Public	Intervention Strategies & Metrics	RE SCE Public Sector Stage 2 doc, RHTR 3 of [PS03045 Observations • PA states increased number of reach codes as a metric for Problem Statement One. Recommended Action • PA should reconsider using increased number of reach codes as a metric. Consideration improvement over baseline AND number of reach codes adopted would be more equitable.	Not relevant to SoCalREN.
68	Public	Intervention Strategies & Metrics	Re SoCalREN page 4 and PG&E pg. 13, RHTR 5 see [PS0305] Observations • PA presents staff education and training for CEM and Strategic Energy Management (SEM) to address Lack of Capacity problem statement • PA presents expanded training as a solution to lack of capacity. Recommended Action We recommend other PAs consider this localized approach to building capacity.	SoCalREN agrees.
69	Public	Intervention Strategies & Metrics	Re PG&E Stage 2 Public Sector Document, RHTR6 in [PS0305] Observations • PA recommends the integration of behavioral programs as a solution to Increase the Relevancy of PG&E Portfolio Recommended Action We caution the PA in using behavior programs as a strategy under the current evaluation model.	This comment pertains to PG&E.
70	Public	Chapter Drafts (Voluntary)	Include $1 million annual funding for a new partnership with	SoCalREN does not service state agencies.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			Administrative Office of Courts (AOC). CA Department of General Services is not involved in ownership, operation or contracting for the AOC facilities. Include additional funding for in depth audits.	
71	Public	Statewide Admin Discussion	Create a long-term sustainable program to help the California Administrative Office of Courts (AOC) substantially reduce its energy use. The AOC Statewide Partnership Program (AOC Partnership) would fund a team of energy professionals through the energy efficiency public purpose program to assist the AOC to plan, evaluate, and implement projects to reduce facilities' energy use. The proposed budget for the program is approximately $1 million per year (approximately five professionals at an average fully loaded cost of $200,000 per person). The IOUs will select the team through a competitive process and contract with it to assist the AOC in the following services:	SoCalREN does not service state agencies.

Issue #	Sector	Topic	Issue	Reference Page #/Note
72	Public	Chapter Drafts (Voluntary)	#1 - The state is interested in more creatively exploring other options for project execution and is strongly reaching out to IOUs and other program administrators to be a partner with us in finding creative solutions. Adapting OBF to include upfront construction costs would help to enable the state to leverage this financing approach. Most of the projects in large state buildings exceed the current $1M limit for financing via OBF. Increasing this limit would address another barrier.	SoCalREN does not service state agencies.
73	Public	Chapter Drafts (Voluntary)	#2 - There is a need to more strategically identify the retrofit opportunities with the highest and most comprehensive savings potential long term. Implementing investment grade audits for all buildings would be cost prohibitive. The state is seeking support from IOUs and PAs to provide this strategic targeting support.	SoCalREN does not service state agencies.
74	Public	Chapter Drafts (Voluntary)	#3 - It is critical that the state utilizes a fair, appropriate, transparent, competitive process in soliciting work. Given those parameters, the state is seeking support in executing retrofit projects that comply with these requirements while offering more time saving and efficient approaches.	SoCalREN does not service state agencies.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			• The state is exploring alternative models for engaging with ESCOS more effectively, at lower costs and more timely execution. The Federal Government has effectively modeled an energy services relationship with the IOUs that may be modified to work with State entities. We encourage the Partnership to work with us to develop alternative ways of delivering efficiency projects to state customers • The state is open to piloting metered based savings approaches with incentives tied to measured savings Extending the current direct install program to small/medium state facilities statewide would help to save time and resources. Further expanding the direct install program to include HVAC measures and control measures would capture a larger portion of the current needs.	
75	Public	Chapter Drafts (Voluntary)	NRDC-1 - (throughout) There seems to be a lot of extra prose. The definitions are extremely helpful, but seems that it could be an Appendix instead of as part of the actual BP.	SoCalREN agrees and has modified its business plan accordingly.
76	Public	Chapter Drafts (Voluntary)	NRDC-2 - (re beginning of document) Very little market characterization. It's unclear what the main end uses are, where the highest need is, etc. It is understandable that there isn't sufficient "public" data but there were examples in the Phase 1 presentations (e.g.,	SoCalREN's business plan will include market characterization data to the extent that is available from the IOUs.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			SDG&E's is a good model). See data recommendations in "NRDC Feedback for All PAs" (Input Source Document).	
77	Public	Chapter Drafts (Voluntary)	NRDC-3 - (page 28-29 as an example of throughout) It's a bit challenging to clearly see the link between barrier/strategy/etc. With so many pages of text to be read by ED and stakeholders, the PAs should strive to make the information as easily digestible and succinct as possible. See "NRDC Feedback for All PAs" for helpful table formats	SoCalREN agrees and has modified its business plan accordingly.
78	Public	Chapter Drafts (Voluntary)	NRDC-4 - (re Throughout and p.34 as an example) It's unclear what exactly SCE proposes to do with the various intervention strategies. In table 6, there is a list of generic intervention strategies. However, this doesn't inform the reader of what approaches are being considered to solve the barrier or reach the desired sector outcome. NRDC urges SCE to look at the other chapters and comments to add appropriate level of detail.	This refers to SCE.
79	Public	Chapter Drafts (Voluntary)	NRDC-5 - P.34 – missing "baseline" as a column. The "metric source" seems to be what the baseline should be. P.36 – NRDC is "natural" not "national"	This refers to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			P.45 – is EAP intended to be ESAP (Energy Savings Assistance Program) or a more general term?	
80	Public	Chapter Drafts (Voluntary)	#2 - (re page 3) Sector profile should be simplified and made more useful by relying less on mentions of recent legislation. Section should come after a useful disclosure that catalogues all actors, sub-sectors, and primary EE funding categories.	SoCalREN agrees and has modified its business plan accordingly.
81	Public	Chapter Drafts (Voluntary)	#3 (Re page 5-6) Section should be edited for brevity and should follow a new section that would include a useful disclosure that catalogues all actors, sub-sectors, and primary EE funding categories. Digressions such as a scale issue could go into an appendix. Table 2 would work better as a Venn Diagram since UC/CSU are state agencies and K-12 is a local govt animal.	This applies to the SCE business plan.
82	Public	Chapter Drafts (Voluntary)	#4 (re page 10) Sector should be edited to focus on Strategic Plan framework and renamed. Remainder could go into an appendix. Should follow a new section that would include a useful disclosure that catalogues all	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			actors, sub-sectors, and primary EE funding categories.	
83	Public	Chapter Drafts (Voluntary)	#5 (re page 14) Move LGP description to a new opening section that fully describes actors and agencies SCE is targeting in public sector. Change “promote three categories” to “advance six goals”. Add capacity building and constant improvement; peer to peer knowledge transfer; and informing the CPUC, CEC, and other state agencies of on-the-ground conditions.	This applies to the SCE business plan.
84	Public	Chapter Drafts (Voluntary)	#6 (re page 12) Market Trends. This section is useful but in places speaks to and generalizes LGPs rather than the public sector as a whole. (E.g. The statement “The main market drivers for public sector EE adoption are greenhouse gas (GHG) reduction and climate action plans.” Holds true for LGPs but not for K-12, etc.	This applies to the SCE business plan.
85	Public	Chapter Drafts (Voluntary)	#7 (re page 14) EM&V section should disclose that the IOUs have no plans and framework in place to evaluate state institutional partnerships (SIPs) or K-12. This includes no active PCG	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			to address these segments. EM&V section should address long-term goals of IOUs LGP EM&V, including a plan to assign IOU staff with LGP knowledge, PM capability, and ample bandwidth to oversee consultant studies. This section should concentrate on the way things are, deficiencies in EMV, and what SCE intends to do to address. Much of the narrative here could go to the beginning in a new Overview chapter that profiles the public sector.	
86	Public	Chapter Drafts (Voluntary)	#8 - (re page 16-20) Market Barriers. Good info but needs to be refocused. Please move the PACE info from Market Trends to fit with the financing narrative here. Bullets on pp. 17-20 are needlessly repeated. Convert into a table for simplicity and transparency.	This applies to the SCE business plan.
87	Public	Chapter Drafts (Voluntary)	#9 - (re page 21) Omit the definitions here to consolidate and add a table to the overall BP filing – many of these definitions will be applicable for various BP chapters.	This applies to the SCE business plan.

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88	Public	Chapter Drafts (Voluntary)	#10 (re page 22) "For example, local government customers require community data for climate action plans and GHG inventories, but access to this data is limited by CPUC Decision D.14-05-016." This statement is a pretty general disclaimer. Did SCE support this rule as proposed? Is it working out? Has there been any demonstrated benefit? Have parties complained? Does SCE support a second look at this rule? Please explain how SCE intends to navigate this rule or improve matters going forward.	This applies to the SCE business plan.
89	Public	Chapter Drafts (Voluntary)	#11 (re page 22) "While this business plan will not be able to overcome all of the data barriers facing this sector, SCE will continue to be mindful of these challenges when developing programs, policies, and procedures." SCE should provide at least one proposed solution to the LG data sharing impasse.	This applies to the SCE business plan.
90	Public	Chapter Drafts (Voluntary)	# (NA) (re page 23) "Southern California Edison's vision for the public sector is to increase customer adoption of EE improvements, enhance	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			customers' abilities to self-serve, increase customer satisfaction, and make program participation easier for customers." SCE should specify who the customer is in this case. SCE statement is rather generic and seemingly could be substituted for other sectors.	
91	Public	Chapter Drafts (Voluntary)	#12 (re page 23) Savings goals should be broken down by LGP, SIP, and K-12.	This applies to the SCE business plan.
92	Public	Chapter Drafts (Voluntary)	#13 (re page 23) "The public sector is a newly defined sector, which will require conducting a number of M&V studies and performance analyses as outlined below." ED staff doesn't gauge why a newly defined sector would require a special study. In any case, if SCE believes that EMV is an urgent priority for the public sector, it's advised to heed ED direction for EM&V (p.27) and retain qualified IOU staff to oversee and monitor.	This applies to the SCE business plan.
93	Public	Chapter Drafts (Voluntary)	#14 (re page 23) Sector Vision. First two paragraphs add nothing new and should be deleted. SCE offers an interesting idea of weening LGs off of EE ratepayer funds but offers no plan to	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			get there and no argument that this is the correct course of action. “In 10 years, SCE would like the public sector to be leaders in energy efficiency adoption and promotion. With the exception of complex or novel projects, public sector customers should no longer be reliant on utility incentives to develop and implement energy efficiency projects, and should be able to finance their own EE projects and/or leverage utility finance programs.”	
94	Public	Chapter Drafts (Voluntary)	#15 (re page 24) Revise for clarity “Public sector customers should continue to leverage their community respect and authority to continue to promote higher EE standards, “substituting “To further drive EE in their communities, public agencies should continue to apply their unique position as trusted and authoritative entities.”	This applies to the SCE business plan.
95	Public	Chapter Drafts (Voluntary)	#16 (re page 25) This sentence is confusing and appears to pardon SCE of fully describing what is in the public sector. Please delete and add more detail about the public sector entities.	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			"The flagship public sector offerings are local government and institutional EE partnerships"	
96	Public	Chapter Drafts (Voluntary)	#17 (re page 25) SCE refers to "four statewide Institutional Partnerships (IPs)" which is incorrect in that these are not statewide programs. Please reference throughout as State Institutional Partnerships (SIPs). Narrative that describes the LGPs and other programs should be moved to into Overview chapter.	This applies to the SCE business plan.
97	Public	Chapter Drafts (Voluntary)	#18 (re page 25) Screen entire chapter for repeated narrative. This sentence appears here for at least the third time "One of the major challenges for public sector customers is the ability to finance EE measures"	This applies to the SCE business plan.
98	Public	Chapter Drafts (Voluntary)	#19 (re page 25) 1. Existing Products and Services. This information should be moved to the front of the chapter.	This applies to the SCE business plan.
99	Public	Chapter Drafts (Voluntary)	#20 (re page 28, 48) Please add to the following statement to explain how the proposed SCE budget will allow for sufficient generation of new innovative project ideas by LGPs. Also please reconcile the SCE	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			budget line item LGP Strategic Plan pilots with the absence of a mention here. Is SCE pursuing new LGP Strategic Plan pilots? Why or why not and why is this justified? “In addition, LGPs have completed less complex Strategic Plan tasks through their partnership budgets. Lessons learned from the work accomplished to date have helped develop a new Strategic Plan process. In this new process, SCE has worked with Energy Division staff to develop a framework for innovative Strategic Plan activities to be proposed by local governments.”	
100	Public	Chapter Drafts (Voluntary)	#21 (re page 29) Everything presented here appears to be repeated elsewhere in chapter. Revise for brevity.	This applies to the SCE business plan.
101	Public	Chapter Drafts (Voluntary)	#22 (re page 32, 40, 48) Suggest changing decision makers to “gatekeepers”. Decision makers are elected or appointed officials not city staff, typically. If decision makers is used, come up with a definition to and use appropriately.	This applies to the SCE business plan.
102	Public	Chapter Drafts (Voluntary)	#23 (re page 39) First mention of RENs should be much closer to beginning of	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			chapter. CCA coordination and response also needs to be addressed.	
103	Public	Chapter Drafts (Voluntary)	#24 (re page 38-47) These pages don't offer a whole lot of useful new substance should be shortened to fit in a single page.	This applies to the SCE business plan.
104	Public	Chapter Drafts (Voluntary)	#25 (page 47) Language is repeated verbatim from p. 27. Revise per request above and consolidate EMV discussion into one section within chapter. "The public sector is a newly defined sector, which will require conducting a number of M&V studies and performance analyses as outlined below." ED staff doesn't gauge why a newly defined sector would require a special study. In any case, if SCE believes that EMV is an urgent priority for the public sector, it's advised to heed ED direction for EM&V (p.27) and retain qualified IOU staff to oversee and monitor.	This applies to the SCE business plan.
105	Public	Chapter Drafts (Voluntary)	CPUC/CLN-1 - (re page 7) Please be clear about extent to which health care belongs in a profile of public buildings, vs. (private) commercial, or both.	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
106	Public	Chapter Drafts (Voluntary)	CPUC/CLN-2 - (re page 13, top) Refers to public sector climate action plans. Many of these target municipal buildings. Text does not discuss how these plans would impact public building sector, incl. e.g. meeting Energy Star or LEED building standards, applying benchmarking to help prioritize buildings for improvement.	This applies to the SCE business plan.
107	Public	Chapter Drafts (Voluntary)	CPUC/CLN-3 (re page 13) Some of the text here not relevant to public buildings, e.g. re: PACE and reach codes, streamlined permitting... Remove or improve applicability to public buildings.	This applies to the SCE business plan.
108	Public	Chapter Drafts (Voluntary)	CPUC/CLN-4 See 2004 attempt to characterize size of “public” buildings in California. Dated, but may be better than nothing if there is not more recent update.	This applies to the SCE business plan.
109	Public	Chapter Drafts (Voluntary)	CPUC/CLN-5 (re page 14) Profile data for Public Sector is lacking and text gives a weak excuse for not finding the data. Does not take a Navigant potential study to have data. Public sector buildings have LOTS of publicly-documented info on	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			the kinds of EE measures they identify, take, save, and spend. See for example CEC data on Prop 39 K-12 schools, Community colleges data for Prop 39, UC and CSU partnerships, DGS State facilities partnerships, Corrections, CEC's long-standing public building loan program and technical assistance. I also believe AB 758 attempted to characterize the public sector building stock. Moreover, LBNL for years has been tracking the ESCO industry (largely with public building clients) and the Federal Energy management Program (FEMP) that targets federal facilities, a good portion of which are in Calif. Also could query the CPUC EM&V data base for program participants with NAICS codes for public buildings, or some equivalent codes.	
110	Public	Chapter Drafts (Voluntary)	CPUC/CLN-6 (re page 16-22) You need to set priorities for the current laundry lists of barriers; pretty surprising that a 1996 source is your reference, given how much progress the public sector has made with EE and climate goals.	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
111	Public	Chapter Drafts (Voluntary)	CPUC/CLN-7 (re page 23, 32) Budgets shown do not seem to reflect the 50-65% increase in savings goals, at least in the near term until strategies for financing manage to offset the need for incentives. What is the trajectory to get to the point of not needing incentives?	This applies to the SCE business plan.
112	Public	Chapter Drafts (Voluntary)	CPUC/CLN-8 (re page 25) Missing any discussion of lessons learned from SoCalREN's local government facility technical assistance and turn-key implementation services.	SoCalREN agrees with this comment. SoCalREN's public sector Intervention Strategy 1 has successfully assisted public agencies to complete energy efficiency projects, complementing and supplementing IOU programs.
113	Public	Chapter Drafts (Voluntary)	CPUC/CLN-9 (re page 25-32) More laundry lists of current products and services and (newer?) intervention strategies in long lists. This is lacking in a clear sense of which strategies will be deployed to overcome which barriers in which market segments or overall sector. P. 29 continues to prominently feature variety of incentives. How does this mesh with our p. 23 vision to move away from incentives?	This applies to the SCE business plan.
114	Public	Chapter Drafts (Voluntary)	CPUC/CLN-10 (re page 25 , 32) In the "budget and Metrics" opening text, SCE punts at coming up with	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
			budget estimates for its strategies, relative to savings goals it sets on p. 25. Seems SCE should be able to estimate market uptake given the strategies and incentives it imagines offering and their costs. In fact, the PA estimates may be INPUTS to the CEC's targeting efforts, rather than the other way around.	
115	Public	Chapter Drafts (Voluntary)	CPUC/CLN-11 (re page 34) Metric #1 for financing and procurement, where the desired outcome is to "encourage greater customer investment in EE", would be better to set the outcome metric as a $ investment level.	This applies to the SCE business plan.
116	Public	Chapter Drafts (Voluntary)	CPUC/CLN-12 (page 36 under "Coordination with Partners) Lists current local government partnerships. Will all these continue? Will they all or partially include activities that targets public buildings?	This applies to the SCE business plan.
117	Public	Chapter Drafts (Voluntary)	CPUC/CLN-13 (re page 39) Codes & Standards program discussion is very general. Hard to discern the value of intended strategies, expected outcomes, and relevant performance metrics.	This applies to the SCE business plan.

Issue #	Sector	Topic	Issue	Reference Page #/Note
118	Public	Chapter Drafts (Voluntary)	CPUC? CLN-14 (re page 42) ETP discussion is general and not informative. Also seems backward in referring to a set of "traditional measures", rather than viewing ET as the way to push the envelope on new(er) technologies, making the case for their application and performance, and learning how to disseminate and get uptake through appropriate market channels.	This applies to the SCE business plan.
119	Public	Chapter Drafts (Voluntary)	CPUC/CLN-15 (re page 42) Refers to the "education of decision makers" as WE&T? Is that a conventional definition? I would think that any persuasion targeting decision-makers would be more about marketing, not "WE&T".	This applies to the SCE business plan.
120	Public	Chapter Drafts (Voluntary)	CPUC/CLN-16 (re page 49) Features ZNE Scho0ols through Prop 39 funding. But I believe Prop 309 funding was only authorized for 5 years, likely to end around 2017 or 2018, is largely committed via plans filed with CEC, and applies primarily to retrofit situations. If retained, supply evidence of how ZNE schools will have 5-10-year future	This applies to the SCE business plan.

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			traction – with what impetus, what funding, what target segments?	
121	Public	Chapter Drafts (Voluntary)	CPUC/CLN-17 (re page 49) Proposing picking ONE school district to "develop a roadmap to cost-effectively achieve ZNE". I would doubt that a single road map, can be that useful given the huge variety of climates, economic situations, facility ages ... across the SCE territory. Refers to collaboration with Doe and NREL. This probably needs additional coordination with relevant school facility and business professionals in So. Calif.	This applies to the SCE business plan.
122	Public	Chapter Drafts (Voluntary)	Highlights of Memorandum include: • ED suggests that SCE revise the document to reduce it by half the length (25 pp. max), with a new Overview chapter at the top that describes the LGPs, State Institutional Partnerships, K-12, and any other programs related programs such as SEEC. Budgets, savings goals, gaps, solutions, transition plans, etc. should be specified for each and then rolled up into an overall tally • SCE fails to demonstrate that SCE is complying with CPUC request to demonstrate that IOUs are moving the LGPs in the direction of greater statewide consistency. • SCE also fails to account for notable changes since 2012, notably the new PA actors operating in the local government space — RENs and CCAs. • For the ten years to come, SCE should explain how its LGPs will stay relevant alongside RENs and CCAs, and whether it supports market segmentation or competition.	This applies to the SCE business plan.

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			• Similarly, SCE should define what constitutes a partner and a partnership, minimal LGP member expectations and rewards, and whether some higher minimal threshold for LGP performance is warranted. • CE chapter should specify proposed strategies to link qualifying local agencies with an effective LGP implementer; how such an implementer would be allowed to make decisions on behalf of its members to motivate and reward them and carry out a coordinated regional vision; and how the implementer would (or would not) serve as conduit for IOU communication and directives. CEandtheotherthreeIOUshav eatoolofenormouspotentialfo relevatingthecapacityofthe LGPs, but whose potential has not been captured fully due to constant staff turnover. The tool is SEEC and the best practices coordinator. SCE should provide a plan for stabilizing and growing SEEC so that, among other things, local agencies have an impartial source of expertise for matters that would include the CAECC, responding to regulatory filings, questions about the service list, filing a protest, becoming a party, and so on.	
123	Public	chapter Drafts (Voluntary)	CSE-1 In talking about the public sector and its sub-segments (i.e., local governments, schools, hospitals); CSE recommends grouping the	This applies to the SCE business plan.

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			same sub-segment challenges and solutions into the same sections throughout the paper (as opposed to referring to the public sector at large throughout the chapter). CSE encourages SCE to reexamine some of its claims about the public sector (again, if broken out by sub-segment, certain characteristics may be easier to assign). CSE hypothesizes that in addition to reducing energy consumption, many public buildings choose to invest in energy efficiency because it saves money. CSE recommends that SCE use citations for the above claims (highlighted) in the final draft. While the chapter refers multiple times to the fact that no studies have been done for the public sector and energy efficiency market potential, CSE requests more specificity in the claim, i.e. no studies done for California? (Please see input source document for important additional details). CSE recommends moving the sections “SCE’s Approach to Achieving Sector Goals” and “Sector	

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			Vision" to the beginning of the chapter; these sections provide a detailed and concise overview of SCE's goals and vision for the public sector.	
124	Public	chapter Drafts (Voluntary)	CSE-2 The description of AB 802 on Pg. 11 fails to include the benchmarking and data access components of the bill (Pg.11). While the description of AB 758 calls out proposed EE Services, the draft chapter does not align its proposed activities to what is prioritized in the AB 758 roadmap (Pg. 11). CSE recommends that SCE use aspects of the AB 758 Action Plan to frame strategy and prioritize activities for the public sector. While the chapter briefly references whole- building data access on Pg. 32 (Building Energy Benchmarking Data Access), it cites the lack of adequate data on Pg. 21. With the roll-out of AB 802, building owners (of both public and private buildings) will be able to access whole-building data (in addition to Green Button DMD and CMD) for the first time (particularly significant for separately-metered buildings). In building a benchmarking portal and offering automatic upload to Portfolio Manager, SCE will be able to retrieve building-level data for all buildings using the portal.	This applies to the SCE business plan.

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			Access to this building-level information will allow for new, and previously unknown insights, into buildings. SCE could also propose how they could prioritize outreach to buildings based on their Energy Star score (lower scores as a proxy for buildings in need of more technical assistance and rebates).	
125	Public	chapter Drafts (Voluntary)	CSE-3 *While it's true that lenders have not historically known how to value high-performing buildings, this particular shortcoming is changing. • Given the availability of OBF in the SCE territory, it would be helpful for the chapter to include insights on public sector participation and as to whether OBF is alleviating any of the aforementioned barriers to capital for EE improvements. CSE requests more detail on the proposed EE revolving funds (Pg. 28)	This applies to the SCE business plan.
126	Public	chapter Drafts (Voluntary)	TURN-1 (re page Incomplete pp. 9, 32, 16- 22, 25-32, 35- 49, Table 6 p. 34) Overall: SCE's public sector BP chapter lacks quantitative information on estimated efficiency potential (p. 9), which when available should be linked to the proposed savings goals (p. 25), and proposed budget (p. 32). The BP reads more as a regulatory compliance document, appearing long in somewhat generalized discussions on market barriers (pp. 16 – 22), existing products and services (pp. 25 – 32), and coordination with key partners and associated proceedings (p. 35-49). This is particularly evident in reviewing the one page matrix of "Public Sector Problem Statements, Desired Sector Outcome,	This applies to the SCE business plan.

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			Intervention Strategies, and Metrics", in which the chapter is generally captured (Table 6, p. 34). TURN recommends that SCE streamline the sections cited.	
127	Public	chapter Drafts (Voluntary)	TURN-2 (re pages 35-49) The BP contains no discussion of gas usage in the public sector, or partnering with SoCalGas. This is particularly disconcerting given the lengthy Section D. "Coordination with Key Partners and Associated Proceedings". Efficiency savings and cost- effectiveness are significantly compromised by this bifurcated approach. TURN was equally confused by the fact that SCE and SCG each proposed stand-alone public sector HOPPs instead of a coordinated effort. TURN recommends that SCE incorporate information and data on gas efficiency into all customer sector BPs, and develop seamless customer offerings.	This applies to the SCE business plan.
128	Public	chapter Drafts (Voluntary)	TURN-3 (re page 4) SCE concludes that Industry Standard Practice (ISP) should rarely apply to the public sector: "Additionally, there is a scale issue. A public building's kitchen or computer server system is usually considerably smaller than it would be in a commercial building. SCE concluded that Industry Standard Practice (ISP) should rarely apply to the public sector because the community the public sector serves and the scale of public sector energy systems do not compare to those of the commercial sector. Public sector investments are based on public good and on providing essential services at a minimal cost. But minimizing costs often leaves more advanced EE work for the public sector unrealized because it is expensive, while the	This applies to the SCE business plan.

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			commercial sector is not bound by the same spending restrictions." (Emphasis added). TURN believes that it is inappropriate for SCE to unilaterally decide that ISP should not apply to the public sector. Such a generalized statement claiming that alleged differences in the "scale" of public sector and commercial energy using equipment and systems is not a reasonable basis for exempting the public sector from ISP considerations. SCE should proceed with the identified M&V market characterization study identified as needed "as soon as possible in order to: Document industry standard practices specific to the public sector, particularly in operations, maintenance, and early replacement or "indefinite repair" practices, which may differ in different segments within the sector." (p. 41)	
129	Public	chapter Drafts (Voluntary)	TURN-4 (re page 13) SCE explains, "The declining cost and increased adoption of solar and battery storage is making a great impact on the EE marketplace." This is a critically important matter, and TURN commends SCE for flagging it. SCE should address the impact of solar and battery storage in its discussion of overarching market trends for each BP chapter.	This applies to the SCE business plan.
130	Public	chapter Drafts (Voluntary)	TURN-5 (re page 28) SCE summarizes the first of the public sector problem statements in Table 6 as "Financing and procurement hurdles challenge adoption". With financing and public sector	This applies to the SCE business plan.

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			procurement being such significant hurdles to efficiency adoption, TURN believes it would be very helpful to expand the discussion of some of the ways SCE is working to tailor financing programs to this sector and to create EE revolving funds. TURN recommends that SCE provide more detail on the ways SCE is working to tailor financing programs to this sector and to create EE revolving funds. TURN recommends that SCE consider PG&E's proposed expansion of OBF and OBR and new financing partnerships to address problems around capital availability for first costs, with aspecificfocusonprojectco-paysoverthe$100,000 ceiling for OBF. PG&E states that it will explore extending OBF repayment periods beyond the current standard of five years−up to ten− to provide near-term relief for customers requiring greater flexibility for large capex investments. And, explore new, lower risk financing structures for the sector as they become available, beyond simply supplementing existing OBF (up to the current$20,000 cap)with OBR(which carries variable risk depending on	

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			how third-party loans are structured) for greater liquidity.	
131	Public	chapter Drafts (Voluntary)	TURN-6 (re page 48) SCE's discussion of its Public Sector HOPPs is limited to a standalone paragraph in the next to the last page of the BP. It would be very helpful for SCE to incorporate the discussion of its Public Sector HOPPs into more of the core of the BP chapter, and address how NMEC could possibly assist in overcoming market barriers, including capital market investment. Beyond this, TURN recommends that SCE explore using AMI data and innovative meter-measured performance strategies for site-specific whole building programs to stimulate broader market interest in NMEC-based pay-for-performance programs. Such an approach could be used to attempt to spur private sector innovation and capital markets investment, thus building a market for efficiency, creating transparent and real time accounting for savings using smart meter data, increasing quality installations by making contractors accountable to measured performance, and ultimately reducing program administration and	This applies to the SCE business plan.

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			evaluation costs by making the industry (and not just the program) responsible for performance risk.	
132	Public	chapter Drafts (Voluntary)	TURN-7 (General Comment) Customer sector goals and program savings, budgets, and cost-effectiveness are forward looking. The BPs are intended to be integral to California moving the current generally flat or stagnant needle on energy efficiency. Some quantitative context to the current portfolios and programs would be very helpful. We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness.	SoCalREN agrees. Refer to SoCalREN Business Plan, Section N.
133	Public	chapter Drafts (Voluntary)	TURN-8 (General Comment) It is not clear whether projected savings are gross annual. In D.16-08-019 (atp.21), the Commission directed a return to net goals and the development of cumulative goals for application in 2018 to support the State's SB 350 efforts. If not already included, we recommend that SCE provide projected customer sector goals and program savings in net annual and net cumulative form, with the basis for net provided, and cumulative specified by the	This applies to the SCE business plan.

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			estimated average EUL by customer sector and key programs. Indicate the basis (i.e. end use, measures) for the estimated average EUL(s).	
134	Public	chapter Drafts (Voluntary)	UC/CSU-1 (re page 38) At the top of page 38 under section b) Statewide Program Coordination, there are several key topics that have only been addressed with placeholders, including ”How lead PA will operate”, “IOU/PA lead coordination” and “Solicitation strategy for implementation”. Based on the intent of the decision to create statewide consistency and efficiencies, these items must be addressed in a way that effectively supports these goals. There needs to be very clear language on how all IOUs will work together to provide consistent offerings (i.e. identical program processes and project eligibility) for customers in statewide partnerships. The lead PA can leverage the authority provided in the decision to standardize all program processes and project eligibility across all IOUs as needed	SoCalREN does not serve higher education which is a statewide program, led by SCE.

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135	Public	chapter Drafts (Voluntary)	UC/CSU-2 (re page 38) SCE appears to suggest that the public sector will be transitioned to third party programs. The language in the decision does not specifically make this requirement, and UC would like to understand in more detail what this could mean for our statewide partnership, as currently we utilize almost no third party programs. From a high level, transitioning the UC/CSU partnership to a third party program would create new inefficiencies and cost by inserting a management layer between the customer and the utility that does not exist today, while creating no added value to the customer or cost savings. Provide justification and more detail on the requirement/plan to transition statewide institutional partnerships to third party programs.	SoCalREN does not serve higher education which is a statewide program, led by SCE.
136	Public	chapter Drafts (Voluntary)	UC/CSU-3 (re page 38) The timing of an [Public Sector] RFP being released prior to Business Plans being finalized could be problematic in that the solicitation would not incorporate input from public sector stakeholders. The role	SoCalREN does not serve higher education which is a statewide program, led by SCE.

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			and requirements of Statewide Program Implementers is not defined, and depending on how this is developed in the Business Plans, it may make sense for a public sector customer to pursue this role. Provide clarification and more detail on what this RFP will include and how it will accommodate the potential for public sector customers to pursue the Statewide Program Implementer role.	
137	Public	chapter Drafts (Voluntary)	NAESCO - We suggest that the IOUs use the information described below to create a common template for all their business plans. A common template will greatly facilitate stakeholder review and the Commission's analysis which is necessary for approval of Business Plans. [see source input document PS0360 for several page description of the outline]	N/A.
138	Public	chapter Drafts (Voluntary)	NAESCO believes that the Commission's requirements for statewide administration and third party implementation are very clear. In their October 19 presentations, SCE and the other utilities should describe overall bidding plans, including programs not specifically identified in the decision, for 2017, 2018, 2019 and 2020. Those plans should include bidding timelines from issuance of RFPs to contract signing for every program to be bid out.	This applies to IOU PAs.

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			For each year, the utilities should list the programs implemented in their service territories, broken out by utility-implemented and third party implemented programs. In order to meet the Commission's requirement of filing a plan that demonstrates their achieving the Commission's minimum of 60% third-party program spending as a percent of the total portfolio spending, each utility's Business Plan filing should include annual budgets for the years 2017 through 2020 broken out by major category: administration; Implementation (further broken out into utility-implemented programs versus third party programs); marketing (also broken out by utility program-related versus third party program-related) and EM&V.	
139	Public	chapter Drafts (Voluntary)	NAESCO Prior to any utility program implementation, the utilities, working with the CAEECC and other stakeholders, should (1) establish an objective framework with clear criteria that must be applied in determining that a utility must deliver a program, and (2) show how those criteria are met in the	This applies to IOU PAs.

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			case of utility implementation of a particular program. The utilities Business Plans should describe this process and how outcomes were achieved.	
140	Public	chapter Drafts (Voluntary)	NAESCO - The public sector and the residential sector are two markets that are served by a large, sophisticated community of implementers. The end use technologies used in these sectors have seen significant technological improvements in recent years (advanced lighting, energy management systems, smart thermostats, heat pumps, etc.). For both the MUSH and residential markets, SCE and the other utility administrators should establish meaningful budgets for truly open solicitations that allow third parties to propose new, innovative program designs.	This applies to IOU PAs.
141	Public	chapter Drafts (Voluntary)	ORA-1 (re page 23/32) Budgets do not align with 10-year vision for the sector • SCE states on p.23 that "with the exception of complex or novel projects, public sector customers should no longer be reliant on incentive to develop and implement EE projects." • However, the budget table on p.32 shows stable budgets through 2027, which is inconsistent with incentives declining to near zero. The long-term goal is either	This comment applies to SCE.

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			not credible or the budget in out-years should decline substantially	
142	Public	chapter Drafts (Voluntary)	ORA-2 (re page 34) Metrics do not align with the 10-year vision for the sector • SCE's success metrics are all based on participation levels; however, the 10-year vision is that customers will no longer be participating in incentive programs. Fundamental disconnect between a metric of "number of projects that receive on incentive" increasing through year 10 and a vision of declining incentives to zero by year 10.	This comment applies to SCE.
143	Public	chapter Drafts (Voluntary)	ORA-3 - Metrics do not align with the problem statement or intervention strategy • Problem statement of lack of visibility for building performance data and intervention strategies around increasing customer access to data do not match a sector outcome metric of the number of projects receiving an incentive Metric must measure something meaningful that represents success/failure of the intervention strategy	This comment applies to SCE.
144	Public	chapter Drafts (Voluntary)	ORA-4 (re page 33) Metrics must be credible and stable in order for BPs to represent a plan whose success/failure can be accurately assessed • BPs cannot be approved with caveats such as that on p.33 that "SCE plans to refine [the metrics] once more analyses are completed....if historical data on these sectors does not exist or is too sparse, then SCE will update these metrics targets after sector-specific evaluations have been completed." If metrics are constantly moving targets, then the accountability mechanism is destroyed and there is no marker to judge whether or	This comment applies to SCE.

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			not progress is being made, whether strategies are producing results, and whether the administrator is succeeding.	
145	Public	chapter Drafts (Voluntary)	ORA-5 - Fails to address sector-specific market opportunities/advantages in addition to market barriers Many public buildings are have stable, long-term ownership and can have longer time horizons for capital investment	This comment applies to SCE.
146	Public	chapter Drafts (Voluntary)	ORA-6 (page 28-29) Intervention strategies should address specific market barriers and focus on the most important barriers first Example: SCE intervention strategies (on pp.28-29) are just a list of current programs. “Core program” is not an intervention strategy, it is an administrative category.	This comment applies to SCE.
147	Public	chapter Drafts (Voluntary)	ORA-7 (re page 16-22) Contains lengthy sections that do not ‘push the narrative forward’ (• Items included in the early sections should set up the actual intervention strategies, rather than a catalogue that is largely unused in the actual planning sections Example: MT discussion on pp.16-22 develops a laundry list of possible market barriers, but only three are included in the actual intervention plan discussion and these are vague/high level and do not actually use the insights in the preceding discussion	This comment applies to SCE.

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148	Public	chapter Drafts (Voluntary)	ORA-8 (re page 4, 12) Assertions of fact or policy need to be fully supported by evidence and citation, not simply opinion • Example: assertion on p.4 that Industry Standard Practice should rarely apply to the public sector has no citation or evidence to support • Example: assertion on p.12 that the vast majority of low-hanging fruit has been captured "as seen in recent impact evaluations and CPUC dispositions" fails to cite a single study • Example: assertion on p.12 that spillover is not quantified ignores an ED evaluation study in progress that aims to quantify spillover Example: assertion on p.12 that public sector GHG or sustainability mandates reduce PA attribution for program influence fails to cite any evidence that this is current practice.	This comment applies to SCE.
149	Public	chapter Drafts (Voluntary)	ORA-9 (re page 15-22) Studies that are referenced should be cited accurately and use best available recent information • Example :reference to Navigant IP study on p.15 says the study had "very few recommendations for areas under SCE control" is factually inaccurate; the study had many recommendations that are pertinent to SCE territory Example: in discussion of market transformation on pp.16-22, SCE cites a 1996 paper on market transformation produced under an entirely different regulatory structure but fails to cite and discuss the 2013 ED MT white paper written by some of the same authors.	This comment applies to SCE.

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150	Public	Statewide Admin Discussion	Notes page 8 - Currently, we don't have a program implementer for our [UC] partnership. I see no value in introducing a program implementer. I'd like to know more about the process for introducing program implementer for our partnership.	This comment applies to SCE.
151	Public	Chapter Drafts (Voluntary)	Notes page 21 - Comment (from ED): Primary focuses on downstream strategies and tactics. The Decision identifies that Statewide programs should be designed to achieve market transformation. SDG&E is tentatively assigned Statewide administrators for non-residential and residential HVVAC. Where will Statewide strategies appear in this BP?	This comment applies to SCE.
152	Public	Chapter Drafts (Voluntary)	Notes page 22 - With regard to bundling, we want to make sure PAs make room for smaller implementers. Hopefully smaller contractors will also have a voice.	This comment applies to SCE.
153	Public	Chapter Drafts (Voluntary)	Notes page 22 - • The draft chapter can be made shorter. What is the pitch? Why should ratepayer dollars be used toward public sector? • Regarding goals (p. 24): you need to have specific goals that are relatively concrete so we can see if you are achieving them.	This comment applies to SCE.

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			• Budgets don't appear to align with 10 year plan for sector (p. 23). Budgets are stable but should be declining. There is a disconnect between increasing programs and budgets. Assertions need to be fully supported – not just simply stated (example, p. 4).	
154	Public	Chapter Drafts (Voluntary)	Notes page 22 - I also agree there was some content in the draft chapter that was unnecessary. You could skim through definitions. • Goals are not totally clear. • Maybe forgot column on baseline on table (at p. 34?). I can't really tell what you are doing here. This raises the issue of what is the right level of information necessary to relay what PA is doing and where it is going?	This comment applies to SCE.
155	Public	Chapter Drafts (Voluntary)	Notes page 23 - One of ORA's expectations will be a bottom up budget including detailed description of continuing programs as they are, internal staff and administration and overhead. Program budgets need to get built from bottom up every once in a while. Annual advice letters will address incremental changes based on what has transpired from bottom up budget. Bottom up budgets will follow for BP sector chapters. It has been a really long time since utilities provided accounting for what makes $1billion/year. Annual	This comment applies to SCE.

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			advice letters are not enough.	
156	Public	Chapter Drafts (Voluntary)	Notes page 23 - I'd like to second comments of CPUC that BPs should start with market estimate from available data. First, always start with an estimate of what the market is. There are other evaluations besides Navigant studies. Second, PAs need to set up what the target market is. Third, PAs need to make an overarching statement about what kind of investment is required to capture the target market and what the benefits will be. If you go through this process, you will see that Southern California Edison public sector program is off by 1-2 orders of magnitude. We very much support comments of the Coalition for Energy Efficiency about draft chapter lacking mandates and specifics about what is required to be included.	This comment applies to SCE.
157	Public	Chapter Drafts (Voluntary)	Notes page 23 - I have three high level comments: • I didn't see comments about gas usage. There needs to be a partnership between the electric and gas company in the public sector. • Page 4: commercial sector is not bound – needs factual basis to support assertions p. 25: for all BPs, when you	This comment applies to SCE.

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			make your projections of savings, need to clarify if gross or net, annual or cumulative.	
158	Public	Chapter Drafts (Voluntary)	Notes Page 24 - see extensive list of recommendations from the state of California on this page of the notes.	This comment applies to SCE.
159	Public	Chapter Drafts (Voluntary)	Notes page 24 - p. 37 includes a large list of to dos. IOU/PA coordination should be customer driven partnerships, not market driven programs. • When you have institutional partnership, Statewide process is more difficult. I would like to know why institutional partnerships were included in Statewide. This doesn't work with institutional partnerships.	This comment applies to SCE.
160	Public	Chapter Drafts (Voluntary)	Draft page 25 - ZNE energy goals for state buildings has not been acknowledged at all in this draft chapter. That should be added. There should be coordination with C&S in advancing that goal. It is problematic to leave this issue out of draft chapter.	This comment applies to SCE.
161	Public	Chapter Drafts (Voluntary)	Notes page 25 - Curiously missing from SCE's draft chapter is any reference to lessons learned from SoCalREN experience on buildings	This comment applies to SCE.

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162	Cross Cutting: C&S	Codes & Standards	For all IOU PAs C&S chapters: Recommended Action • In view of the observations and comment above we recommend the IOUs integrate product reach standards as a strategy into their Business Plans We specifically recommend consideration of dynamic reach standards to drive innovation on an ongoing basis	Not applicable to SoCalREN.
163	Cross Cutting: C&S	Reach Codes	Suggestion made to consider process of rolling out new programs before setting corresponding reach codes. It may be easier to set codes after people have participated in programs and learned about benefits of new technology.	Not applicable to SoCalREN.
164	Cross Cutting: C&S	Strategies	C&S discussions have debated that code savings are being stranded because the code is not strict enough and they urge that code standards be pushed forward. At the same time, PAs in other CC subcommittee meetings and other venues argue that standards are not being implemented by customers because they are too expensive. If codes aren't being met, why are PAs then pushing for more strict codes?	Standards are being pushed forward to achieve the 2020 and 2030 goals, regardless of implementation or cost-effectiveness. C&S programs help stakeholders better implement codes and achieve savings, and also push for advanced adoption of codes to prepare stakeholders for future mandates and to establish LGs as leaders.
165	Cross Cutting: C&S	C&S Compliance Metrics	Achieving full compliance with Title 24 continues to be a significant challenge for the California building industry. This challenge will only increase as the standards evolve to meet State ZNE targets. PA developed compliance assistance tools are marginally helpful, but more effective solutions are available through development channels not directly managed by the PAs. Performance metrics for compliance improvement should use A/B testing of building intervention practices such that 1) as-built outcomes can be compared and modeled, and 2) longer-term,	Further details can be found in Section F of SoCalREN's Cross-Cutting: Compliance Enhancement C&S chapter

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			metered energy use of the A/B groups can be compared. Due to the overall length of most design and construction timeframes, any RCT applied to compliance improvement should allow for multi-year implementation and analysis cycles.	
166	Cross Cutting: C&S	California Energy Commission Objectives	The PA business plans should include the following objectives to support the California Energy Commission's building and appliance standards: (1) Appliance standards advocacy to reduce plug load energy consumption in both residential and commercial buildings; (2) Building standards advocacy to meet the state goal of ZNE commercial buildings by 2030; (3) Building standards advocacy for existing building "reach codes" that can be published in the California Building Code, Part 11 and adopted by local jurisdictions.	Addressed in Section A and throughout the SoCalREN Cross-Cutting: Compliance Enhancement C&S chapter