Inland Regional Energy Network (I-REN)

2021-2025

Energy Efficiency Business Plan

WRCOG | CVAG | SBCOG

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WRCOG Western Riverside Council of Governments

CVAG

sb cog San Bernardino Council of Governments

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Inland Regional Energy Network Business Plan

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I-REN Mission

To actively participate in California's Clean Energy initiatives and build a stronger clean energy economy and community.

Locally Administered and Delivered EE Programs

> *"RENs also have the unique opportunity to be able to leverage not only multiple local government entities into a single program delivery channel, but they also may be able to utilize funding from multiple sources to deliver more comprehensive and holistic programs, especially to hard-to-reach customers."*[1]

Initiated in 2019, the proposed Inland Regional Energy Network (I-REN) is a consortium of the Western Riverside Council of Governments, Coachella Valley Association of Governments, and San Bernardino Council of Governments that serve the counties of San Bernardino and Riverside. These partners have joined together to submit this Business Plan in order to establish locally administered, designed, and delivered energy efficiency (EE) programs.

Historically, the Inland Empire has faced challenges in receiving equitable opportunities to participate in energy efficiency and advanced energy. As dedicated representatives of local government, the I-REN consortium members bring established connections from their work serving this region and can provide support to fill gaps in existing energy efficiency services. I-REN will establish a locally administered regional energy network to ensure ratepayers in this region can become active participants in meeting California energy efficiency goals.

In addition, I-REN sees a critical need to accelerate action in the region, catalyzing current local government activities related to climate change through targeted and tailored energy efficiency programs, layering other efforts to increase impact. I-REN will focus their first Business Plan on assisting and empowering local government—county and municipal—and building the professional workforce. To that end this Business Plan will cover three main sectors: Public Sector, Codes and Standards, and Workforce Education and Training. They anticipate in future filings to grow into residential and commercial offerings as necessary to fill gaps and needs in the region.

Collectively known as the Inland Empire, the I-REN service area includes 11% of California's population, but its geographic arrangement, population, and distance from the state's major metropolitan areas result in inconsistent and insufficient service to the region. Further, the region is distinct from other southern California areas—particularly Los Angeles—with its own robust character, culture, and identity. As a collective, the councils of government that make up I-REN have implemented energy efficiency services locally for the better part of a decade, and have established the skill sets, knowledge, and networks to identify and address the unique challenges and opportunities head-on. The issues and concerns of the region require a consistent local presence to help transition to a clean economy and to reduce energy use effectively.

[1] California Public Utilities Commission (CPUC), Decision 19-12-021, December 5, 2019, page 18.

About I-REN

I-REN is a coalition of three councils of government, the Western Riverside Council of Governments (WRCOG), the Coachella Valley Association of Governments (CVAG), and the San Bernardino Council of Governments (SBCOG), encompassing San Bernardino County, Riverside County, and all of the jurisdictions within the region. Together, I-REN represents 52 cities, 78 unincorporated county areas, 17 tribes and 11% of the population of California.

WRCOG: WRCOG is a joint powers authority whose purpose is to unify Western Riverside County so that it can speak with a collective voice on important issues that affect its members. Representatives from 18 cities in Western Riverside County, the County of Riverside, and the Eastern and Western Municipal Water Districts have seats on the WRCOG Executive Committee, the policy-setting Board for the Agency. WRCOG currently operates a Local Government Partnership (LGPs) and has been successful over the years in energy efficiency retrofit projects and education for both residential and commercial customers. Since its inception in 2010, the Partnership has achieved savings of over 16 million kWh and over 9,000 therms.

CVAG: CVAG is the regional planning agency coordinating government services in the Coachella Valley. By providing solutions to the common issues of the local governments and tribes that are its members, CVAG promotes a better quality of life and balanced growth for residents of Central and Eastern Riverside County. CVAG secured Strategic Plan funding and implemented the "Green for Life" program, which helped seven cities and one tribe to reach ambitious energy savings goals. Through this grant, participants completed greenhouse gas inventories, Climate Action Plans, Energy Action Plans, and much more. The Green for Life program was run in tandem with the Desert Cities Energy Partnership (DCEP) to achieve further energy savings. DCEP included representatives from 10 CVAG member cities, one tribe, and representatives from Southern California Edison (SCE) and Southern California Gas (SoCalGas). While in operation, the 10-year DCEP program achieved savings of 5.2 million kWh and 22,000 therms. CVAG still maintains a strong working relationship with SCE and SoCalGas.

SBCOG: With membership comprised of representatives from 24 cities and the San Bernardino County Board of Supervisors, SBCOG focuses on regional matters and provides a forum to reduce duplication of effort and share information to advocate for local communities. SBCOG / San Bernardino Regional Energy Partnership (SBREP) received strategic planning funding to implement benchmarking for cities in the partnership with the goal of seeing where city facilities ranked amongst others in the region of similar size/operations. Since it was formed in late 2015, SBREP has reduced more than 3 million kWh and helped participating cities receive more than $1 million in incentives combined. To date, 13 cities have participated in SBREP.

WHAT IS A COUNCIL OF GOVERNMENT (COG)?

COGs are voluntary associations that represent member local governments, mainly cities and counties, to provide cooperative planning, coordination, and technical assistance on issues of mutual concern that cross jurisdictional lines.

COGs serve to develop consensus on many issues that need to be addressed in a subregional or regional context. If properly structured, COG duties complement and do not duplicate jurisdictional activities, and unify members on matters of mutual concern, but are independent of the responsibilities traditionally exercised by the individual members within their own communities.

Jurisdictions typically agree to form COGs following discussion and negotiation on common goals and objectives, which are usually consummated by execution of a Joint Powers Agreement (JPA). In most cases, adoption of a JPA is specifically authorized by state law. In California, JPA authority is granted under Section 6500 et. seq. of the Government Code.

I-REN Organization

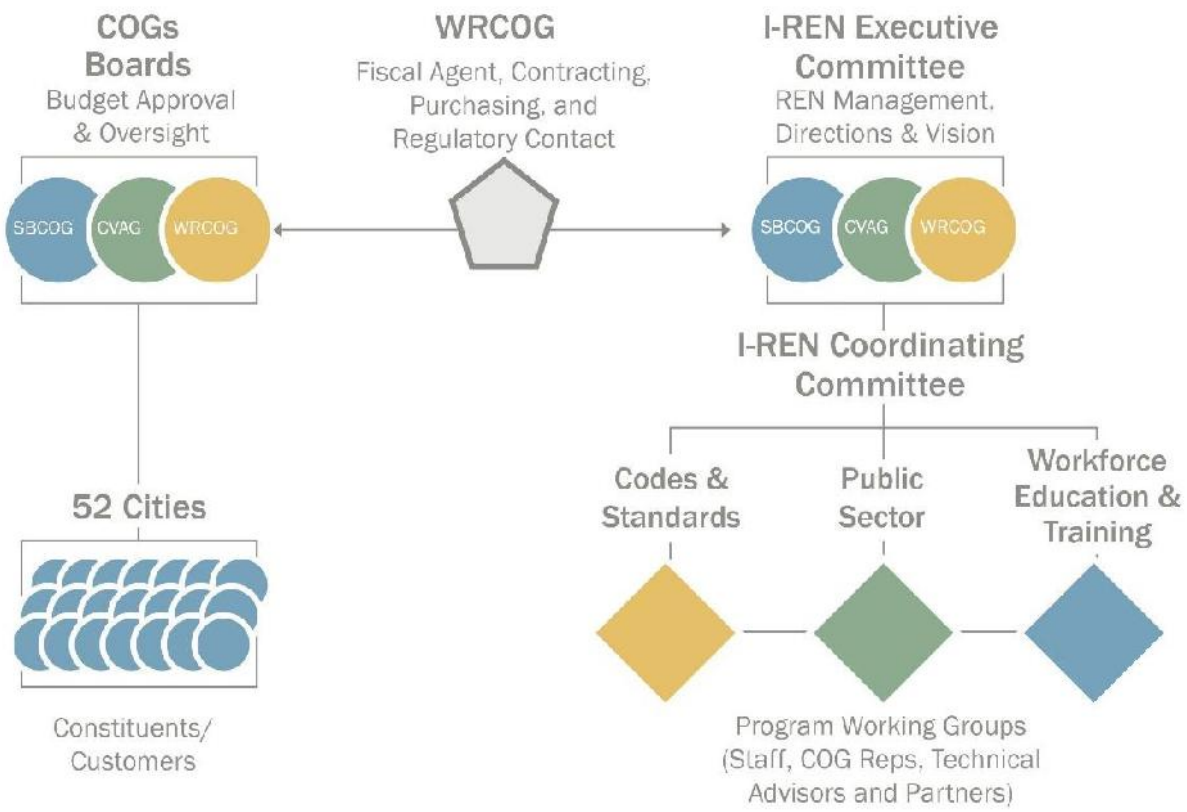

Figure 1-1. I-REN Governance

The I-REN organization builds on the robust and active Committee structure currently used for the three COGs (also referred to herein as the **I-REN governing agencies**). The graphic in Figure 1-1 illustrates the organization and the roles.

The COGs each have an Executive Committee which sets policy and oversees the budgets for the COGs. For I-REN, they will provide an oversight role to ensure accountability and service to the member cities. Representatives from the cities, the County Board of Supervisors, and the Municipal Water Districts collectively have seats on the Executive Committees for WRCOG, CVAG, and SBCOG. By working together through the committee structure and utilizing resources, the COGs are cost-effective by reducing duplication of effort and sharing information, enabling strong advocacy and strengthening the Region's standing.

WRCOG will serve as the fiscal agent, purchasing and contracting entity, and primary regulatory contact manager for I-REN. They will not have more decision-making power than the other COGs but will work through the committee structure to ensure equal engagement for the entire region.

Representatives from each COG will in turn be represented on the I-REN Committee and have equal power in I-REN decision making and management. The I-REN Committee will set all strategic direction,

vision, and specific policies related to the operation and management of REN activities, and will jointly consider regulatory issues.

The I-REN Committee will be advised by three programmatic working groups composed of I-REN staff, COG representatives, technical advisors, and partners. The Program Working Groups will focus on program design, implementation, marketing and outreach, and other day-to-day implementation activities. They will provide information, program proposals, and program tracking and monitoring reports to the I-REN Committee on a regular basis to ensure smooth operations and to address any issues or concerns that may arise.

I-REN Vision & Goals

The I-REN governing agencies have collectively developed a vision and three guiding goals to help shape its Business Plan, its future, and anticipated activities:

VISION

I-REN's vision is to connect residents, businesses, and local government to a wide range of energy efficiency resources to increase energy savings and equitable access throughout San Bernardino and Riverside counties.

GOAL 1.

Build capacity and knowledge to enable local governments to effectively leverage energy efficiency services and to demonstrate best practices. (Public Sector Chapter)

GOAL 2.

Ensure there is a trained workforce to support and realize energy efficiency savings goals across sectors. (WE&T Chapter)

GOAL 3.

Work closely with local building departments and the building industry to support, train, and enable long-term streamlining of energy code compliance. (Codes and Standards Chapter)

Definition of Market

The Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA)[2], which includes the counties of Riverside and San Bernardino, makes up approximately 11% of California's total population, but their square mileage comprises approximately 17% of California's land area.

While the Los Angeles and San Francisco MSAs are the largest in the state by population, the Riverside-San Bernardino-Ontario MSA is a very close third – yet it has had historically low participation in energy efficiency programs and has been historically underserved by utility energy efficiency programs. This may be due in part to its distance of two- to three-hours to the Los Angeles MSA – many utility-run programs are administered from within the Los Angeles MSA, and naturally the program implementers focus their resources locally.

I-REN is excited for the opportunity to administer regionally appropriate resources locally within the third-largest MSA in the state and by leveraging existing local relationships the I-REN governing agencies are best suited to serve their respective communities.

- Riverside County: Population 2,189,641 (2010 Census), covering 7,208 square miles; population density of 304 people/square mile
- San Bernardino County: Population 2,035,210, covering 20,105 square miles (largest county in the United States by area); population density of 101 people/square mile

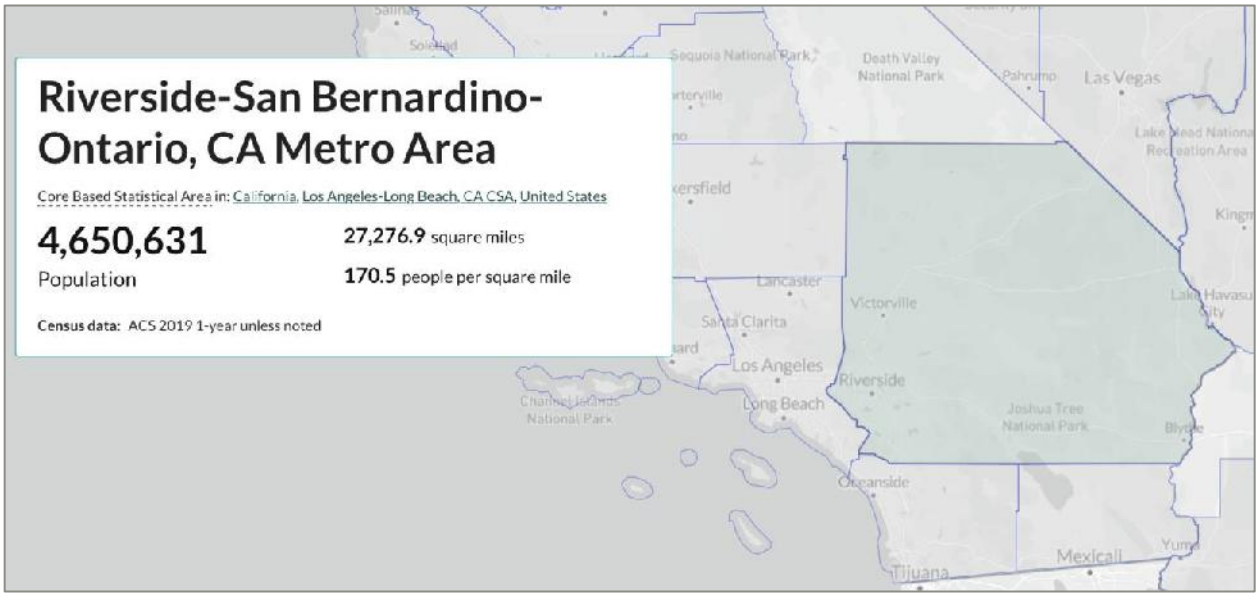

Figure 1-2. I-REN Service Territory Map[3]

[2] "Metropolitan Statistical Area (MSA) is a geographical area with a population of 50,000 or more, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties." Definition Provided by the California Employment Development Department.

[3] Source: https://censusreporter.org/profiles/31000US40140-riverside-san-bernardino-ontario-ca-metro-area/

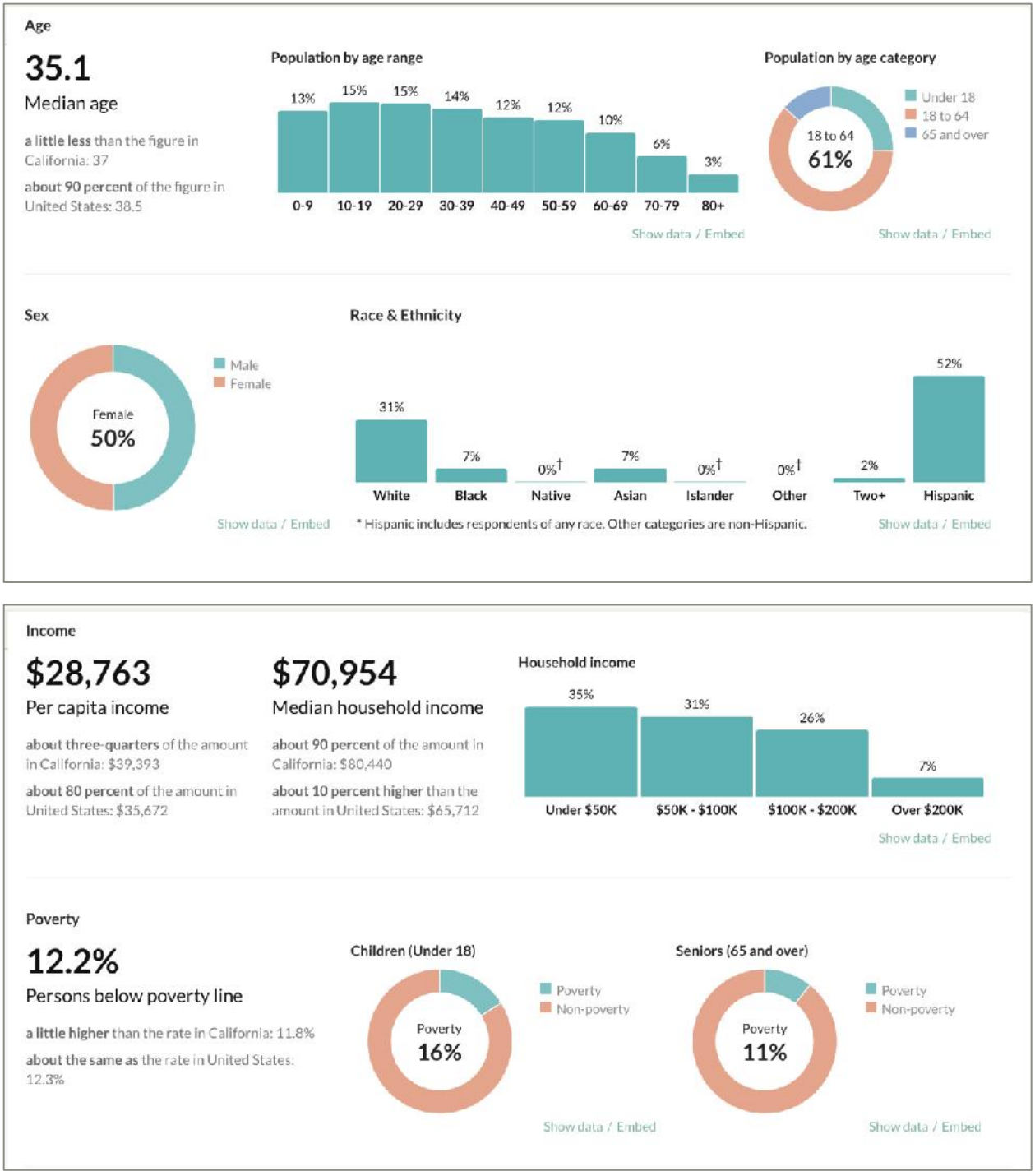

Figure 1-3. Riverside-San Bernardino-Ontario MSA Demographic & Income Data[4]

[4] Source: https://censusreporter.org/profiles/31000US40140-riverside-san-bernardino-ontario-ca-metro-area/

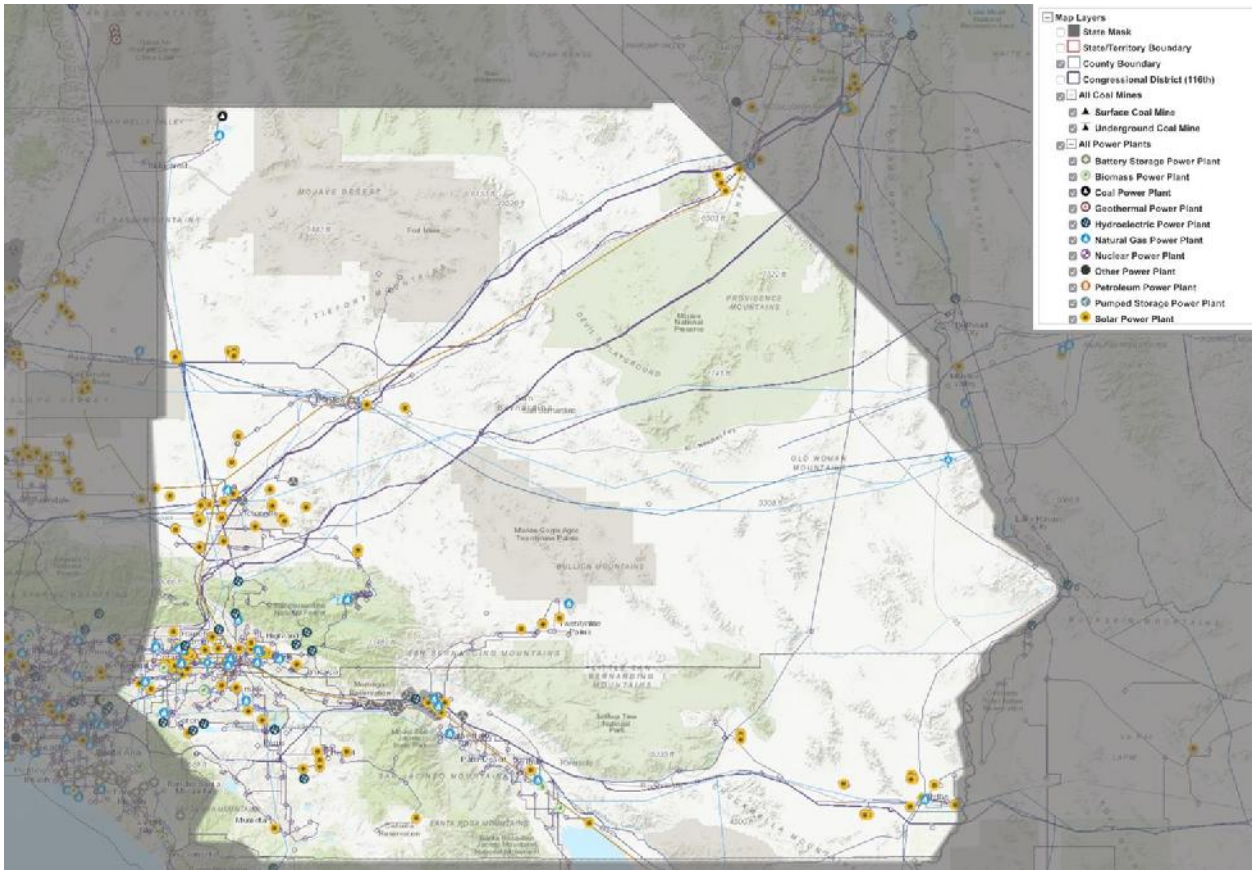

Figure 1-4. I-REN Territory Energy Infrastructure[5]

[5] Source: Energy Information Administration (EIA) https://www.eia.gov/state/?sid=CA

Addressing I-REN Regional EE and California's Energy Needs

The I-REN region is a diverse geography with mountains, deserts, distinct urban areas, tribal areas, and vibrant communities and towns. The region is served by SCE and SoCalGas and is included in the SoCalREN territory. While there are multiple Program Administrators (PAs) in the region, the actual services to local communities are limited and are not meeting the needs of this growing area. The reduction of LGPs in particular is impacting the ability of the local jurisdictions to aggressively reduce energy use in local government buildings and build the capacity to tackle the State's greenhouse gas (GHG) reduction goals.

REGIONAL CHALLENGES

Include but are not limited to:

- Large territory with geographically isolated rural and frontier areas
- High poverty rates, with unemployment exacerbated by COVID-19
- Lack of accessible workforce training resources, especially for disadvantaged workers
- Insufficient resources to serve DACs and tribal lands
- Extreme climate change impacts with increasingly hot and dry weather

The illustration in Figure 1-4 from Energy Information Administration (EIA) is a good demonstration of how the Inland Empire is used as a bridge for services to the large Los Angeles MSA, with pipelines, powerlines, etc. crisscrossing the territory. State goals included in SB 350, AB/SB32, and others all point to the need to increase the services and opportunities for energy savings in the inland areas of California. In Summer of 2020, the California Independent System Operator (CAISO) and SCE issued multiple heat wave warnings and flex alerts, asking all energy consumers to reduce usage during stressful times on the electricity grid. Coupled with massive fire events across the state, it is even more important for I-REN to implement and begin assisting its communities, and thus, the State.

The region's continued growth and increasingly hot and dry weather will likely result in an overall increase in energy consumption in the coming years. In addition, the I-REN territory has large sections of the region that are characterized as disadvantaged communities (DACs) as defined by SB 535, tribal lands, or with a population with a median income 60% below the statewide median, as seen in the maps and data on the pages that follow. These factors contribute to a substantial need for focused, consistent, local engagement to serve these communities and to help reduce energy consumption over time.

A combination of workforce limitations, relative geographic isolation and low density make large parts of the I-REN territory difficult to serve. However, the need to serve the population is real. The I-REN region represents 11% percent of the State's population and through ratepayer fees customers in both urban and rural areas of the region contribute to the funding the investor owned utilities (IOUs) receive to provide energy efficiency services. Utility workforce education and training programs are nearly absent, and LGPs are being phased out, and local jurisdictions are facing increased pressures to put resources and attention to other major issues from housing to job development.

I-REN has coordinated with the other PAs in the region, and consulted with the other RENs in the state, to ensure that this Business Plan is positioned to fill gaps, provide services appropriate to a REN, and address needs that cannot or are not being addressed by other PAs. As a new program implementer, I-REN aims to scale its role and goals appropriately to match its strengths and fit the needs of its constituents to ensure that it offers the region and the California Public Utilities Commission (CPUC or Commission) a portfolio of programs that has measurable value in increasing energy savings, community resilience, and long-term economic and environmental sustainability.

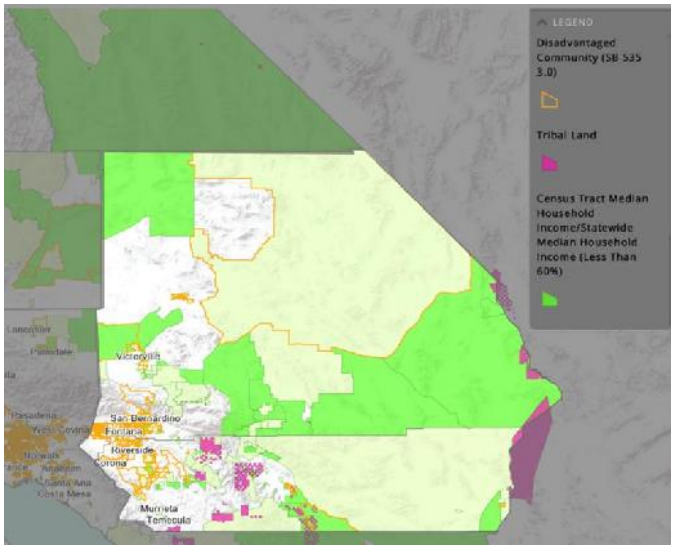

Figure 1-5. Disadvantaged communities and tribal lands in I-REN Territory
Source: CEC GIS Portal

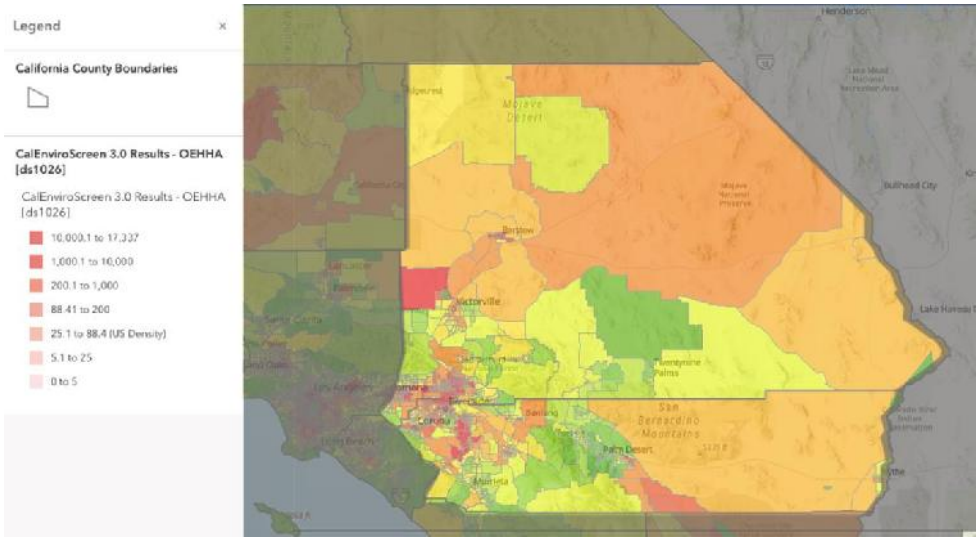

Figure 1-6. CalEnviroScreen 3.0 Results for I-REN Territory
Source: CalEnviroScreen 3.0

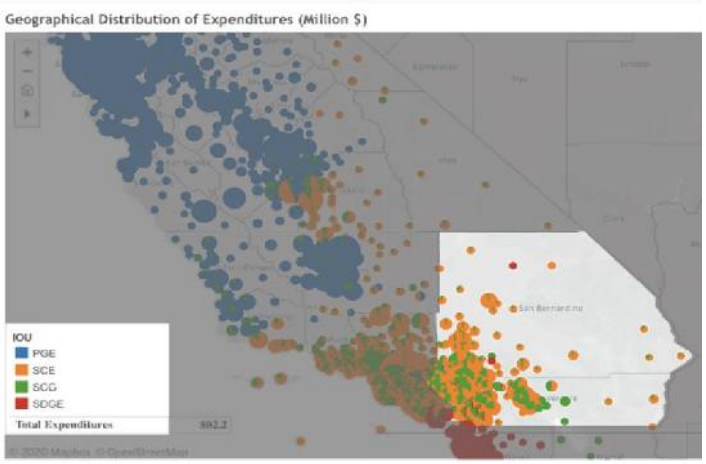

Figure 1-7. Geographical Distribution of Energy Efficiency Expenditures
Source: EESTATS Website, Geographic Distribution of Expenditures, 2016 data set

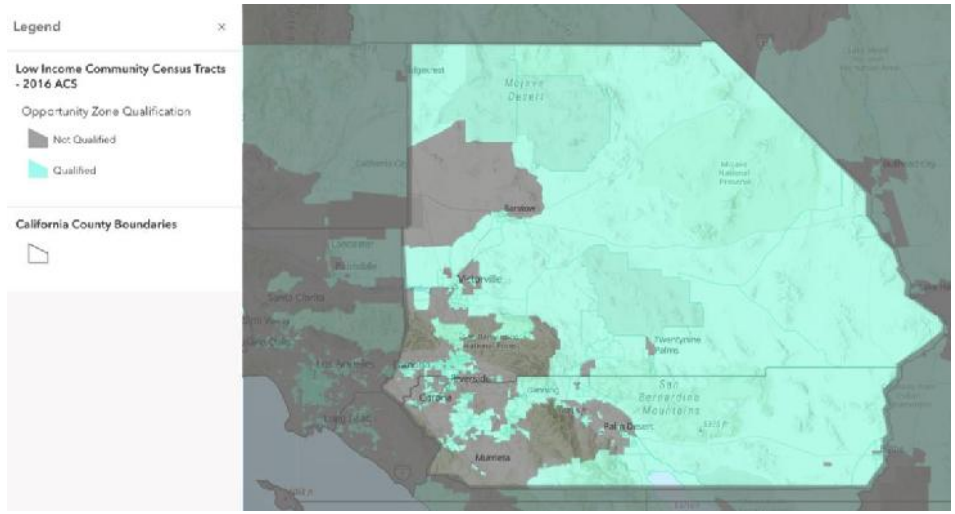

Figure 1-8. Low Income Opportunity Zones in I-REN Territory
Source: Low Income Community Census Tracts - U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

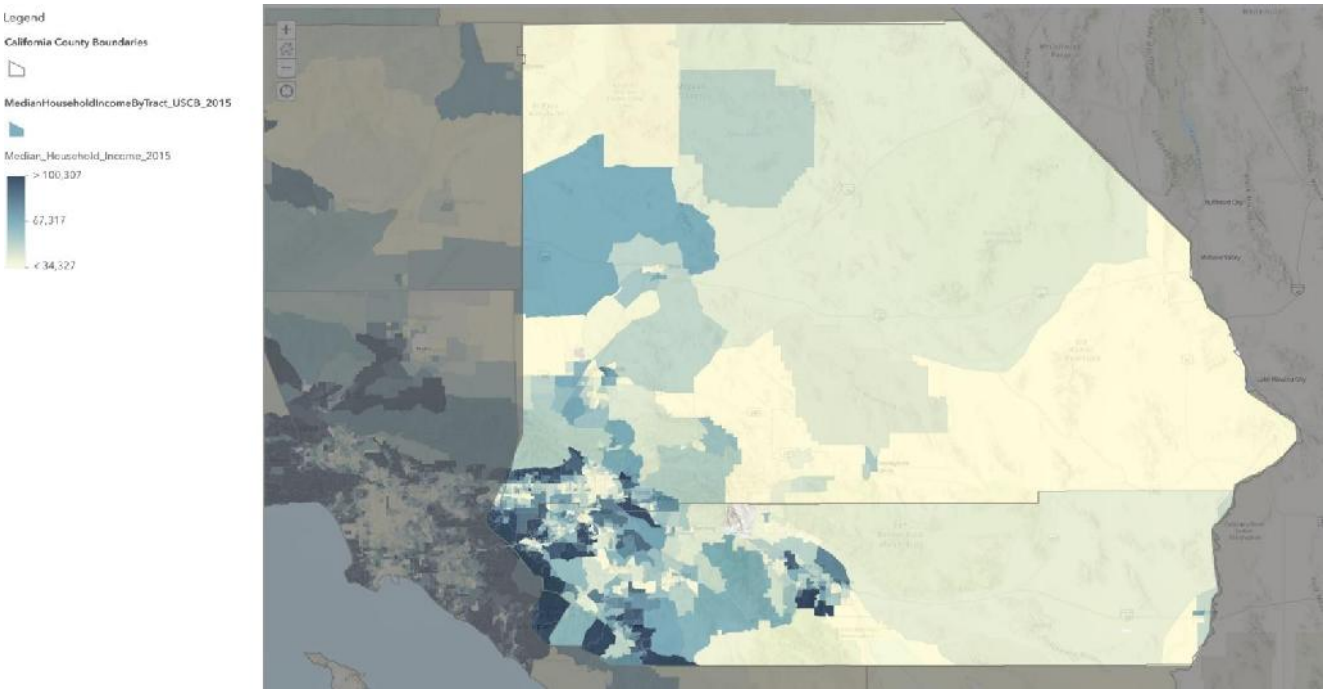

Figure 1-9. Median Household Income in I-REN Territory
Source: United States Census Bureau, 2015

Table 1-1. Inland Empire Cities & Percentage of Population Living in Poverty[6]

San Bernardino County		
Cities	**Number of Cities**	**Rate of Poverty**
Chino, Chino Hills, Grand Terrace, Rancho Cucamonga, Redlands, Upland	6	0% - 10%
Apple Valley, Big Bear Lake, Colton, Fontana, Hesperia, Highland, Loma Linda, Montclair, Ontario, Rialto, Victorville, Yucaipa, Yucca Valley	13	10% - 20%
Needles, San Bernardino, Twentynine Palms	3	20% - 30%
Adelanto, Barstow	2	30% - 40%
Riverside County		
Cities	**Number of Cities**	**Rate of Poverty**
Beaumont, Canyon Lake, Corona, East Vale, Indian Wells, Lake Elsinore, Menifee, Murrieta, Norco, Temecula	10	0% - 10%
Calimesa, Hemet, Indio, Jurupa Valley, La Quinta, Moreno Valley, Palm Desert, Palm Springs, Perris, Rancho Mirage, Riverside, San Jacinto, Wildomar	13	10% - 20%
Banning, Blythe, Cathedral City, Coachella	4	20% - 30%
Desert Hot Springs	1	30% - 40%

[6] Husing, Ph.D., John E., Economics & Politics, Inc. *Inland Empire Quarterly Economic Report: Inland Empire City Profile 2020.* October 2020. Available online.

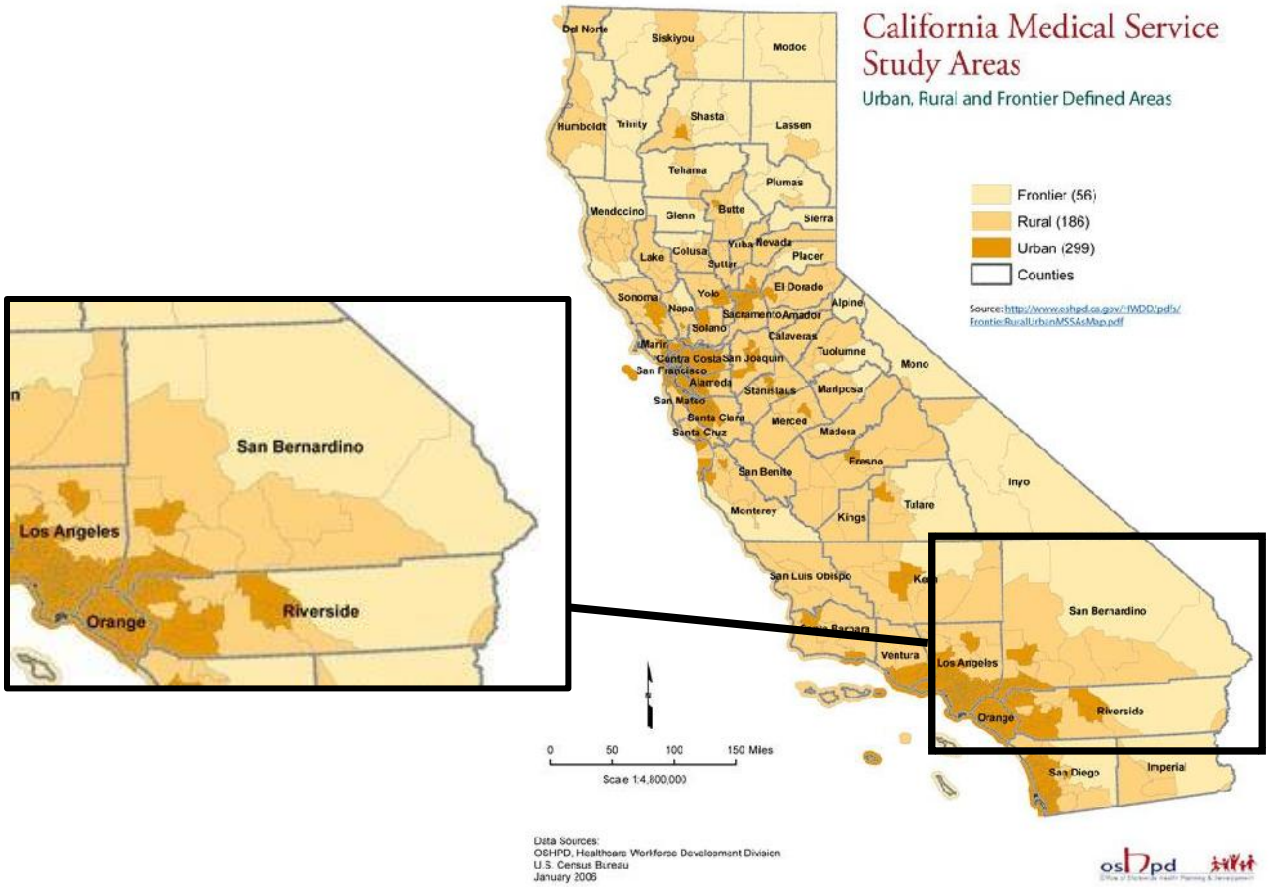

Figure 1-10. Urban, Rural and Frontier Defined Areas in I-REN Territory

Business Plan Sectors

In developing this Business Plan, I-REN aims to document its goals, strategies and tactics to increase the access and availability of energy efficiency services to its constituents and ensure value to the ratepayers in the region and the state. The plan consists of three main sectors, which align with the major I-REN work areas and are interrelated in their focus on supporting local jurisdictions and the energy efficiency workforce.

PUBLIC SECTOR

The I-REN Public Sector offering strives to establish robust and comprehensive wrap-around services for the local jurisdictions in the I-REN territory. Briefly, this includes Strategic Energy Planning to help identify opportunities, strategic investments in municipal and community buildings, establishing a Building Upgrade Concierge (BUC) service with digital and person-to-person technical assistance, and incentives for meter-based savings (Normalized Metered Energy Consumption or NMEC) achieved over three to five years. In their role as organizations dedicated to local government, the I-REN governing agencies have developed extensive networks and expertise with key partners in the public sector across

the region, and plan to leverage this history to continue facilitating energy efficiency upgrades. With 52 cities, 78 unincorporated county areas, and 17 tribal areas, there are significant needs. Further, many of these local governments tend to be under-resourced and lack the capacity, knowledge, and ability to effectively update their buildings. This will fill a gap in energy efficiency services by existing utilities, community choice aggregators (CCAs), or RENs.

CODES & STANDARDS: CROSS-CUTTING SECTOR

I-REN will implement a well-rounded set of activities related to supporting improved codes and standards compliance and enforcement through training, outreach, and technical assistance. The I-REN region includes many smaller jurisdictions that face significant challenges with codes and standards enforcement and compliance. The local building department staff in these jurisdictions are key to realizing energy savings from implementation and enforcement of codes and standards. For that reason, I-REN proposes to focus much of its C&S Sector work on empowering and supporting these local building department staff to be energy efficiency leaders in their own communities, through improved communications, protocols, and systems for increased efficiency. I-REN sees an opportunity to leverage its strong network with public sector staff to offer resources and support, while also providing targeted training and outreach to support building and construction industry actors to foster increased compliance with codes and standards.

WORKFORCE EDUCATION AND TRAINING: CROSS-CUTTING SECTOR

The I-REN team will work closely with local providers, as well as coordinating with other industry leaders statewide to bring more comprehensive, equitable and targeted training opportunities to the region. In addition, I-REN will work to improve workforce development and help enhance the availability of skilled workers and connections with businesses. Due in part to its geographic distance from major MSAs, the I-REN service area has historically had limited engagement in necessary workforce development opportunities. There is substantial demand but not a strong enough pool of skilled workers to meet that demand. The majority of IOU energy efficiency (EE) workforce training has typically taken place in the Los Angeles area or in border cities distant from many workers. I-REN sees an opportunity to strengthen its workforce by delivering trainings locally and using regional connections, especially with the Community Colleges and California State Universities (CSUs), and knowledge to engage and build workforce networks. Through these activities I-REN can help bridge the divide between training providers, job seekers, and employers to support the growth of a clean energy workforce and economy in the Inland Empire.

Purpose of Business Plan

The three primary agencies that constitute I-REN are pursuing the development of a new REN driven by the need to create equity and access in the region to energy efficiency programs. The Commission has recognized the value that local governments bring to energy efficiency program delivery and with the development of the REN model has provided an essential tool for local governments to leverage their expertise, networks, and deep connections to their communities to help reach state energy and climate goals.

While current energy data is not available by county, information from the CPUC's EESTATS website illustrates the lack of energy efficiency dollar expenditures in the region (Figure 1-7).

Similar to the Central Coast and the relatively new 3C-REN, Central/Inland California has historically been difficult to serve through current channels and will remain so unless there is an entity to directly serve and tailor programs for the region. As illustrated in the chart below, the I-REN region represents 4.5 million people and over 27,000 square miles, a substantial region with a need for its own independent REN dedicated to serving its communities.

Table 1-2. REN Population and Service Area Comparison

Organization	Counties	# of Cities	Total Population	Service Area (Sq. Miles)	Population per Sq. Mile
BayREN	9	101	7,753,023	6,907	1,123
3C-REN	3	25	1,581,504	7,877	201
SoCalREN	12	220	20 Million +	50,000 +	400 +
I-REN	2	52	4.5 Million	27,263	170

Increasing resources and technical services is essential to the health and success of the region. The I-REN region is at a disadvantage due to climate impacts that will continue to worsen year over year. The Inland Empire already has a greater number of cooling degree days (CDD) than most of Southern California and these are projected to increase by more than a month of additional CDD each year over the next decade. According to Cal-Adapt, the I-REN counties will experience an average of 41 additional cooling days per year in the next ten years (for a total of 304 CDD per year on average), compared to 1995-2005 data.

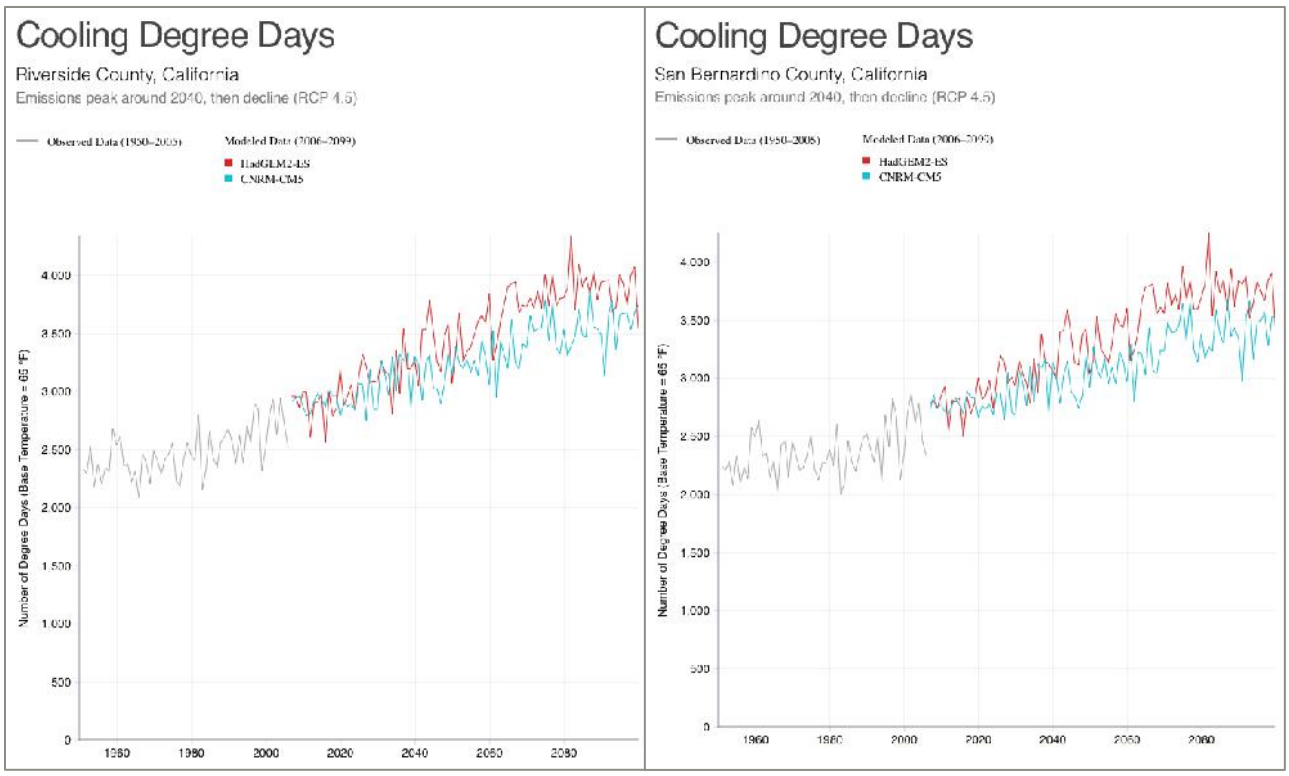

Figure 1-11. Cooling Degree Days in the I-REN Counties

Riverside and San Bernardino County Cooling and Heating Days are increasing substantially. Blue line is cooling days, red line is heating days. Source: Cal-Adapt

Overview

Supporting California's Energy Goals & Needs

The I-REN Business Plan has been informed by a range of state and regulatory policies and legislation. The following is a summary of the key policies and legislation that are considered and incorporated into this Business Plan.

Strategic Plan and Associated Action Plans

Senate Bill (SB) 350 Supporting Plans: Several plans have been developed to define and better outline how to achieve the goals required in SB 350 specific to doubling energy efficiency from existing buildings and for addressing barriers to low-income communities. This includes California Energy Commission (CEC) Staff report "Framework for Establishing the Senate Bill 350 Energy Efficiency Savings Doubling Targets," CEC report "Senate Bill 350: Doubling Energy Efficiency Savings by 2030," and the CEC "SB 350 Low-Income Barriers Study Recommendations." I-REN has reviewed these documents and considered their recommendations and insights into this Business Plan.

Existing Buildings Energy Efficiency (EBEE) Action Plan: The EBEE Action Plan provides detailed strategies and tactics for increasing energy efficiency in all existing buildings, including all residential buildings. The EBEE Action Plan outlines a series of priorities for local government leadership in energy efficiency, codes, and workforce that have been considered and incorporated when appropriate into this Business Plan.

California Energy Efficiency Strategic Plan (CEESP) and the Big Bold Goals: The 2011 CEESP outlines bold goals for achieving Zero Net Energy (ZNE) in all new residential buildings beginning in 2020 and directs program administrators to move away from single measure programs to deeper whole-house programs.

State Legislation and Goals

SB 100: The bill signed by Governor Brown calls for utilities to procure 60 percent renewable energy by 2030 and 100 percent carbon-free energy by 2045, and relevant to I-REN, to double the energy efficiency of existing buildings. The law makes California the largest jurisdiction to legally commit to clean energy. The goal to double energy efficiency for existing buildings will be a substantial lift and require coordination and collaboration with all PAs in the region.

Assembly Bill (AB) 1482; SB 246; SB 379; AB 2800: A range of state laws calling for preparation of state climate adaptation strategy, establishing the Governor's Office of Planning and Research (OPR) Integrated Climate Adaptation and Resiliency Program, requiring local governments to include adaptation and resiliency strategies in general plans, and requiring state agencies to account for climate change when planning new infrastructure, respectively. I-REN is facing immediate impacts due to climate change and intends to leverage its EE portfolio to not just reduce energy consumption but to improve the resilience of the communities in the region.

AB 841: Authorizes a one-time redirection of unspent energy efficiency funds from IOUs to schools. Programs would be designed to upgrade heating ventilation and air conditioning (HVAC) systems, increase energy efficiency, and address potential lead in water fixtures. I-REN's Public Sector initiatives align well with this new law and I-REN will look to build an approach to support this effort either directly or in coordination with regional PAs.

AB 32/SB 32: California Global Warming Solutions Act of 2006 – AB 32/SB 32 are the leading legislation in California directing substantial reductions in carbon emissions. The latest extension of SB 32 mandates the reduction of GHG gas emissions to 40 percent below the 1990 levels by 2030. As a consortium of local governments, this bill is central to I-REN's engagement and interest in deep energy savings and GHG gas reductions in the built environment. Climate Action Plans being developed throughout the region will be able to leverage and enhance I-RENs activities, particularly local governments.

SB 350 Clean Energy and Pollution Reduction Act of 2015: The primary aspect of this law relevant to I-REN is the mandate to increase energy efficiency by 50 percent in existing buildings by 2030 and its focus on addressing the needs of disadvantaged communities more effectively in accessing energy efficiency and solar resources, and workforce development. This Business Plan's goals and strategies draw substantially from this mandate.

SB 1414: Requires increased code compliance and requirement for confirmation of appropriate permits for installation of new HVAC and heat pumps systems. I-REN will incorporate these requirements into its programs and work with building departments to establish successful approaches to implement this across the region.

Regulatory Requirements

> *"The decision authorizes the continued operation of existing RENs and invites new REN proposals as business plans to be filed with the Commission, if they meet certain additional requirements as defined in this decision. Any new REN will be required to demonstrate unique value in achieving state goals, represent more than one local government entity, to coordinate with existing program administrators in their geographic area prior to filing their business plan, to vet their proposal with stakeholders through the California Energy Efficiency Coordinating Committee (CAEECC), and to explain their REN governance structure in their business plan filing."*[7]

I-REN is offering this Business Plan as a formal proposal to form a REN as outlined by the CPUC. I-REN has reviewed the CPUC guidance and pertinent decisions and is confident that it is well suited and needed to ensure equitable and effective energy efficiency services and resources to the region. This Business Plan provides details regarding the existing gaps, and lack of services needed in the region as required by the CPUC's guidance. The following outlines the specific CPUC guidance and direction addressed in the Business Plan.

The CPUC in Decision 12-11-015, Decision 16-08-019, Decision 18-05-041, and refined in decision 19-1-021 the REN's activities to three areas:

1. Activities that utilities or CCA program administrators cannot or do not intend to undertake.
2. Pilot activities where there is no current utility or CCA program offering, and where there is potential for scalability to a broader geographic reach, if successful.
3. Activities serving hard-to-reach markets, whether or not there is another utility or CCA program that may overlap.[8]

> *"What we seek to avoid with "overlap" concerns, is duplicative administrative costs that may be associated with multiple administrators operating in one area, disproportionate funding concentrated on one geographic area, and/or multiple program administrators conducting similar activities. In addition, we want to avoid customers receiving confusing or multiple competing offers for the same type of measure or project."*[9]

I-REN has focused on these three criteria areas and the need to provide value for ratepayers in the development of this Business Plan. The I-REN governing agencies have worked for nearly 18 months coordinating, developing and refining the presented sectors to ensure they do not overlap and instead fill clear gaps, address hard-to-reach communities, and assess opportunities to pilot new ideas that could be scaled beyond the I-REN region.

[7] CPUC, Decision 19-12-021, December 5, 2019, page 2.
[8] CPUC Decision 19-12-021, December 5, 2019, page 31.
[9] CPUC Decision 19-12-021, December 5, 2019, page 24-25.

Specifically, I-REN has engaged in the following coordination activities:

- Met with SCE, SoCalGas, and SoCalREN to discuss proposed programs and received Letters of Commitment to Cooperate (included in Appendix C).
- Connected with and secured support letters from numerous cities across the I-REN territory, as well as county officials and other regional organizations such as Southern California Association of Governments and Western Community Energy (letters included in Appendix C).
- Presented initial Strategic Framework and the Draft Business Plan to the Full California Energy Efficiency Coordinating Committee (CAEECC), once in May 2020 and then again in December 2020.
- Regularly attended and participated in CAEECC and Underserved Working Group meetings.
- Responded to and incorporated input from CAEECC stakeholders in Business Plan where appropriate (see Appendix D).
- Coordinated with CPUC Energy Division Staff and conducted a series of Ex Parte communications with Commission Staff and Commissioners to introduce I-REN, the proposed programs, and discuss I-REN's Business Plan submittal.

Providing Value

I-REN's Business Plan has been designed to be targeted, feasible, and actionable to provide a solid foundation for building and growing a successful REN and energy efficient portfolio in the region. The I-REN Business Plan is informed by the stakeholder process indicated above and shaped by I-REN's collective history of working in energy efficiency and clean energy through grant programs and previous local government programs. This relevant experience is summarized in selected examples below.

- WRCOG's LGP, known as the Western Riverside Energy Partnership (WREP), has existed for 10 years in WRCOG territory and has grown over those years to 18 members along with the County of Riverside to collectively support energy efficiency upgrades & community engagement.
- WRCOG's Streetlight initiative is a regional program for 11 agencies that provided financing and rebates for energy efficient street lighting to regional jurisdictions.
- WRCOG's CCA program, Western Community Energy (WCE), supports six member agencies which buys cleaner electricity and sells it at a lower cost to its customers.
- CVAG participated in the Desert Cities Energy Partnership (DCEP), a 10-year LGP including CVAG and its 10 member cities and utilities servicing its jurisdiction.
- CVAG's Property Assessed Clean Energy (PACE) program has service agreements with seven private firms to service CVAG's jurisdiction. PACE started in the Coachella Valley in 2007, starting with the City of Palm Desert and later transitioning to a regional approach through CVAG.
- CVAG received a Strategic Plan grant in the amount of $4.1 million to assist its cities with completing Greenhouse Gas inventories, Climate Action Plans, Energy Action Plans, and many more policies relevant to energy efficiency and reduction of their carbon footprints.
- CVAG's voluntary Green Building program is designed to encourage customers and contractors to go beyond Title 24 requirements.
- CVAG's Community Choice Aggregation (CCA) program, called Desert Community Energy (DCE), buys cleaner electricity and sells it at lower costs to its customers.
- SBCOG coordinated San Bernardino County's ZEV Readiness and Implementation Plan.
- SBCOG's Climate Resiliency Study "Resilient IE" includes the participation of all 24 cities in San Bernardino County.
- SBCOG's San Bernardino Regional Energy Partnership includes collaboration with 13 cities and the region's IOUs.

I-REN Value Metrics

There are three primary areas that I-REN sees establishing unique value with this Business Plan:

1. Building local government capacity to implement energy efficiency upgrades for municipal buildings and for improving code compliance.

2. Supporting economic sustainability and a strong local workforce by connecting effective and equitable opportunities for local EE training and demand for EE upgrades.

3. Establishing long-lasting, scalable tools through the Building Upgrade Concierge (BUC) that can be used in every city in the region for purposes including but not limited to sharing timely and accurate EE information, identifying rebates and incentives available through any PA's programs, and helping explain financing resources.

Aligning with Commission Decision Making

The I-REN Business Plan is designed to align with the current PA Business Plan timeframe to 2025. The objective is to develop an initial foundation and framework that will guide I-REN through its launch phase and into a sustainable future as a program implementer beyond 2025, with a focus on adaptability and flexibility.

I-REN recognizes that the Commission is considering changes to PA Business Plan processes and timing. The primary driving issues are COVID-19 impacts, changes to cost effectiveness, and updates to the Potential and Goals study. This Plan has been developed with these issues in mind and I-REN asserts that as a REN, it is not impacted by cost effectiveness rules nor the updates to the Potential and Goals study. This is due to the fact that the Potential and Goals Study does not specifically provide actionable data based on REN territories or REN programs and D.19-12-021 affirmed that RENs do not have a cost effectiveness threshold requirement.

The majority of the activities outlined in I-REN's Business Plan are non-resource programs, designed to support and enhance the activities of other PAs, with a targeted local government resource program not currently provided to its member audiences.

Major Trends

The following major trends will influence the design and impact I-REN's portfolio, including: COVID-19 and related economic stressors, racial inequity, increasing climate change impacts, geography, and the need for high performance buildings and a skilled workforce.

I-REN's proposed offerings have elements that can support each of these substantial issues and help to better serve the region, ensuring that ratepayer dollars are being allocated equitably to DAC, rural, tribal, and other communities who need the funds and who have been historically underserved.

Figure 1-12. Riverside Mission Hotel

Additional trends have been identified in each Sector chapter specific to that area.

COVID-19, Unemployment, and Economic Stresses on Local Government

The public health impacts from COVID-19 and associated economic challenges have severely affected the Inland Empire and will impact the region for the foreseeable future. In one example, research from the Economic Roundtable identified Riverside County workers as tied for having the highest risk in California for job loss due to COVID-19 economic impacts. "The burden of unemployment is unequally distributed. It rests most heavily on young adults, Latinos, and workers in restaurant, hotel, personal care, and janitorial jobs. Young adults graduating from school and attempting to enter the job market face extremely difficult challenges," the report concluded.[10]

Local governments will continue to face economic stresses in this region, particularly those cities reliant on sales taxes. Retail and commercial activity will be impacted negatively for the foreseeable future and may not rebound for years. It is uncertain what the specific and ongoing implications might be, but for the purpose of planning for I-REN, it is assumed based on what happened in the 2007-2010 recession that local government staffing will be frozen or reduced, that there will be less funding available for non-essential capital improvements, and planning funding will also be negatively impacted. The other cascading impacts from COVID-19 such as job loss, housing insecurity, health disparities and more will affect the region's local jurisdictions, and it is anticipated that it will continue to be difficult to engage and leverage local government staff as effectively while they respond to the ongoing pandemic and weather its long-term effects going forward. Economic development and affordability are important

[10] Lansner, Jonathan. Orange County Register. (April 17, 2020). Riverside County workers at highest risk for coronavirus-related layoff, by this math. Available online. Accessed November 2020.

issues to the I-REN region, which has seen population growth greater than other parts of California while having lower median income, prior to the COVID-19 pandemic.[11]

The I-REN portfolio will directly help local governments mitigate some of these issues by providing additional resources to the region, and enabling ongoing workforce development, economic activity, and capital improvements. As the COVID-19 pandemic and related economic crisis continues to unfold, the cross-cutting, interrelated activities proposed for I-REN's Public Sector, WE&T, and C&S programs will support local governments and building professionals in navigating the changes ahead.

Social and Racial Inequity

The issue of racial inequity and the widespread outpouring of support for a rehaul of community policing and systemic racial policies are critical concerns that I-REN can and will address within its portfolio. Some of the implications that are within I-REN's ability to address include the unequal access to energy efficiency dollars, the lack of support for small and underserved communities, ineffective programs for tribal communities, as well as overall lack of diversity. Proactive outreach to disadvantaged communities to assist increase the availability of a sustainable and equitable workforce will be important. I-REN's racial makeup is significantly more Hispanic and Latino than the rest of California, with fewer Asian residents. The majority of the region's residents - 51.6%, or 2.39 million - are Hispanic. Of those, approximately 1.5 million are primarily Spanish speaking.[12] This diversity requires I-REN to ensure that its programs, services, and resources are available and accessible to everyone.

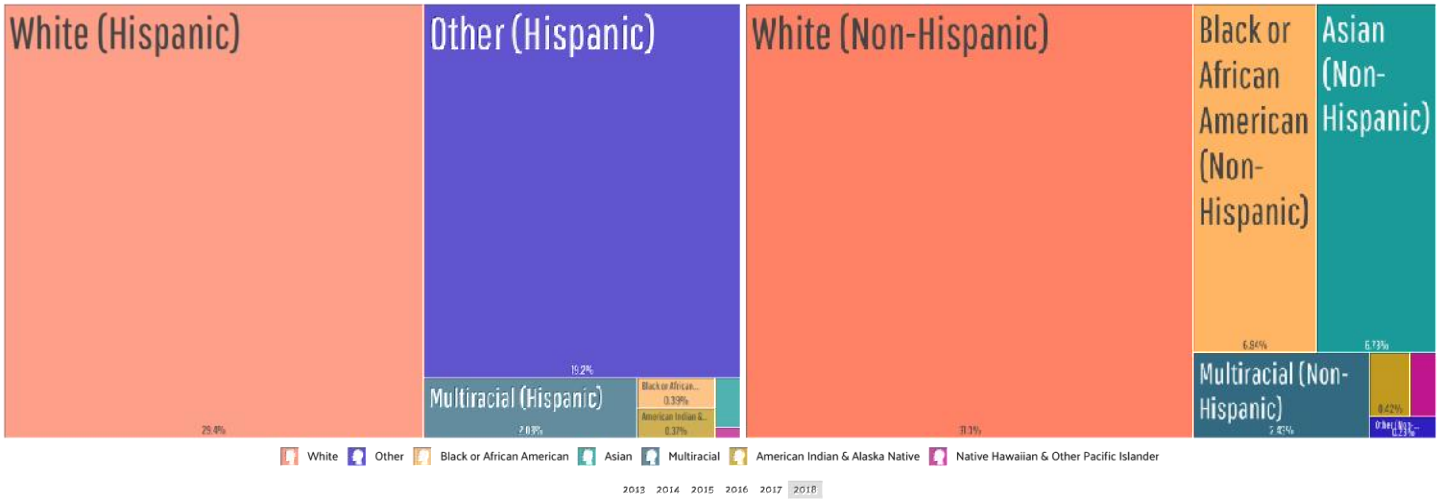

Figure 1-13. Inland Empire Racial Demographics[13]

[11] Jones, B., Elkind, E., Duncan, K., & Hanson, M. (2017). The Net Economic Impacts of California's Major Climate Programs in the Inland Empire. *UC Berkeley: Berkeley Law*. Available online. Accessed April 2020. http://laborcenter.berkeley.edu/pdf/2017/Inland-Empire-Net-Impacts.pdf

[12] https://datausa.io/profile/geo/riverside-san-bernardino-ontario-ca#demographics

[13] Source: https://datausa.io/profile/geo/riverside-san-bernardino-ontario-ca

Climate Change

As discussed earlier in this chapter, climate change is a slow moving but major challenge and trend with the broadest impacts to the I-REN service territory. Climate change is anticipated to impact Riverside and San Bernardino counties with increased extreme and variable weather resulting in increasingly hotter summers and more extreme winter storms. Drought and wildfire impacts will also increase, particularly as more homes and communities build into the wildlands urban interface. The Inland Empire already has some of the worst smog in the region contributing to health impacts and poor air quality. I-REN's Public Sector programs will work with local governments to upgrade public buildings' energy systems, particularly HVAC. Upgrades will be designed to offer safe and healthy hubs for community members, as well as better buildings for public sector workers. Together these improvements will help to improve the ability of the region to withstand these impacts while also reducing energy usage and greenhouse gas impacts related to energy use.

Geography

Geography is a major consideration for I-REN as a motivation to create a REN, and as a barrier that needs to be directly and consistently addressed. The I-REN service territory covers over 27,000 square miles – an area nearly the size of the state of South Carolina – with a range of communities, populations, and needs. Vast areas of the region are historically underserved by traditional IOU and other PA programs as they are far away from major cities, have a lack of an available workforce, and lower socio-economic standing making them less attractive to travel to provide services. I-REN, as a local government coalition, has a mission to equitably serve these outlying communities. Moreover, these communities are already part of the I-REN governing agencies' organizational structures and can be more effectively engaged and served through I-REN than any other existing organization.

High Performance Buildings and a Skilled Workforce

As the State moves to implement a near-ZNE residential code, and high performing existing buildings, the gap in the skills of the existing workforce will be exacerbated. The future reality of more complex building design, construction, and operation will require technical training and engagement with all contractor types to make sure that advanced measures, technologies, and approaches are installed and implemented correctly to achieve the anticipated savings. In addition, these complex concepts will require improved "soft skills" to communicate effectively to job crews, customers, building departments, and others. I-REN will incorporate these future-focused topics as they collaborate with training providers and industry stakeholders for their WE&T sector initiatives. In alignment with I-REN's value metrics, I-REN will structure its WE&T activities to help ensure the Inland Empire workforce has equitable opportunities to learn these new skills and technologies, especially in rural, DAC, low income, and other vulnerable communities.

Evolving from Past Cycles & I-REN's Role

I-REN sees this initial Business Plan submittal as the first step in establishing a strong foundation for a larger and more comprehensive portfolio of programs. This Business Plan is focused on building capacity and enabling local governments to become better leaders for energy efficiency, expanding the workforce, and solidifying the ability to enforce codes and standards.

Ultimately, I-REN envisions growing its offerings into the Residential and Commercial Sectors, particularly targeting hard-to-reach audiences in the region. I-REN sees the opportunity as the IOUs transition their residential programs in the coming years to step in and fill the gaps anticipated for hard-to-reach and less cost-effective EE to help address equity and access for all residents and disadvantaged communities. Equally, I-REN anticipates working with small and medium commercial businesses in the future to address their needs for EE. The region has a relatively large number of tribal communities and while I-REN will begin working with tribes during this Business Plan timeframe, it is anticipated that the focus will be on building relationships, listening, and collaborating to establish a better approach to meeting the unique requirements of tribal communities.

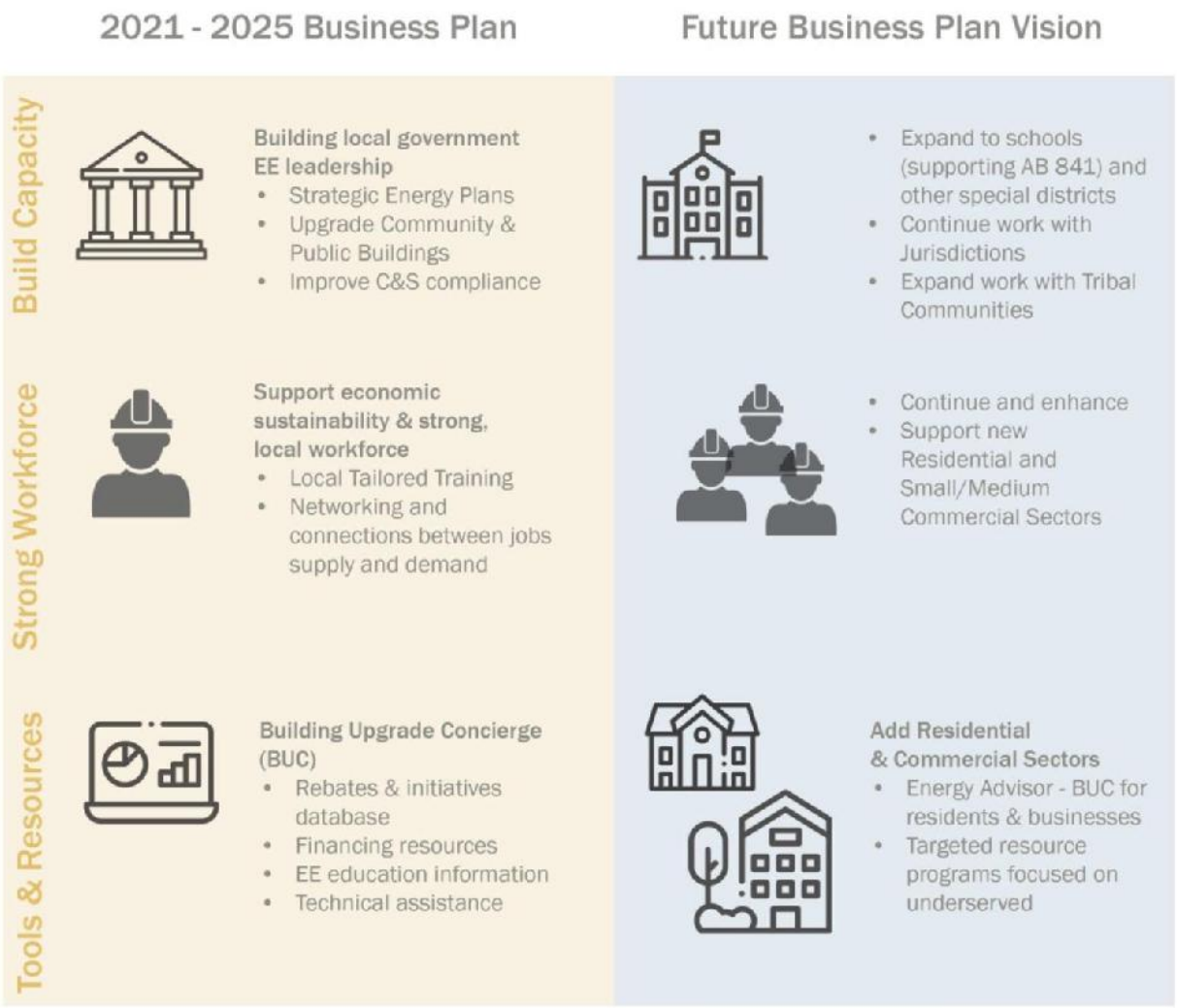

Figure 1-14. I-REN's Business Plan and Vision for the Future

Intervention Strategies and Goals

Figure 1-15. I-REN Strategic Framework

Challenges & Barriers

The I-REN region faces numerous barriers that in the past have hindered participation in energy efficiency programs. I-REN has developed its strategic interventions to address specific barriers (Table 1-3) faced by market actors in each of the three sectors it proposes to serve. This approach is based on insights from the I-REN governing agencies' work with their local jurisdictions, and with consideration also given to previous attempts by other PAs to address these sectors in this region. Those lessons learned informed I-REN's planning process, as well as best practices from successful programs elsewhere in the state.

Table 1-3. Barriers and Strategies for All I-REN Sectors

Problem	Barriers	Solutions	Strategies
Public Sector			
Local government staff lack the time and capacity to pursue complex energy efficiency projects.	Lack of understanding of best practices for energy efficiency solutions.	Technical assistance, locally focused resources, and person-to-person support are needed to develop and implement strategic energy plans for the Public Sector.	S1.1
There are a variety of EE programs and funding sources but it's unclear which apply to local government facilities or how to participate.	Confusion on types of incentives or financing programs and lack of staff resources to apply.	Tailored, locally focused program options are needed, as well as technical assistance and resources to prompt participation in I-REN and other PA programs.	S1.1 S1.2
Due to budgetary restrictions and complicated approval processes, public sector agencies may wait until burnout to replace equipment. At that time, they are forced to decide quickly, often without access to outside funding sources.	Disconnect between funding sources and timing of energy efficiency upgrades, which can increase building operating costs due to increased maintenance needs and higher energy use.	Strategic energy planning can help create a roadmap to plan for equipment upgrades. Technical assistance and locally focused programs can help agencies leverage resource programs and financing to reduce costs.	S1.1 S1.2
Older, inefficient equipment continues to function so it is not replaced due to cost and staff resource issues, yet it drives up building operating costs through increases in required maintenance and higher energy use.	Lack of drivers or need for local government agencies to replace existing working, but inefficient equipment.	Technical assistance combined with an incentive or financing option could make the difference in a public sector agency moving to a higher efficiency option for their facility.	S1.1 S1.2

Problem	Barriers	Solutions	Strategies
Navigating EE program participation and funding sources is complex and requires a dedicated "Energy Champion" who can devote time and attention to the subject.	Frequent changes in the Energy Champions, with high turnover in staff and overall lack of government staff capacity.	Person-to-person technical assistance and support is critical for maintaining relationships through staffing turnover.	S1.1
Local governments each have their own bureaucratic structure, and it's often unclear how they can enroll in EE programs or apply for financing opportunities.	Varied governance, and funding rules that limit ability to take advantage of typical IOU funding/LGP.	Technical assistance resources, and person-to-person support can help agency staff navigate the enrollment and approval process.	S1.1
Codes & Standards			
Codes and standards are continually being updated.	Lack of capacity and time to learn details of Title 24, Part 6 and implement effective means to review or enforce.	Technical assistance, tools, training, and resources can help local building department staff and permit applicants keep up with changes to codes and standards.	S3.1 S3.3
Some local building departments have limited staff resources for enforcing energy codes.	Energy efficiency is a low priority for building departments. Focus is on life and safety issues.	Ongoing training and outreach can help identify and fill gaps in building department capacity, while reinforcing the importance of energy codes and helping encourage local leadership in EE and C&S.	S3.1
Some local building departments have limited capacity to monitor and enforce changes, leading to uneven compliance across the region.	Lack of enforcement of permitting of HVAC systems for existing buildings as well as other energy code elements for new construction, especially related to the 2019 code cycle.	Outreach to construction firms and local building departments can help ensure consistent and timely information is being distributed across jurisdictions to support both compliance and enforcement.	S3.2
Both permit applicants (e.g., construction firms) and local building department staff have complicated	Technical questions and issues with permitting, codes, etc.	Technical assistance can help provide targeted support for permit applicants and local building departments, and other tools, and resources can offer accessible	S3.3

Problem	Barriers	Solutions	Strategies
requirements to follow for compliance and enforcement.		information to answer frequently-asked questions and help address known issues.	
Workforce Education & Training			
When employers are hiring for skilled positions in advanced energy and energy efficiency, they can't find people to hire.	Inability to find and retain skilled and qualified workers for the demand.	Foster connections between workforce and industry. Promote relevant training opportunities in collaboration with WIBs to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1 S2.2
Codes and standards compliance and energy efficiency programs require certain certifications and qualifications for builders to participate.	A limited number of builders in the region have the required certifications and qualifications.	Promote relevant training opportunities in collaboration with WIBs to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1
Energy efficiency and advanced energy projects and programs require qualifications that the local workforce does not have.	Lack of qualified workforce in Riverside/San Bernardino Counties, especially in the more remote areas.	Foster connections between workforce and industry. Promote relevant training opportunities in collaboration with WIBs to upskill the workforce.	S2.1
Job seekers cannot find jobs in energy efficiency and advanced energy.	Lack of job opportunities in energy efficiency and advanced energy in the region.	Foster connections between workforce and industry. Identify and illuminate the pathways to energy efficiency and advanced energy jobs.	S2.2
Contractors aren't aware of energy efficiency projects, or they cannot or choose not to perform this work.	Lack of interest or knowledge of the opportunities and benefits of energy efficiency projects.	Foster connections between workforce and industry. Promote relevant training opportunities to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1 S2.2

Problem	Barriers	Solutions	Strategies
Training is too far away and is offered infrequently or scheduled during work hours when it's inconvenient for contractors to attend. Also, existing training may be irrelevant to contractors or local projects' needs.	Training opportunities' availability, timing, and location pose challenges for contractors to be able to attend and are not designed for the particular needs of the local market.	Promote relevant training opportunities to upskill the workforce. Improve access to training by increasing the number of sites and delivery mechanisms, as well as options for timing that accommodates the workforce's schedule. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1

Portfolio Metrics & Budget

Metrics

Portfolio Level - All Sector Metrics

Table 1-4. Portfolio Level Metrics

Portfolio Level Metric	Baseline Year	Short Term Target 2021[14]	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
CO2-equivalent of net annual kWh savings	2022	N/A	1,026	1,173	1,351
First year annual kW gross	2022	N/A	759	856	1,000
First year annual kW net	2022	N/A	720	813	949
First year annual kWh gross	2022	N/A	4,401,355	4,596,706	5,335,690
First year annual kWh net	2022	N/A	4,175,629	4,361,224	5,062,128
First year annual Therm gross	2022	N/A	127,668	155,636	181,325
First year annual Therm net	2022	N/A	121,315	147,884	172,295
Lifecycle ex-ante kW gross	2022	N/A	3,220	3,511	4,081
Lifecycle ex-ante kW net	2022	N/A	3,209	3,499	4,067
Lifecycle ex-ante kWh gross	2022	N/A	18,780,846	19,037,308	22,006,804
Lifecycle ex-ante kWh net	2022	N/A	17,825,745	18,069,440	20,887,250
Lifecycle ex-ante Therm gross	2022	N/A	512,633	624,822	727,940
Lifecycle ex-ante Therm net	2022	N/A	487,087	593,666	691,644
First year annual kW gross in Disadvantaged Communities	2022	N/A	190	214	250

[14] The resource program portion of I-REN's Public Sector will launch in year two, therefore there are no targets for 2021, the intended first year of their business plan activity.

Portfolio Level Metric	Baseline Year	Short Term Target 2021[14]	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
First year annual kW net in Disadvantaged Communities	2022	N/A	180	203	237
First year annual kWh gross in Disadvantaged Communities	2022	N/A	1,100,339	1,149,177	1,333,922
First year annual kWh net in Disadvantaged Communities	2022	N/A	1,043,907	1,090,306	1,265,532
First year annual Therm gross in Disadvantaged Communities	2022	N/A	31,917	38,909	45,331
First year annual Therm net in Disadvantaged Communities	2022	N/A	30,329	36,971	43,074
Lifecycle ex-ante kW gross in Disadvantaged Communities	2022	N/A	805	878	1,020
Lifecycle ex-ante kW net in Disadvantaged Communities	2022	N/A	802	875	1,017
Lifecycle ex-ante kWh gross in Disadvantaged Communities	2022	N/A	4,695,212	4,759,327	5,501,701
Lifecycle ex-ante kWh net in Disadvantaged Communities	2022	N/A	4,456,436	4,517,360	5,221,812
Lifecycle ex-ante Therm gross in Disadvantaged Communities	2022	N/A	128,158	156,206	181,985
Lifecycle ex-ante Therm net in Disadvantaged Communities	2022	N/A	121,772	148,416	172,911
First year annual kW gross in Hard-to-Reach Markets	2022	N/A	N/A	N/A	N/A
First year annual kW net in Hard-to-Reach Markets	2022	N/A	N/A	N/A	N/A
First year annual kWh gross in Hard-to-Reach Markets	2022	N/A	N/A	N/A	N/A
First year annual kWh net	2022	N/A	N/A	N/A	N/A
First year annual Therm gross	2022	N/A	N/A	N/A	N/A
First year annual Therm net	2022	N/A	N/A	N/A	N/A

Portfolio Level Metric	Baseline Year	Short Term Target 2021[14]	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Lifecycle ex-ante kW gross	2022	N/A	N/A	N/A	N/A
Lifecycle ex-ante kW net	2022	N/A	N/A	N/A	N/A
Lifecycle ex-ante kWh gross	2022	N/A	N/A	N/A	N/A
Lifecycle ex-ante kWh net	2022	N/A	N/A	N/A	N/A
Lifecycle ex-ante Therm gross	2022	N/A	N/A	N/A	N/A
Lifecycle ex-ante Therm net	2022	N/A	N/A	N/A	N/A
PAC Levelized Cost ($/kW)	2022	N/A	$0.41	$0.36	$0.31
PAC Levelized Cost ($/kWh)	2022	N/A	$4.41	$3.79	$3.18
PAC Levelized Cost ($/therm)	2022	N/A	$2,632.75	$2,182.44	$1,883.26
TRC Levelized Cost ($/kW)	2022	N/A	$0.48	$0.42	$0.37
TRC Levelized Cost ($/kWh)	2022	N/A	$5.37	$4.42	$3.81
TRC Levelized Cost ($/therm)	2022	N/A	$0.41	$0.36	$0.31

Public Sector Metrics

Table 1-5. Public Sector Metrics

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
First year annual kW gross	2022	N/A	759	856	1,000
First year annual kW net	2022	N/A	720	813	949
First year annual kWh gross	2022	N/A	4,401,355	4,596,706	5,335,690

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
First year annual kWh net	2022	N/A	4,175,629	4,361,224	5,062,128
First year annual Therm gross	2022	N/A	127,668	155,636	181,325
First year annual Therm net	2022	N/A	121,315	147,884	172,295
Lifecycle ex-ante kW gross	2022	N/A	3,220	3,511	4,081
Lifecycle ex-ante kW net	2022	N/A	3,209	3,499	4,067
Lifecycle ex-ante kWh gross	2022	N/A	18,780,846	19,037,308	22,006,804
Lifecycle ex-ante kWh net	2022	N/A	17,825,745	18,069,440	20,887,250
Lifecycle ex-ante Therm gross	2022	N/A	512,633	624,822	727,940
Lifecycle ex-ante Therm net	2022	N/A	487,087	593,666	691,644
CO2-equivalent of net annual kWh savings	2022	N/A	1,026	1,173	1,351
Percent annual net kW per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent annual net kWh per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent annual net Therms per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net kw savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net kw savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net Therm savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual Net kW savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Average annual Net kWh savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual Net Therms savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector accounts participating in programs	2021	TBD	TBD	TBD	TBD
Percent of estimated floorplan area (i.e., ft2) of all Public Sector buildings participating in building projects	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector water/wastewater flow enrolled in non-building water/wastewater programs	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
PAC Levelized Cost ($/kW)	2022	N/A	$0.41	$0.36	$0.31
PAC Levelized Cost ($/kWh)	2022	N/A	$4.41	$3.79	$3.18
PAC Levelized Cost ($/therm)	2022	N/A	$2,632.75	$2,182.44	$1,883.26
TRC Levelized Cost ($/kW)	2022	N/A	$0.48	$0.42	$0.37
TRC Levelized Cost ($/kWh)	2022	N/A	$5.37	$4.42	$3.81
TRC Levelized Cost ($/therm)	2022	N/A	$0.41	$0.36	$0.31
Total program-backed financing distributed to Public Sector customers requiring repayment	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector buildings with current benchmark	2021	TBD	TBD	TBD	TBD
Average energy use intensity of all Public Sector buildings	2021	TBD	TBD	TBD	TBD

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Percent of floorplan area of all Public Sector buildings with current benchmark	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Codes & Standards Metrics

Table 1-6. Codes & Standards Metrics

Codes & Standards Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Net GWh savings	2021	N/A	N/A	N/A	N/A
Net MMTherms savings	2021	N/A	N/A	N/A	N/A
Net MW savings	2021	N/A	N/A	N/A	N/A
Number of measures supported by CASE studies in rulemaking cycle (current work)	2021	N/A	N/A	N/A	N/A
Number of measures adopted by CEC in rulemaking cycle (indicator of past work)	2021	N/A	N/A	N/A	N/A
Number of T-20 measures supported by CASE studies in rulemaking cycle (current work)	2021	N/A	N/A	N/A	N/A
Number of measures adopted by CEC in current year	2021	N/A	N/A	N/A	N/A
Number of federal standards adopted for which a utility advocated (IOUs to list advocated activities)	2021	N/A	N/A	N/A	N/A
Percent of federal standards adopted for which a utility advocated (#IOU supported / # DOE adopted)	2021	N/A	N/A	N/A	N/A
The number of local government Reach Codes	2021	N/A	N/A	N/A	N/A

Codes & Standards Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
implemented (this is a joint IOU and REN effort)					
Number of training activities (classes, webinars) held, number of market actors participants by segment (e.g. building officials, builders, architects, etc.) and the total size (number of the target audience) by sector. (M) Number of training activities	2021	TBD	12	12	TBD
Number of training activities (classes, webinars) held, number of market actors participants by segment (e.g. building officials, builders, architects, etc.) and the total size (number of the target audience) by sector. (M) Number of participants	2021	TBD	360	360	TBD
Increase in code compliance knowledge pre/post training	2021	N/A	N/A	N/A	TBD
The percentage increase in closed permits for building projects triggering energy code compliance within participating jurisdictions	2021	N/A	N/A	N/A	N/A
Number and percent of jurisdictions with staff participating in an Energy Policy Forum	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions with staff participating in an Energy Policy Forum	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions receiving Energy Policy technical assistance.	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions receiving Energy Policy technical assistance.	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Codes & Standards Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Buildings receiving enhanced code compliance support and delivering compliance data to program evaluators	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Workforce Education and Training Metrics

Table 1-7. Workforce Education and Training Metrics

Workforce Education and Training Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Number of collaborations by Business Plan sector to jointly develop or share training materials or resources.	2021	TBD	4	8	12
Number of participants by sector	N/A	TBD	90	120	150
Percent of participation relative to eligible target population for curriculum	N/A	N/A	TBD	TBD	TBD
Percent of total WE&T training program participants that meet the definition of disadvantaged worker.	N/A	TBD	TBD	TBD	TBD
Percent of incentive dollars spent on contracts* with a demonstrated commitment to provide career pathways to disadvantaged workers	N/A	N/A	TBD	TBD	TBD
Number Career & Workforce Readiness (CWR) participants who have been employed for 12 months after receiving the training	N/A	N/A	TBD	TBD	TBD

Portfolio Budget

The following budget tables summarize I-REN's portfolio and sector level budgets estimated based on proposed activities and tactics. I-REN's proposed budget will be responsive to CPUC decisions and direction. The budget will be responsive to market forces and needs, and will adjust based on information by internal and external program stakeholders and program assessments.

Table 1-8 shows I-REN's proposed budget for the portfolio and by sector.

I-REN's portfolio budget summarizes expected administration, direct implementation, incentives, marketing and evaluation measurement and verification costs. The budget was informed by both planned program activities as well as the caps and targets in the Energy Efficiency Policy Manual.

I-REN will work with SCE and SoCalGas to establish processes that streamline and expedite reimbursement for cost so that I-REN member agencies, subcontractors and vendors can be paid and reimbursed promptly and efficiently.

Table 1-8. I-REN Portfolio and Sector Budgets

	I-REN Portfolio Budget ($)					
Sector	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Public Sector	4,314,226	6,288,194	6,191,722	6,629,390	7,074,566	**30,498,098**
Workforce Education & Training	2,312,208	2,253,295	2,393,426	2,437,164	2,674,650	**12,070,743**
Codes & Standards	1,416,066	1,446,107	1,503,952	1,564,110	1,626,674	**7,556,909**
Evaluation Measurement & Verification	92,154	114,441	115,604	121,810	130,349	**574,358**
Total	**8,134,654**	**10,102,037**	**10,204,704**	**10,752,474**	**11,506,239**	**50,700,108**

Public Sector ($)						
Budget Category	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Administration	431,423	628,819	619,172	662,939	707,457	**3,049,810**
Marketing and outreach	258,854	377,292	371,503	397,763	424,474	**1,829,886**
Direct implementation - non incentive	3,623,949	3,782,083	3,701,047	3,818,688	3,942,635	**18,868,402**
Direct implementation - incentives	-	1,500,000	1,500,000	1,750,000	2,000,000	**6,750,000**
Total	**4,314,226**	**6,288,194**	**6,191,722**	**6,629,390**	**7,074,566**	**30,498,098**

Codes & Standards ($)						
Budget Category	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Administration	141,607	144,611	150,395	156,411	162,667	**755,691**
Marketing and outreach	84,964	86,766	90,237	93,847	97,600	**453,414**
Direct implementation - non incentive	1,189,495	1,214,730	1,263,320	1,313,852	1,366,407	**6,347,804**
Direct implementation - incentives	-	-	-	-	-	**-**
Total	**1,416,066**	**1,446,107**	**1,503,952**	**1,564,110**	**1,626,674**	**7,556,909**

Workforce Education & Training ($)						
Budget Category	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Administration	231,221	225,329	239,343	243,716	267,465	**1,207,074**
Marketing and outreach	138,732	135,198	143,606	146,230	160,479	**724,245**
Direct implementation - non incentive	1,942,255	1,892,768	2,010,477	2,047,218	2,246,706	**10,139,424**
Direct implementation - incentives	-	-	-	-	-	**-**
Total	**2,312,208**	**2,253,295**	**2,393,426**	**2,437,164**	**2,674,650**	**12,070,743**

Portfolio Energy Savings & Cost-Effectiveness Targets

Decision 19-12-021 affirmed that RENs do not have a cost effectiveness threshold requirement,[15] although I-REN has designed its portfolio to make efficient use of ratepayer funds while serving the needs of the region. With a large majority of funding in non-resource programs – Codes and Standards and Workforce Education and Training, two areas in which I-REN is particularly well equipped to serve – I-REN's portfolio cost-effectiveness results are not as high as could be seen with a larger portfolio heavy in resource programs. In 2021 results are zero because it is anticipated that the resource program under the Public Sector will claim its first energy savings in its second year, 2022. Estimated cost-effectiveness and savings targets for I-REN's overall program portfolio are shown in Table 1-9, and the estimated cost-effectiveness for resource program activity in the Public Sector is shown in Table 1-10.

Table 1-9. I-REN Overall Program Portfolio Energy Savings & Cost-Effectiveness Targets

Program Portfolio	2021	2022	2023	2024	2025
Net kWh	0	4,175,629	4,361,224	4,361,224	5,763,031
Net kW	0	720	813	813	1,084
Net Therms	0	121,315	147,884	147,884	196,707
CO2	0	1,736	2,039	1,937	2,781
NOx	0	640	668	668	883
Total Resource Cost (TRC)	0	0.17	0.19	0.19	0.25
Program Administrator Cost (PAC)	0	0.20	0.22	0.23	0.30
Ratepayer Impact Measure (RIM)	0	0.15	0.16	0.17	0.20

Table 1-10. I-REN Public Sector Resource Activity Cost-Effectiveness Targets

Public Sector Resource Activity	2021	2022	2023	2024	2025
Total Resource Cost (TRC)	0	0.45	0.51	0.47	0.61
Program Administrator Cost (PAC)	0	0.74	0.81	0.79	1.03
Ratepayer Impact Measure (RIM)	0	0.35	0.35	0.36	0.37

[15] CPUC, Decision 19-12-021, December 5, 2019, Conclusions of Law paragraph 11.

Accounting Practices

I-REN will follow accounting practices consistent with local government accounting programs, Generally Accepted Accounting Principles, CPUC's Energy Efficiency Policy Manual and any additional accounting guidance provided in decisions and Energy Division reporting and filing templates.

WRCOG's Chief Financial Officer (CFO) will be responsible for overseeing the financial management and accounting for I-REN which will include oversight of the annual budgets and managing and maintaining program expenditures.

Solicitation Plan

As local government agencies, I-REN will follow current bidding and solicitation rules set by the I-REN Committee and WRCOG as the lead agency. These rules were designed to ensure fair and equitable bidding in accordance with state and local laws.

As a local government, WRCOG's procurement processes are open and transparent, and all contracts must be reviewed and executed by the Board, comprised of elected officials. Contract approvals are agendized and discussed at public Board meetings that are subject to the Brown Act. Compliance with state requirements found in statute and local rules and procedures related to competitive solicitations are built into WRCOG's procurement guidelines. Also, as a local government, WRCOG is subject to the Public Records Act, so procurement documents and correspondence are available to the public.

WRCOG as the lead agency for I-REN will utilize WRCOG contracting and purchasing procedures. WRCOG's contracting process consists of a competitive solicitation process that allows interested parties to submit proposals to WRCOG for consideration of various project sizes / scopes. WRCOG and assigned team members screen project proposals and invite bidders for an interview if selected. Once the interviews conclude, WRCOG recommends the top bidder to its committee structure where a formal action is taken in order to move forward with bringing on the selected bidder for the project. As part of the competitive solicitation process, WRCOG also coordinates with the non-selected bidders if they would like a debrief on their proposal so that the non-selected bidder can better understand how to make themselves more competitive for future solicitation processes.

The approval committee structures that make a decision and recommendation for competitive solicitations are the Administration & Finance Committee along with WRCOG's executive board known as the Executive Committee. For contract purposes, the final and approved contract known as the Professional Services Agreement (PSA) is signed by WRCOG's Executive Director only if approved at the Executive Committee. Signatures will consist of WRCOG legal and WRCOG Executive Director.

WRCOG maintains an internal Financial Manual, which guides the Agency's actions as it relates to many fiscal matters. The Manual addresses accounting issues such as accounts payable, accounts receivable, budgeting, and contracts. The Manual does not provide any guidance regarding the issuance of an RFP. Staff updates the internal Manual regularly to address regulatory changes and to maintain internal consistency with other documents such as the WRCOG Employee Policies and Procedures Manual. The Financial Manual is to be updated when this RFP Policy is updated.

WRCOG's current Request for Proposals (RFP) protocol:

- No RFP is required if the value of the resulting contract is $100,000 or less, which falls under the Executive Director's Single Signature Authority. WRCOG may still choose to issue an RFP for services less than this amount, depending on individual circumstances.
- An RFP is required when the value of the contract is between $100,000 and $200,000, unless the Executive Director makes a finding that one or more of the following conditions occurs:

  - The issue and/or required services are time critical and release of an RFP would cause an undue delay;
  - The service requires unique expertise or knowledge of the region which is not generally available; therefore, an RFP is unlikely to generate a significant number of responses; and/or
  - WRCOG is responding to a request from a member agency.

- If a contract is then issued without an RFP based on these circumstances, then the Staff Report requesting approval of the contract in question must cite these circumstances and demonstrate why no RFP is required.
- An RFP is automatically required for any contract in excess of $200,000.

Inland Regional Energy Network Business Plan

Chapter 2: Public Sector

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Introduction

The councils of government (COGs) that make up I-REN have direct relationships and a history of collaborating with the many government jurisdictions in their territory. This existing foundation of connections is reflected in the numerous letters of support I-REN has received from local and regional jurisdictions through the stakeholder coordination process to prepare this Business Plan (see Appendix C: Letters of Commitment & Support). I-REN will use these relationships and regional expertise to effectively build local government capacity and knowledge to complete energy efficiency upgrades to public facilities and buildings in a strategic and effective manner. Further, these public sector activities will strive to demonstrate and communicate best practices for the community, in alignment with the Existing Buildings Energy Efficiency Action Plan, Strategy 1.7 for Local Government Leadership. I-REN's Public Sector offerings will include a combination of technical assistance, targeted incentives, and financing resources to accomplish this goal.

Audience Served

I-REN's public sector offerings will serve the members of the three Councils of Government (COGs) represented in I-REN, including the counties of Riverside and San Bernardino, the cities, school districts, water districts, special districts, and tribes. These regional programs will target, but not be limited to, upgrades to existing public buildings and facilities with high energy use and older equipment. While the offerings will consider all public building types, there will be a focus on community-serving buildings such as community centers, libraries, senior centers, schools, and fire and police buildings. Through energy efficiency projects in these facilities, I-REN can provide benefits that will flow to disadvantaged, low income, and other vulnerable communities where these facilities serve as cooling centers offering protection from the region's extreme heat. The I-REN programs will be multi-benefit in nature, layering energy efficiency strategies with greenhouse gas reductions, wildfire mitigation, community resilience and climate adaptation measures.

PUBLIC SECTOR GOAL & STRATEGIES

Goal 1. Build capacity and knowledge to enable local governments to effectively leverage energy efficiency services and to demonstrate best practices.

S1.1 Develop a regional Building Upgrade Concierge (BUC) for local governments, special districts, and tribal communities with technical guidance and tools to inform and enable priority energy improvements.

S1.2 Establish incentives and leverage existing financing mechanisms to assist local governments with implementing energy efficiency projects in public buildings.

BUDGET

2021-2025 Budget (total): $30.5M

Challenges and Solutions

I-REN's local governments have limited incentives to complete energy upgrades and are challenged to maintain and upgrade these facilities due to lack of funding for capital improvements, a lack of awareness related to energy efficiency and other energy efficiency program opportunities, limited time and staff resources, along with conflicting priorities. Further, State mandates such as building energy benchmarking (AB 802) requirements, energy code compliance, and climate adaptation planning are additional unfunded regulations and requirements on

local governments and are difficult to meet given competing priorities. These challenges are exacerbated now due to the COVID-19 pandemic, the associated economic downturn and increased pressure on local government agencies to respond to a variety of issues.

To address these challenges, I-REN will leverage its existing public sector partnerships and networks across the region to offer technical assistance, implement resource program options, and improve access to financing. Implementing these initiatives will further I-REN's goals of encouraging resilience and continuous capacity building for local governments, thereby strengthening their ability to serve their community through energy efficiency projects in their own facilities, while also saving on building operations costs and contributing to local and statewide goals for energy savings, climate resilience, and greenhouse gas emissions reduction.

Strategies

Strategies to achieve I-REN's goals for the Public Sector will place added emphasis on "aggressive efficiency for jurisdiction-owned buildings,"[1] and energy efficiency improvements to existing buildings that serve low income, moderate income, and disadvantaged communities. I-REN has centered its Public Sector approach around two strategies:

S1.1 Develop a regional Building Upgrade Concierge (BUC) for local governments, special districts, and tribal communities with technical guidance and tools to inform and enable priority energy improvements.

I-REN will provide person-to-person technical assistance to local governments to support energy efficiency projects including, but not limited to, strategic energy planning and benchmarking. I-REN will also develop tools and resources to increase public sector participation in other federal, state, and local programs.

S1.2 Establish incentives and leverage existing financing mechanisms to assist local governments with implementing energy efficiency projects in public buildings.

I-REN will deliver a resource offering to provide incentives for meter-based savings (Normalized Metered Energy Consumption or NMEC) achieved over three to five years. I-REN will also leverage sustaining financing mechanisms to support HVAC upgrades in public buildings. If a third-party program becomes available that serves this need and makes this resource offering duplicative, I-REN will focus its full Public Sector budget on providing technical assistance and strategic energy planning through the BUC. I-REN has designed its Public Sector offerings to be flexible and its goals and targets can be adjusted accordingly to meet the needs of the region.

Through their extensive work with local governments and their committee structure, the I-REN governing agencies have become a trusted voice and advocate for the public sector in their two counties. By collaborating with their member jurisdictions and using their established communication networks, I-REN can provide regionally focused public sector solutions to help local governments succeed as energy efficiency leaders.

[1] Existing Buildings Energy Efficiency Action Plan, Strategy 1.7 Local Government Leadership. https://efiling.energy.ca.gov/getdocument.aspx?tn=206015 Accessed October 2020.

Market Characterization

Market Actors

The California Public Utilities Commission (CPUC) defines the public sector as encompassing a broad range of organizations and facilities, including federal, state, and local governments such as cities, counties, and special districts. The public sector also includes educational institutions such as higher education campuses, community colleges, and K-12 schools. The market actors who impact and are impacted by energy efficiency work in the public sector include but are not limited to the following:

- **Local Governments:** The elected officials and other staff at local jurisdictions responsible for decision-making around budgets and spending for publicly-owned facilities. These individuals include elected officials, county boards of supervisors, tribal councils, special district supervisors, city managers, planners, community development staff, and sustainability staff. Building Department staff also play a role, which offers an important cross-cutting opportunity for work with the I-REN Codes & Standards sector initiatives.
- **Facility Staff:** Depending on the size of the facility and/or the resources of the jurisdiction, public sector facilities may or may not have dedicated facility managers, operations staff, or building engineers. Facility staff may be responsible for one building or a campus of various buildings and infrastructure. In smaller jurisdictions and smaller facilities, staff with other primary job functions may have secondary responsibilities for operations and building maintenance. Facility staff may have widely varying levels of responsibility and training on energy efficiency program participation, strategic energy planning, equipment replacement, and ongoing operations and maintenance. These staff are critical for improving energy efficiency in public sector buildings and they also can benefit from I-REN's Workforce Education & Training sector initiatives to enhance their skill set.
- **Building Professionals:** These individuals are responsible for specifying and installing replacement equipment in public sector facilities, whether through energy efficiency programs or directly funded by the jurisdiction. This includes contractors, energy managers, energy consultants, architects, designers, and other building professionals. This group is important to I-REN's Public Sector work as well as Codes & Standards and Workforce Education & Training.

Other Partners and Stakeholders

In addition to primary market actors, the public sector programs will engage and work with the following groups.

- **Energy Efficiency Programs:** Resource and non-resource programs offered by RENs, CCAs, and IOUs can be a driver of retrofit activity and energy efficiency improvements in the public sector, along with program implementation firms and energy service companies (ESCOs). I-REN will offer a resource program as part of its initiatives in the Public Sector, and it will also provide resources to direct jurisdictions toward the best-fit solution for implementing their strategic energy plans, in collaboration with other program administrators (PAs).
- **Financing Resources:** Funding for energy efficiency projects in the public sector can come from many different sources: from the utility (on-bill financing), from energy savings performance

contracts with service providers, from revolving lending products, and from traditional lenders such as financial institutions.

- **Community Members:** Residents pay for local government facilities through their tax dollars, and directly benefit from these facilities in a variety of ways. Local government jurisdictions can model best practices in energy efficiency to their constituents through projects at facilities where their communities interact.

Sector Landscape

> *"The Inland Empire is one of the hottest regions of the state, and per capita residential electricity use is higher than for the state as a whole. Therefore, the requirements in SB 350 and other statutes and regulations to promote energy efficiency have special significance for the Inland Empire, with its enormous efficiency potential."*[2]

In the I-REN service territory, these public sector jurisdictions include two counties, 52 cities, 115 special districts, unincorporated communities, and 15 tribal areas, ranging in size from less than a dozen tribal members in the Augustine Band of Cahuilla Indians to more than 300,000 residents in the City of Riverside.[3] For additional information and analysis on I-REN's public sector jurisdictions please see Appendix B: Public Sector Market Analysis.

The Inland Empire has economic strengths with a growing economy pre-COVID, but also has many socio-economic vulnerabilities. The I-REN territory represents approximately 11% of California's population and has approximately 16% living in poverty (compared to 14.7% living in poverty in California), with 38% of those being Hispanic and 34% white.[4]

The I-REN service territory is among the hottest and driest regions of California and experiences harsh climate conditions in summer months. Vulnerable populations such as children, the elderly, and low-to-moderate income families benefit from public gathering spaces that offer protection from extreme heat. Further, these conditions require air conditioning in most buildings resulting in high utility bills and energy use.

Tracking and understanding the total energy savings potential is challenging for the Inland Empire. Typical datasets such as those available from the CEC or CPUC are inconsistent in how public buildings are counted or characterized, and are often lumped into commercial buildings, with some considered institutional. Further, I-REN does not have access to specific energy use data in its territory and the Potential and Goals study aggregates information using the IOU service territory, not by county.

> *"Between 2010 and 2016, IOU energy efficiency expenditures in the Inland Empire totaled approximately $612 million (in 2017 dollars). These funds were divided between residential and non-residential energy efficiency construction and program administration. Construction activity received $365 million in investments. Twenty-five percent of these*

[2] Betony Jones, primary author, Green Economy Program Center for Labor Research and Education (CLRE) UC Berkeley, for Next 10, "The Net Economic Impacts of California's Major Climate Programs in the Inland Empire", August 2017, page 42.

[3] U.S. Census Bureau, 2010.

[4] https://datausa.io/profile/geo/riverside-san-bernardino-ontario-ca#economy

funds were directed to residential efficiency projects with 75 percent going to non-residential projects. Program administration expenditures totaled $247 million."[5]

Based on available data from the region's IOUs, the potential for savings and assistance for I-REN's territory and local governments is clear. Using information from Southern California Edison (SCE) and SoCalGas's (SCG) Public Sector Chapter Business Plans, it is estimated that the public sector represents approximately 15-16% of overall energy use respectively. HVAC represents 10% of energy use in SCE's region, with lighting representing over 53%. Whole building energy represents 25% of energy use.

In 2018, SCE estimated approximately 85 GWh of potential energy savings and 12 MW of potential demand savings for the public sector in their territory. The SCE public sector consists of 75,000 service accounts spread across 50,000 square miles. The I-REN service territory, at 27,263 square miles in size, makes up more than half of SCE's territory. State and federal government make up 19% of energy usage in the public sector, while **local government and education comprise 81% of public sector energy usage** (two segments I-REN proposes to serve through its Public Sector initiatives).[6] Further, SCG reports for its territory that local government energy use (therms) is approximately 35% of the overall usage for 5,428 accounts and educational providers equal 45% with 7,212 accounts.

It is important to note that approximately 84% of natural gas use in SCG territory is for electric generation, and not directly impacted by energy efficiency measures.[7] This large percentage of energy use may be able to be addressed more holistically through I-REN managed initiatives than is possible through SCG, as I-REN will have the ability to **leverage long-term engagement with these jurisdictions** and technical assistance planning.

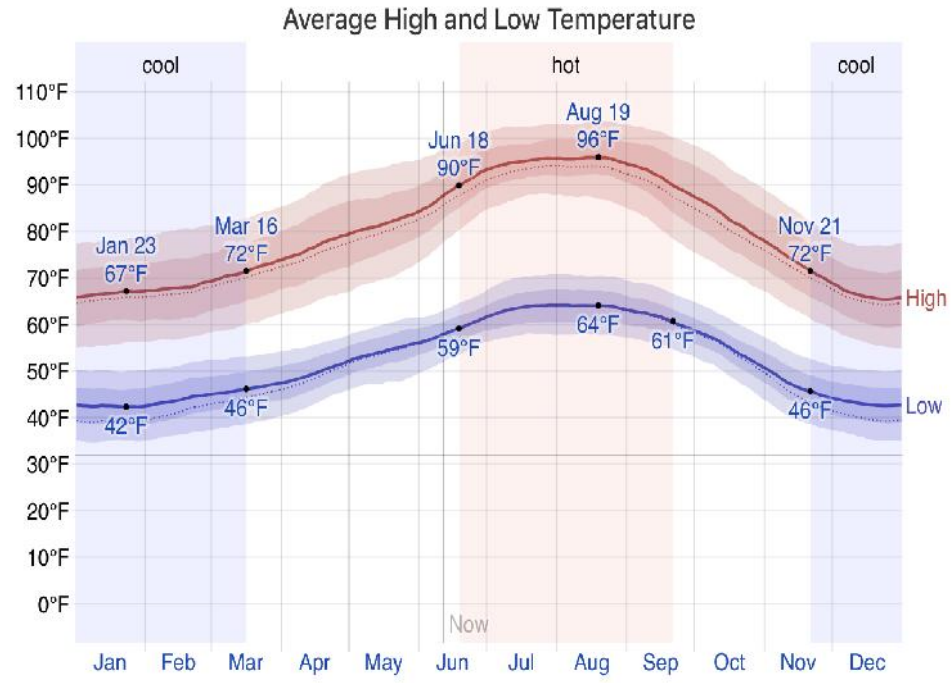
As a result of facility disrepair, delayed maintenance on aging HVAC equipment, and extreme high temperatures during the cooling season (See Figure 2-1), public agencies in the I-REN counties are often burdened with high energy bills at their facilities. Public sector buildings may also have secondary end uses specific to the type of facility, for example, pool pumps and foodservice equipment at community centers with swimming facilities and commercial kitchens. However, the local government agencies and districts that make up the I-REN public sector are challenged in trying to improve the energy efficiency of their equipment and facilities, given various barriers including but not limited to insufficient funding for capital improvements, a lack of awareness around energy efficiency and IOU programs, complicated and long cycles times for approval processes for budgets and spending, and limited time and staff resources.

I-REN will build on its existing connections in the public sector to help these local government agencies and districts improve their facilities' energy performance, to contribute to energy conservation and greenhouse gas reduction goals and **position local government agencies as energy efficiency leaders in their communities**.

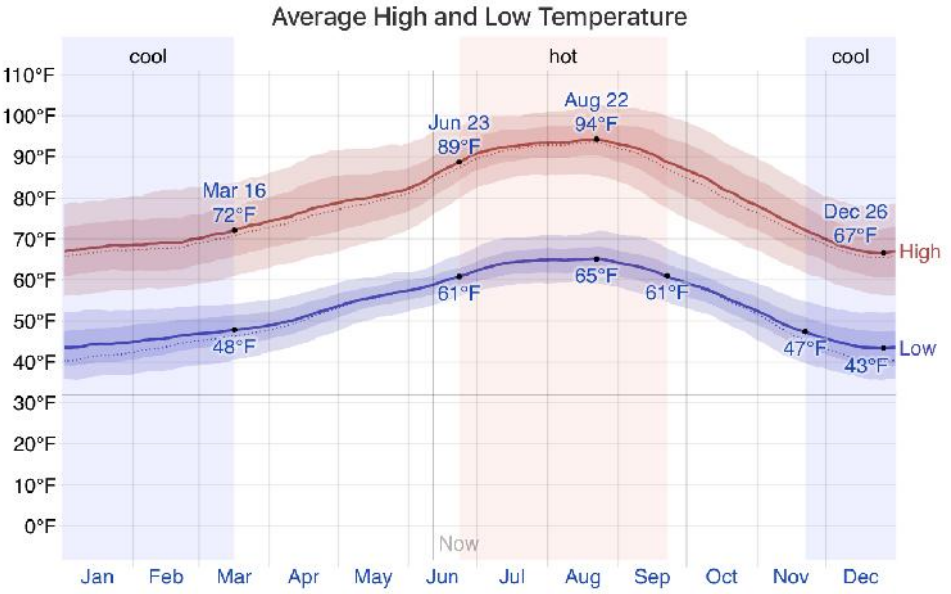
[5] Betony Jones, primary author, Green Economy Program Center for Labor Research and Education (CLRE) UC Berkeley, for Next 10, "The Net Economic Impacts of California's Major Climate Programs in the Inland Empire", August 2017, page 43.

[6] Southern California Edison Business Plan, p. 165.

[7] SoCal Gas Business Plan, Submitted January 17, 2017, page 243-244.



The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.



The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.

Figure 2-1. Average High and Low Annual Temperatures, San Bernardino and Riverside Counties

Top: County of San Bernardino Average Temperatures.
Bottom: County of Riverside Average Annual Temperatures.
(Weatherspark.com)

Table 2-1. Estimated Public Sector Agencies & Facilities in Riverside and San Bernardino Counties[8, 9]

	Riverside County	San Bernardino County
Airports (county/municipal-owned, public use)	13 airports	16 airports
Cemetery	8 special districts	2 special districts
Colleges	26 colleges	22 colleges
Community Services	6 special districts	12 special districts
County Sheriff	18 contracted cities	14 city patrol stations and 8 county stations
Fire Stations	101 stations	58 stations
Healthcare	3 special districts	4 special districts
K-12 Schools	608 schools	623 schools
Libraries	35 libraries and 3 library districts	32 libraries
Local Police	29 city departments	10 city departments
Mosquito & Vector Control	3 special districts	1 special district
Parks & Recreation	4 special districts	2 special districts
Public Utilities	1 municipal utility	1 special district
Resource Conservation	6 special districts	3 special districts
Sanitary	2 special districts	1 special districts
School Districts	24 districts	32 districts
Water	22 special districts	27 special districts

Major Trends

> *"Public sector customers are generally characterized as: not profit-motivated; have fixed utility budgets; require a public process on key decisions, including finding and project approval; implement on a fiscal year rather than a calendar year; and follow unique purchasing guidelines. These characteristics are unlike most commercial businesses."* [10]

There are three major trends that will influence the design and impact of I-REN's Public Sector program offerings: COVID-19, racial inequity, and increasing climate change impacts. Each of these substantial issues have elements that can be supported by I-REN's proposed offerings and help to better serve the region, ensuring that ratepayer dollars are being allocated to communities who need the funds and who have been historically underserved.

The public sector is dominated by city government and other agencies funded by various tax mechanisms from sales taxes to property taxes. Economic downturns such as what happened in the recession in 2007-2010 have large impacts on local governments and result in a reduction of services and staffing levels. The impacts from COVID-19 and the anticipated economic challenges will impact the region for the foreseeable future, particularly for those cities reliant on sales taxes. It is uncertain what the specific implications might be, but for the purpose of planning for I-REN, it is assumed that staffing will be reduced, that there will be less funding available for non-essential capital improvements, and planning funding will also be negatively impacted. Further, it is anticipated that it will be more difficult to engage and leverage local government staff as effectively while they respond to the ongoing pandemic.

In addition, the issue of racial inequity and the pervasive outpouring of support for a rehaul of community policing and systemic racial policies is a critical concern that I-REN can and will address with the Public Sector programs (as well as its other programs). Some of the implications that are within I-REN's ability to address include the unequal access to energy efficiency dollars, the need for additional support and commitment for small and underserved communities, ineffective programs for tribal communities, as well as overall lack of diversity. Many of these communities have been historically underinvested in and have greater needs for facility improvements, particularly community serving facilities such as libraries, community centers and the like. By supporting energy efficiency projects in these types of facilities, I-REN can provide equitable and locally administered assistance to public sector agencies where benefits will flow directly to disadvantaged and vulnerable communities.

> *"The region's climate is becoming more extreme, with daily average high temperatures projected to increase by up to 8-14ºF by the end of century. Rainfall rates are currently low (approximately 5 inches per year) and highly variable from year to year. This variability is projected to increase over the coming decades, with extreme drought and extreme wet events both becoming more common. In turn, increasing frequencies of these*

[8] Special District Data Source: California Special Districts Association. Accessed October 2020. https://mydashgis.com/CSDA/map

[9] Aggregated numbers from broad research from City, County, and other websites. These numbers provide a broad, order-of-magnitude estimate of the type and number of public sector buildings in the region.

[10] SCG Business Plan, January 17, 2017, Page 244.

> *extreme events will increase the risk of flash flooding and wildfire, given the close relationship between precipitation variability and growth of invasive grasses that serve as the major fuel for wildfire in the region." California's Fourth Climate Change Assessment, Inland Deserts Region Report* [11]

Climate change is a slow moving but major challenge and trend with the broadest impacts to the I-REN service territory. Climate change is anticipated to impact Riverside and San Bernardino counties with increased extreme and variable weather resulting in increasingly hotter summers and more extreme winter storms. Drought and wildfire impacts will also increase, particularly as more homes and communities build into the wildlands urban interface. The Inland Empire already has some of the worst smog in the region contributing to health impacts and poor air quality.

I-REN's Public Sector programs will work with local governments to upgrade public buildings' energy systems, particularly HVAC. Upgrades will be designed to offer safe and healthy hubs for community members, as well as better buildings for public sector workers. Together these improvements will help to improve the ability of the region to withstand these climate change impacts while also reducing energy usage and greenhouse gas impacts related to energy use.

[11] Hopkins, Francesca. (University of California, Riverside). 2018. Inland Deserts Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-008.

Intervention Strategies and Objectives

In its approach to serving the public sector, I-REN is guided by an overarching goal:

Goal 1. Build capacity and knowledge to enable local governments to effectively leverage energy efficiency services and to demonstrate best practices.

I-REN's governing agencies have a foundation of strong relationships with local governments and jurisdictions in their service territory, and their approach to the public sector has been carefully designed to build on those successes. With their existing connections, I-REN is well-positioned to reach local agencies with the strategies and tactics outlined in this chapter.

Table 2-2. Intervention Strategies, Tactics, and Objectives

	Intervention Strategy	Tactic	Objective
Technical Assistance	S1.1 Develop a regional Building Upgrade Concierge (BUC) for local governments, special districts, and tribal communities with technical guidance and tools to inform and enable priority energy improvements.	T1.1.1: Establish person-to-person support for local governments to get higher levels of assistance and support for their EE projects. T1.1.2: Develop or enhance strategic energy plans to connect local government goals related to climate, resilience, and economic development to energy efficiency programs and adoption. T1.1.3: Create resources for the public sector to tap into EE and distributed energy resources programs offered by other providers and IOUs.	*Local governments have support and resources to develop and implement their strategic energy plans and energy efficiency projects.*
Incentives & Financing	S1.2 Establish incentives and leverage existing financing mechanisms to assist local governments with implementing energy efficiency projects in public buildings.	T1.2.1: Deliver a resource offering to provide incentives for savings based on Normalized Metered Energy Consumption (NMEC) achieved over three to five years. T1.2.2: Leverage sustaining financing mechanisms for HVAC upgrades in public buildings.	*Help local governments afford and finance a range of energy efficiency upgrades.*

Approach to Overcoming Barriers

Some of the greatest challenges to participation in the public sector in the I-REN service area may also be indicators of unrealized energy savings potential. I-REN has designed its Public Sector strategies and tactics to help local government agencies, tribal leadership, and staff at school districts and special districts overcome these participation barriers to improve their facilities' energy performance and harvest "stranded" energy savings.

Table 2-3. Barriers and Strategies for I-REN Public Sector

Problem	Barriers	Solutions	Strategies
Local government staff often lack the time and capacity to pursue complex energy efficiency projects.	Lack of understanding of best practices for energy efficiency solutions.	Technical assistance, locally focused resources, and person-to-person support are needed to develop and implement strategic energy plans for the public sector.	S1.1
There are a variety of EE programs and funding sources, but it is often unclear which apply to local government facilities or how to participate.	Confusion on types of incentives or financing programs and lack of staff resources to apply.	Tailored, locally focused program options are needed, as well as technical assistance and resources to prompt participation in I-REN and other PA programs.	S1.1 S1.2
Due to budgetary restrictions and complicated approval processes, public sector agencies may wait until burnout to replace equipment. At that time, they are forced to make quick decisions, without access to outside funding sources.	Disconnect between funding sources and timing of energy efficiency upgrades, which can increase building operating costs due to increased maintenance needs and higher energy use.	Strategic energy planning can help create a roadmap to plan for equipment upgrades. Technical assistance and locally focused programs can help agencies leverage resource programs and financing to reduce costs.	S1.1 S1.2
Older, inefficient equipment continues to function, so it is not replaced due to up-front cost and staff resource issues, yet it increases building operating costs through required maintenance and higher energy use.	Lack of drivers or need for local government agencies to replace existing working, but inefficient equipment.	Technical assistance combined with an incentive or financing option could make the difference in a public sector agency moving to a higher efficiency option for their facility.	S1.1 S1.2
Navigating EE program participation and funding sources is complex and requires a dedicated “Energy Champion” who can devote time and attention to the subject.	Frequent changes in the Energy Champions, with high turnover in staff and overall lack of government staff capacity.	Person-to-person technical assistance and support is critical for maintaining relationships through staffing turnover.	S1.1
Local governments each have their own bureaucratic structure, and it is often unclear how they can enroll in EE programs or apply for financing opportunities.	Varied governance, and funding rules that limit ability to take advantage of typical IOU funding or Local Government Partnerships (LGPs).	Technical assistance resources, and person-to-person support can help agency staff navigate the enrollment and approval process.	S1.1

Strategy 1.1 Develop a regional Building Upgrade Concierge (BUC) for local governments, special districts, and tribal communities with technical guidance and tools to inform and enable priority energy improvements.

Objective: Local governments have support and resources to develop and implement their strategic energy plans and energy efficiency projects.

Tactic 1.1.1: Establish person-to-person support for local governments to get higher levels of assistance and support for their EE projects.

Insufficient staff time and resources is one of the major barriers to implementing energy efficiency retrofits in public sector buildings. This has been exacerbated over the past year due to the COVID-19 pandemic, with local governments on the front lines addressing the public health crisis and enduring the associated economic downturn. Local jurisdictions have had to implement mandatory closures of facilities, as well as intensive planning and logistical efforts to prepare for safely reopening facilities to the public.

RENterns: Building Capacity to Support Public Sector EE Projects

As part of its continued efforts to collaborate and work with local governments, I-REN proposes to support public sector energy efficiency projects with "RENterns." Interested local government agencies would be provided interns from the Inland Empire that will support agencies with energy efficiency programs such as climate action planning, energy benchmarking, energy efficiency projects and other sustainability initiatives. This effort will continue to foster building capacity as it will provide participating local governments additional support to meet ENERGY goals.

The idea of RENterns originates from the success of WRCOG's Public Service Fellowship program, which has trained more than 75 Fellows over five years. The success of the Fellowship Program has led to alumni being hired in the region, while other alumni use their experiences in the program to trailblaze new professional development opportunities like graduate school.

I-REN will provide concierge-style support by phone, email, and in-person when feasible, to help fill gaps in staff capacity and resources at these local government jurisdictions. I-REN can also provide additional staffing support through its RENterns initiative described at left. As the pandemic and associated economic challenges continue to affect Southern California, local governments may be even more cost-conscious than before, and some may have sustained cuts to staffing or funding.

I-REN's technical assistance support will build local government's capacity to tackle these complex projects, from helping with benchmarking to navigating options and approaches for maximizing their investments and energy savings. I-REN will offer person-to-person support to help these local governments in making efficient equipment purchases and to implement energy efficiency projects. Resulting energy bill savings will benefit local governments and contribute to both local and statewide goals for energy efficiency and greenhouse gas reduction.

Local governments, special districts, and tribal jurisdictions vary widely in their current situation with regard to energy efficiency project implementation. Some may have already

implemented projects and need to ensure their facility staff are engaged in ongoing commissioning. Some may have put projects on hold over the past year due to the pandemic and now need to revisit them. Others, especially smaller and more rural jurisdictions, may need to start from the beginning.

I-REN will meet these departments and facilities staff where they are, assess their current situation and resources, and offer guidance to move them forward. In addition to staff resource constraints, other common barriers facing the public sector include complex program requirements to receive funding, risk aversion to new or unproven technology, a lack of data to support their decision-making process, or limited technical expertise and knowledge of energy projects. I-REN can offer personalized support to identify and address barriers by building and sustaining relationships with local jurisdiction staff.

I-REN activities to implement this tactic include but would not be limited to the following:

- Identify and establish rapport with department decision makers and facility staff.
- Assess jurisdictions' needs and collaborate on an approach to address them.
- Guide staff to technical resources and compelling data to assist in decision making.
- Offer problem-solving support for staff navigating lengthy approval and procurement processes.
- Maintain communication to monitor status and encourage progress.
- Follow up on completed projects to ensure efficient operations and ongoing maintenance, and address facility staff turnover and retraining needs.
- Provide RENtern staff as well as in-person, phone, and email support to individuals, and offer training and workshops for departments if desired.

Tactic 1.1.2: Develop or enhance strategic energy plans to connect local government goals related to climate, resilience, and economic development to energy efficiency programs and adoption.

> *"A strategic energy plan is a roadmap to achieving community energy goals in both the near and long term." - US DOE*[12]

The I-REN service territory is a patchwork of jurisdictions, including some that have developed a strategic energy plan and some that have not. Some jurisdictions that do have strategic energy plans may have been unable to effectively implement them, lacking clear priorities and understanding of the best impact or challenged by time and staffing constraints. Jurisdictions without strategic energy plans may be unsure of the value proposition in undertaking that level of planning effort given the challenges they have faced over the past several months.

Through this tactic I-REN will assess the current state of strategic energy planning and provide technical assistance to begin the process or help move the process forward. Strategic energy planning is a critical exercise for organizing a community around goals for not just energy efficiency but also climate change mitigation, resilience, and economic development.

[12] U.S. Department of Energy Office of Energy Efficiency & Renewable Energy. "Community Greening: How to Develop A Strategic Energy Plan." Prepared by the National Renewable Energy Laboratory (NREL), February 2010. Available online.

The US DOE identifies a step-by-step approach for strategic energy planning based on community, city, state, and tribal experience. I-REN will adapt this overall approach to be targeted and effective for its constituents and will support the process with activities including but not limited to those identified below:

- **Identify/Convene Stakeholders:** I-REN will utilize existing committee structure connections from the three COGs that make up the I-REN governing agencies to bring various stakeholders to the table.
- **Develop Energy Vision, Energy Baseline, and Specific Goals:** I-REN can serve as a facilitator for parts of this process, giving input on energy efficiency best practices and possible objectives for consideration.
- **Identify and Evaluate Programs and Funding Sources:** I-REN can provide information on its own resources and financing options as well as other program administrators' offerings, to ensure the best outcome for each jurisdiction.
- **Compile and Implement the Plan:** I-REN can guide jurisdictions in organizing sites and projects into phases for implementation, leveraging available energy usage data and building benchmarking to prioritize community facilities with high energy use.
- **Evaluate Progress and Fine-Tune Plan:** DOE recommends periodic stakeholder meetings and reviews to ensure continued success. I-REN can provide consistency and follow-through as a facilitator of these meetings and can help provide recognition to celebrate successes and create local case studies to demonstrate achievements in the region.

Addressing Climate Resilience & Leveraging Other Funding Sources

I-REN governing agency WRCOG was awarded a grant by the Bay Area Council to focus on climate resiliency projects to help its member agencies tackle climate resiliency. The grant that has been awarded to WRCOG will be used to develop a climate resiliency framework that can be utilized by local governments as a guiding template to implement battery storage systems / microgrids.

With climate resiliency becoming a key focal point for the state and its sustainability efforts, the I-REN team will learn from WRCOG's climate resiliency framework to support the I-REN region with climate resiliency projects. Funding for implementation of these projects cannot come from energy efficiency funds from the CPUC, but the I-REN team can support its agencies with identification of funding through grants from the DOE, CEC, CPUC, and event by utilizing programs offered by the utilities as well as leveraging I-REN financing mechanisms if needed.

Tactic 1.1.3: Create resources for the public sector to tap into EE and distributed energy resources programs offered by other providers and IOUs.

In this tactic, I-REN will act as a clearinghouse for information about energy efficiency programs available in the region for the public sector, and will create and promote regionally-focused tools and resources to increase energy efficiency program participation among their constituents.

The I-REN service territory has long been characterized by low participation in energy efficiency programs. In the public sector, barriers such as staffing constraints and confusing program requirements put an undue burden on local governments trying to figure out where and how they can participate. I-REN's approach addresses these barriers head-on and leverages their existing connections to other program administrators and in-house capabilities for marketing and outreach.

The I-REN governing agencies have established communication channels and working relationships with all 52 cities in their service territory, county board of supervisors, water districts, school district superintendents and other public sector agencies. Through their committee structure they facilitate meetings and planning efforts around sustainability, and host educational forums to bring awareness to environmental issues, energy efficiency and water conservation, in collaboration with other agencies. Each of these opportunities is marketed through the I-REN governing agencies' established communication networks, making I-REN a trusted voice in the region--especially for local governments.

By creating a regionally-focused set of tools and resources, I-REN can offer targeted information for general consumption while also using the data set as an internal reference for I-REN staff efforts under Tactic 1.1.1 to provide one-on-one technical assistance and in Tactic 1.1.2 for identifying program opportunities to leverage when implementing strategic energy plans.

Activities to implement this tactic could include but are not limited to the following:

- Assess the current energy efficiency programs available in the region to the public sector.
- Collaborate with program administrators to get information on eligibility requirements and participation processes.
- Compile content with user-friendly, regionally focused packaging.
- Create a suite of tools including but not limited to online resources, information databases, and printed materials.
- Distribute and promote materials through e-communicators, social media, web, and at in-person events.
- Update materials periodically to reflect feedback on ease of use, and to reflect program changes.

Strategy 1.2 Establish incentives and leverage existing financing mechanisms to assist local governments with implementing energy efficiency projects in public buildings.

Objective - Help local governments afford and finance a range of energy efficiency upgrades.

Tactic 1.2.1: Deliver a resource offering to provide incentives for savings based on Normalized Metered Energy Consumption (NMEC) achieved over three to five years.

I-REN proposes to offer a resource program with incentives for measures including but not limited to HVAC tune ups and retrofits; exterior and interior lighting and smart controls; and operations and maintenance. The program would be open to all public sector facilities including those operated by county and city government, school districts, special districts, and tribes.

Program outreach will focus initially on public gathering spaces such as community and neighborhood centers, health and recreation centers, senior centers, teen centers, and libraries. Implementing energy efficiency projects at these locations will serve multiple goals, including but not limited to those described here:

- Upgrades and retrofits to HVAC and lighting equipment both interior and exterior will improve comfort and safety at facilities that benefit vulnerable populations such as children, elders, and low income, disadvantaged, and underserved communities.
- Higher efficiency equipment, appliances and controls such as cooling-dominated HVAC loads as well as improvements to operations and maintenance will lower energy bills for local governments, reducing overhead and freeing up funds for other projects.
- Completion of projects at these high-visibility locations will support achieving local and statewide energy efficiency and greenhouse gas reduction goals while also positioning local governments as energy efficiency leaders within their communities.

The program will use an NMEC approach to calculate savings and demonstrate persistence of savings. By using NMEC to calculate savings, the program will help protect against unrealized savings. Combined with technical assistance and reinforcement of operations and management best practices, public sector customers will experience maximized savings.

I-REN governing agency WRCOG brings public sector program administration experience from its successful and highly-regarded Regional Streetlight Program (Figure 2-2), which reduces costs to local jurisdictions through cost-effective and energy efficient lighting retrofits and regional operations and maintenance. The program was designed to save the subregion $70 million over 20 years. The program involved a demonstration project to gain feedback from community stakeholders including interested jurisdictional elected officials and staff, engineers, community and environmental groups, and residents.

Figure 2-2. WRCOG Regional Streetlight Program Outreach Example

Note that if a third-party program becomes available that serves this need and makes this resource offering duplicative, I-REN will focus its full Public Sector budget on providing technical assistance and strategic energy planning through the BUC. I-REN has designed its Public Sector offerings to be flexible and its goals and targets can be adjusted accordingly to meet the needs of the region.

Tactic 1.2.2: Leverage sustaining financing mechanisms for HVAC upgrades in public buildings.

> *Energy efficiency financing is defined by Lawrence Berkeley National Laboratory as "debt or debt-like products that support the installation of energy efficiency measures by allowing costs to be spread over time."*[13]

Figure 2-3 shows a wide variety of financing mechanisms available for energy efficiency projects, from traditional loans and financing from banking institutions to specialized products designed specifically for energy efficiency. However, the public sector is challenged by many barriers in trying to take advantage of these options. Staff time and resources are constrained, the array of options is confusing, and it can be unclear how local governments, special districts, and tribes would participate, given their unique position as publicly funded agencies.

I-REN can bridge this gap by identifying financing mechanisms and creative funding sources, evaluating their appropriateness for various public sector jurisdictions and facility types in the I-REN service territory, and then assembling a tailored set of options to present to local governments, special districts, and tribes. I-REN can support local jurisdiction staff and decision-makers in navigating through the complexities of financing options (see Figure 2-3), choosing a pathway and applying for funds, and then serve as a technical assistance resource for project implementation and reporting.

For its initial focus, I-REN proposes to target HVAC upgrades in community buildings including but not limited to recreation centers, libraries, senior centers, and the like. HVAC replacement at a large facility is costly, and the intervention of financing through I-REN's Public Sector initiative could mean the difference between replacing a system with baseline equipment and moving up to a more efficient system that will deliver better performance and bill savings, as well as supporting energy savings and climate action goals.

Financing Mechanisms

Potential funding mechanisms may include but would not be limited to the following:

- On-bill financing
- Savings-backed arrangements such as performance contracting
- Revolving loan funds
- California Climate Investments using Cap-and-Trade auction proceeds
- New financing mechanisms from the banking industry
- Community energy projects
- Green bonds and climate bonds

[13] Greg Leventis et al. "Current Practices in Efficiency Financing: An Overview for State and Local Governments," Ernest Orlando Lawrence Berkeley National Laboratory, November 2016. Available online.

Other Sources of Funding

In addition to traditional and specialized financing options, I-REN can help its public sector jurisdictions identify and gain access to other funding sources including but not limited to the following:

- State, e.g. California Energy Commission grants
- Federal, e.g. Department of Energy, Energy Efficiency & Renewable Energy funding

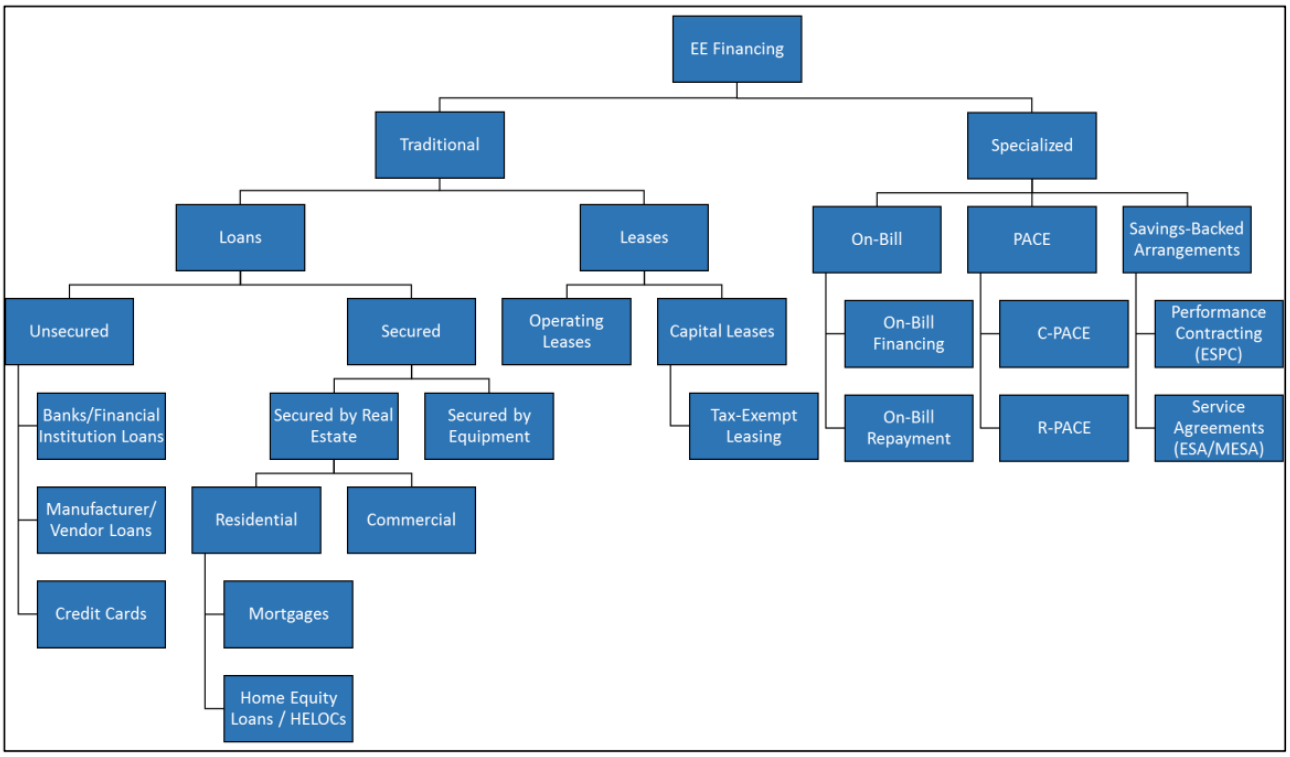


Figure 1-1: Typology of energy efficiency financing products

Figure 2-3. Typology of Energy Efficiency Financing Products[14]

Source: LBNL, February 2016

[14] Greg Leventis et al. "Current Practices in Efficiency Financing: An Overview for State and Local Governments," Ernest Orlando Lawrence Berkeley National Laboratory, November 2016. Available online.

Anticipated Programs

I-REN anticipates providing program offerings to the public sector including but not limited to the following:

- **Technical Assistance and Strategic Energy Planning** – short-term and mid-term technical support for local governments, special districts, school districts, and tribes to increase energy efficiency in publicly-owned facilities. Additional support and technical services to design high performing, energy efficient buildings.
- **Public Buildings NMEC Program** – a resource program (in year two of I-REN program administration) to provide incentives and financing for savings based on Normalized Metered Energy Consumption (NMEC) achieved over three to five years, with a special focus on HVAC improvements to community-serving buildings.

Note that I-REN has designed its Public Sector offerings to be flexible and its goals and targets can be adjusted to meet the needs of the region, including focusing its full Public Sector budget on providing technical assistance and strategic energy planning if needed due to the emergence of duplicative third-party programs that serve this need.

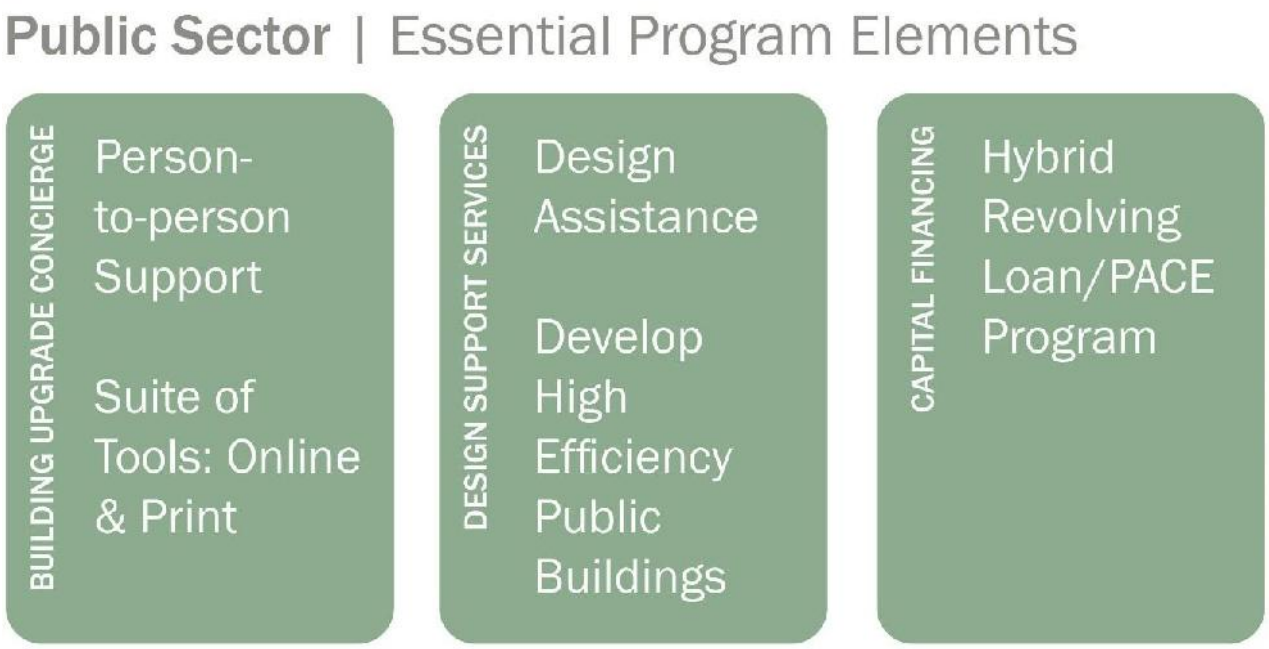


Figure 2-4. I-REN Public Sector Essential Program Elements

Evolving Approach

As a new REN, I-REN will build upon the work currently underway through its governing agencies and local government partnerships to implement the strategies outlined here, in collaboration with the key partners described in the section that follows. Based on measurement and verification, and on monitoring progress toward performance metrics through the near and midterm activities, I-REN will adjust strategies for future implementation beyond the 2021-2025 timeline.

Leveraging I-REN's Existing Key Partners

I-REN has worked for many years to build relationships (shown in Table 2-4) with local governments, building and planning departments, code officials and permit staff, private construction and architectural firms, and other market actors who will impact work in the public sector. These relationships are maintained through frequent engagement and through I-REN's numerous outreach activities and communication platforms, through which I-REN has become a trusted voice and advocate for local communities in the region. Local governments in the counties of Riverside and San Bernardino look to the I-REN governing agencies for information and collaboration on energy efficiency and sustainability-related opportunities.

One of the challenges of working with local government agencies for public sector energy efficiency is the turnover in both staff and elected positions, which can mean the loss of a department's "Energy Champion." In their many existing collaborations with local governments, the I-REN governing agencies take a proactive approach to maintaining the lines of communication across these transitions, working with the outgoing official or staff member before they depart and then reaching out to the successor to establish the new relationship.

I-REN will build on these existing relationships to foster additional connections with new partners as described earlier in the chapter (sections entitled "Market Actors" and "Other Partners and Stakeholders").

Table 2-4. I-REN's Key Partnerships with Market Actors in the Public Sector

Key Partners	Relevant Examples of Past/Present Collaboration
Local governments, including two counties, 52 cities, 115 special districts, and 15 tribal areas	The three I-REN governing agencies have all had or currently have LG partnerships – with various connections including City Manager, Planning, local utilities. They bring multiple local experts into the conversation on a monthly/quarterly basis. WRCOG's existing partners consist of Public Agencies (18 members), Water Districts (2 members), and Riverside County Superintendent of Schools. Collaboration has included various Energy, Environmental, and Transportation / Planning Programs such as LGP, PACE, Western Community Energy (WCE, the WRCOG's Community Choice Aggregation), Transportation Uniform Mitigation Fee (TUMF) program, Solid Waste Cooperative, Clean Cities Coalition, and Planning / Grant Writing Assistance Programs.

Key Partners	Relevant Examples of Past/Present Collaboration
	WRCOG has committee structures engaged with planning directors and public work directors. They work with building department decision-makers and coordinate with permit technicians and all other staff face to face. CVAG's 10 member cities looks to CVAG to keep them updated on energy efficiency programs and measures. CVAG has participated in the Desert Cities Energy Partnership (DCEP) LGP with each of their member cities and the utility companies servicing the CVAG jurisdiction. CVAG also obtained a Strategic Plan grant in the amount of $4.1 million to assist its cities with completing Greenhouse Gas inventories, Climate Action Plans, Energy Action Plans, and many more policies relevant to energy efficiency and reduction of their carbon footprints. The DCEP allowed the CVAG member cities to achieve great energy savings for a 10-year period, due to close collaboration and monthly meetings. CVAG also has existing relationships with each of its cities through its Solid Waste & Recycling Committee (TWG) that reports to the Energy & Environmental Resources Committee (E&E), which then reports to its Executive Committee. The TWG committee is made up of representatives of each city who are involved in sustainability and recycling. The E&E committee is made up of elected representatives from each city; they discuss all topics related to energy and sustainability and provide recommendations to the Executive Committee, which is made up of elected representatives from each city. SBCOG brings experience working with South Coast Air Quality Management District, and other councils of governments throughout Southern California. SBCOG cities recently participated in a county-wide Zero Emission Vehicle (ZEV) Readiness and Implementation Plan funded through the CEC. Climate Resiliency Study "Resilient IE" is currently underway, which includes the participation of all 24 cities in San Bernardino County. SBCOG brings experience working closely with law enforcement, such as California Highway Patrol, as well as rail support facilities in the region.
Local Community Colleges	CVAG staff is part of a committee with College of the Desert to offer feedback and expertise in the creation and development of their workforce & training certification program, which allows students to take classes to become trained in installation and repair on systems such as HVAC, environmental management systems and more.
K-12 Schools	CVAG has hosted and presented at various sustainability expos which were held for hundreds of middle school and high school students to learn about various programs and measures related to energy efficiency and recycling.
IOUs/Other Program Administrators	SBCOG has experience conducting outreach through the San Bernardino Regional Energy Partnership in collaboration with SCE and SoCalGas and working closely with 12 cities in the region.

Key Partners	Relevant Examples of Past/Present Collaboration
Building Professionals	WRCOG has collaborated with the Riverside Chapter Building Industry Association (BIA) through in WRCOG's Transportation Uniform Mitigation Fee (TUMF) Program. In addition, WRCOG previously served on the Board of the U.S. Green Building Council Inland Empire Chapter (USGBC-IE). CVAG has connections to the local building industry through its work with the PACE program described earlier, as well as through the Desert Cities Energy Partnership (DCEP). Through the DCEP, CVAG partnered with local universities to provide Title 24 training classes to local building contractors, architects, and building and safety officials.
PACE and other financing and funding sources	Through WRCOG, the Regional Streetlight Program solicited a Request for Bid (RFB) that was used to select a financial provider to support members with the financing/ purchase of the various streetlights within the WRCOG subregion. WRCOG has supported its member agencies in applying and receiving grants through its on-Call Grant support program to help agencies implement projects in the areas of Transportation, Environmental, Energy, and Water. CVAG administers a Property Assessed Clean Energy (PACE) program and has service agreements with seven private firms to service CVAG's jurisdiction. PACE started in the Coachella Valley in 2007, starting with the City of Palm Desert and later transitioning to a regional approach through CVAG. SBCOG received a grant to demonstrate more than 200 compressed natural gas (CNG) and liquid natural gas (LNG) Peterbilt and Freightliner trucks. This partnership included Ryder Systems, which demonstrated the CNG and LNG trucks with various companies. SBCOG also received a grant from the Mobile Source Air Pollution Reduction Review Committee to purchase, install and maintain multiple electric vehicle charging stations for three locations: SBCOG east parking lot area, San Bernardino Metrolink Station, and San Bernardino Transit Center.

Budget and Metrics

Budget

The budget shown in Table 2-5 will facilitate the forecasted short and mid-term metrics targets with the expectation that increased participation and project volume is achieved as initial efforts scale and gain traction.

Table 2-5. Public Sector Budget

Budget ($)	2021	2022	2023	2024	2025
Administration	431,423	628,819	619,172	662,939	707,457
Marketing and outreach	258,854	377,292	371,503	397,763	424,474
Direct implementation - non incentive	3,623,949	3,782,083	3,701,047	3,818,688	3,942,635
Direct implementation - incentives	-	1,500,000	1,500,000	1,750,000	2,000,000
Total	**4,314,226**	**6,288,194**	**6,191,722**	**6,629,390**	**7,074,566**

Energy Savings & Cost-Effectiveness Targets

Although RENs are not required to achieve a specific cost-effectiveness metric, I-REN endeavors to be as cost-efficient as possible in using ratepayer funds. Table 2-6 shows the estimated cost-effectiveness for I-REN's resource program activity in the Public Sector.

Table 2-6. I-REN Public Sector Resource Activity Anticipated Cost-Effectiveness

Public Sector Resource Activity	2021	2022	2023	2024	2025
Net kWh	0	4,175,629	4,361,224	4,361,224	5,763,031
Net kW	0	720	813	813	1,084
Net Therm	0	121,315	147,884	147,884	196,707
CO2	0	1,736	2,039	1,937	2,781
NOx	0	640	668	668	883
Total Resource Cost (TRC)	0	0.45	0.51	0.47	0.61
Program Administrator Cost (PAC)	0	0.74	0.81	0.79	1.03
Ratepayer Impact Measure (RIM)	0	0.35	0.35	0.36	0.37

Metrics

Based on the intervention strategies I-REN developed for the Public Sector, the following metrics are proposed to track program performance.

Public Sector Metrics

Table 2-7. Public Sector Metrics

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
First year annual kW gross	2022	N/A	759	856	1,000
First year annual kW net	2022	N/A	720	813	949
First year annual kWh gross	2022	N/A	4,401,355	4,596,706	5,335,690
First year annual kWh net	2022	N/A	4,175,629	4,361,224	5,062,128
First year annual Therm gross	2022	N/A	127,668	155,636	181,325
First year annual Therm net	2022	N/A	121,315	147,884	172,295
Lifecycle ex-ante kW gross	2022	N/A	3,220	3,511	4,081
Lifecycle ex-ante kW net	2022	N/A	3,209	3,499	4,067
Lifecycle ex-ante kWh gross	2022	N/A	18,780,846	19,037,308	22,006,804
Lifecycle ex-ante kWh net	2022	N/A	17,825,745	18,069,440	20,887,250
Lifecycle ex-ante Therm gross	2022	N/A	512,633	624,822	727,940
Lifecycle ex-ante Therm net	2022	N/A	487,087	593,666	691,644
CO2-equivalent of net annual kWh savings	2022	N/A	1,026	1,173	1,351
Percent annual net kW per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent annual net kWh per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Percent annual net Therms per project building or facility	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net kw savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net kw savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual net Therm savings per project building floor plan area	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual Net kW savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual Net kWh savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Average annual Net Therms savings per annual flow through project water/wastewater facilities	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector accounts participating in programs	2021	TBD	TBD	TBD	TBD
Percent of estimated floorplan area (i.e., ft2) of all Public Sector buildings participating in building projects	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector water/wastewater flow enrolled in non-building water/wastewater programs	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
PAC Levelized Cost ($/kW)	2022	N/A	$0.41	$0.36	$0.31
PAC Levelized Cost ($/kWh)	2022	N/A	$4.41	$3.79	$3.18
PAC Levelized Cost ($/therm)	2022	N/A	$2,632.75	$2,182.44	$1,883.26

Public Sector Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
TRC Levelized Cost ($/kW)	2022	N/A	$0.48	$0.42	$0.37
TRC Levelized Cost ($/kWh)	2022	N/A	$5.37	$4.42	$3.81
TRC Levelized Cost ($/therm)	2022	N/A	$0.41	$0.36	$0.31
Total program-backed financing distributed to Public Sector customers requiring repayment	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Percent of Public Sector buildings with current benchmark	2021	TBD	TBD	TBD	TBD
Average energy use intensity of all Public Sector buildings	2021	TBD	TBD	TBD	TBD
Percent of floorplan area of all Public Sector buildings with current benchmark	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Cross-Cutting & Coordinating Activities

Marketing, Education & Outreach

The I-REN governing agencies bring experience in marketing, education, and outreach to the public sector from a long history of work with the local governments they serve. Through their committee structures and established communication platforms, the I-REN governing agencies have become a trusted voice and advocate in their two counties. They can use this position to coordinate marketing, education, and outreach (ME&O) activities within the region through their network of member jurisdictions. In the public sector, the bulk of this ME&O will fall under the category of outreach and relationship building.

Coordination with other program administrators will be important for I-REN's proposed Public Sector Tactic 1.1.3, and I-REN has already opened the lines of communication and begun to discuss ways to collaborate, in order to reduce market confusion and ensure the best outcome for ratepayers.

I-REN anticipates its Public Sector-related marketing could include but would not be limited to the following activities shown in Table 2-8, in alignment with the proposed Public Sector intervention strategies and tactics.

Table 2-8. Marketing Activities for I-REN C&S Sector

Intervention Strategy	Tactic	Marketing Activities
S1.1 Develop a regional Building Upgrade Concierge (BUC) for local governments, special districts, and tribal communities with technical guidance and tools to inform and enable priority energy improvements.	T1.1.1: Establish person-to-person support for local governments to get higher levels of assistance and support for their EE projects. T1.1.2: Develop or enhance strategic energy plans to connect local government goals related to climate, resilience, and economic development to energy efficiency programs and adoption. T1.1.3: Create resources for the public sector to tap into EE and distributed energy resources programs offered by other providers and IOUs.	*Outreach to local jurisdictions and agencies to educate them about the program offerings, to provide presentations at meetings and with key decision makers.* *Develop content for an e-newsletter targeted to local government audiences, a comprehensive website with a listing of events, resources and tools for local governments, targeted use of social media, and other channels to promote public sector resources.* *Collaborate with local governments, tribes, and special districts to design and deliver messaging to the community to promote local leadership in energy efficiency by highlighting success stories from local strategic energy plans and projects.*
S1.2 Establish incentives and leverage existing financing mechanisms to assist local governments with	T1.2.1: Deliver a resource offering to provide incentives for savings based on Normalized Metered Energy	*Develop a marketing and outreach plan to support resource and financing initiatives. Promote the initiatives through the I-REN governing agencies' existing marketing*

Intervention Strategy	Tactic	Marketing Activities
implementing energy efficiency projects in public buildings.	Consumption (NMEC) achieved over three to five years. T1.2.2: Leverage sustaining financing mechanisms for HVAC upgrades in public buildings.	*channels, local government connections, building industry communication networks, and other channels.*

Workforce Education & Training

Workforce Education & Training (WE&T) is an important area for cross-cutting coordination, with synergies between I-REN's Public Sector and WE&T initiatives that include and are not limited to the following:

- Identify and help to engage contractors and building firms who provide services to local governments/public sector to locate and work in the I-REN territory.
- Coordinate potential training programs in the WE&T to help enhance energy efficiency services to local governments, such as facility manager and operations trainings, advanced controls training, and the like.
    - I-REN's service territory includes several relatively new cities incorporated in recent years; these cities are building their local capacity and establishing their infrastructure. They will benefit from training and education for their public sector facility staff.
- Establish training programs and resources for local government agencies and tribes to better manage and maintain low energy use targets.
- Provide interns ("RENterns") to support agencies with energy efficiency projects and other sustainable initiatives. The idea of RENterns originates from WRCOG's Public Service Fellowship program, which has trained more than 75 Fellows over five years. The success of the Fellowship Program has led to alumni being hired in the region and pursuing additional education and training such as graduate school.

I-REN will coordinate its WE&T and Public Sector activities to maximize the benefits to their constituents in these sectors.

Codes & Standards

Codes and Standards (C&S) is another important area for cross-cutting coordination with the Public Sector. I-REN's C&S sector activities incorporate training for local building department staff, to help those individuals perform their jobs and build capacity in their departments to better enforce codes and standards. This supports better code compliance in publicly owned buildings, especially as some of the relatively new cities in I-REN's territory begin to explore building their own public infrastructure and facilities.

These synergies support I-REN's Public Sector approach, which focuses on empowering local governments as leaders in energy efficiency through their own publicly owned facilities. I-REN will

coordinate its C&S and Public Sector activities to maximize the benefits to their constituents in these sectors.

EM&V Considerations

The current lack of energy efficiency data about the public sector places added importance on the role of EM&V. I-REN will collaborate with the CPUC and stakeholders to ensure that data collection activities are embedded in Public Sector program design to capture the information necessary to meet evaluation requirements and to help expand the understanding of energy efficiency potential and best practices in this relatively new sector.

I-REN's EM&V considerations for its Public Sector programs include data collection to inform CPUC evaluation activities and support internal program performance tracking and continuous improvement. I-REN has also identified studies, either already in progress or proposed, that will help to characterize the market and support the development of baselines to enable more reliable EM&V of Public Sector program impacts.

Data Collection Needs

I-REN data collection will support both external EM&V by the CPUC and internal research study activities. I-REN's data collection needs directly correspond to identified metrics and indicators, and the intervention strategies developed for the Public Sector.

To support external EM&V activities, I-REN will collect data to keep the CPUC and stakeholders apprised of program progress. I-REN will work collaboratively with Energy Division staff to ensure data collection meets their needs, to enable evaluation that can:

1) inform the program selection process,

2) provide early feedback to program implementers,

3) produce impact evaluations at the end of the funding period, and

4) feed the planning process for future program cycles.[15]

Data collection will also support I-REN's internal EM&V activities and inform the measuring of progress toward established program goals and targets, CPUC metrics and indicators, and PA determined value metrics. Data collection and real-time program performance tracking will support the delivery of timely feedback to implementers and/or program administration staff. This in turn will support continuous improvement and inform future program planning efforts.

Table 2-9 shows the research questions and data collection needs I-REN has identified for the Public Sector, in alignment with CPUC metrics and indicators and I-REN's internal goals and value metrics.

[15] Energy Efficiency Policy Manual, version 6, April 2020, p.44.

Table 2-9. I-REN Public Sector Data Collection

Topic Focus	Research Questions/Data Collection Needs	EM&V Objective	Timeframe
Energy savings and greenhouse gas (GHG) emissions reduction	• Net and gross first year annual kW, kWh, and Therms • Net and gross lifecycle ex-ante kW, kWh, and Therms • CO2-equivalent of net annual kWh savings	Track program performance	Short-term/ Mid-term
Public sector benchmarking and strategic energy planning	• What percent of public sector buildings and total floorplan area have a current benchmark? • What percent of public sector jurisdictions and total floorplan area have a current strategic energy plan?	Understand and track the public sector market	Short-term
Energy intensity of public sector buildings	• What is the average energy use intensity of all public sector buildings?	Identify highest needs and track program performance	Short-term
EE program penetration in the eligible market	• What percent of service accounts are participating in programs? • What percent of total public sector floorplan area is participating in building projects?	Understand and track the public sector market	Short-term/ Mid-term
Depth of I-REN interventions	• How many service accounts are participating? • What is the average square footage of properties? • What is the per-application energy usage of buildings that have been retrofitted? • What percent of public sector water/wastewater flow is enrolled in non-building water/wastewater programs?	Track program performance	Mid-term
Investment in EE	• What is the total amount of program-backed financing loaned through I-REN programs?	Track program performance	Mid-term

Anticipated Study Needs

PA-led studies may inform program target setting, value metrics, and highlight opportunities for improved data and measurement collection. Because the Public Sector is a new market segment for energy efficiency programs, carved out from Commercial, very little data exists and few relevant evaluation studies have been completed.

One of the major areas for I-REN's study considerations is to better characterize and understand the size, scope, and breadth of public sector needs for energy efficiency in the Inland Empire. The I-REN proposes to develop and manage a study to first inventory the number and type of public sector buildings in the territory, including determining the type of energy systems, operating costs and procedures, and utility usage.

A Statewide Public Sector Market Study has been identified as an "urgent need" to help PAs understand the potentials and challenges of the Public Sector.[16] The objective of this PG&E-led study has been identified as "Develop a quantitative and qualitative characterization of the four subsegments within the Public Sector that provides PAs with information about industry standard practices, baseline saturation of high impact measures, and the unique market barriers that differentiate Public Sector customers from those in the Commercial Sector." When available, I-REN will use the study's data and findings to inform ongoing improvements to program processes.

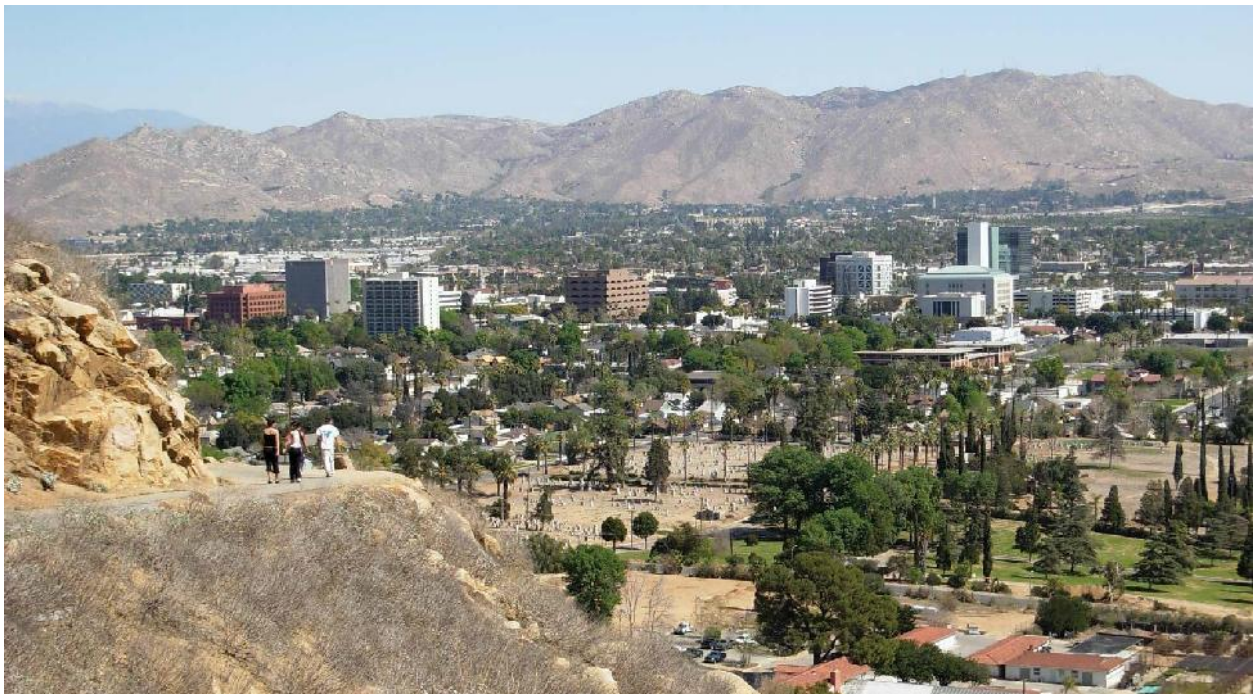
I-REN will also look to the CAEECC Underserved Working Group's sub-working group Public Sector Research Team from University of California, Santa Barbara as they develop and implement their workplan to identify underserved public sector customers within energy efficiency programs. As indicated in a December 2020 presentation to CAEECC, the research team proposes to focus on socioeconomic indicators including linguistic isolation, poverty, and unemployment in the CalEnviroScreen dataset to analyze gaps in program participation.[17] As this research is conducted and data is made available, I-REN will use the resulting insights to inform targeted strategies to improve equity and access for underserved local governments in the Inland Empire through its Public Sector initiatives.

Coordination with other Program Administrators

I-REN is in communication with other PAs operating in the region to identify areas of potential coordination for Public Sector activities. I-REN will ensure its activities are differentiated and avoid duplication of effort, while maintaining cooperation with other PAs.

[16] 2209 - Statewide Public Sector Market Study. Study ID: 2019_Public_503. Energy Project Status Reporting System. Accessed November 2020. https://psr.energydataweb.com/#!/project-status-view-edit/503

[17] "Identifying underserved public sector customers within energy efficiency programs." Presentation by University of California, Santa Barbara Public Sector Research Team to CAEECC-Hosted Sub-Working Group on Underserved Customers Meeting. December 16, 2020. Slide deck available online.



Inland Regional Energy Network Business Plan

Chapter 3: Codes & Standards (Cross-Cutting)

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Introduction

I-REN is proposing a dynamic and targeted set of programs for the Codes and Standards (C&S) Sector to assist its local government agencies in better understanding and enforcing energy building codes. In addition, I-REN will support the region's building industry to better conform and implement these codes. Compliance with California Energy Code (Title 24, Part 6) and California Green Building Standards Code (Title 24, Part 11) is required for new construction of, and additions and alterations to, residential and nonresidential buildings.

The authorities having jurisdiction or "AHJs" that provide permits for these projects and enforce codes and standards are found at the city and county level and are expected to enforce the California Energy Code without additional budget resources. Increased contractor compliance with the Energy Code, particularly related to residential HVAC, is identified as an important strategy to increase energy efficiency and home safety. The CEC has established a goal to increase compliance by 80% by 2021.[1]

Energy code enforcement has historically been difficult for local jurisdictions, particularly smaller communities with fewer resources. Conflicting priorities and a focus on life and safety codes relegates energy code to a secondary (or tertiary) position. I-REN's service territory includes many AHJs that face significant challenges in enforcing energy codes and standards with their current resources and capacity. These jurisdictions are small in population size, geographically dispersed, challenged by extreme climate conditions, and disadvantaged by pollution and other factors.

As an organization led by and dedicated to serving local governments, I-REN can provide flexible and adaptable solutions to help bridge the gap and assist these jurisdictions. I-REN's C&S initiatives will offer locally focused training, education, and tools to support codes and standards implementation, enforcement, and compliance activities.

CODES & STANDARDS GOAL & STRATEGIES

Goal 3. Work closely with local building departments and the building industry to support, train, and enable long-term streamlining of energy code compliance

S3.1 Establish an ongoing training program to assist building department staff and the building industry to support, understand, and effectively implement energy efficiency codes and standards.

S3.2 Implement an outreach program to engage, educate and involve regional construction firms and building departments, and support compliance and regional energy efficiency programs and customers.

S3.3 Develop technical assistance tools and resources to assist building departments and the building industry with understanding, evaluating, and permitting of energy codes.

BUDGET

2021-2015 Budget (total): $7.6M

[1] California Energy Commission, "2019 California Energy Efficiency Action Plan," December 2019, page 40.

Strategies

I-REN has centered its strategies on three key areas in C&S:

3.1. Support local jurisdictions' building departments to build capacity and understanding to better enforce and manage Energy Code Compliance and oversight

I-REN's locally-focused interventions will equip building department staff to identify potential issues, provide guidance to permit applicants, and streamline the permitting process. With increased knowledge and capacity, local building department staff will have the tools and additional resources to support their code enforcement and compliance, as well as cultivate the associated energy savings from efficient building practices.

3.2. Engage and support local builders and the building industry to comply with energy codes.

I-REN will help engage, educate, and inform contractors and building professionals in the Inland Empire about codes, compliance, and resources available to enable higher compliance and effectiveness. This will be through a link to the Workforce Education and Training Cross-Cutting Sector programs, as well as through direct engagement under the C&S Sector programs.

3.3. Provide regional tools, training, and resources to promote energy codes.

I-REN will provide a bridge between the Statewide Codes Team and the local industry by curating best practices into locally relevant resources, materials, regional forums, and trainings.

I-REN is well positioned to lead this work because of its extensive network of local connections with public and private sector stakeholders in the C&S community. Through their committee structure and strong relationships with cities and local jurisdictions, the three COGs that make up I-REN's governing agencies are actively engaged with building departments from jurisdictions throughout the region. In their role as COGs they already serve as a trusted resource for information as well as a facilitator for statewide coordination with other program administrators, CEC, CPUC, CCAs, International Code Council (ICC), and other stakeholders. The communication networks and local connections the I-REN governing agencies have fostered are crucial for engaging these local building departments and delivering the support they need to excel in their C&S enforcement roles and foster increased compliance.

The COVID-19 pandemic has had a significant effect on the global economy and that of the United States and the State of California. While the pandemic continues to unfold, it is clear that the role of local governments is of critical importance in advocating for their communities in times of crisis. The contractor and building communities were particularly hurt in the last recession and will likely be impacted in this crisis. Creating C&S Sector programs that can enable streamlined work for both local government and contractors, while enabling safer and better buildings is an opportunity and need. To the extent that construction and renovation continues to be an economic driver in the I-REN region, local building departments will continue to be responsible for permitting and enforcement of energy codes and standards. Through the proposed C&S sector initiatives, I-REN can provide training, education, and resources to support building department staff in the performance of their jobs, thereby contributing to economic development and energy efficiency associated with building activity in this region.

Market Characterization

Market Actors

> *"Energy efficiency savings are maximized only if they are installed following manufacturer guidelines by a well-trained workforce. Long-lasting, impactful energy efficiency savings require local commitment, and local communities need to be the focal point for training and workforce development."* - *California Energy Commission* [2]

Among the numerous market actors that comprise the broader C&S community (Table 3-1), local governments are responsible for permitting and enforcing code requirements in new construction and existing buildings. They are also tasked with coordinating across this wide field of stakeholders and market actors to improve awareness of codes and standards requirements and increase compliance.

In the I-REN region there are 52 local government AHJs, ranging from large cities to smaller, more rural municipalities, and several Indian Tribes. The local building department staff at these AHJs are key to realizing energy savings from implementation and enforcement of codes and standards. For that reason, I-REN proposes to focus much of its C&S Sector work on empowering and supporting these local building department staff to be energy efficiency leaders in their own communities—consistent with the Existing Buildings Energy Efficiency Action Plan Strategy 1.7 Local Government Leadership. In order to encourage rigorous code enforcement at the local level, a strong foundation of regional support is needed—and that is what I-REN proposes to provide through its C&S Sector programs.

On the compliance side of the C&S "enforcement and compliance" equation is a large community of building professionals, which includes architects, designers, contractors, energy consultants, and third party code plans examiners, inspectors, raters, verifiers. This community also includes contractors skilled in a wide variety of trades: electricians, HVAC technicians, insulation installers, plumbers, and many more. This diverse community is of critical importance for performing high-quality installation of efficient equipment in compliance with codes and standards.

[2] California Energy Commission, "2019 California Energy Efficiency Action Plan," December 2019, page 108.

Table 3-1. I-REN Codes & Standards Sector Market Actors

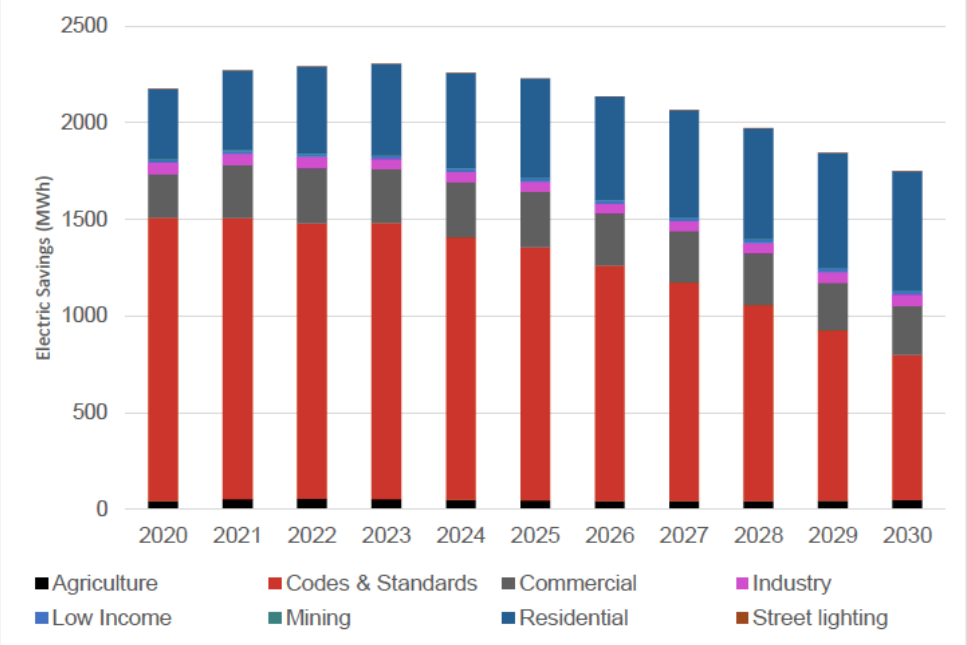
Market Actor Type	Examples
Building Department Staff	Chief building officials, permit technicians, plans examiners, building inspectors, etc.
Other Local Government Staff	Planners and community development staff, sustainability staff, city managers, public works directors, and elected officials.
Building Professionals	Architects, designers, contractors, energy consultants, and third-party code plans examiners, inspectors, raters, and verifiers.
Other Permit Applicants	Commercial building owners and managers; multifamily housing developers, owners, and managers; homeowners.
Partner Agencies and Utilities	California Public Utilities Commission, California Energy Commission, Building Standards Commission, Investor Owned Utilities, Municipal Utilities, etc.
Industry, Stakeholder and Professional Groups	International Code Council (ICC) Chapters, American Institute of Architects (AIA), Local Realtor® Associations, California Building Industry Association (CBIA) chapters (Riverside & San Bernardino County Chapters), the U.S. Green Building Council and Inland Empire US GBC local chapter, California Building Officials (CALBO), Building Owners and Managers Association (BOMA) chapters, California Energy Alliance (CEA), American Public Works Association (APWA) Southern California Chapter, etc.

Sector Landscape

The I-REN service territory of Riverside and San Bernardino counties covers more than 27,000 square miles and includes the state's third-largest Metropolitan Statistical Area (MSA). The region has seen **steady growth over the last decade** following the Great Recession, as people moved away from coastal areas with a higher cost of living. The California Finance Department reported that between 2010 and 2019, the Inland Empire added 407,476 people to reach a population of 4,632,327.[3]

Previous efforts emphasizing increased compliance with energy codes and standards in new construction to produce energy savings and emission reductions has resulted in stranded savings in existing homes and buildings. The CPUC's 2019 Potential and Goals Study, cited in the 2019 California Energy Efficiency Action Plan, recently identified C&S activity in existing buildings as the major driver of potential savings statewide (Figure 3-1).

Existing buildings pose unique challenges for code compliance, in comparison to new construction, but they far outnumber new buildings in the Inland Empire even despite the growth and new construction in the I-REN counties. The housing stock in Riverside and San Bernardino counties, nearly 1.6 million residential units, was largely built in the era before the 1978 building standards took effect. This indicates a **significant opportunity for C&S-related energy savings and carbon reduction** in I-REN's existing residential building stock through code compliant equipment installation, additions, alterations, and renovations.

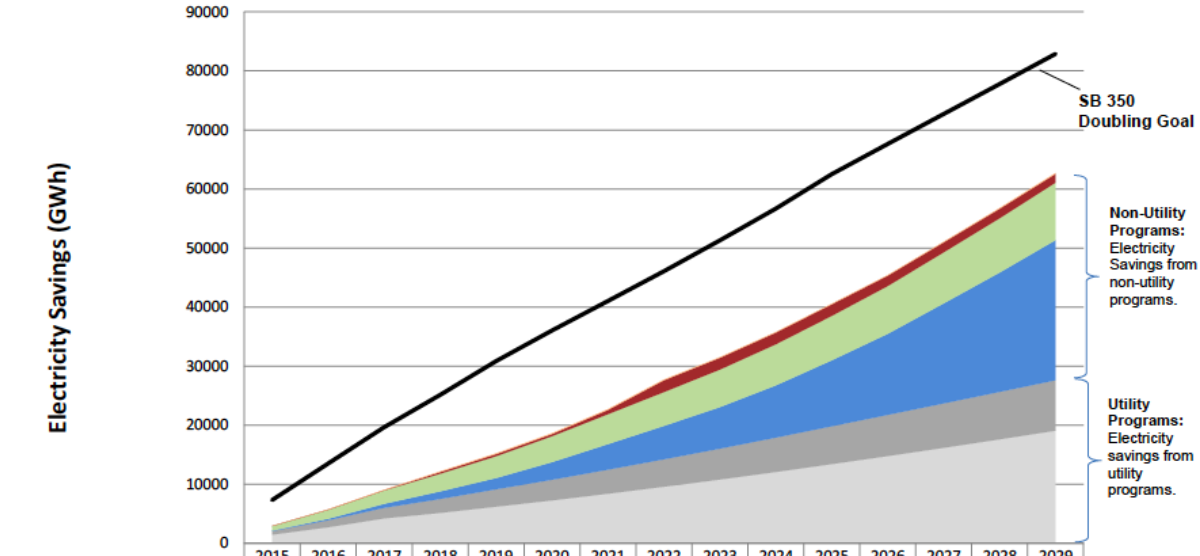


Source: Navigant, 2019 PG Study

Figure 3-1. Statewide Electric Savings Market Potential (MWh)[4]

[3] Inland Empire Quarterly Economic Report. Economics & Politics, Inc. October 2019. Available Online. Accessed October 2020. http://www.johnhusing.com/QER%20Reports/QER%20October%202019.pdf

[4] California Energy Commission, "2019 California Energy Efficiency Action Plan," December 2019, page 54.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Agriculture & Industry	2	33	58	95	118	121	116	109	94	83	76	75	82	99	127
Behavioral & Market Trans.	32	39	47	296	366	375	732	2002	1998	1986	1963	1762	1693	1617	1492
Financing	757	1513	2270	2994	3704	4401	5074	5736	6360	6967	7536	8099	8653	9202	9748
Codes & Standards	93	243	673	1280	1899	2980	4325	5655	7037	8841	11172	13729	16948	20215	23746
POU Programs	596	1190	1790	2360	2945	3501	4069	4645	5232	5822	6406	6977	7520	8042	8540
IOU Programs	1427	2685	4179	5112	6169	7230	8373	9550	10768	12052	13385	14748	16145	17580	19050
SB 350 Doubling Goal	7,286	13,46	19,60	25,10	30,81	36,01	41,03	46,04	51,28	56,66	62,51	67,60	72,69	77,78	82,87

Figure 3-2. Senate Bill 350 Goal for Doubling Energy Efficiency Savings by 2030

Senate Bill 350 Doubling Energy Efficiency Savings by 2030, pg. 17 illustrates the high percentage of planned savings from codes and standards by non-utility programs.

New construction is also a focus of C&S activities. When single family residential new construction slowed elsewhere in California after the 2008 housing crisis, the Inland Empire continued to see new single family housing starts due to the greater availability and lower cost of developable land.[5] Data from the 2018 US Census indicates that the I-REN territory represents **13% of California's total new residential permits**, despite having 11.6% of the population. In 2018, more than 78% of new permits in the Riverside-San Bernardino-Ontario, CA MSA were for single family homes.

2018 Annual Permits Data for New Houses

Location (MSA)	Total	1 unit	2 units	3 and 4 units	5 or more	Structures with 5 or more
State of California						
Housing Units Authorized	113,502	58,831	2,590	2,050	50,031	1,763
Valuation	$ 27,844,627	$ 17,843,585	$ 480,909	$ 389,207	$ 9,130,926	
Riverside-San Bernardino-Ontario, CA						
Housing Units Authorized	14,809	11,591	166	279	2,773	233
Valuation	$ 3,538,857	$ 3,080,304	$ 25,194	$ 42,882	$ 390,477	
Percentage of Calif. permits	13%	20%	6%	14%	6%	13%
Los Angeles-Long Beach-Anaheim, CA						
Housing Units Authorized	29,524	10,042	1,528	522	17,432	506
Valuation	$ 7,348,035	$ 3,507,156	$ 307,236	$ 108,602	$ 3,425,041	
Percentage of Calif. permits	26%	17%	59%	25%	35%	29%

(Source https://www.census.gov/construction/bps/msaannual.html)

Figure 3-3. 2018 Permit Data: State of California, Inland Empire, and Los Angeles-area MSAs

The building industry in the Inland Empire may see benefits from recent and ongoing legislative efforts at the state level to encourage construction of more affordable housing.[6] Overbuilding has not been a problem in the Inland Empire in recent years. The City of Riverside, for example, has seen **growth that outpaces the supply of housing** and is "in need of much more residential construction to keep up with demand from its rising population."[7]

Additional information from the Construction Industry Research Board (CIRB) 2015 Annual Energy Permit Summary, indicates that the I-REN territory had about **10% of the state's HVAC changeout permits**. It is widely understood that the actual number of HVAC units installed are much higher than are permitted (approximately ⅓ of all units), indicating a large opportunity for I-REN to achieve higher energy savings with increased support of the local jurisdictions and builder community.[8]

[5] Building the Future: Construction in Southern California. LAEDC Institute for Applied Economics. September 2016. Available online. Accessed October 2020. https://laedc.org/wp-content/uploads/2016/12/Construction_FINAL_20161110.pdf

[6] Legislative Steps Toward More Affordable Housing. Reyes, Carrie B. First Tuesday Journal. Available online. Accessed October 2020.

[7] Riverside Housing Indicators. September 8, 2020. First Tuesday Journal. Available online. Accessed October 2020.

[8] DNV-GL, Final Report: 2014-2016 HVAC Permit and Code Compliance Market Assessment Volume I, Prepared for the CPUC, September 2017, page 3.

Major Trends

The newest standards released in 2019 introduced one of the highest levels of efficiency and performance in residential buildings California has ever seen, adding solar, and an equivalent to zero net energy requirement. Substantial changes in multifamily codes are expected in the next cycle with the potential for zero or low carbon residential codes in the following cycle. These new requirements have increased complexity and multiple pathways for builders to consider. Local government and industry professionals will need consistent support to ensure that these codes can be effectively implemented and enforced.

Economic development was already of importance to the I-REN region, which has seen population growth greater than other parts of California while having lower median income.[9] As the COVID-19 pandemic and related economic crisis continues to unfold, the cross-cutting workforce development activities proposed for I-REN's C&S sector program will have a role to play in helping local governments and building professionals navigate the changes ahead.

With education and outreach, I-REN proposes to provide leadership in the effort to shift the narrative around C&S. The proposed sector activities can help to ease the burden of compliance and enforcement while emphasizing the many benefits that accrue from the interconnectedness of C&S compliance with energy efficiency, energy bill savings, and comfort for building occupants. Due to the pandemic, issues of public health and links to indoor air quality may be of even greater interest than before.

Other trends and issues that may affect I-REN's C&S community include the following:

- Learning, complying, and implementing the 2019 code
- Building decarbonization
- Heat pump water heaters and electrification measures
- ZNE preparedness / "plug and play" grid
- Systems integration and demand flexibility
- Virtual inspections and online permitting required from COVID-19

[9] Jones, B., Elkind, E., Duncan, K., & Hanson, M. (2017). The Net Economic Impacts of California's Major Climate Programs in the Inland Empire. *UC Berkeley: Berkeley Law*. Available online. Accessed October 2020. http://laborcenter.berkeley.edu/pdf/2017/Inland-Empire-Net-Impacts.pdf

Intervention Strategies and Objectives

In its approach to serving the C&S community, I-REN is guided by an overarching goal:

Goal 3: Work closely with local building departments and the building industry to support, train, and enable long-term streamlining of energy code compliance.

To achieve this goal, I-REN will provide direct support and assistance to local building departments as well as regional construction firms responsible for complying with permitting requirements. I-REN's intervention strategies address the barriers faced by the C&S community in order to streamline code enforcement and permitting, and increase energy efficiency in the region through C&S.

Table 3-2. Intervention Strategies, Tactics, and Objectives

	Intervention Strategy	Tactic	Objective
Training	S3.1 Establish an ongoing training program to assist building department staff and the building industry to support, understand, and effectively implement energy efficiency codes and standards.	T3.1.1 Develop training curriculum to address gaps in compliance with current requirements. Offer ongoing training on changes and trends in C&S. Tactic 3.1.2 Support local governments and the building industry during transitions to new codes to deliver effective messaging and resources and increase timely compliance with updated requirements.	*Improve understanding of energy efficiency codes and standards among local building departments and the building industry to increase implementation and compliance.*
Outreach	S3.2 Implement an outreach program to engage, educate and involve regional construction firms and building departments, and support compliance and regional EE programs and customers.	T3.2.1 Foster the development of an online Code Hub community for sharing best practices amongst building departments and the building industry. T3.2.2 Expand local jurisdiction relationships to host regional forums for the building industry and public sector.	*Make code compliance a valuable element of the region's energy efficiency goal attainment with engagement regionwide.*
Technical Assistance	S3.3 Develop technical assistance tools and resources to assist building departments and the building industry with understanding, evaluating, and permitting the energy codes.	T3.3.1 Identify and address the areas of greatest need for improved code compliance, in collaboration with local governments and the building industry. T3.3.2 Improve consistency in code enforcement and compliance resources across the region by facilitating cooperation between local governments. T3.3.3 Evaluate and develop model ordinances and policies for use regionally.	*Deliver locally informed resources and tools that streamline code compliance and enforcement and increase permit closeout.*

Approach to Overcoming Barriers

I-REN's intervention strategies are designed to overcome the problems and barriers described in Table 3-3, with tactics and activities to achieve the overarching goal of elevating energy codes and standards compliance through training, outreach, and assistance to local government jurisdictions and other stakeholders in the C&S community.

The C&S sector faces unique barriers to increased energy efficiency. This is especially true in the I-REN service territory, given its size and distance from the Los Angeles MSA. I-REN proposes to offer a C&S program tailored to the specific needs of this region, even though the sector has been targeted by other non-local programs. This approach is consistent with CPUC's policy in D.12.11-2015 that Regional Energy Networks (RENs) should implement energy efficiency initiatives in hard-to-reach markets "whether or not there is a current utility program that may overlap."[10] In designing their approach to the C&S sector, I-REN has selected strategies and tactics based on insights from the I-REN governing agencies, with consideration also given to previous attempts by other PAs to address the C&S sector in this region. Those lessons learned informed I-REN's planning process, as well as best practices from successful C&S programs elsewhere in the state.

The proposed interventions rely on relationships and communication. I-REN is uniquely positioned to serve the C&S sector because the I-REN governing agencies already have extensive connections throughout the region with local building and planning departments, including code officials and permitting staff at all levels, and many of the private construction and architectural firms who frequently apply for permits.

[10] California Public Utilities Commission, Decision 12-11-015, Decision Approving 2013-2014 Energy Efficiency Programs and Budgets, November 8, 2012, Page 17.

Table 3-3. Barriers and Strategies for I-REN Codes & Standards Sector

Problem	Barriers	Solutions	Strategies
Codes and standards are continually being updated and becoming more complex.	Lack of capacity and time to learn details of Title 24, Part 6 and implement effective means to review or enforce.	Technical assistance, tools, training, and resources can help local building department staff and permit applicants keep up with changes to codes and standards.	S3.1, S3.3
Some local building departments have limited staff resources for enforcing energy codes.	Energy efficiency is a low priority for building departments. Focus is on life and safety issues.	Ongoing training and outreach can help identify and fill gaps in building department capacity, while reinforcing the importance of energy codes and helping encourage local leadership in EE and C&S.	S3.1
Some local building departments have limited capacity to monitor and enforce changes, leading to uneven compliance across the region.	Lack of enforcement of permitting of HVAC systems for existing buildings as well as other energy code elements for new construction, especially related to the 2019 code cycle.	Outreach to construction firms and local building departments can help ensure consistent and timely information is being distributed across jurisdictions to support both compliance and enforcement.	S3.2
Both permit applicants (e.g. construction firms) and local building department staff have complicated requirements to follow for compliance and enforcement.	Technical questions and issues with permitting, codes, etc.	Technical assistance can help provide targeted support for permit applicants and local building departments, and other tools, and resources can offer accessible information to answer frequently-asked questions and help address known issues.	S3.3

Strategy 3.1 Establish an ongoing training program to assist building department staff and the building industry to support, understand, and effectively implement energy efficiency codes and standards.

Objective: Improve the understanding of energy efficiency codes and standards among local building departments and the building industry to increase implementation and compliance.

Tactic 3.1.1: Develop training curriculum to address gaps in compliance with current requirements. Offer ongoing training on changes and trends in C&S.

Local building departments are critically important to increasing energy efficiency through improved code implementation and enforcement. Yet these individuals face numerous barriers in the performance of their jobs: a constantly changing and often confusing set of requirements to be enforced, limited time and staff resources, and the need to prioritize life and safety-related codes.

The community of professionals responsible for code implementation and permitting includes numerous job titles: Chief Building Officials, Permit Technicians, Plans Examiners, Building Inspectors, etc. I-REN proposes to develop a role-based training curriculum that is tailored to supporting these individuals in the performance of their job responsibilities. Training will augment available curriculum and fill gaps where needed and build on successful topics and strategies from other PAs.

"Journey mapping" is a technique that can be used to gain insight into the challenges faced by these professionals as they move through their daily tasks, and those insights will inform training modalities for each role. Training can be offered in person, via webinar, or on demand. Locations, delivery mechanisms, topics, and other aspects of training will be informed by data gathered as part of Tactic 3.3.1, so that I-REN's offerings prioritize the areas of greatest need.

To complement and enhance public sector training, I-REN will also coordinate and offer private sector training to help architects, builders, and other trades better comply with energy codes and navigate the process to get permits.

To avoid duplication of effort, I-REN is communicating and exchanging ideas with other PAs operating in the region. Though other programs and initiatives have targeted the C&S sector, many local building departments and the building industry in general in the I-REN region have been underserved and will benefit greatly from locally focused training opportunities. I-REN will differentiate its C&S training offerings and coordinate with other training providers where necessary to make the best use of its constituents' ratepayer dollars.

Additionally, training in C&S is an important area for crossover activities related to economic development and Workforce Education & Training (WE&T).

Activities to support this tactic may include and would not be limited to the following:

- Design training curriculum based on journey mapping and gaps identified in Tactic 3.3.1.
- Maximize accessibility through different training modalities including in-person (if possible given social distancing needs due to COVID-19), live webinars, and/or online on-demand training. Training sessions could be general admission and/or hosted by a specific local building department for their staff.
- Register as an ICC Preferred Provider to offer ICC-approved training and continuing education units (CEUs).
- Coordinate with other PAs to avoid duplication of effort.
- Integrate private and public sector training opportunities to enhance cross-learning and coordination.
- Incorporate periodic updates to reflect changes to codes and standards and trends in the C&S community.

Key partners for these activities will include those listed in Table 3-4 as well as other existing providers of training and educational resources on C&S.

Tactic 3.1.2: Support local governments and the building industry during transitions to new codes and standards to deliver effective messaging and resources and increase timely compliance with updated requirements.

Codes and standards requirements are updated frequently, and local governments as well as the building community as a whole are often challenged to stay current during times of transition. This is especially true for smaller AHJs in disadvantaged communities and rural areas as they may lack the time and capacity to track the updates and changes. As a trusted regional partner, I-REN can provide support to these local governments and the building community to help them understand updated C&S requirements and make timely changes to their implementation and enforcement processes.

This work requires effective and well-timed communication from a credible source. Each of the three agencies that comprise I-REN has had or currently has Local Government Partnerships (LGPs) with connections including city managers, planning department staff, local utilities, and others. I-REN is already engaging with these local experts on a monthly and/or quarterly basis. I-REN governing agency staff are also involved with hosting webinars and forums with local governments and building industry professionals on various topics, fostering collaboration and consistency across the region.

In addition to in-person and web meetings and workshops, I-REN governing agencies have established digital communication channels that can be leveraged for C&S outreach. For example, WRCOG distributes a quarterly e-communicator to more than 1,900 contacts with news and updates relevant to local government and the building industry, such as utility program opportunities. I-REN staff have the in-house capability to ramp up these communications to provide timely, important information to the C&S community. For example, during Spring 2020 at the onset of the COVID-19 pandemic and associated shelter-in-place mandates, they shifted to releasing a briefing more frequently—every week—with updates tailored to their members.

With this experience in providing in-person, online, and email messaging to local governments and the building industry, I-REN proposes to promote increased understanding and compliance with C&S updates by engaging in activities including but not limited to the following:

- Host targeted local workshops timed to coincide with Title 24 and state building code update years (2022 and 2025), in-person if possible.
- Offer online workshops and materials.
- Engage in e-communications and distributing presentation materials and messaging to local government and building industry contacts.
- Generate social media content, podcasts, and other creative forms of outreach and communication.
- Participate in state and local code update processes with agencies such as the California Building Standards Commission (CBSC) or CEC.

Key partners for these activities will include local government officials, planning and building departments, and construction and building industry professionals such as those listed in Table 3-4.

Strategy 3.2 Implement an outreach program to engage, educate, and involve regional construction firms and building departments, and support compliance and regional EE programs and customers.

Objective: Make code compliance a valuable element of the region's energy efficiency goal attainment with engagement regionwide.

Tactic 3.2.1: Foster the development of an online Code Hub community for sharing best practices amongst building departments and the building industry.

I-REN proposes to develop and deploy a web-based Code Hub that will serve as an online community for C&S sector stakeholders. On the Code Hub, community members can submit questions to be answered by others in the community and/or by an expert Code Coach. Community members can also share best practices on topics related to their role and experience in the C&S sector, whether they are a permit technician or code enforcement official or a general contractor applying for a permit.

Especially in a large service territory like I-REN's, a technology-based solution like the proposed Code Hub is an effective way to overcome some of the challenges and barriers associated with time and distance. In today's world, many people are accustomed to using message boards and online forums to get answers to their questions and to interact socially and professionally. The Code Hub will promote a sense of community by connecting stakeholders in the C&S sector who have similar responsibilities, allowing them to "crowdsource" their questions to their peers, contribute their ideas and tips to help others, and also get input from experts.

The Code Hub will be designed to be searchable and organized by relevant topics, to allow community members to easily navigate to the information they need. Questions and discussions will be moderated and secure, and the interface will meet all accessibility standards. The Code Hub will be promoted through local government communication channels and I-REN's committees, e-communicators, and social media. The Code Hub will be integrated into the overall BUC system proposed for the I-REN Public Sector, to provide a single technical resource for local jurisdictions and the industry.

The I-REN governing agencies bring experience developing websites and online tools, for example SBCOG's recently developed vanpool website, and working with information technology vendors to collaborate and design user-friendly web-based resources.

Key partners for these activities may include code implementers on both the enforcement and compliance side. Partners should include local ICC Chapters, local AIA chapters, associations of contractors for new construction and retrofits (residential and nonresidential), local government building department and sustainability offices, environmental advocacy groups, associations of technology manufactures and vendors, and others in the C&S community.

Tactic 3.2.2: Expand local jurisdictions' relationships to host regional forums for the building industry and public sector.

Effective outreach to permit applicant market actors will help these individuals understand their roles and responsibilities in the C&S sector, leading to increased code compliance. This broad segment of market actors include private construction firms, architectural firms, general contractors, installers of HVAC and other equipment, and many other building professionals who have a responsibility to comply with C&S for construction and renovation activities in residential and nonresidential buildings.

I-REN is already engaged with many of these market actors and brings the existing connections to jumpstart a series of regional forums on code compliance for this segment of market actors. Building firms regularly attend committee meetings hosted by the I-REN governing agencies to learn about opportunities that may benefit them, such as utility programs or transportation projects. In addition, the I-REN governing agencies are experienced in working collaboratively with other PAs to host regional forums and workshops. For example, CVAG has hosted Energy Code Ace workshops in partnership with SCE and SoCalGas. CVAG has also hosted Energy & Water summits attended by more than 500 participants, to educate and update constituents about energy efficiency programs and strategies in collaboration with other agencies in the region. I-REN's proposed C&S regional forums would leverage this prior experience and existing partnerships to avoid duplication of effort.

Topics may include but would not be limited to Title 24 standards, Zero Net Energy (ZNE), low carbon buildings, beneficial electrification, building decarbonization, specific technologies like heat pump water heaters, and other requirements or trends affecting the building industry. These regional forums also allow an exchange of ideas where I-REN can gain insight to the implementation side of codes and standards, directly from the individuals responsible for compliance. These insights can inform the development of training and workshops, outreach materials, and other activities. Moreover, these regional forums offer an important opportunity for crossover activities related to economic development and WE&T.

Activities for this tactic could include and would not be limited to the following:

- Design a series of regional forums. These could be general admission events with participants from various firms, or targeted events at the workplace for large firms with numerous staff.
- Expand accessibility to forums through different modalities including in-person and/or online to accommodate social distancing needs due to COVID-19. Online forums could be accessed live or on demand via recordings.
- Plan the market actor types and locations to be targeted, using data from Tactic 3.3.1 to prioritize areas of greatest need.
- Promote regional forums to building professionals through existing communication channels.
- Launch regional forum series and track data regarding participation and feedback received.
- Gather contact information, distribute forum materials, and maintain lines of communication.
- Use feedback and discussions to inform development of future regional forums and other C&S activities.

Key partners for these activities will include local government officials, planning and building departments, and construction and building industry professionals such as those listed in Table 3-4. There may also be opportunities to collaborate with other PAs in the region to maximize reach.

Strategy 3.3 Develop technical assistance tools and resources to assist building departments and the building industry with understanding, evaluating, and permitting the energy codes.

Objective: Deliver locally informed resources and tools that streamline code compliance and enforcement and increase permit closeout.

Tactic 3.3.1: Identify and address the areas of greatest need for improved code compliance, in collaboration with local governments and the building industry.

This important tactic will assess the current state of code enforcement and compliance in the I-REN territory using primary and secondary data. The analysis resulting from this tactic will inform the detailed planning process to kick off other activities across I-REN's strategic framework for the C&S sector, such as developing training, planning outreach efforts, and designing technical resources and tools. This data will also help form baselines for some of the metrics to measure I-REN C&S sector program performance.

I-REN brings direct in-house experience developing and implementing surveys of their member local governments and constituents to assess gaps in program areas. Their staff compile and analyze the responses, prepare reports and outreach materials to share their findings, and ultimately use those insights to make improvements to programs.

Rigorous data collection will be a near-term effort to support implementation of other activities in the C&S sector. Key partners for this effort include the C&S enforcement and permitting community, such as local government agencies and building departments, as well as frequent permit applicants such as private construction and architectural firms. The proposed activities to implement this tactic may include but are not limited to the following:

- Collaborate with local governments to design and deploy an effective survey instrument, via an online survey platform already utilized by I-REN.
- Conduct additional in-depth phone interviews as needed to survey key decision makers and/or to fill identified gaps in response data.
- Review secondary data sources obtained in collaboration with local government agencies and code officials.
- Compile results and preparation of report materials for sharing with local governments.
- Analyze results, in cooperation with local governments, to inform program planning efforts and evaluation, measurement and verification (EM&V).

Key partners for these activities will include local government officials, planning and building departments, and construction and building industry professionals such as those listed in Table 3-4.

Tactic 3.3.2: Improve consistency in code enforcement and compliance resources across the region by facilitating cooperation between local governments.

Much of the work currently performed by the I-REN governing agencies is directly related to this tactic: facilitating cooperation by local government officials and planning staff in order to reduce duplication of efforts and encourage consistency across the region on a variety of topics. This work occurs through the committee structure in place between CVAG, SBCOG, and WRCOG, composed of local government staff, City Managers, and elected officials. Members of the regional building industry are also involved with and benefit from the I-REN governing agencies' committees and communications. Because of its role as stakeholder consensus-builder for these parties, I-REN is well-positioned to lead the collaborative process of assessing and updating the various tools and resources around code enforcement and compliance in this region.

Resources and materials may be out of date and will need revisions to reflect current requirements, technologies, and trends. There may also be opportunities to look at adding new content or features to streamline the enforcement and compliance processes. The ongoing COVID-19 pandemic and associated shelter-in-place mandates have highlighted the need for adaptability in local government services. For example, "Online Building Departments" can allow permit applications and related documentation to be submitted with payment on a website, to reduce in-person interactions. Some building departments already utilize these features, while others do not have access. With I-REN's assistance, code enforcement and compliance resources and materials can be made more consistent across the region and can be updated to reflect current requirements.

The talented staff at the COGs that comprise I-REN are experienced in developing resources specifically targeted to local governments. Their in-house teams specialize in creative marketing and outreach to engage with their audience. They frequently develop flyers and materials and host events and workshops as well as podcasts and webinars. They are experienced in using email and social media to promote events and opportunities and have in-house graphic designer and videographer staff.

Improving consistency in code enforcement and compliance resources available across the I-REN territory will involve but not be limited to the following activities:

- Assess the existing resources and communication channels. These may be widely varied: websites, online tools, training modules, checklists, how-to guides, frequently-asked questions, e-newsletters, social media posts, podcasts, printed materials, scripts and talking points for phone and in-person assistance, etc.
- Collaborate with AHJs and local governments to develop updated content based on current requirements, best practices, and new solutions for streamlining the code enforcement and compliance process. Materials will be technically accurate and tailored to address the areas of greatest need identified in Tactic 3.3.1.
- Distribute materials through the AHJs, local government, and regional building professionals' communication channels.
- Ensure materials are reaching code enforcement officials and/or permit applicants as identified in the needs assessment.

Key partners for these activities will include local government officials, planning and building departments, and construction and building industry professionals such as those listed in Table 3-4.

Tactic 3.3.3: Evaluate and develop model ordinances and policies for use regionally.

One of the greatest benefits of a regional organization working with local jurisdictions is the ability to leverage the knowhow of a large body of professionals and then to distribute that knowledge and resources to less advantaged groups. The I-REN team will enable this regional collaboration by identifying important areas for policy improvements, such as future reach codes, efficiency and fire ordinances, et.al., and work with jurisdictions to create model ordinances and policies that can be adopted by interested local governments. This tactic will also enable I-REN to test and pilot various approaches to common concerns and establish an effective regional response that can be easily and affordably adopted region-wide. This effort will ensure dollars spent are well utilized and have the greatest impact possible.

Specifically, I-REN will survey and interview key jurisdictions as needed to understand the major areas for concern and potential policies. Then working through their committee structure, they will develop regionally appropriate model ordinances and vet and refine them with participating local governments. Once finalized, these model resources will be made available to any jurisdiction in the region. I-REN will provide ongoing technical assistance to adjust and implement the ordinances as well as provide ongoing monitoring and tracking to address any needed changes or updates.

Anticipated Programs

I-REN's anticipated program offerings are new non-resource programs proposed to provide short-term and mid-term support for the C&S community to streamline compliance across the region. Anticipated programs include but are not limited to the following:

- C&S Training and Education – a non-resource program to establish and implement training and education for building department staff and the building industry to support, understand, and effectively implement energy efficiency codes and standards.
- C&S Technical Support Program – a non-resource program to develop technical assistance tools and resources to assist building departments and the building industry with understanding, evaluating, and permitting the energy codes.

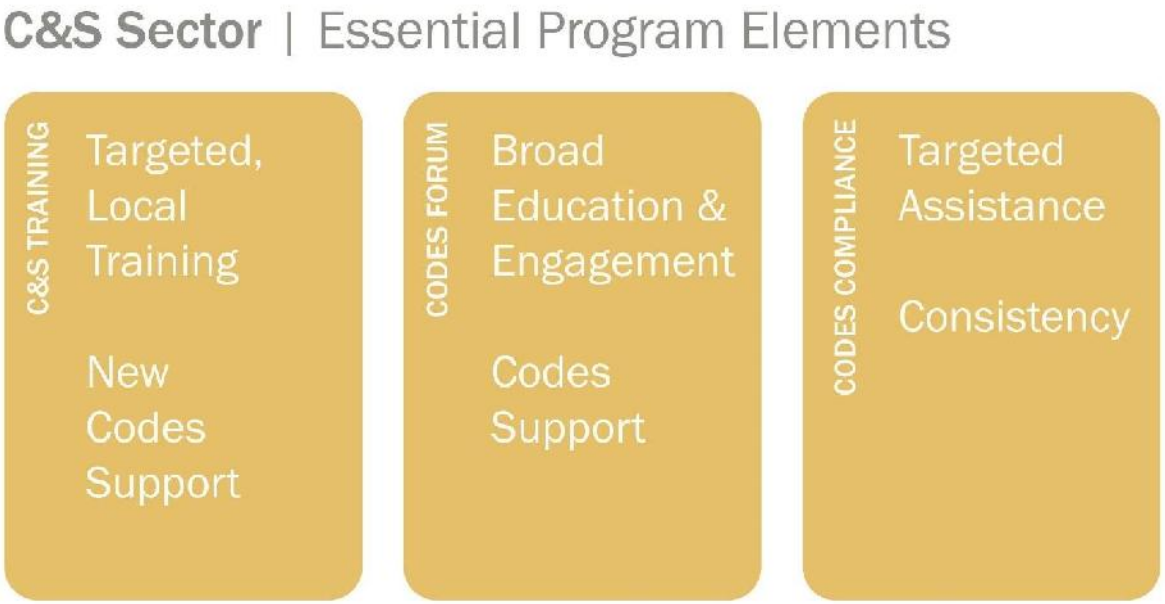


Figure 3-4. I-REN Codes & Standards Sector Essential Program Elements

Evolving Approach

As a new REN, I-REN will consult with other existing RENs providing similar activities and implement best practices as well as build upon the work currently underway through the COGs and LGPs. I-REN will implement the strategies outlined here in collaboration with the key partners described in the section that follows. Based on EM&V and on monitoring progress toward performance metrics through the near- and mid-term activities, I-REN will adjust strategies for future implementation beyond the 2021-2025 timeline.

Leveraging I-REN's Existing Key Partners

I-REN's greatest strength is their extensive network of relationships with local governments, building and planning departments, code officials and permit staff, private construction and architectural firms, and other market participants with responsibilities in the C&S sector.

These relationships have been built over decades and are maintained through frequent engagement and through the I-REN governing agencies' committee structures, numerous outreach channels, and ongoing programs and initiatives. Local governments of the Inland Empire and various industry stakeholders already look to the I-REN governing agencies for information on energy efficiency programs and sustainability.

Table 3-4 shows examples from the I-REN governing agencies' experience with these collaborative activities. These key partnerships will be of critical importance for I-REN's work in the C&S sector. I-REN will build on these existing relationships to foster additional connections with partners as described earlier in the chapter (section entitled "Market Actors").

Table 3-4. I-REN's Key Partnerships in the Codes & Standards Sector

Key Partners	Relevant Examples of Previous & Ongoing Collaboration
Local Governments: **WRCOG: 18 Cities** **CVAG:10 Cities** **SBCOG: 24 Cities & Five Board of Supervisors**	The three I-REN COGs have all had or currently have LGPs and various connections including City Manager, Planning, and local utilities. They bring multiple local experts into the conversation on a monthly/quarterly basis. WRCOG's partners consist of Public Agencies (18 members), Water Districts (2 members), and Riverside County Superintendent of Schools. Collaboration has included various Energy, Environmental, and Transportation / Planning Programs such as LGP, PACE, Western Community Energy (WCE, the WRCOG's Community Choice Aggregation), Transportation Uniform Mitigation Fee (TUMF) program, Solid Waste Cooperative, Clean Cities Coalition, and Planning / Grant Writing Assistance Programs. CVAG's membership includes 10 cities and CVAG has participated in the Desert Cities Energy Partnership (DCEP) LGP with each of their member cities and the utility companies servicing the CVAG jurisdiction, as described earlier in the Public Sector chapter. The DCEP allowed the CVAG member cities to achieve great energy savings for a 10-year period, due to close collaboration and monthly meetings. CVAG also has existing relationships with each of its cities through its Solid Waste & Recycling Committee (TWG) that reports to the Energy & Environmental Resources Committee (E&E), which then reports to its Executive Committee. Each city looks to CVAG to keep them updated on energy efficiency programs and measures. The SBCOG Board consists of the mayor of each of the 24 cities in the county, as well as the five members of the San Bernardino County Board of Supervisors. SBCOG has close relationships and partnerships with each city, and has worked on numerous projects such as regional ridesharing, building transportation infrastructure, coordination of a Zero Emission Vehicle Readiness and Implementation Plan for the County, and a Climate Resiliency Study "Resilient IE." In addition, SBCOG has numerous committees to foster collaboration among stakeholders, including a City/County Manager Technical Advisory Committee.

Local Universities and Community Colleges	Through DCEP, CVAG hosted annual Energy Summits that were well attended. CVAG partnered with the local universities (CalState San Bernardino and UC Riverside) to hold multiple Title 24 training classes. CVAG has also partnered with the Palm Springs campus of UC Riverside to host C&S trainings in partnership with the IOUs and Energy Code ACE.
Building Professionals, including private firms such as architects, construction, and others	CVAG administers a Property Assessed Clean Energy (PACE) program and has service agreements with seven private firms to service CVAG's jurisdiction. PACE started in the Coachella Valley in 2007, starting with the City of Palm Desert and later transitioning to a regional approach through CVAG. Through DCEP, CVAG partnered with local universities as mentioned above to hold multiple Title 24 training classes, which were offered to local building contractors, architects, and building and safety officials. As the Transportation Authority for the County of San Bernardino region, SBCOG brings relationships with numerous building and construction industry related firms. SBCOG also brings connections to engineering, building, and construction firms through WTS International, an industry organization dedicated to advancing equity and access for women in the transportation industry, where a member of SBCOG's I-REN leadership team previously served as president of the Inland Empire chapter.
Industry, Stakeholder and Professional Groups	Riverside Chapter Building Industry Association (BIA) has been involved with WRCOG's TUMF Program with feedback on Transportation Program Growth and is a potential partner for C&S outreach and educational workshops. In addition, WRCOG previously served on the Board of the USGBC-IE.
3C-REN, SoCalREN, BayREN	These existing RENs provide a ready-made advisory group of local government Program Administrators implementing similar programs. Coordinating with this group will help to inform and strengthen the initial and ongoing offerings from I-REN.
Investor Owned Utilities (IOUs)	I-REN has been in communication with SCE and SoCalGas to establish commitments to cooperate as Program Administrators in the region and will continue to work closely with the IOUs to ensure offerings are coordinated and non-duplicative. The I-REN governing agencies have relevant experience partnering with the IOUs to deliver regional outreach and codes and standards training. CVAG has partnered with the Palm Springs campus of UC Riverside to host C&S trainings in partnership with SCE, SoCalGas, and Energy Code ACE. SBCOG has experience conducting outreach through the San Bernardino Regional Energy Partnership in collaboration with SCE and SoCalGas and working closely with 13 cities in the region.
Regional, State, and other Government Partners	To leverage shared resources and promote consistency in its C&S work, I-REN will collaborate with government agencies at the state level, such as CPUC, CEC, Energy Division, Building Standards Commission, and others. I-REN will also collaborate at the regional level, and brings a wealth of experience and existing relationships from its work with various regional entities including South Coast Air Quality Management District (South Coast AQMD) and the Mobile Source Air Pollution Reductions Review Committee (MSRC) Technical Advisory Committee and the MSRC Board. I-REN also bring experience working with Southern California Association of Governments (SCAG) as well as other COGs and transportation authorities throughout Southern California (LA Metro, RCTC, OCTA and VCTC).

Budget and Metrics

Budget

The budget shown in Table 3-5 will facilitate the forecasted short- and mid-term metrics targets with the expectation that increased participation and project volume is achieved as initial efforts scale and gain traction.

Table 3-5. Codes & Standards Budget

Budget ($)	2021	2022	2023	2024	2025
Administration	141,607	144,611	150,395	156,411	162,667
Marketing and outreach	84,964	86,766	90,237	93,847	97,600
Direct implementation - non incentive	1,189,495	1,214,730	1,263,320	1,313,852	1,366,407
Direct implementation - incentives	-	-	-	-	-
Total	**1,416,066**	**1,446,107**	**1,503,952**	**1,564,110**	**1,626,674**

Metrics

Based on the intervention strategies I-REN developed for C&S, the following metrics are proposed to track program performance.

Table 3-6. Program Performance Metrics

Codes & Standards Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Net GWh savings	2021	N/A	N/A	N/A	N/A
Net MMTherms savings	2021	N/A	N/A	N/A	N/A
Net MW savings	2021	N/A	N/A	N/A	N/A
Number of measures supported by CASE studies in rulemaking cycle (current work)	2021	N/A	N/A	N/A	N/A
Number of measures adopted by CEC in rulemaking cycle (indicator of past work)	2021	N/A	N/A	N/A	N/A
Number of T-20 measures supported by CASE studies in rulemaking cycle (current work)	2021	N/A	N/A	N/A	N/A
Number of measures adopted by CEC in current year	2021	N/A	N/A	N/A	N/A
Number of federal standards adopted for which a utility advocated (IOUs to list advocated activities)	2021	N/A	N/A	N/A	N/A
Percent of federal standards adopted for which a utility advocated (#IOU supported / # DOE adopted)	2021	N/A	N/A	N/A	N/A
The number of local government Reach Codes implemented (this is a joint IOU and REN effort)	2021	N/A	N/A	N/A	N/A
Number of training activities (classes, webinars) held, number of market actors participants by segment (e.g. building officials, builders,	2021	TBD	12	12	TBD

Codes & Standards Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
architects, etc.) and the total size (number of the target audience) by sector. (M) Number of training activities					
Number of training activities (classes, webinars) held, number of market actors participants by segment (e.g. building officials, builders, architects, etc.) and the total size (number of the target audience) by sector. (M) Number of participants	2021	TBD	360	360	TBD
Increase in code compliance knowledge pre/post training	2021	N/A	N/A	N/A	TBD
The percentage increase in closed permits for building projects triggering energy code compliance within participating jurisdictions	2021	N/A	N/A	N/A	N/A
Number and percent of jurisdictions with staff participating in an Energy Policy Forum	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions with staff participating in an Energy Policy Forum	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions receiving Energy Policy technical assistance.	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Number and percent of jurisdictions receiving Energy Policy technical assistance.	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator
Buildings receiving enhanced code compliance support and delivering compliance data to program evaluators	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator	N/A - Indicator

Cross-Cutting & Coordinating Activities

Marketing, Education & Outreach

Through their longstanding partnerships with the local governments they serve, the I-REN governing agencies have become a trusted voice and advocate in their two counties. They can use this position to coordinate Marketing, Education and Outreach (ME&O) activities within the region through their network of member jurisdictions.

The COVID-19 pandemic has highlighted the importance of timely and accurate communication from reliable sources, from all levels of government. I-REN can serve as a facilitator for coordination with other PAs and statewide programs and initiatives for emergency communication planning and other ME&O activities.

Effective marketing and outreach activities are fundamentally important to I-REN's strategies for C&S. The I-REN governing agencies bring in-house capacity to design, develop, and deploy creative marketing content for various channels, from printed materials and website content to email communicators, social media, videos, and podcasts. They are skilled at designing well-branded promotional campaigns to engage their local government audience.

I-REN anticipates its C&S-related marketing could include but would not be limited to the following activities shown in Table 3-7, in alignment with the proposed C&S intervention strategies and tactics.

Table 3-7. Marketing Activities for I-REN C&S Sector

Intervention Strategy	Tactic	Marketing Activities
S3.1 Establish an ongoing training program to assist building department staff and the building industry to support, understand, and effectively implement energy efficiency codes and standards.	T3.1.1 Develop training curriculum to address gaps in compliance with current requirements. Offer ongoing training on changes and trends in C&S. Tactic 3.1.2 Support local governments and the building industry during transitions to new codes to deliver effective messaging and resources and increase timely compliance with updated requirements.	*Promote training through I-REN governing agencies' existing marketing channels, through local government partnerships, and through building industry communication networks.* *Build a social media presence with local industry and professional groups, leveraging the existing connections from the I-REN governing agencies.* *Collaborate with local governments to design and deliver effective messaging to building departments and private industry during code transitions.*
S3.2 Implement an outreach program to engage, educate and involve regional construction firms and building departments, and support compliance and regional EE programs and customers.	T3.2.1 Foster the development of an online Code Hub community for sharing best practices amongst building departments and the building industry. T3.2.2 Expand local jurisdiction relationships to host regional forums for the building industry and public sector.	*Develop marketing content for e-communicators, social media, and other channels to promote the online Code Hub and building professionals' regional forums.*
S3.3 Develop technical assistance tools and resources to assist building departments and the building industry with understanding, evaluating, and permitting the energy codes.	T3.3.1 Identify and address the areas of greatest need for improved code compliance, in collaboration with local governments and the building industry. T3.3.2 Improve consistency in code enforcement and compliance resources across the region by facilitating cooperation between local governments. T3.3.3 Evaluate and develop model ordinances and policies for use regionally.	*Develop and deploy effective survey instruments to gather data and use that data to inform the design of resources to assist building departments and industry professionals.*

Workforce Education & Training

The C&S sector offers many opportunities for cross-cutting WE&T activities. The I-REN governing agencies' experience collaborating with key educational partners such as universities and community colleges will be an advantage when launching their training activities in the C&S sector.

I-REN's approach to serving the C&S sector incorporates training for local building department staff, to help those individuals perform their jobs and build capacity in their departments to better enforce codes and standards. This is important for developing a skilled workforce in some of the rural jurisdictions with less resources in their local building departments, and for areas that include underserved and disadvantaged communities, in line with the directive in Senate Bill 350.

I-REN's service territory also includes several relatively new cities incorporated in recent years; these cities are building their local capacity and establishing their infrastructure. They will benefit from C&S and energy efficiency-related training and education for their local government employees.

Building professionals in the private sector are another target of I-REN's strategies for C&S, and they will benefit from I-REN's training and outreach opportunities contributing to their professional development and supporting the development of a capable regional workforce trained in advanced energy efficient building practices in order to comply with codes and standards. I-REN will align its C&S training activities with its WE&T program to maximize benefits to the region's local government workforce and building professionals.

EM&V Considerations

As a new REN, I-REN is interested in collaborating with the CPUC, CEC, Energy Division, other PAs, and the region's C&S community to support statewide and regional efforts around C&S EM&V Roadmaps and Plans. I-REN will collaborate with the CPUC and other stakeholders to ensure that data collection activities are embedded in C&S program design to capture the information necessary to meet evaluation requirements and also to help expand the understanding of REN program impacts in this cross-cutting sector.

For its C&S programs, I-REN's EM&V considerations include data collection to inform CPUC evaluation activities as well as to support internal program performance tracking and continuous improvement. I-REN has also identified an anticipated area of study, supported by assessment and data collection tactics described here and in its C&S intervention strategies.

Data Collection Needs

I-REN data collection will support both external EM&V by the CPUC and internal research study activities. I-REN's data collection needs correspond to identified C&S metrics and indicators, and the intervention strategies developed for the C&S sector.

To support external EM&V activities, I-REN will collect data to keep the CPUC and stakeholders apprised of program progress. I-REN will work collaboratively with Energy Division staff to ensure data collection meets their needs, to enable evaluation that can:

1) inform the program selection process,

2) provide early feedback to program implementers,

3) produce impact evaluations at the end of the funding period, and

4) feed the planning process for future program cycles.[11]

Table 3-8 shows the research questions and data collection needs I-REN has identified for C&S. Data collection will support I-REN's internal EM&V activities and inform the measuring of progress toward established program goals and targets, CPUC metrics and indicators, and PA determined value metrics. Data collection and real-time program performance tracking will enable the delivery of timely feedback to implementers and/or program administration staff and support continuous improvement and future program planning efforts.

I-REN will also work with CEC and other stakeholders to ensure that I-REN C&S programs and data collection support statewide legislation and goals such as SB 1414 and the requirement for confirmation of appropriate permits for installation of new heating ventilation and air conditioning (HVAC) and heat pumps systems. I-REN will incorporate these requirements into its programs and work with building departments to establish successful approaches to implement this across the region.

Table 3-8. I-REN Codes & Standards Data Collection

Topic Focus	Research Questions/Data Collection Needs	EM&V Objective	Timeframe
C&S regional characterization	• What is the current state of code enforcement and compliance in the I-REN territory? • What C&S and permitting resources exist to support local building departments? • What compliance barriers exist for local building departments? • Which local jurisdictions show interest in reach codes/ordinances?	Understand the C&S sector market and identify highest needs	Short-term/ Mid-term
Depth of I-REN interventions	• How many trainings and regional forums are hosted with I-REN support? • How many individuals attend trainings and forums? • What number and percent of jurisdictions receive training, technical assistance, and other I-REN C&S resources? • How many local jurisdictions implement reach codes/ordinances?	Track program performance	Mid-term
C&S compliance improvement	• How has code compliance knowledge increased among training participants? • What is the percent increase in closed permits that are associated with or trigger C&S requirements?	Understand and track C&S compliance improvements	Mid-term

[11] Energy Efficiency Policy Manual, version 6, April 2020, p.44.

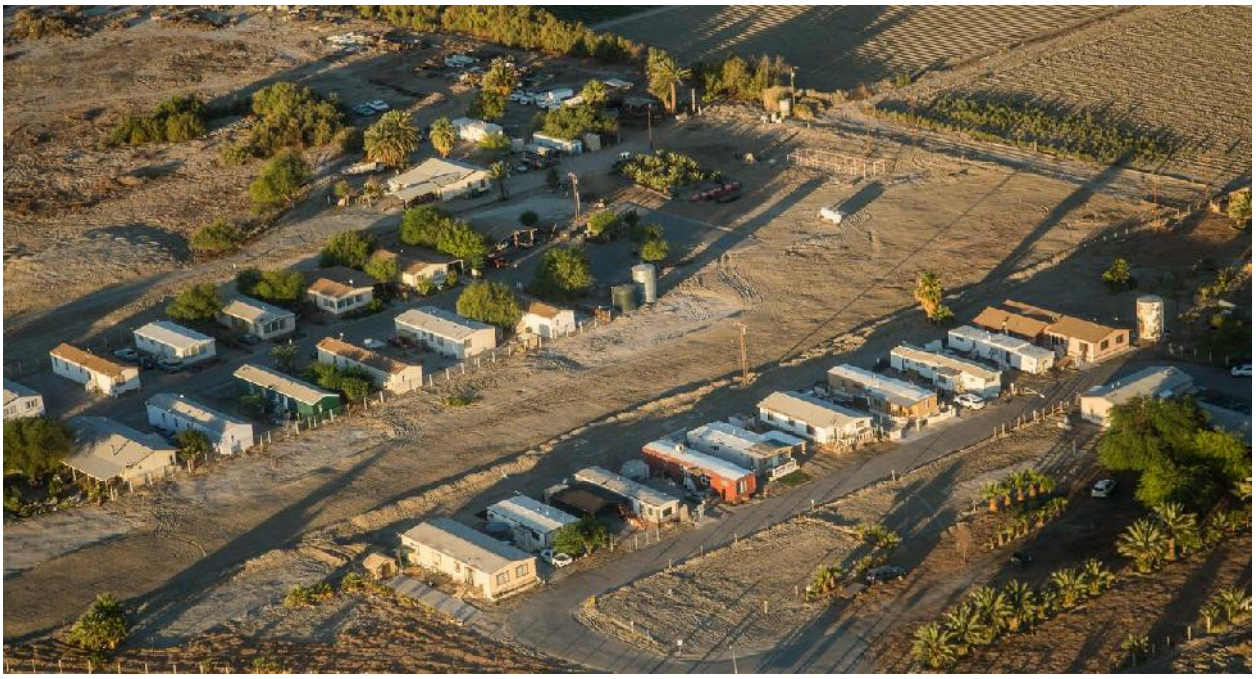
Anticipated Study Needs

PA-led studies may inform program target setting, value metrics, and highlight opportunities for improved data and measurement collection. One of the major areas for I-REN's study considerations is to better understand the current baseline of C&S compliance in the Inland Empire, in order to identify the areas of greatest need and provide targeted support through its C&S initiatives. I-REN proposes to develop and manage a study to characterize C&S compliance barriers, permitting practices and trends, and availability of training and educational resources. The assessment tactics described in I-REN's C&S intervention strategies will support this area of study. One of the key activities proposed by I-REN to support this study area is the data collection described in *Tactic 3.3.1 Identify and address the areas of greatest need for improved code compliance, in collaboration with local governments and the building industry*.

The information and analysis from this study will be used to develop training, plan outreach efforts, and design technical resources and tools. This data will also help form baselines against which to measure program performance during deployment. I-REN anticipates collecting this data initially to gain near-term feedback, then repeating the assessment after a few years to examine program progress and make improvements for program delivery in the mid-term timeframe and beyond.

Coordination with other PAs

I-REN is in communication with other PAs operating in the region to identify areas of potential coordination for C&S activities, and the I-REN governing agencies bring experience coordinating with other PAs through their LGP work. I-REN will ensure its activities are differentiated and avoid duplication of effort, while maintaining cooperation with other PAs.



Inland Regional Energy Network Business Plan

Chapter 4: Workforce Education & Training (Cross-Cutting)

Contents

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Introduction

"In the complex work of energy efficiency, higher skill often translates into more energy savings. According to the California Energy Commission, poorly installed HVAC systems increase energy use by 20 to 40 percent. What seems like a moderate increase becomes a significant concern when you consider that up to 85 percent of replacement HVAC systems in California are installed incorrectly."[1]

Workforce Education and Training (WE&T) initiatives may now be more important than ever due to the COVID-19 pandemic the U.S. faced for the majority of 2020 and continues to face in 2021. As a locally-focused and locally-led advocate for economic development in the Inland Empire, I-REN is distinct in its ability to respond to this crisis and help support the region's recovery. The COGs that make up I-REN's governing agencies have direct connections to local governments and community stakeholders to make this effort as effective as possible.

Agility and collaboration will be required to mount a response to the economic devastation caused by the pandemic. In comparison to larger institutions with a wider focus, local governments have a better ability to pivot and be flexible in serving their constituents. Local governments and community stakeholders are already on the frontline in managing the public health crisis and they will continue to have a critical role in economic development and resiliency. At the same time, those local governments are going to be overwhelmed by the new demands upon them and the reduction in resources to do their jobs.

WORKFORCE EDUCATION & TRAINING GOAL & STRATEGIES

Goal 2. Ensure there is a trained workforce to support and realize energy efficiency savings goals across sectors.

S2.1 Establish local partnerships with existing and potential training providers in the region to deliver targeted, equitable, and relevant energy efficiency training for contractors and other industry stakeholders.

S2.2 Facilitate industry engagement and development of job pathways to identify demand and jobs for a trained workforce.

BUDGET

2021-2025 Budget (total): $12M

I-REN will serve as a facilitator and resource for stakeholder collaboration in addressing the WE&T needs in the Inland Empire. These activities will promote job market recovery and progress toward statewide goals regarding energy efficiency, air quality, and support for underserved, rural, tribal, and disadvantaged communities (DACs). Both Senate Bill (SB) 350 and SB 535 prioritize these communities for initiatives to improve air quality, increase energy efficiency, and address economic conditions. SB 350 emphasizes workforce development and increased project penetration in underserved communities.[2] I-REN has an opportunity to support these goals through its WE&T initiatives.

[1] https://www.bluegreenalliance.org/resources/california-public-utility-commission-agrees-a-skilled-trained-and-diverse-workforce-is-the-key-to-achieving-efficiency-goals/

[2] California Senate Bill 350, Sec. 8.25943.a.1;.c.7-8.

WE&T Strategies

I-REN has centered its WE&T approach around two strategies:

2.1. Establish local partnerships with existing and potential training providers in the region to deliver targeted, equitable, and relevant energy efficiency training for contractors and other industry stakeholders.

I-REN will assess the current training marketplace in the Inland Empire and work with local providers, including higher education providers, high schools, adult schools, and professional training companies to tailor content to be relevant to the region's needs and ensure that disadvantaged communities are a focus. I-REN will collaborate with training providers to improve access to a broad spectrum of training opportunities in person, online, and in the field.

2.2. Facilitate industry engagement and development of job pathways to identify demand and jobs for a trained workforce.

I-REN will convene and collaborate with state, regional, and local stakeholders, including workforce investment boards (WIBs) and economic development departments to develop a unified mission around the region's energy efficiency workforce, highlighting pathways for job seekers to enter the green jobs market and to increase access for disadvantaged communities. I-REN will facilitate identifying opportunities for employers and local workforce partners to network and connect.

With its governing agencies' existing networks of contractors and training providers, I-REN is well positioned to help bridge the gap between the energy industry and the workforce. I-REN is building partnerships with local community colleges, local universities and local WIBs to establish a comprehensive network of WE&T offerings.

I-REN also brings close connections with local government planning and building departments across the region. I-REN's proposed WE&T initiatives offer important opportunities for collaboration across other sectors through its work in the Public Sector and Codes & Standards (C&S)-- both of which are important drivers of energy efficiency and advanced energy activity and employment in the region.

Market Characterization

> *"Over the next decade, the state will face a shortfall of more than one million... highly skilled workers. Overcoming this challenge will be critical to California's future economic prosperity. It will also require aligning each region's expansive training and education programs with the needs of employers to develop more workers with skills that translate into jobs."*[3]

Market Actors

The wide-reaching field of market actors who make up the WE&T community include existing building industry employers in the public sector and in private industry, trainers, job seekers and their advocates, and education providers, as well as other individuals and organizations in local communities who may be directly or indirectly affected by WE&T initiatives. I-REN will focus initially on existing building industry employers/employees, promoting energy efficiency training opportunities and increasing their knowledge base of how and why to build expertise in this area. I-REN has extensive connections in the region and regularly engages with leaders in these areas as part of their committee structure (see Table 4-6. I-REN's Key Partnerships & Collaboration Experience in the WE&T Sector).

Existing Building Industry Support

Private sector employers for energy efficiency and advanced energy-related jobs include a wide variety of building professionals, such as architects, designers, contractors, energy consultants, and third-party code plans examiners, inspectors, raters, verifiers. This community also includes contractors skilled in a wide variety of trades: electricians, HVAC technicians, insulation installers, plumbers, and many more. This diverse community is of critical importance for performing high-quality installation of efficient equipment in compliance with codes and standards. These professionals are on the frontlines with customers, in charge of helping specify equipment, installation, scope of work, and advising on permits.

I-REN's WE&T initiatives will support these firms and individuals in becoming more involved, better educated and engaged, so they can make a significant difference in making homes and businesses more energy efficient (as well as healthier and more comfortable) by getting the required permits, using the most energy efficient equipment, and employing advanced practices in building science.[4] There is an opportunity to increase and expand this group's participation in energy efficiency programs as well, by increasing their knowledge and awareness through WE&T activities. This may be particularly true of smaller HVAC companies, and electricians and plumbers who have not considered making energy efficiency a focus of their work.

[3] California Economic Summit, "2016 Roadmap to Shared Prosperity", Summit Summary, 2015, page 5, www.caeconomy.org.

4 "Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities (WE&T Guidance Plan)." Prepared by the UC Berkeley Center for Labor Research and Education. Available online. May 2014.

New Job Seekers/Second Careers

Job seekers could include students looking to enter the workforce during or after high school, and students in community colleges, universities, trade schools, and other educational institutions. Job seekers include individuals who are unemployed, or underemployed. This group also includes people who are looking to change jobs or careers to work in energy efficiency and advanced energy, or those currently working in the industry who seek to make lateral career moves or advance in their fields.

The public sector offers opportunities for energy efficiency and advanced energy-related employment. Generally, public projects are larger at scale, which results to higher wages for contractors.[5] By integrating newer and more efficient technologies within the public sector, there will be a need for facility managers or building engineers who are responsible for monitoring, maintaining, and replacing equipment such as HVAC systems. Also within the public sector are local jurisdictions' building and planning departments who are responsible for issuing permits and enforcing codes and standards including building officials, permit technicians, plans examiners, and building inspectors.

Other Market Actors

Workforce development organizations and training providers are an important market actor and partner for proposed WE&T initiatives. Organizations like Workforce Investment Boards (WIBs) advocate for and provide resources to support job seekers, and work to connect job seekers with employers. They work alongside economic development organizations and serve both displaced and incumbent workers.

Training providers offer education to help job seekers gain skills, upskill training to assist workers in advancing in their careers, and continuing education to ensure workers stay current with emerging technologies and trends.

Other market actors and members of the community who affect or are affected by energy efficiency WE&T initiatives include and are not limited to the following:

- Utility energy efficiency programs, which incentivize energy efficiency projects, thereby bringing jobs to the region and establishing a set of standards for local construction and installation of efficient equipment and technologies.
- Students in the K-12 education system who are not yet of working age but are learning about energy efficiency and advanced energy as a career path for their future.
- Families who rely on the income generated by energy efficiency jobs, and the communities and local economies where they reside and purchase goods and services.

[5] "Putting California on the High Road: A Jobs and Climate Action Plan for 2030" California Workforce Development Board (CWDB). Prepared by the UC Berkeley Center for Labor Research and Education. June 2020. Available online.

Sector Landscape

The story of the Inland Empire's WE&T sector is one of resilience and growth, despite persistent challenges and inequity. The COVID-19 pandemic has had devastating effects on the economy nationally and in the Inland Empire, and these effects are likely to persist through the program years covered by I-REN's business plan. In addition to assessing and anticipating the pandemic's impacts, it is important to understand the job market and workforce situation that existed in the I-REN service territory prior to the pandemic.

Market Demand and Supply

The Centers for Excellence for Labor Market Research conducted an analysis of the market supply and demand for jobs related to energy and utilities and assessed the number of people trained annually by Inland Empire Community College Programs. In three areas assessed—HVAC, Construction Crafts and Welding—the number of available jobs far exceeded the number of individuals graduating with a certificate in these particular areas. At the same time, the enrollments in each area are robust and indicate a potential pool of people who could join the workforce.

Figure 4-1 and Figure 4-2 on the following pages detail this information for HVAC and Construction Crafts demand, community college enrollment, and people graduation with those jobs. Figure 4-3 is a recent outreach piece for the Inland Empire indicating the number of jobs in energy efficiency related industries. Collectively, this information indicates the robust job demand for a trained green workforce, the availability of active partners, and the need for continued engagement and development of the workforce in the area – moving people from enrollment to completion and work. What appears to be a persistent gap between supply and demand should be addressed regionally and comprehensively.

Further, there has been substantial analysis and effort in WE&T related to the energy efficiency market in recent years. The IOUs have been charged with updating and reforming their programs by stakeholders and by two reports developed for the CPUC and IOUs by the Don Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, the 2011 California WE&T Needs Assessment and the follow-up report (the 2014 WE&T Guidance Plan). The overall objective of these two plans is to **help identify how to create a permanent long-term green workforce that has effective standards, certifications, and licenses, along with good pay and clear career paths.**

While I-REN cannot address all these needs, they are poised to be an important resource in the workforce network to move this objective forward. The Guidance Plan distinguishes between **market-building activities** (creating the green workforce) and **skills building activities**. I-REN's Strategy 2.1 is skills-building focused, while Strategy 2.2 is market-building focused.

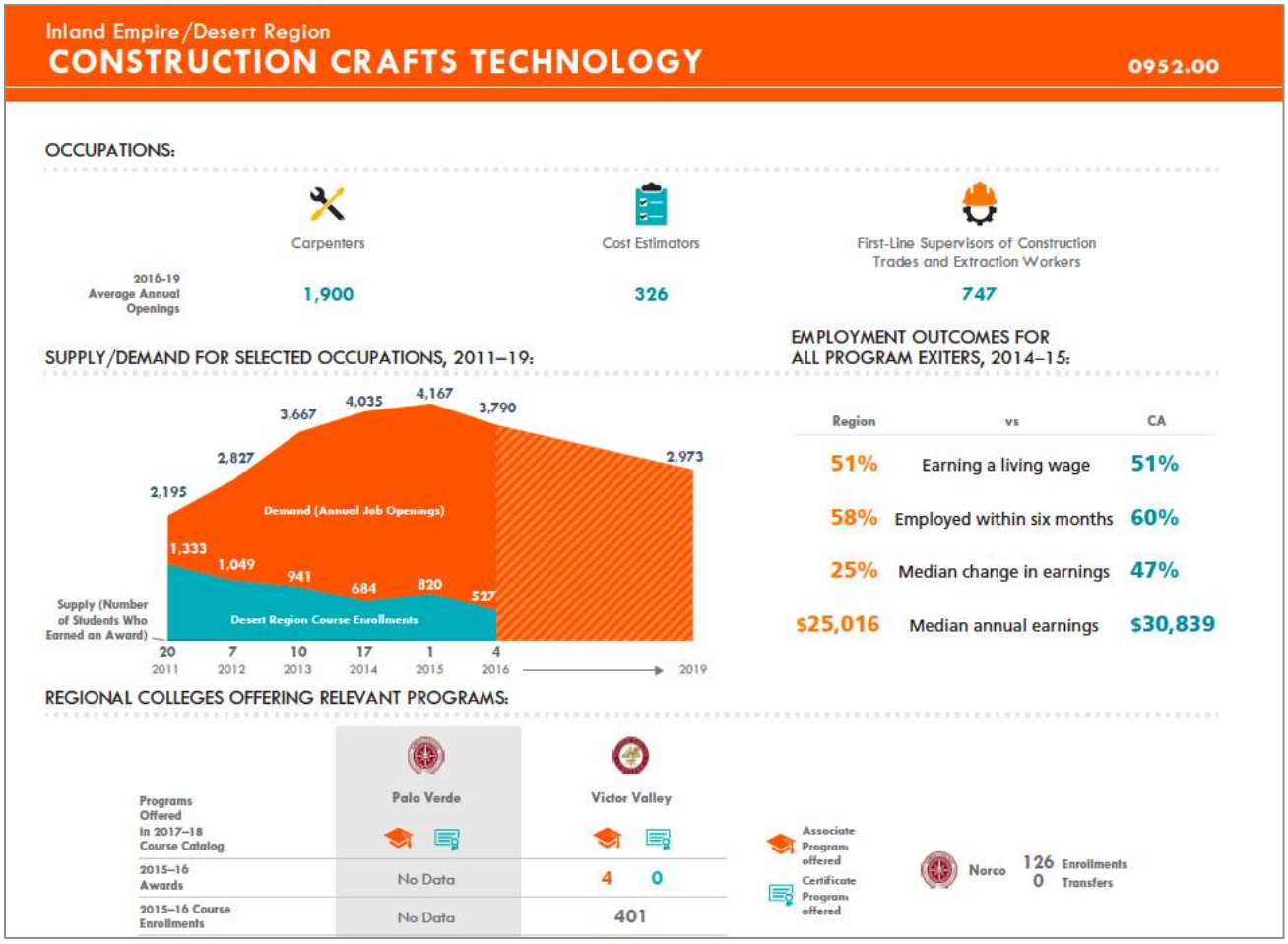


Figure 4-1. Inland Empire Construction Labor Market Research[6]

[6] "Inland Empire/Desert Region Sector Profile Report," COE for Labor Market Research, 2017.

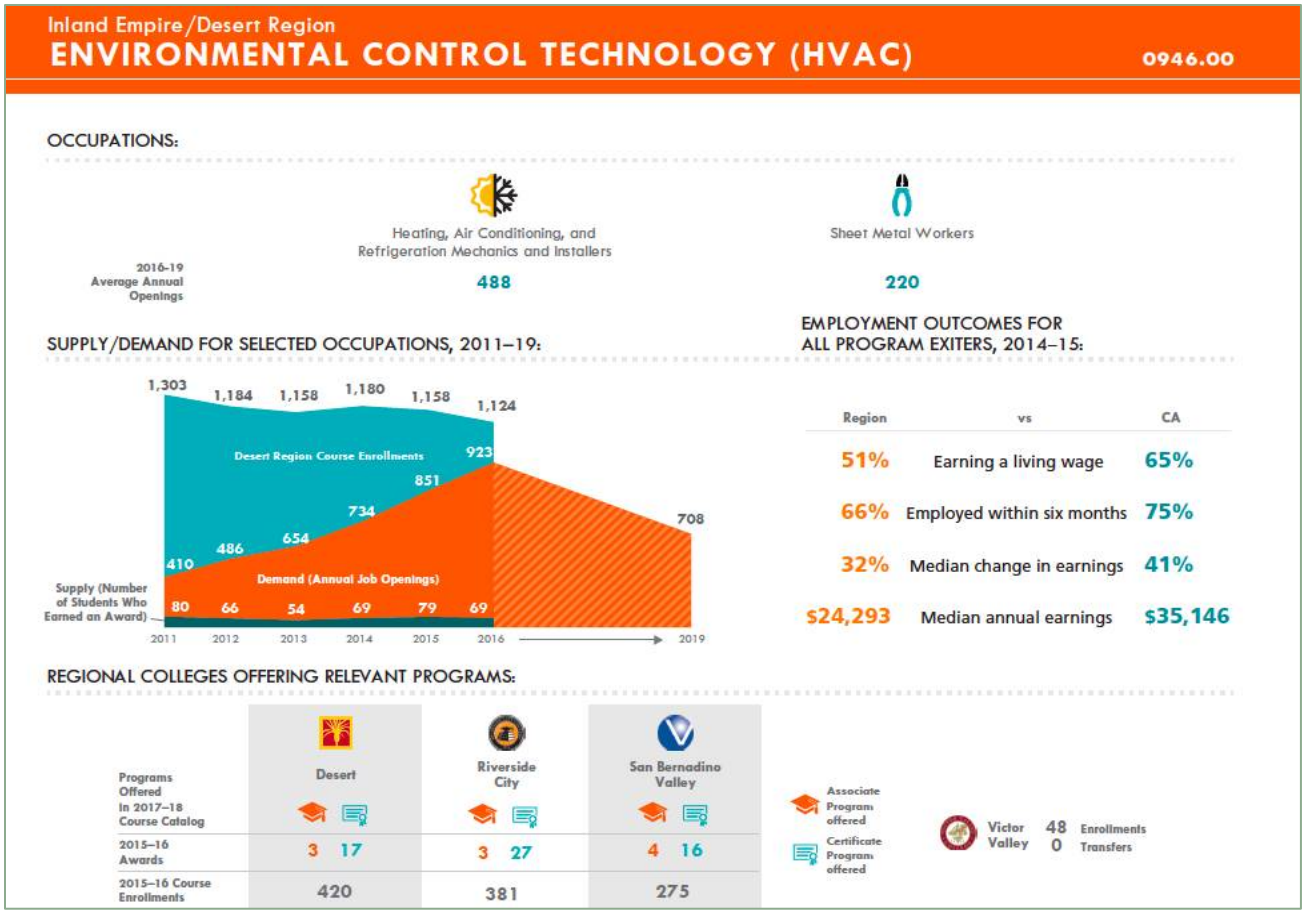


Figure 4-2. Inland Empire HVAC Labor Market Research[7]

[7] "Inland Empire/Desert Region Sector Profile Report," COE for Labor Market Research, 2017.

Figure 4-3. Inland Empire Projected Jobs 2017-2022, Energy, Construction and Utility, 2018.

Skills-Building: Leveraging Training and Education Opportunities

> *"The Guidance Plan also recommends a stronger emphasis on and redesign of programs dedicated to EE skills-building—i.e., to incorporate EE skills into the broader skills set of the professional and trades workers in occupations that most impact energy use. To achieve the goals ... the IOUs need to align with, leverage, and influence the rest of California's rich workforce training and education infrastructure." WE&T Guidance Plan, page 8.*

As highlighted in the WE&T Guidance Plan, I-REN does not intend to develop new curriculum or replicate existing efforts; instead, their focus is on developing and leveraging the many partners already in the I-REN region and helping to create better programs and series of classes. By working with WE&T providers in San Bernardino and Riverside counties, particularly community colleges, I-REN can help bridge the divide between job supply and demand.

As illustrated in Figure 4-4, currently SoCalGas nor SCE has "Energy Centers" (the IOUs' term for training centers) in the I-REN territory, requiring contractors at times to travel substantial distances to attend energy efficiency classes. In contrast, regional community colleges do have programs in this area that can and should be leveraged.

The I-REN governing agencies have existing partnerships with local colleges and community colleges, successfully providing instructional energy efficiency classes and events at local campuses where they have typically achieved high participation rates. Further, I-REN will employ 3C-REN's approach to harness other successful training programs like Energy Code ACE and bring them to the region. I-REN governing agency CVAG's staff is part of a committee with College of the Desert, a local community college, to offer feedback and expertise in the creation and development of their workforce and training certification program. This program allows students to take classes to become trained in installation and repair on systems such as HVAC, environmental management systems and more.

Offering training at familiar, nearby locations makes it easier for job seekers and workers to attend. I-REN can use its connections and experience to help ensure training opportunities are accessible throughout the region.

Table 4-1. Existing Regional Programs with relevance to WE&T

College	District/City	Potential Programs to leverage
San Bernardino County		
Barstow Community College	BCCD/Barstow	Industrial Maintenance Electrical & Instrumentation - Programs
Chaffey College	Rancho Cucamonga	HVAC programs
San Bernardino Valley College	SBCCD/San Bernardino	Heating, Ventilation, Air Conditioning and Refrigeration AA/Certificate
Victor Valley College	Victorville	Construction & Manufacturing Technology Program
CSU San Bernardino (CSUSB)	San Bernardino	Workplace Training and Online Career Training Programs
Riverside County		
College of The Desert	Palm Desert	Building & Energy Systems Professionals AS Degree, Air Conditioning & Refrigeration Certificate, Building Energy Consultant
Riverside Community College	Riverside	Air Conditioning and Refrigeration Certification
UC Riverside	Riverside and Palm Springs	Cross-cutting trainings in C&S

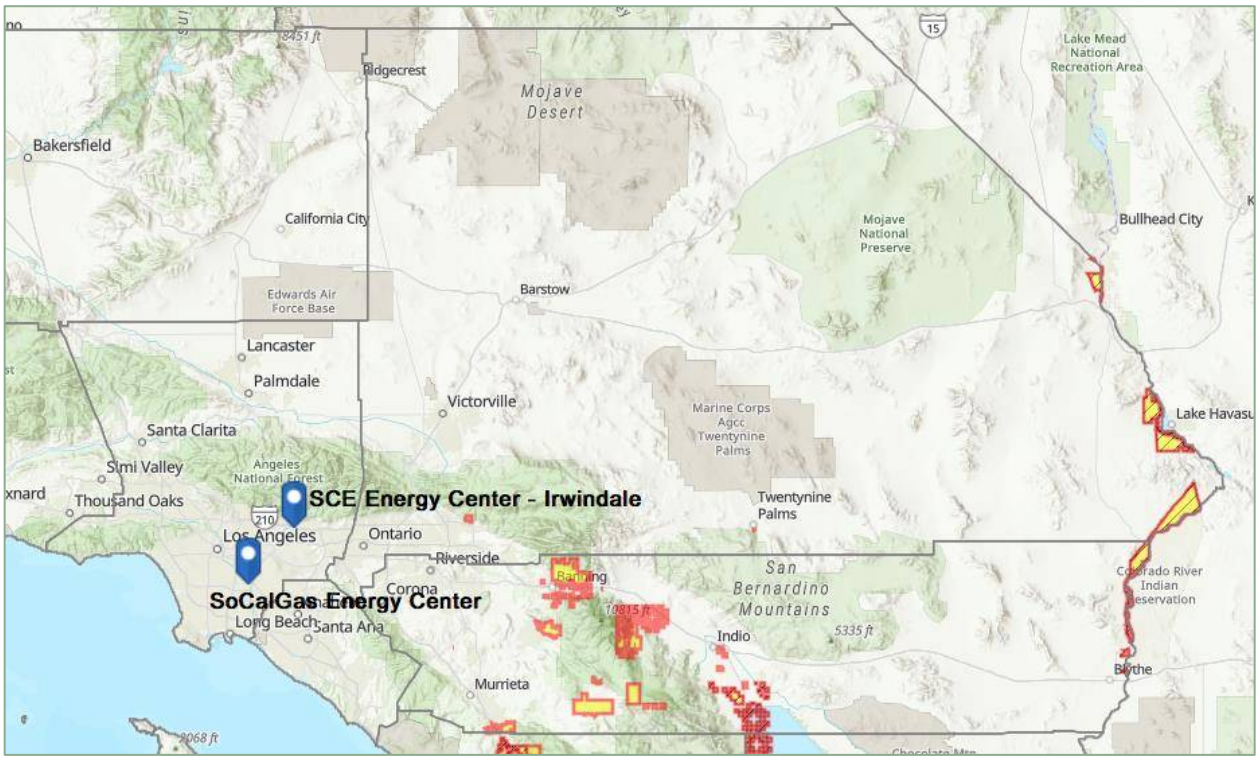


Figure 4-4. Energy Centers located outside Riverside and San Bernardino Counties

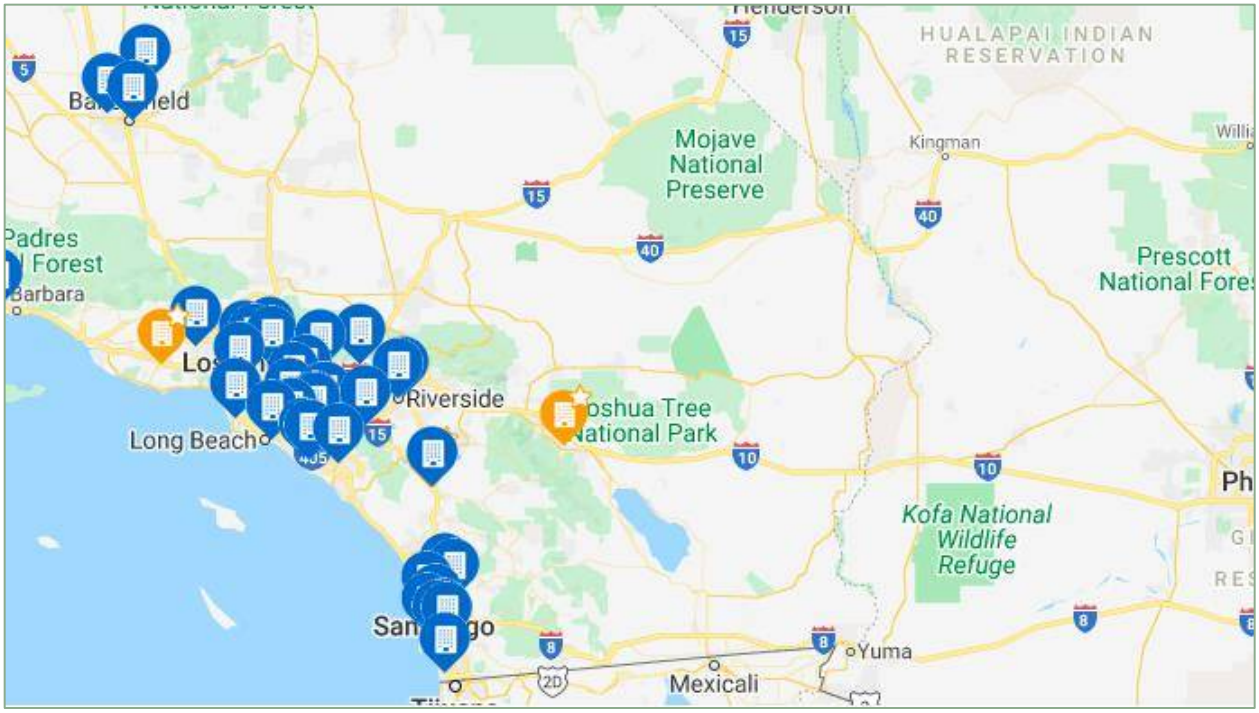


Figure 4-5. BPI Certified contractors

(Source: http://www.bpi.org/locator-tool)

In the further inland areas of Riverside and San Bernardino counties, there appears to be a lack of individuals and firms with advanced training and certifications such as the ones offered by the Building Performance Institute (BPI). As illustrated by Figure 4-5, there only a handful of BPI certified firms in the Inland Empire and with few exceptions they are mainly clustered around the cities of San Bernardino and Riverside. This is likely exacerbated by the lack of BPI testing centers, which are all located near San Francisco and Sacramento, and other high-quality energy efficiency training locations in the area. I-REN has an opportunity to build partnerships with BPI and other providers to increase the number of skilled and certified contractors in the region.

An important part of I-REN's WE&T initiative will involve working with state, regional, and local stakeholders to provide upskill and advanced training for incumbent workers or workers with an existing skill set in energy efficiency-related trades. I-REN's WE&T initiative will support training programs and certifications that are more accessible than a four-year degree, to assist workers in obtaining "good and promising" jobs in construction trades, such as electrical and HVAC trades, which demand a high level of technical training and experience.

The I-REN governing agencies bring experience in building effective partnerships in the Inland Empire to foster economic development. For example, WRCOG is launching Innovation 2030, an initiative featuring projects and programming that will be focused on all parts of the energy spectrum including generation, savings, transportation, grid, and more. See Figure 4-6 for more details. I-REN's work in the WE&T sector will complement the Innovation 2030 initiative and partnerships.

Potential Partners

I-REN will identify and build partnerships with organizations and agencies including but not limited to those shown below to collaborate on I-REN's WE&T initiatives. The I-REN governing agencies have a strong foundation of existing connections with these types of organizations, as described later in this chapter in Table 4-6.

Education (Building and Expanding Relationships)

- K-12 Schools and Districts
- Pre-Apprenticeship Programs
- Inland Empire/Desert Regional Consortium (Community Colleges (CCC))
- California Community Colleges
- Colleges/Universities

Trade Associations

- Air Conditioning Contractors of America (ACCA)
- Institute of Heating and Air Conditioning Industries (IHACI)
- American Institute of Architects (AIA)
- American Public Works Association (APWA), Southern California Chapter, including Coachella Valley, High Desert, and Inland Empire Branches
- Association of Energy Engineers (AEE)
- Building Industry Association (BIA)
- Local Chapter Building Associations (Desert Valley Building Association (DVBA) for Coachella Valley)
- International Association of Plumbing and Mechanical Officials (IAPMO)
- International Union of Operating Engineers (IUOE)
- International Brotherhood of Electric Workers (IBEW)
- Laborers' International Union of North America (LiUNA!)
- California Labor Management Cooperation Committee (LMCC)
- Sheet Metal Workers Union

Industry & Non-Profit Organizations

- California Advanced Lighting Controls Training Program (CALCTP)
- California Energy Alliance
- National Comfort Institute
- Natural Resources Defense Council (NRDC)
- Energy Service Companies (ESCOs)
- Economic and Community Development Corporations

Certification Organizations

- North American Technician Excellence (NATE)
- National Council on Qualifications for the Lighting Professions (NCQLP)
- Building Performance Institute (BPI)
- Builder Operator Certification (BOC)
- Home Energy Rating System (HERS)
- Consumer Home Energy Efficiency Rating System (CHEERS)

Government Agencies

- California Energy Commission
- California Air Resources Board (CARB)
- California Department of Education
- California Community Services and Development (CSD)
- California Workforce Investment Boards (WIBs)
- California Division of Apprenticeship Standards, Apprenticeship Council and building/construction trade apprenticeship programs

Innovation 2030

WRCOG's Leadership for Economic Development in the Inland Empire

Innovation 2030, a project of the Western Riverside County Council of Governments (WRCOG), seeks to establish an innovation driven economy in the Inland Southern California region by 2030. Innovation 2030 will foster an environment conducive to entrepreneurship and innovation and facilitate a transition away from low-skill, low-wage jobs that dominate the region's economy. In doing so, Innovation 2030 will help to futureproof the region, making the community more resilient against automation due to the logistics industry as a recent study, conducted by the University of Redlands has shown that more than 60% of the I-REN region's jobs are in jeopardy over the next 2 decades. Additionally, this impending challenge has only been accelerated by the impacts of COVID-19. Innovation 2030 will better align employment opportunities with job-skills training and K-12 through university education, and improve economic outcomes for all residents, including the most disadvantaged community members.

Innovation 2030 projects and programming would be focused on all parts of the energy spectrum from: generation, saving, transportation, grid, etc. Its model would entail targeted outreach programs aimed at entrepreneurs in the energy sector, recruit them and provide them with entrepreneurial support such as:

- ***Storytelling Masterclass for Innovators***: Storytelling that attracts investment and makes sales
- ***Investment Masterclass Program***: Proven techniques to raise millions for entrepreneurs and investors
- ***Innovation 2030 Impact Investment Fund***: Harnessing sources of capital for the region's entrepreneurs
- ***Young Entrepreneurs***: Paid internships for the region's most promising students in the region's most exciting startups
- ***Cities Innovate Program***: Teaching cities to serve entrepreneurs better, faster, and cheaper, from one-stop "create a business" to regional pilot programs
- ***First Chance Program***: Enabling underserved groups by bringing entrepreneurship into the communities

Innovation 2030 would also provide effective partnerships with the region's utilities by providing possible testing, job-training, certifications, and innovations related to the energy field. A focus on alignment between education systems and the workforce is critical now more than ever, especially when it comes to an aging workforce and the need for retraining new and in-demand skillsets in a COVID-19 economy and climate.

Lastly, the Innovation 2030 effort is led by Fred Walti, the Co-Founder of the Los Angeles Cleantech Incubator (LACI) an incubator known for its world-class programming for entrepreneurs in the energy, sustainability and cleantech space. It is recognized for its innovative partnership with the Los Angeles Department of Water and Power, Southern California Edison and other major stakeholders. The intent of Innovation 2030 would be to take this 'proof of concept' programming to the Inland Southern California region, a very vulnerable and underserved community area and propel its local economy towards resiliency in the future.

Figure 4-6. Innovation 2030: I-REN COG Leadership for Economic Development in the Inland Empire

Market-Building: Supporting a Green Workforce

Over the last decade the Inland Empire has seen economic growth following the recovery from the Great Recession of 2008, and since 2012 the region added 385,000 new jobs as of January 2020.[8] Yet annual per capita incomes in the Inland Empire have persistently lagged behind statewide averages. In 2018, Inland Empire workers earned on average less than 64% of the statewide average per capita income. This reflects a larger trend of growing income disparity in California, cited in the 2011 statewide WE&T needs assessment as one of the major problems plaguing the state's economy.[9]

Table 4-2. Average Per Capita Annual Income: Inland Empire vs. California as a whole[10]

Area	Average Per Capita Personal Income (2018)
California	$63,557
Riverside County	$40,637
San Bernardino County	$40,316

The COVID-19 pandemic has put additional strain on the region's economy and workforce over the past year, with unemployment in the region spiking dramatically in late spring of 2020. In August 2020 the average unemployment rate for the I-REN counties was 11%-- nearly three times the region's average annual unemployment rate in 2019.[11] Research from the Economic Roundtable identified Riverside County workers as tied for having the highest risk in California for job loss due to COVID-19 economic impacts. "The burden of unemployment is unequally distributed. It rests most heavily on young adults, Latinos, and workers in restaurant, hotel, personal care, and janitorial jobs. Young adults graduating from school and attempting to enter the job market face extremely difficult challenges," the report concluded.[12]

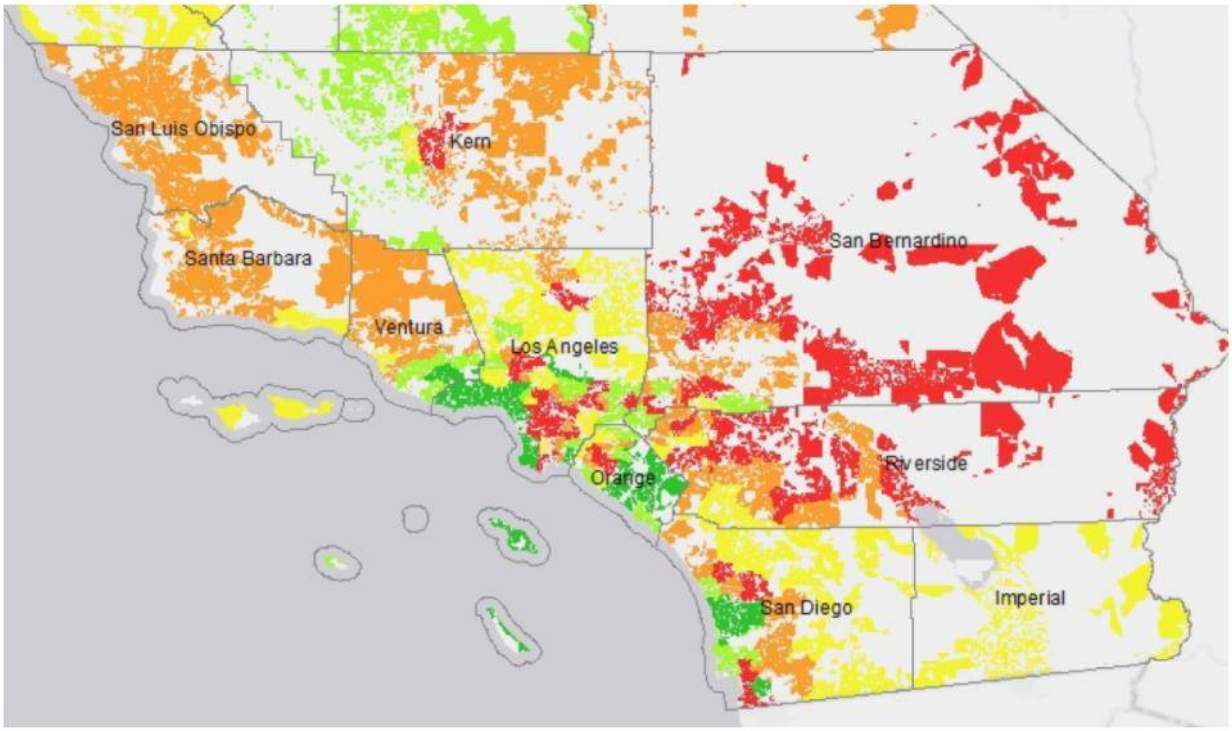
[8] Economist John Husing quoted by Jack Katzanek with The Press Enterprise, "Inland job growth to slow to 2012 levels in 2020, forecast says" Article from January 15, 2020. Accessed October 2020. https://www.pe.com/2020/01/15/inland-job-growth-to-slow-to-2012-levels-in-2020-forecast-says/

[9] California Workforce Education and Training Needs Assessment, Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2011. p.12.

[10] State of California Employment Development Department. Accessed October 2020. https://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/LocalAreaProfileComQSResults.asp?menuChoice=localAreaCom&selectedindex=36&area1=0604000065&countyName=&area2=0604000071&countyName=&area3=0601000000&countyName=&submitIt=Compare+Areas

[11] State of California Employment Development Department. Accessed October 2020. https://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/LocalAreaProfileComQSResults.asp?menuChoice=localAreaCom&selectedindex=36&area1=0604000065&countyName=&area2=0604000071&countyName=&area3=0601000000&countyName=&submitIt=Compare+Areas

[12] Lansner, Jonathan. Orange County Register. (April 17, 2020). Riverside County workers at highest risk for coronavirus-related layoff, by this math. Available online. Accessed November 2020.



Map shows job-loss risk, from highest (red) to lowest (green). (Source: Economic Roundtable)

Figure 4-7. Job Loss Risk in the Inland Empire due to the COVID-19 pandemic[13]

Research shows that prior to 2020, the Inland Empire region had a deficit in well-paying jobs and job pathways to success, and that this deficit disproportionately affects minorities and marginalized communities. The Brookings Metropolitan Policy Program's report from early 2019 found that the Inland Empire faced a deficit of roughly 347,500 "good or promising jobs," meaning employment that can sustain a family or a position that will lead to another job that can sustain a family.[14]

According to the California Advanced Energy Employment Survey, in 2015 the Inland Empire lagged behind other regions in the share of advanced energy jobs as a percentage of total jobs.[15] The Centers of Excellence for Labor Market Research determined that the level of jobs available compared to the number of individuals trained locally in the community colleges is large (see Figure 4-1 and Figure 4-2). This is indicative of the challenges the Inland Empire has faced in accessing education and training needed to grow their advanced energy economy and workforce. This could also be a result of the region being underserved in utility energy efficiency programs that would bring projects and incentive dollars to the region, resulting in jobs for energy efficiency-related construction trades. The construction and utilities sectors represent seven percent of the Inland Empire's total jobs, but they include 17 percent of

[13] Ibid.

[14] Advancing Opportunity in California's Inland Empire, by Chad Shearer, Isha Shah, and Marek Gootman. Metropolitan Policy Program at Brookings. February 2019. Available at: https://www.brookings.edu/wp-content/uploads/2019/02/Full-Report_Opportunity-Industries_Inland-California_Final_Shearer-Shah-Gootman.pdf Accessed October 2020. p.6.

[15] Advanced Energy Jobs in California: Results of the 2016 California Advanced Energy Employment Survey. Advanced Energy Economy, 2016. p. 16

its family-sustaining jobs and four percent of promising jobs for workers with less than a four-year college education.[16]

Table 4-3. Employment in Energy Efficiency, 2015 [17]

Region	Population	Advanced Energy Jobs	Total Jobs	% of Total Jobs
Southern California	17,635,918	229,153	8,145,109	2.8%
Inland Empire	4,693,171	40,377	1,531,663	2.6%
Central Coast	1,504,111	20,138	655,819	3.1%
Greater San Francisco Bay	7,161,311	113,020	3,750,379	3.0%
Greater Sacramento	1,896,552	30,399	832,042	3.7%
Rest of California	6,609,205	74,616	2,396,978	3.1%
California Total	**39,500,268**	**507,703**	**17,311,990**	**2.9%**

In its market-building strategy, I-REN will work with industry stakeholders in the region to identify and support the development of green workforce pathways. There are many organizations already working toward individual goals related to job placement-- WIBs, economic development departments, and others. Rather than duplicating their efforts, I-REN can serve as a facilitator to bring those organizations together and ensure that advanced energy and energy efficiency jobs are part of the focus in the region.

I-REN will also leverage its existing relationships with the building industry to help connect workforce advocates and employers. By convening and collaborating with these stakeholders I-REN's market-building initiatives will help illuminate the pathways for job seekers in the region to find advantageous employment to sustain their families and build careers in energy efficiency and advanced energy.

Major Trends

Unprecedented unemployment and economic contraction are the most significant trends affecting the WE&T sector, and the extent and depth of these challenges are major unknowns. As the pandemic and ensuing economic crisis continue to unfold, I-REN's WE&T initiatives and the cross-cutting activities proposed for the Public Sector and C&S will have an important role to play in guiding the region's job seekers and employers through current and future obstacles and opportunities.

[16] Advancing Opportunity in California's Inland Empire, by Chad Shearer, Isha Shah, and Marek Gootman. Metropolitan Policy Program at Brookings. February 2019. Available at: https://www.brookings.edu/wp-content/uploads/2019/02/Full-Report_Opportunity-Industries_Inland-California_Final_Shearer-Shah-Gootman.pdf Accessed October 2020. p. 37

[17] Ibid.

Other trends and issues that may affect I-REN's WE&T community include the following:

- Increasing the diversity of the energy efficiency workforce, including gender and race diversity, is essential to create greater equity and to meet the needs of the growing industry.
- Closing the skills gap and increasing the capabilities of the workforce to perform increasingly higher levels of advance building and technical building is fundamental to this industry and requires better coordination between elementary school and secondary school curriculum.
- Soft skills development has potential to increase the ability of the building industry to innovate business models, work and communicate effectively with customers, and be more resilient.
- The possibility of a "Green New Deal" and increased need and desire to address and adapt to climate change.
- Increased levels of certifications, particularly Building Performance Institute BPI, and similar.

Of these trends one of the most important is the need to increase the workforce's technical and analytical capabilities. Figure 4-8 illustrates how new green jobs require a higher level of analytical skills. As energy efficiency becomes more connected to advanced techniques, and complex modeling tools, the workforce needs to be better at using these skills.

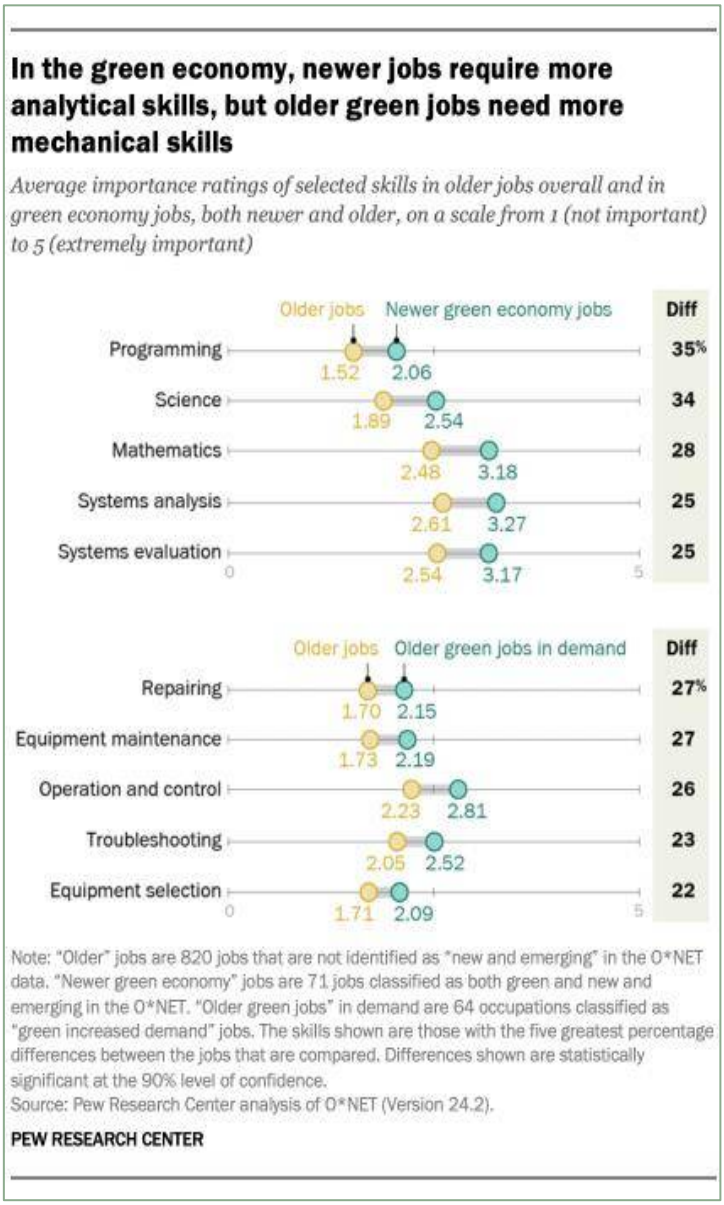


Figure 4-8. Green Economy Job Skills

Kochhar, Rakesh, "New, emerging jobs and the green economy are boosting demand for analytical skills," Pew Research Center

Intervention Strategies and Objectives

In its approach to serving the WE&T sector, I-REN is guided by an overarching goal:

Goal 2: Ensure there is a trained workforce to support and realize energy efficiency savings goals across sectors.

The primary role of I-REN is to ensure workforce training and education programs in the Inland Empire are aware of emerging technologies and changing production processes related to energy efficiency and advanced energy, and to work with trade associations and training partners to assess new skill sets that arise from these changes in the industry. I-REN's WE&T sector strategies are designed to expand the skills and capacity for the local workforce to do energy efficiency work, by partnering with local education providers to deliver targeted training and facilitate pathways to high-road jobs in energy efficiency-related occupations. This effort will identify and address gaps in the existing marketplace in the region, using best practices and existing studies as well as industry engagement. Through these initiatives I-REN will coordinate with other training providers to enable a better trained energy efficiency workforce in Riverside and San Bernardino counties to support and realize energy efficiency savings goals in the region.

Table 4-4. Intervention Strategies, Tactics, and Objectives

	Intervention Strategy	Tactic	Objective
Local training for the existing workforce	S2.1 Establish local partnerships with existing and potential training providers in the region to deliver targeted, equitable, and relevant energy efficiency training for contractors and industry.	T2.1.1 Assess training opportunities available in the region. T2.1.2 Offer "train the trainer" support to providers on energy efficiency topics and trends. Encourage providers to focus on the needs of the local market. T2.1.3 Facilitate the development of multiple sites/delivery mechanisms for contractor and industry training programs.	*Create a robust local network of training programs that increase capacity and knowledge related to energy efficiency in the building industry.*
Developing the region's new green workforce	S2.2 Facilitate industry engagement and development of job pathways to identify demand and jobs for a trained workforce.	T2.2.1 Convene and engage partners and organizations to define and establish a green workforce. T2.2.2 Reinforce pathways from high school, trade schools, and colleges into jobs in the energy efficiency workforce, in collaboration with established community partners. T2.2.3 Facilitate identifying opportunities for building companies and local workforce partners to network and connect.	*Increase the number of skilled energy efficiency workers in the region.*

Approach to Overcoming Barriers

I-REN's intervention strategies are designed to overcome the problems and barriers described in Table 4-5, with tactics and activities to achieve the overarching goal of ensuring there is a trained workforce to support and realize energy efficiency savings goals in the region.

As indicated in the initial market analysis presented above, there is a gap between the demand and supply of existing trades people to provide energy efficiency services in the I-REN service territory. For contractors looking to expand their skills, career advancement and access to high-road jobs, the pathways for obtaining additional certifications can be complicated, costly, and limited by timing or distance.

Table 4-5. Barriers and Strategies for I-REN WE&T Sector

Problem	Barriers	Solutions	Strategies & Tactics
When employers are hiring for skilled positions in advanced energy and energy efficiency, they can't find people to hire.	Inability to find and retain skilled and qualified workers for the demand.	Foster connections between workforce and industry. Promote relevant training opportunities in collaboration with WIBs to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1 S2.2
Codes and standards compliance and energy efficiency programs require certain certifications and qualifications for builders to participate.	A limited number of builders in the region have the required certifications and qualifications.	Promote relevant training opportunities in collaboration with WIBs to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1
Energy efficiency and advanced energy projects and programs require qualifications that the local workforce does not have.	Lack of qualified workforce in Riverside/San Bernardino counties, especially in the more remote areas.	Foster connections between workforce and industry. Promote relevant training opportunities in collaboration with WIBs to upskill the workforce.	S2.1 S2.2
Job seekers cannot find jobs in energy efficiency and advanced energy.	Lack of job opportunities in energy efficiency and advanced energy in the region.	Foster connections between workforce and industry. Identify and illuminate the pathways to energy efficiency and advanced energy jobs.	S2.2

Problem	Barriers	Solutions	Strategies & Tactics
Contractors aren't aware of energy efficiency projects, or they cannot or choose not to perform this work.	Lack of interest or knowledge of the opportunities and benefits of energy efficiency projects.	Foster connections between workforce and industry. Promote relevant training opportunities to upskill the workforce. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1 S2.2
Training is too far away and is offered infrequently or scheduled during work hours when it's inconvenient for contractors to attend. Also, existing training may be irrelevant to contractors or local projects' needs.	Training opportunities' availability and location pose challenges for contractors to be able to attend and are not designed for the particular needs of the local market.	Promote relevant training opportunities to upskill the workforce. Improve access to training by increasing the number of sites and delivery mechanisms. Collaborate with employers to provide continuing education for professional development and employee retention.	S2.1

Strategy 2.1 Establish local partnerships with existing and potential training providers in the region to deliver targeted, equitable, and relevant energy efficiency training for contractors and other industry stakeholders.

Objective: Create a robust local network of training programs that increase capacity and knowledge related to energy efficiency in the building industry.

Tactic 2.1.1: Assess training opportunities available in the region

I-REN will employ rigorous data collection to assess the training offerings in the region. This effort is crucial for informing a plan of action that will address gaps, build on promising opportunities, and avoid duplication of effort. This exercise also helps establish connections or build on existing partnerships among regional stakeholders. I-REN will examine the training marketplace through multiple lenses:

- **Stakeholders:** Who are the organizations currently providing training in the region? Who are the other organizations or entities that guide workers or employers to training providers? What support will workers need after completing a training program?
- **Content:** What topics, technologies, and skills are covered in currently available training? Are they appropriate for the needs of local employers? Are they appropriate for meeting the requirements of energy efficiency projects in the region?
- **Modalities:** How is training delivered? Modalities could include in-person classroom training, workplace training sponsored by an employer, field training at a project location, online classes or on-demand self-paced offerings, etc.
- **Metrics:** What metrics need to be tracked to ensure that trainings are effective? What impact do trainings have on job placement and access to high-road jobs? What tools and instruments have been developed to track student progress?
- **Geography:** For in-person training, where in the region are these trainings offered? When these training opportunities are mapped to population centers and locations of energy efficiency project activity in the region, do they overlap and where are the gaps? How far do participants have to travel to attend?
- **Equity:** Are underserved communities, DACs, tribes, and other marginalized groups able to take advantage of training opportunities? If so, what are the strengths among current offerings? If not, what are the barriers to increasing participation?
- **Access:** What are the barriers to accessing and hosting training, especially for disadvantaged workers? What are the costs for participants, employers, and providers? What are the knowledge thresholds or prerequisites? What is the timing of classroom training sessions? For online training, are there barriers associated with access to technology, e.g. are online offerings mobile-friendly or PC-required? What policies need to be implemented to ensure the local workforce has access to training that lead to high-road jobs.
- **Program and market needs**: What are the programs that will be offered by IOUs or other PAs that require specific skills? Are there opportunities to connect directly to active or planned programs to enhance the feasibility of the training for individuals? What energy-efficiency career pathways have been established for workers in the region?

Implementing this assessment may involve but not be limited to the following activities:

- Collaboration with stakeholders to design and deploy an effective survey instrument, via an online survey platform already utilized by I-REN.
- Additional in-depth phone interviews as needed to survey key decision makers and/or to fill identified educational, program, and policy gaps in response data.
- Review of secondary data sources obtained in collaboration with stakeholders.
- Compilation of results and preparation of report materials for sharing with stakeholders.
- Analysis of results, in cooperation with stakeholders, to inform program planning and EM&V.

Tactic 2.1.2: Offer "train the trainer" support to providers on energy efficiency topics and trends. Encourage providers to focus on the needs of the local market.

Based on the information gathered in Tactic 2.1.1, I-REN will collaborate with training providers and the IOUs to address gaps in educational offerings and determine the most effective way to bridge those gaps in the region. I-REN can also be a facilitator to ensure training opportunities are aligned with State energy efficiency goals including those outlined in SB 350 regarding doubling energy efficiency savings by 2030, along with policies and labor standards that support local workforce development.

One area of particular interest to I-REN is HVAC installation, especially due to the Inland Empire's high cooling load. I-REN can work with existing educational providers to focus curriculum on advanced training for existing HVAC contractors. This "upskill" training would help them acquire advanced technical knowledge to support them in earning higher wages. Content could include but would not be limited to beyond code, smart sizing, and advanced building science skills.

In order to position the training providers to provide this advanced content, I-REN can provide "train the trainer" educational support. Through their work with both the public and private sectors the I-REN governing agencies bring connections to professionals in various trades who can lend their expertise to this effort.

I-REN can work with providers to develop and/or tailor content around energy efficiency topics and trends including but not limited to the following:

- Mechanical HVAC basics
- Passive house and zero net carbon/energy
- Heat pump water heaters, and other electrification measures
- Certified Energy Manager (CEM)
- Operations and facilities management
- Building Performance Institute (BPI) trainings
- Codes training including solar and battery installation and smart energy systems
- Building Envelope sealing (duct blower tests, insulation/radiant barrier checks, etc.)
- HERS and CHEERS certifications

Tactic 2.1.3: Facilitate the development of multiple sites/delivery mechanisms for contractor and industry training programs.

In a service territory as expansive as the Inland Empire, expanding the number of training sites and promoting multiple delivery mechanisms are crucial for improving access to workforce education. The data collected in Tactic 2.1.1 will inform I-REN's plans for this effort. Based on identified areas of need, I-REN will work with providers to develop approaches to expand training opportunities in the region.

Significant barriers exist for training providers in hosting in-person training in far-flung rural areas. If they offer a training event and attendance is lacking, providers are discouraged from serving that area in the future. I-REN can help providers identify underserved areas with a significant population that could benefit from training, and I-REN can also facilitate cooperation among other utilities and stakeholders to co-sponsor events. For example, I-REN is already in conversation with SoCalGas about collaborating to bring training opportunities to the region. Through co-sponsorship and I-REN's extensive network of connections with local governments, I-REN can help promote training events with marketing and outreach to increase awareness and encourage participation.

I-REN can also provide outreach to employers to support decision-making around onsite training in the workplace or hands-on field training for employees. Workplace training shows the employer's support for professional development and can aid in employee retention, while also improving the company's ability to take on energy efficiency projects that require highly skilled work. On-the-job training can also provide workers the opportunity to receive pay while being trained.

Industry stakeholders have asserted that hands-on training, such as the California Advanced Lighting Controls Training Program (CALCTP), is preferred.[18] I-REN is in contact with CALCTP to explore possibilities for partnering to offer training in the region. CALCTP certifies electricians in advanced lighting controls and offers one of the two approved Acceptance Testing Technicians training programs. They are a key collaborator for both WE&T and cross-cutting activities in support of I-REN's C&S initiatives. For areas of the region where in-person training is challenging for cost reasons or limited participation numbers, I-REN will work with local stakeholders and employers to assess the applicability of online training options for supplementing local training. I-REN can recommend regionally appropriate training to pursue and assist with messaging and outreach to guide participants.

[18] Opinion Dynamics. PY2013-2014 California Statewide Workforce Education and Training Program Contractor Training Market Characterization. June 2016. P.6

Strategy 2.2 Facilitate industry engagement and development of job pathways to identify demand and jobs for a trained workforce.

Objective: Increase the number of skilled energy efficiency workers in the region

Tactic 2.2.1: Convene and engage partners and organizations to define and establish a green workforce.

To define and foster the development of a green workforce in the Inland Empire, a collaborative relationship-based approach is crucial to success.

One of I-REN's greatest strengths is its engaged audience of stakeholders, described in Table 4-6. This network will form the foundation for convening partners and organizations who are members of the WE&T community. This could include but may not be limited to local government agencies; local and regional building industry professionals; WIBs and job placement organizations; labor unions; WE&T providers and educational institutions; and many others. I-REN can serve as a facilitator to lead the process of collaborating with key stakeholders on the topic of WE&T and the region's green workforce.

As part of its established committee structure, I-REN regularly engages with leaders in both the public sector and private industry. In establishing what the green workforce means to the Inland Empire, it will be important to consider the green job opportunities within cross-cutting areas such as the Public Sector and C&S community. For example, to maximize the benefits of energy efficiency in the region, local governments have a need for well-trained facility managers in publicly owned buildings, and knowledgeable permitting staff in building departments. Similarly, local and regional contractors and other members of the building community have a need for skilled workers to implement efficient construction and equipment installation practices.

Through this engagement tactic I-REN can gain valuable insight into each entity's role in this work, while creating connections between stakeholders and fostering a collective vision and mission for developing the Inland Empire's green workforce.

This important exercise will examine questions and themes including but not limited to the following:

- What are the advanced energy and energy efficiency jobs in the region?
- How do job seekers find these jobs?
- Do these jobs lead to career advancement?
- Who are the organizations supporting job seekers and where do they operate?
- What support services are in demand?
- What skills and trades do employers look for in hiring for these positions?
- Which skills are lacking in the current market?
- Codes and standards compliance and enforcement
- Public Sector facility management
- Energy efficiency resource program participation

Tactic 2.2.2: Reinforce pathways from high school, trade schools, and colleges into jobs in the energy efficiency workforce, in collaboration with established community partners.

I-REN will examine the information gathered from Tactic 2.1.1 and Tactic 2.2.1 and work with established community partners to identify the pathways that a student job seeker might follow in order to join the energy efficiency or advanced energy workforce.

"Journey mapping" is a technique that can be used to gain insight into the steps a student would take as they explore their options for employment. I-REN can work with community partners to establish specific and detailed example profiles of job seekers to use in this process. Examining these profiles and following the individual's journey can help I-REN and its partners to discover the resources that are available and the barriers that are encountered by the types of individuals this WE&T tactic will support.

The collaborative journey mapping process can be especially helpful in learning about the lived experience of students from DACs and underserved communities as they seek to enter the workforce, and the unique challenges they face. I-REN's key partners for this effort are experts in advocating for the communities they serve. In many cases they may have engaged in this type of journey mapping activity and can leverage that insight for this effort.

As the facilitator, I-REN's role is to listen first, learn from the community experts, and collaborate to make measurable improvements. I-REN can identify synergies between partners and encourage cooperation in developing messaging that will illuminate the identified pathways for students in various situations. I-REN can then use its resources and extensive reach to deliver this messaging across the region, through its 52 local government partners and private industry connections. I-REN can also leverage its RENterns initiative (described at right) as a pathway for students to enter the workforce in a role supporting local governments' energy efficiency and sustainability projects.

For this tactic I-REN will bring key partners to the table including but not limited to:

- Riverside County Workforce Development Board
- San Bernardino County Workforce Development Board
- California Youth Energy Services
- High schools in Riverside and San Bernardino counties
- Inland Empire/Desert Regional Consortium
- Youth development programs
- Community colleges
- Trade Schools
- Universities

RENterns: A Pathway to Advanced Energy Education & Employment

In a cross-cutting activity from the Public Sector chapter, I-REN plans to provide internship opportunities for "RENterns" to support local government agencies with energy efficiency projects, climate action planning, energy benchmarking, and other sustainability initiatives.

This initiative highlights the synergies between I-REN's Public Sector and WE&T activities. RENterns will help build capacity within local governments to complete energy efficiency projects while gaining job skills for future careers in advanced energy.

The idea of RENterns originates from WRCOG's successful Public Service Fellowship program, which has trained more than 75 Fellows over five years. The Fellowship Program has led to alumni being hired in the region, while other alumni use their experiences in the program to trailblaze new professional development opportunities like graduate school.

Tactic 2.2.3: Facilitate identifying opportunities for building companies and local workforce partners to network and connect.

Building on the groundwork of relationships and market insights from Tactic 2.2.1, I-REN can create opportunities for networking and connection among employers, workforce partners, the building industry, and the community, as appropriate. In the short-term this may be limited to online and virtual environments but will expand when possible to in-person and hybrid events.

More populous areas of the I-REN territory may have an established history of green job fairs and other events that could be leveraged to encourage these connections. I-REN can work with organizers to emphasize green jobs within the scope of larger events, or to plan new events focused on advanced energy and energy efficiency. I-REN can also provide outreach assistance to ensure participation by key stakeholders.

Rural areas and smaller job markets will especially benefit from I-REN's support for WE&T networking events. These areas may not have any existing infrastructure for job fairs or similar events. If they do, the events may not be tailored to advanced energy and energy efficiency. I-REN can work with local partners to develop event concepts, which could include targeted invitation-only mixers with a smaller crowd, or job fairs that are open to the public.

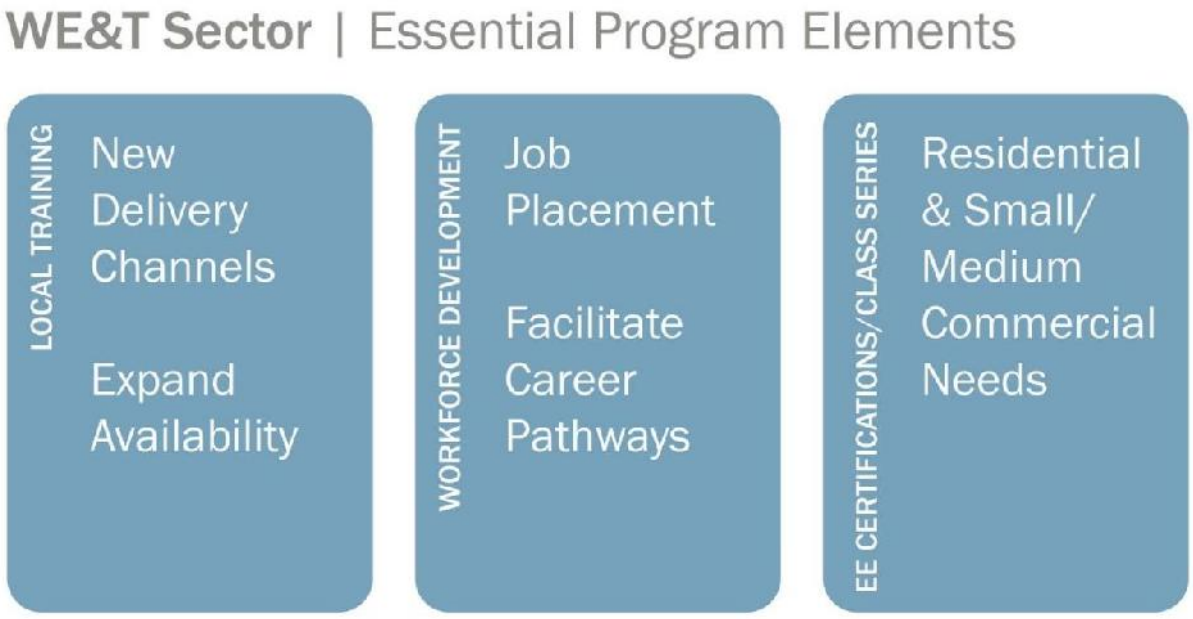
I-REN brings a wealth of experience in developing, promoting, and hosting events for local communities. In its committee work, the I-REN governing agencies are already engaged with many of the region's WE&T market actors. Regional construction firms regularly attend the I-REN governing agencies' committee meetings, as do public sector employers such as city planners and building departments. I-REN's support for WE&T networking events offers an excellent opportunity to create connections across I-REN's Public Sector and C&S initiatives.

In addition, the I-REN governing agencies are experienced in working collaboratively with other PAs to host regional events and would leverage those connections to co-sponsor and conduct outreach and marketing to promote WE&T networking events.

Anticipated Programs

I-REN anticipates offering two non-resource programs to provide short and mid-term support for training and educating the regional workforce to realize energy efficiency savings goals for the residential and commercial markets. Those programs include but are not limited to the following:

- Training and Education – establish local partnerships with existing and potential training providers in the region to assess the training resources available in the region, offer "train the trainer" support to providers on energy efficiency topics and trends with a focus on the needs of the local market, and develop sites and delivery mechanisms to help ensure equitable access to training.
- Workforce Development – facilitate industry engagement and develop job pathways by convening local partners in the community, reinforcing pathways from schools into jobs in the energy efficiency workforce, and encouraging connections between industry and workforce development organizations.



Evolving Approach

As a new REN, I-REN will coordinate with existing RENs doing this work to identify and build on best practices and build upon the work currently underway through the COGs and local government partnerships. I-REN will implement the strategies outlined here in collaboration with the key partners described in the section that follows. Based on EM&V and on monitoring progress toward performance metrics through the near and mid-term activities, I-REN will make adjustments to strategies for future implementation beyond the 2021-2025 timeline.

Leveraging I-REN's Existing Key Partners

I-REN's governing agencies have extensive networks of existing partners that will be important for collaborating on WE&T initiatives, and their work with local governments at the city and county level offer opportunities for cross-cutting activities with I-REN's proposed work in the Public Sector and C&S. I-REN is also building partnerships with local community colleges, local universities, and local workforce investment boards (WIBs) to establish a comprehensive network of WE&T offerings.

The following table shows relevant examples of the I-REN governing agencies' experience working with key partners in the region. I-REN will build on its existing relationships to include additional key partners representing all market actor segments as described earlier in the chapter (section entitled "Potential Partners").

Table 4-6. I-REN's Key Partnerships & Collaboration Experience in the WE&T Sector

Key Partners	Relevant Examples of Collaboration
Local Universities: **Cal State San Bernardino** **UC Riverside**	Through the 10-year Desert Cities Energy Partnership (DCEP) local government partnership, CVAG partnered with the local universities to hold multiple Title 24 training classes, which were offered to local building contractors, architects, and building and safety officials. CVAG has also partnered with the Palm Springs campus of UC Riverside to host codes and standards trainings in partnership with the IOUs and Energy Code ACE.
Local Community Colleges: **College of the Desert**	CVAG staff is part of a committee with College of the Desert to offer feedback and expertise in the creation and development of their workforce & training certification program, which allows students to take classes to become trained in installation and repair on systems such as HVAC, environmental management systems and more.
Middle Schools and High Schools	CVAG has hosted and presented at various sustainability expos which were held for hundreds of middle school and high school kids to learn about various programs and measures related to energy efficiency and recycling.
Trade associations, advocacy and stakeholder groups, and other industry organizations	Through I-REN's stakeholder coordination work and presentations to CAEECC, I-REN gained support and offers of assistance from groups such as the Natural Resources Defense Council (NRDC), California Labor Management Cooperation Committee, and the local Sheet Metal Workers union. These partners will be important for collaboration on I-REN's goal to improve the equity of WE&T opportunities for DAC, rural, underserved, and other vulnerable communities. The Riverside Chapter of the Building Industry Association (BIA) has been involved with WRCOG's TUMF Program with feedback on Transportation Program growth and is a potential partner for outreach and educational workshops. WRCOG leadership also brings connections to the USGBC Inland Empire Chapter (USGBC-IE), having previously served on the board.

Key Partners	Relevant Examples of Collaboration
Employers, such as engineering, building, architecture, and construction-related firms	WRCOG hosts committee meetings where local and regional building firms are active participants. CVAG has hosted bus tours to various energy efficiency facilities to increase awareness of environmental and energy saving methods used by these facilities, including tours to an Anaerobic Digestion facility and a Zero Net Energy development. CVAG administers a Property Assessed Clean Energy (PACE) program and has service agreements with private firms to service CVAG's jurisdiction. As the Transportation Authority for the County of San Bernardino region, SBCOG brings relationships with numerous building and construction industry related firms. SBCOG brings connections to engineering, building, and construction firms through WTS International, an industry organization dedicated to advancing equity and access for women in the transportation industry, where a member of SBCOG's I-REN leadership team previously served as president of the Inland Empire chapter. This connection aligns with I-REN's goal to expand equity of WE&T opportunities in the region. SBCOG also works with its 24 cities and hundreds of employer sites throughout the region to promote ridesharing, reduce congestion and help improve air quality.
Other Program Administrators	SBCOG has experience conducting outreach as part of the San Bernardino Regional Energy Partnership with SCE and SoCalGas, working closely with 13 cities. CVAG partnered with SCE, SoCalGas, and Energy Code ACE to host codes and standards trainings at UC Riverside's Palm Springs campus. Through its stakeholder coordination work, I-REN has continued to build working relationships with SCE and SoCalGas, as well as other RENs such as SoCalREN and BayREN.
Local Governments	The three I-REN governing agencies have all had or currently have LG partnerships – with various connections including City Manager, Planning, local utilities. They bring multiple local experts into the conversation on a monthly/quarterly basis. WRCOG has committee structures engaged with planning directors and public work directors. They work with building department decision-makers and coordinate with permit technicians and all other staff face to face. CVAG has hosted many annual Energy & Water summits, which were attended by over 500 participants, in order to educate and update about relevant programs, energy efficient programs, and strategies from like-minded agencies. SBCOG Cities participated in a county-wide ZEV Readiness and Implementation Plan funded through the CEC. The Climate Resiliency Study "Resilient IE" is currently underway, which includes the participation of all 24 cities in San Bernardino County.

Budget and Metrics

Budget

The budget shown in Table 4-7 will facilitate the forecasted short and mid-term metrics targets with the expectation that increased participation and project volume is achieved as initial efforts scale and gain traction.

Table 4-7. Workforce Education & Training Budget

Budget ($)	2021	2022	2023	2024	2025
Administration	231,221	225,329	239,343	243,716	267,465
Marketing and outreach	138,732	135,198	143,606	146,230	160,479
Direct implementation - non incentive	1,942,255	1,892,768	2,010,477	2,047,218	2,246,706
Direct implementation - incentives	-	-	-	-	-
Total	**2,312,208**	**2,253,295**	**2,393,426**	**2,437,164**	**2,674,650**

Metrics

Based on the intervention strategies I-REN developed for WE&T, the following metrics are proposed to track program performance.

Table 4-8. Program Performance Metrics

Workforce Education and Training Metric	Baseline Year	Short Term Target 2021	Short Term Target 2022	Short Term Target 2023	Mid Term Target (2024-2025)
Number of collaborations by Business Plan sector to jointly develop or share training materials or resources.	2021	TBD	4	8	12
Number of participants by sector	N/A	TBD	90	120	150
Percent of participation relative to eligible target population for curriculum	N/A	N/A	TBD	TBD	TBD
Percent of total WE&T training program participants that meet the definition of disadvantaged worker.	N/A	TBD	TBD	TBD	TBD
Percent of incentive dollars spent on contracts* with a demonstrated commitment to provide career pathways to disadvantaged workers	N/A	N/A	TBD	TBD	TBD
Number Career & Workforce Readiness (CWR) participants who have been employed for 12 months after receiving the training	N/A	N/A	TBD	TBD	TBD

Cross-Cutting & Coordinating Activities

Marketing, Education & Outreach

The I-REN governing agencies serve as a trusted voice and advocate for local communities within their two counties. They can use this position to coordinate Marketing, Education and Outreach (ME&O) activities to promote workforce education and training in the region. I-REN can serve as a facilitator for coordination with other PAs and statewide programs and initiatives ME&O activities.

Effective marketing and outreach activities are fundamentally important to I-REN's strategies for WE&T. The I-REN governing agencies bring in-house capacity to design, develop, and deploy creative marketing content for various channels, from printed materials and website content to email communicators, social media, videos, and podcasts. They are skilled at designing well-branded promotional campaigns to engage their local government audiences.

I-REN anticipates its WE&T-related marketing could include but would not be limited to the following activities, in alignment with the proposed intervention strategies and tactics.

Table 4-9. Marketing Activities for I-REN WE&T Sector

Intervention Strategy	Tactic	Marketing Activities
S2.1 Establish local partnerships with existing and potential training providers in the region to deliver targeted, equitable, and relevant energy efficiency training for contractors and industry.	T2.1.1 Assess training opportunities available in the region. T2.1.2 Offer "train the trainer" support to providers on energy efficiency topics and trends. Encourage providers to focus on the needs of the local market. T2.1.3 Facilitate the development of multiple sites/delivery mechanisms for contractor and industry training programs.	*Develop and deploy effective survey instruments to gather data on current training opportunities.* *Collaborate with training providers and employers to design and deliver effective messaging to increase awareness and encourage participation in training events.* *Conduct relationship building meetings and outreach events - online and in person.*
S2.2 Facilitate industry engagement and development of job pathways to identify demand and jobs for a trained workforce.	T2.2.1 Convene and engage partners and organizations to define and establish a green workforce. T2.2.2 Reinforce pathways from high school, trade schools, and colleges into jobs in the energy efficiency workforce, in collaboration with established community partners. T2.2.3 Facilitate identifying opportunities for building companies and local workforce partners to network and connect.	*Develop and deploy materials to promote stakeholder events through I-REN governing agencies' existing marketing channels, through local government partnerships, and through building industry communication networks.* *Develop and deploy messaging in collaboration with educational and workforce partners to illuminate the green job pathways in the region.*

Codes & Standards

I-REN's WE&T initiatives offer an important cross-cutting opportunity to support C&S. I-REN's approach to serving the C&S sector focuses heavily on training for local building department staff, to help those individuals perform their jobs and build capacity in their departments to better enforce codes and standards. This is significant for WE&T as it helps build a skilled workforce in some of the rural jurisdictions with less resources in their local building departments.

I-REN's service territory also includes several relatively new cities incorporated in recent years; these cities are building their local capacity and establishing their infrastructure. They will benefit from training and education for their local government employees.

Another of I-REN's cross-cutting strategies for both WE&T and C&S involves outreach to building professionals in the private sector, contributing to their professional development and supporting the development of a capable regional workforce trained in advanced energy efficient building practices.

By aligning its C&S training activities and WE&T activities, I-REN can help to maximize benefits to the region's workforce, local governments, and building professionals.

EM&V Considerations

The recently-published report from the California Workforce Development Board (CWDB) "Putting California on the High Road: A Jobs and Climate Action Plan for 2030" (referred to herein as "June 2020 CWDB report") highlights the importance of data collection, tracking and evaluation studies to develop beneficial WE&T initiatives and improve them over time.[19] Accordingly, for its WE&T cross-cutting sector programs, I-REN proposes data collection and identifies an anticipated study need to support both external EM&V by the CPUC and internal research and program development activities.

As a new REN, I-REN is interested in collaborating with the CPUC, CEC, Energy Division, other PAs, and the WE&T community to support statewide and regional efforts around WE&T EM&V Roadmaps and Plans. I-REN will collaborate with the CPUC and other stakeholders to ensure that data collection activities are embedded in C&S program design to capture the information necessary to meet evaluation requirements and also to help expand the understanding of REN program impacts in this cross-cutting sector.

Data Collection Needs

I-REN's data collection needs correspond to identified metrics and indicators, and the intervention strategies outlined for its WE&T sector programs. To support external EM&V activities, I-REN will collect data to keep the CPUC and stakeholders apprised of program progress. I-REN will work collaboratively with Energy Division staff to ensure data collection meets their needs, to enable evaluation that can:

1) inform the program selection process,

[19] "Putting California on the High Road: A Jobs and Climate Action Plan for 2030" California Workforce Development Board (CWDB). Prepared by the UC Berkeley Center for Labor Research and Education. June 2020. Available online.

2) provide early feedback to program implementers,

3) produce impact evaluations at the end of the funding period, and

4) feed the planning process for future program cycles.[20]

Data collection will also support I-REN's internal EM&V activities and inform the measuring of progress toward established program goals and targets, CPUC metrics and indicators, and PA determined value metrics. I-REN's value metrics emphasize equity and building workforce capacity.

Real-time program performance tracking enabled by data collection will support the delivery of timely feedback to implementers and/or program administration staff. This in turn will support continuous improvement and inform future program planning efforts. Table 4-10 shows the research questions and data collection needs I-REN has identified for its WE&T initiatives, in alignment with CPUC metrics and indicators and I-REN's internal goals and value metrics, and informed by the June 2020 CWDB report.

Table 4-10. I-REN Workforce Education & Training Sector Data Collection

Topic Focus	Research Questions/Data Collection Needs	EM&V Objective	Timeframe
WE&T regional characterization	• Who are the training providers, job placement partners, and other WE&T stakeholders? • What topics, technologies, and skills are covered in available training content? • How is training delivered? • Where are in-person trainings located, relative to Inland Empire population centers and demand? • Do DACs, tribes, and other underserved or vulnerable populations have equitable training opportunities? • What are the barriers to increased access and equity? • What job skills are needed to participate in EE programs offered by other Pas?	Understand the WE&T sector market and identify areas of highest need	Short-term
Depth of I-REN interventions	• How many 'train the trainer' or upskill trainings are conducted? • How many collaborations occur with other organizations to jointly develop or share training materials or resources? • How many partners and organizations are convened for green workforce leadership and engagement? • How many RENterns are placed in positions to support local governments? • How many RENterns go on to pursue further education or careers related to EE, advanced energy, climate resilience, and sustainability? • How are I-REN collaborations expanding WE&T access for workers from DACs, tribes, and other underserved or vulnerable populations?	Program performance tracking	Short-term/ Mid-term

[20] Energy Efficiency Policy Manual, version 6, April 2020, p.44.

I-REN's WE&T sector strategic interventions center on fostering partnerships and facilitating industry engagement rather than developing and delivering curriculum. However, additional EM&V efforts could include examining the feasibility of working with training providers to collect data on secondary effects of I-REN interventions. This could include collaborating with key partners to assess the feasibility of collecting and evaluating data to track key metrics identified in the June 2020 CWDB report:[21]

- Enrollees and number of graduates
- Attainment of industry-recognized credentials
- Job placement and job retention
- Initial wages and wage mobility over time

Anticipated Study Needs

The June 2020 CWDB report highlights the importance of identifying data collection and analysis methods and the resources to support them prior to making field investments. Accordingly, I-REN anticipates the need for an initial study to identify current resources as well as gaps and barriers in the I-REN region's WE&T sector. This effort aligns with the intervention strategy described in *Tactic 2.1.1: Assess training opportunities available in the region*.

The proposed study will assess the region's WE&T stakeholders as well as training content, modalities, geography, equity, access, and program and market needs. I-REN will use the information and analysis from this study to foster partnerships and develop targeted approaches to WE&T sector activities. This data will also inform ongoing data collection activities and help form baselines against which to measure program performance during deployment and ensure that ratepayer investments are used judiciously to benefit communities and workers with the greatest need.

I-REN anticipates collecting this data initially to gain near-term feedback, then repeating the assessment after a few years to examine program progress and make improvements for program delivery in the mid-term timeframe and beyond.

In addition to I-REN's proposed data collection and study activities, the recently-released Energy Division & Program Administrator Energy Efficiency EM&V Plan Version 10 for 2019 – 2021 includes multiple studies underway that could provide useful insights for I-REN to incorporate in its WE&T initiatives.[22] I-REN will review the results of these studies are they are made available and incorporate findings however is appropriate to enhance I-REN WE&T program design and delivery.

Coordination with other PAs

I-REN is in communication with other PAs operating in the region to identify areas of potential coordination for WE&T activities. I-REN will ensure its activities are differentiated and avoid duplication of effort, while maintaining cooperation with other PAs to improve access to relevant training opportunities across the I-REN counties.

[21] "Putting California on the High Road: A Jobs and Climate Action Plan for 2030" California Workforce Development Board (CWDB). Prepared by the UC Berkeley Center for Labor Research and Education. June 2020. Available online.
[22] Energy Division & Program Administrator Energy Efficiency Evaluation, Measurement and Verification Plan FINAL 2019 – 2021 Version 10. California Public Utilities Commission, Energy Division. December 30, 2020. Available online.

Appendix A: CPUC Checklist

Table A-1. CPUC Checklist with I-REN Notes

Map to NRDC Compilation Document	Business Plan Element	I-REN Notes / Indicate Complete
New Requirements for BP Motion per D.19-12-021		**Ch. 1: Portfolio Summary**
	Represent more than one LG	About I-REN, page 1.4-1.6
	Present BP proposal at CAEECC	Regulatory Requirements, page 1.19
BP must contain per D.19-12-021		**Ch. 1: Portfolio Summary, Appendices**
	New and Unique Value	Providing Value, page 1.21
	Governance Structure	I-REN Organization, page 1.5
	Letter of Commitment to Cooperate	Appendix C: Letters of Commitment & Support
	CAEECC & Other Stakeholder Feedback Resolution	Appendix D: Stakeholder Input Resolution
	Energy Savings Targets	Goals & Budget, beginning page 1.27
	Goals & Metrics	Goals & Budget, beginning page 1.27
	Benefits & Costs (TRC, PACT)	Goals & Budget, beginning page 1.27
REN Activities Criteria		**Ch. 1: Portfolio Summary**
	Meet at least one of three	Regulatory Requirements, page 1.19
Portfolio Summary		**Ch. 1: Portfolio Summary**
0	**Executive Summary**	**Ch. 1: Portfolio Summary**
	Company description	About I-REN, page 1.4-1.6
	Definition of market	Definition of Market, page 1.7-1.14
	Mission Statement	I-REN Mission, page 1.3
	Purpose of Business Plan	Purpose of Business Plan, page 1.15
I.A.1, II.D.2	**Overview**	**Ch. 1: Portfolio Summary**
	About EE/DSM	Addressed throughout Business Plan
	CA Energy Needs	Supporting California's Energy Goals & Needs, page 1.17-1.18

Appendix A: CPUC Checklist

Map to NRDC Compilation Document	Business Plan Element	I-REN Notes / Indicate Complete
	Regulatory Requirements	Regulatory Requirements, page 1.19
	Strategic Plan	Supporting California's Energy Goals & Needs, page 1.17-1.18
	Legislation (e.g., AB 758, SB 350, AB 802, AB 793)	Supporting California's Energy Goals & Needs, page 1.17-1.18
	IOUs/PAs/CPUC/etc. overall role	Evolving from Past Cycles & I-REN's Role, page 1.26
I.A.2	*Broad socioeconomic and utility industry trends relevant to PA's EE programs (population, economics and markets, technology, environment/climate)*	Major Trends, page 1.23-1.25
I.B.1	*Vision (e.g., How PA thinks about and uses EE over next 10 years)*	I-REN Vision & Goals, page 1.6, and Evolving from Past Cycles & I-REN's Role, page 1.26
I.5	*Compare/contrast to past cycles*	Evolving from Past Cycles & I-REN's Role, page 1.26
I.B.2	**Goals & Budget**	**Ch. 1: Portfolio Summary, 'Goals & Budget' Section**
I.B.2 & I.C.2.a	*Energy Saving Goals*	Goals & Budget, beginning page 1.27
I.C.2.a	*Portfolio Budget (sector and portfolio level per xls checklist)*	Goals & Budget, beginning page 1.27
I.C.2.a, I.C.2.d	*Cost-effectiveness (sector and portfolio level per xls checklist)*	Goals & Budget, beginning page 1.27
I.C.2.b	*Explanation of Admin Budgets (e.g., Direct/Indirect Labor, Professional/Admin personnel)*	Goals & Budget, beginning page 1.27
I.C.2.c	*Explanation of accounting practices*	Goals & Budget, beginning page 1.27
I.C.3 and I.C.4	**Intervention strategies (high level)**	**Ch. 1 Portfolio Summary, 'Intervention Strategies' Section**
	Overall issues/challenges/barriers	Challenges & Barriers, page 1.34
	High level summary of strategies and tools (e.g., AMI data, AB 802, procurement model, up/mid/downstream, etc.)	Intervention Strategies, page 1.33
I.C.4; I.D	**Solicitation plan**	**Ch. 1: Portfolio Summary, 'Solicitation Plan' Section**
I.C.4	*Solicitation strategies/areas that could be SW*	Solicitation Plan, page 1.38
I.D; II.F	*Proposal for transitioning the majority of portfolios to be outsourced by the end of 2020.*	Solicitation Plan, page 1.38

Appendix A: CPUC Checklist

Map to NRDC Compilation Document	Business Plan Element	I-REN Notes / Indicate Complete
Sector Chapter (commercial, residential, public, agricultural, industrial, x-cutting)		**Ch. 2: Public Sector, Ch. 3: Codes & Standards, and Ch. 4 Workforce Education & Training. See chapter subsections as indicated below.**
II.A	**Summary tables**	
II.A	*Table with CE, TRC, PAC, emissions, savings, budget*	Sector Chapter: Budget and Metrics
I.C.7; II.E.1.b	*Metrics for sector*	Sector Chapter: Budget and Metrics
II.D	**Market characterization (overview and market/gap and other analysis)**	
II.D.1	*Electricity/NG*	Sector Chapter: Introduction/ Market Characterization
II.D.2	*State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)*	Ch. 1: Portfolio Summary, Supporting California's Energy Goals & Needs, page 1.17-1.18
II.D.3	*EE potential and goals*	Sector Chapter: Market Characterization
II.D.5	*Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)*	Sector Chapter: Market Characterization
II.D.6	*Major future trends that are key for the PA and its customers*	Sector Chapter: Major Trends
II.D.7	*Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)*	Sector Chapter: Approach to Overcoming Barriers
II.2.a	**Description of overarching approach to the sector**	
	Goals/strategies/approaches	Sector Chapter: Introduction, Intervention Strategies and Objectives
I.C.6; I.D	*How portfolio meets Commission guidance*	Ch. 1: Portfolio Summary, Regulatory Requirements, page 1.19; addressed throughout Business Plan
II.C	*Description of how this chapter addresses the performance challenges/barriers*	Sector Chapter: Approach to Overcoming Barriers
I.C.4 a-c	**Intervention strategies (detailed)**	
II.D.2.a; II.E.3	*What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)*	Sector Chapter: Intervention Strategies and Objectives
I [cmt with excerpt]	*Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)*	Sector Chapter: Intervention Strategies and Objectives
II.E.1.a; II.E.4	*How approaches advance goals discussed above*	Sector Chapter: Intervention Strategies and Objectives
I.C.4; I.E; II.D.4	*How strategies use lessons learned from past cycles and EM&V*	Sector Chapter: EM&V Considerations; Ch. 1: Portfolio Summary, Evolving from Past Cycles & I-REN's Role, page 1.26

Appendix A: CPUC Checklist

Map to NRDC Compilation Document	Business Plan Element	I-REN Notes / Indicate Complete
I	*How will interventions support/augment current approaches or solve challenges*	Sector Chapter: Approach to Overcoming Barriers, Intervention Strategies and Objectives
II.D.2	*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.*	Ch. 1: Portfolio Summary, Supporting California's Energy Goals & Needs, page 1.17-1.18
I.C.4	*Future expectations for intervention strategies*	Sector Chapter: Evolving Approach; Ch. 1: Portfolio Summary, Evolving from Past Cycles & I-REN's Role, page 1.26
I.C.1; II.E.6	*Description of pilots*	Sector Chapter: Anticipated Programs
II.F	*Key Partners*	Sector Chapter: Key Partners
I.C.5; I.D; II.B; II.C	**Compare/contrast to past cycles**	Sector Chapter: Evolving Approach; Ch. 1: Portfolio Summary, Evolving from Past Cycles & I-REN's Role, page 1.26
	Budget changes as appropriate	N/A
	Modification to sector strategies	N/A
	Cross-cutting (sector chapters and ME&0)	
II.E.2; II.H, II.K	*Program Administrator marketing and integration with SW MEO as applicable*	Sector Chapter: Marketing, Education & Outreach
II.E.5; II.H	*Workforce, education, and training*	Sector Chapter: Cross-Cutting & Coordinating Activities
II.H	*Emerging Technologies*	N/A
II.H	*Codes & Standards*	Sector Chapter: Cross-Cutting & Coordinating Activities
II.G	**Cross PA and Offering Coordination**	
II.G	*How strategies are coordination among regional PAs*	Sector Chapter: Intervention Strategies and Objectives, Key Partners, Cross-Cutting & Coordinating Activities
II.G	*Proposal of statewide program administrator/approaches for this sector*	N/A
II.G	*How the sector strategies are coordinated with statewide program activities*	Sector Chapter: Intervention Strategies and Objectives, Key Partners, Cross-Cutting & Coordinating Activities
II.G	*How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)*	Sector Chapter: Intervention Strategies and Objectives, Key Partners, Cross-Cutting & Coordinating Activities
II.I	**EM&V Considerations (statement of needs)**	
II.I	*Data collection needs*	Sector Chapter: EM&V Considerations
II.I	*Anticipated study needs*	Sector Chapter: EM&V Considerations

Map to NRDC Compilation Document	Business Plan Element	I-REN Notes / Indicate Complete
II.J	**Demand Response**	N/A
ED Guidance (p.8)	*How EE measures use up-to-date DR enabling technologies to be "DR ready"*	N/A
ED Guidance (p.8)	*How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies*	N/A
ED Guidance (p.9)	*How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce*	N/A
II.K	**Residential Rate Reform**	N/A
ED Guidance (p.9)	*How BPs will help reduce load during TOU periods*	N/A
ED Guidance (p.9)	*How BP will diminish barriers to load reduction during TOU periods*	N/A
ED Guidance (p.9)	*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*	N/A
ED Guidance (p.9)	*How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate*	N/A
ED guidance (p.9)	*ME&O re: rate reform*	N/A
II.L	**Integrated Demand Side Resources**	N/A
II.M	**Zero-Emission Vehicles (EVs)**	N/A
II.N	**EnergySavings Assistance (Multi-family Focused)**	N/A
Appendices		
	Additional Customer Data	N/A
	Cited research	Appendix B: Public Sector Market Analysis
	CAEECC stakeholder input resolution	Appendix D: Stakeholder Input Resolution

Appendix B: Public Sector Market Analysis

Measure Selection and Savings Methodology

To estimate the energy savings for the I-REN Public Sector resource program, measures were selected based on their statewide availability as well as their viability towards a broad range of implementation opportunities.

The following categories of measures were identified as having high potential for application to the Public Sector, based on the specific application criteria listed.

Table B-1. Public Sector Measure Categories

Measure Category	Energy End Use
Plug loads	Exercise machines, tools, computers, office equipment, refrigerators, food prep equipment
Standard lighting	Virtually all indoor spaces except for specialty lighting listed below
Whole-Building HVAC	Likely to have rooftop unit or similar approach to HVAC; med-large buildings; may be in addition to or in lieu of central plant
Mechanical shop	Equipment plug loads, pumps /compressors /hydraulics, possibly high ventilation demand
High bay lighting	Assembly spaces, gyms, warehouses
Specialty Outdoor Lighting	Large parking areas, athletic fields, stadiums
Significant plumbing installation	High number of plumbing fixtures and subsequent demand for hot and cold water. Gyms, assembly spaces, airports, jails and prisons, commercial kitchens, large offices, etc.
Central plant	Pumps, boilers, chillers/cooling water
Gas appliances	Cooking and/or water heating equipment
High water heating loads	boilers/steam generators, heated pools, showers, laundering, ware washing, cooking, spa/sauna
Cooling-dominated HVAC loads	Assembly spaces, gyms, offices (typically), classrooms (typically), commercial kitchens, etc.
Water pumps	Pool, water treatment station, agricultural irrigation operations, hot water recirculation
Laboratories	Wet or dry. Depending on use may have high loads for: ventilation/exhaust; space heating/cooling; refrigeration; plug loads; water heating/cooling. Other specialized loads may exist on case-by-case basis
Other specialty lighting	Theatrical lighting, greenhouses, others
Data Center	Dedicated server room for large data operations
High Exhaust or Ventilation Loads	Labs, industrial / commercial operations, some healthcare, etc.

Measure Category	Energy End Use
Process Loads from misc. equipment	Airport/jail security, airport baggage equipment, warehouse conveyances, etc.
Heating-dominated HVAC loads	Occupied spaces in CZs with seasonal heating
Water Heating Process Loads	For commercial / industrial use, distinct from water heating for restrooms /showers /pools
Process Cooling and Heating Loads	For commercial and industrial use.

Target implementation was then based on a market assessment of available target opportunities as well as implementation feasibility during the first few years of program implementation across a broad variety of facilities in the targeted area.

A broad measure mix was then assembled based on both implementation feasibility as well as energy savings yield for each of the previously mentioned categories, and year over year savings yield was computed based on implementation potential and target penetration.

Yearly projections reflect a gradual increase in program participation as well as a slight increase in implementation costs (2.2% based on average yearly inflation rate).

Appendix D: Stakeholder Input Resolution

Table D-1. CAEECC Issue Tracker with Stakeholder Feedback and I-REN Resolution Discussion

ID #	Chapter	Issue	I-REN Resolution Type	I-REN Resolution Discussion
1	Public	SoCalREN Suggested a more targeted focus on low income and disadvantaged communities. In particular, while San Bernardino has three of the most impoverished based on the last Census, the letters of support are from more affluent communities. Suggest ramping up engagement and marketing efforts to disadvantaged local governments and communities. Also, for Public Sector strategy, appreciate seeing SoCal REN strategies replicated – since a main purpose of RENs is to focus on hard-to-reach (HTR) communities.	Addressed in general section of BP or Testimony in Application; Deferred to Implementation Plan or Program Design Stage	I-REN intends to ensure engagement and service across the territory, particularly assisting those local governments who have been historically underserved or unable to access previous or current programs. Letters of support received to date are included in Appendix C of I-REN's Business Plan.
2	Public	BayREN Expressed an appreciation of the focus on governance, infrastructure, and coordination plan for statewide programs and other actors. Noted the plan looks well thought out. Plan speaks to one of the founding principles/needs of RENs: serving hard to reach communities. Acknowledged that certain activities such as Statewide Energy Efficiency Collaborative (SEEC) which were previously funded by IOUs, are especially important in current times of declining local government funding.	Deferred to Implementation Plan or Program Design Stage	I-REN intends to work with the other RENs to incorporate best practices and connect its local work with large state policy making efforts.

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3	Public	Small Business Utility Advocates Agreed with comments on SEEC, HTR, and low-income considering local government and economic conditions are very strained. This business plan is 2021-2025; small-medium business (SMB) plans is listed under the future business plan; asked if programs be offered to them sooner.		This plan focuses on three sectors (Public, Workforce, Codes & Standards). For the future I-REN is looking towards SMB and residential, but the current focus is building a foundation before expanding. I-REN has had discussions on third party solicitations and is working on as many parallel paths as possible.
4	WE&T, Public	SoCalREN Noted possible duplicative resource program between WET and public sector. The third party solicitation is set to sail at the same time that I-REN's business plan is reviewed. Asked how avoided duplication is being ensured.	Addressed in Sector Chapter of BP	I-REN added a Resource program for the Public sector based on the suggestion from Commission staff. If it's duplicative, WRCOG can adjust as appropriate. I-REN does not see any duplication currently nor has any been brought up in discussions with current PAs.
5	WE&T	BayREN Suggested working with Sheet Metal Workers Union or other CAEECC Members on workforce metrics. Sheet Metal Workers Union Stated that IOUs and RENs must focus on cost-effectiveness, and sometimes miss contractors who have greater expertise in engaging disadvantaged communities; noted that they are happy to discuss further offline.	Addressed in Sector Chapter of BP	I-REN is interested in working with stakeholders and organizations to help inform and shape a successful workforce program. I-REN will incorporate a clear goal for engaging and serving disadvantaged communities through its workforce training and education program. See WE&T Strategies in Chapter 4: Workforce Education & Training.

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6	WE&T	California Labor Management Cooperation Committee Offered to provide assistance on workforce and reaching disadvantaged communities.	Deferred to Implementation Plan or Program Design Stage	I-REN is interested in working with stakeholders and organizations to help inform and shape a successful workforce program.
7	WE&T	NRDC Suggested looking at the UC Berkeley Labor Center's recently released report on workforce demand and supply. NRDC's Bethany Jones was a witness for low-income workforce; can share a document that provides key solutions. RENs have more opportunities to explore strategies that IOU and MCE PAs need to comply with. 3C-REN Also offered support.	Deferred to Implementation Plan or Program Design Stage	See above.
8	WE&T	Sheet Metal Workers Local 104 Noted that slide 22 (goals and strategies) looks more like goals. Echoed comments on disadvantaged communities; wanted to see it incorporated into workforce offering. Noted that applying to building departments can be an issue, asked what the associated plan is.	Addressed in Sector Chapter of BP	I-REN will incorporate a clear goal for engaging and serving disadvantaged communities through its workforce training and education program. See WE&T Strategies in Chapter 4: Workforce Education & Training.

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9	WE&T	Energy Division Asked what the synergy is between I-REN's workforce education training and the CPUC low income energy assistance programs, and if there's overlapping goals/duplication, how it is being addressed. BayREN BayREN's residential programs aren't income qualified. Have seen success with MCE's multifamily program, and we have case studies to show how we've layered the two programs. In sum, we work in partnership to provide a more holistic and higher incentive for low income SoCalREN SoCalREN's Workforce Education Program is nationally recognized. SoCalREN analyzed all programs, including IOU workforce education. Recommended to I-REN, and RENs at large, to continuously look for creative ways to offer value without duplication; programs must be customized so they don't duplicate. There are still significant gaps that RENs can fill.	Deferred to Implementation Plan or Program Design Stage	I-REN is interested in making sure that WET offerings serve and address the specific needs of San Bernardino and Riverside Counties' residents and businesses. I-REN will be laser focused on locally driven program elements that will help to ensure there is no duplication. One of the most important reasons for being a REN is to bring this localized approach to a community.

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10	Multiple Sectors	Asked how I-REN is working to deal with overlap with existing programs in the relevant geographic area.	Addressed in general section of BP or Testimony in Application	I-REN has been in regular communication with SCE, SoCalGas and SoCalREN. The first strategy is to target any areas that haven't yet been touched, including disadvantaged communities, high desert, cities that haven't yet been engaged, and the Arizona and Nevada borders. If there is overlap, I-REN will ensure through coordinated efforts that there is no duplication of services.
12	NA	BayREN BayREN especially appreciated two aspects of the proposal: (1) Board oversight; and (2) Services to Tribes.	Addressed in general section of BP or Testimony in Application	I-REN appreciates these comments. I-REN's governance is described in the Portfolio Summary chapter and the approach to serving tribes is referenced throughout the Business Plan.

Appendix E: Acronyms & Abbreviations

AB	Assembly Bill
ACCA	Air Conditioning Contractors of America
AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
APWA	American Public Works Association
BOMA	Building Owners and Managers Association
BPI	Building Performance Institute
BSC	Building Standards Commission
BUC	Building Upgrade Concierge
C&S	Codes and Standards
CAISO (or ISO)	California Independent System Operator
CALBO	California Building Officials
CARB (or ARB)	California Air Resources Board
CBSC	California Building Standards Commission
CCA	Community Choice Aggregator
CCC	California Community Colleges
CDE	California Department of Education
CEA	California Energy Alliance
CEC	California Energy Commission
CEESP	California Energy Efficiency Strategic Plan
CEU	Continuing Education Unit
CO2	Carbon Dioxide
CPUC	California Public Utilities Commission
CSAC	California State Association of Counties
CSD	Community Services and Development

CSI	California Solar Initiative
CSU	California State University
CVAG	Coachella Valley Association of Governments
DAC	Disadvantaged Community
DAS	Division of Apprenticeship Standards
DEER	Database for Energy Efficient Resources
DOE	U.S. Department of Energy
DOF	Department of Finance
DSM	Demand Side Management
EBEE	Existing Buildings Energy Efficiency
ED	California Public Utilities Energy Division
EE	Energy Efficiency
EIA	Energy Information Administration
EM&V	Evaluation, Measurement and Verification
ESCO	Energy Service Company
ET	Emerging Technology or Emerging Technologies
GHG	Greenhouse Gas
GWh	Gigawatt Hour
HERS	Home Energy Rating System
HVAC	Heating, Ventilation and Air Conditioning
ICC	International Code Council
IHACI	Institute of Heating and Air Conditioning Industries
IOU	Investor Owned Utility
kW	Kilowatt
kWh	Kilowatt Hour
LG	Local Government
LGP	Local Government Partnerships
ME&O	Marketing, Education and Outreach
MSA	Metropolitan Statistical Area

MW	Megawatt
MWh	Megawatt Hour
NMEC	Normalized Metered Energy Consumption
NRDC	Natural Resources Defense Council
NREL	National Renewable Energy Laboratory
OPR	Governor's Office of Planning and Research
PA	Program Administrator
PACE	Property Assessed Clean Energy
PG&E	Pacific Gas and Electric Company
REN	Regional Energy Network
RFP	Request for Proposals
SB	Senate Bill
SBCOG	San Bernardino Council of Governments
SCE	Southern California Edison
SEP	Strategic Energy Plan
TRC	Total Resource Cost
WE&T	Workforce Education and Training
WIB	Workforce Investment Boards
WRCOG	Western Riverside Council of Governments
ZNE	Zero Net Energy