

# **The Case for Holistic Energy Efficiency Programs, featuring the City of Pomona**

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## **ABSTRACT**

Public agencies' ability to complete energy efficiency (EE) projects has always depended on funding, whether those funds come from an internal or external source. When holistic public sector programs identify energy projects, they include analysis of viable funding and financing mechanisms and offer technical assistance and project management support for a comprehensive look at energy project feasibility. The paper will discuss the benefits of holistic public sector programs, including a financing program designed to address the up-front capital barrier that public agencies, particularly those serving under-resourced communities, face when aiming to save energy and money through whole-building EE projects.

The paper will also explore a case study with the local government of a mid-sized city, the City of Pomona. The city received a \$1.5-million loan through a public sector program and leveraged holistic services to plan whole-building energy projects at two essential facilities, its library and park community center, which serve as community spaces and cooling centers during extreme heat events. The holistic energy programs provided technical support to identify EE measures at these two sites and provided a high-level educational overview of distributed energy resource (DER) measures and associated funding opportunities. Furthermore, holistic public sector programs helped the agency identify incentives and on-bill financing to create a financially viable return on investment. Without this funding option analysis, the city's project would not have moved forward. This paper will demonstrate how holistic EE programs increase the likelihood of completed EE projects, particularly in under-resourced communities, by addressing key barriers to EE implementation, including a lack of technical assistance to identify projects and limited public sector capital available to fund identified projects through completion.

## **Introduction**

The state of California has ambitious greenhouse gas reduction targets, with the goal of doubling EE in existing buildings by 2030 (De Leon 2015). California's public sector is uniquely positioned to advance this goal by implementing comprehensive upgrades in aging public buildings and critical community facilities. Despite the high opportunity for savings in this sector, public agencies across California face unique challenges in their efforts to advance EE and climate resilience. These challenges include and are exacerbated by frequent natural disasters, public safety power shutoff events, resource constraints, and the COVID-19 pandemic. Through a case study on two whole-building EE projects undertaken by the City of Pomona, this paper highlights the need for comprehensive EE program offerings that support project identification, scoping, funding/financing, and implementation. Further, such programs should offer supplemental support to historically underserved communities and work to tie EE to long-term community resilience planning. The public sector needs holistic EE programs that

offer start-to-finish project support, with particular focus on alleviating barriers to underserved agencies, to scale deep whole-building retrofits.

The City of Pomona sits on the eastern edge of Los Angeles County and is home to approximately 150,000 residents (Census Bureau 2021). About 71% of residents identify as Hispanic or Latino, 11% as Asian, 10% as white, 6% as Black or African American, and 3% as American Indian and Alaska Native (2021). 8% of residents identify as two or more races and 65% of Pomona households speak a language other than English at home (2021). Socioeconomically, the city’s poverty rate is 5.5 percentage points above the national median, at 17.1% of residents living below the poverty line and less than 20% of residents over age 25 hold a Bachelor’s college degree (2021). In addition to socioeconomic vulnerabilities, Pomona faces multiple environmental inequities, with parts of the city falling in the 95th percentile of pollution burden in the state of California, according to CalEnviroscreen 4.0 (OEHHA 2021).

The city has a broad set of EE goals as shown in Table 1 below, reflecting a deep commitment to EE and sustainability.

Table 1. City of Pomona Green Plan Goals (City of Pomona Green Plan 2012; City of Pomona Energy Action Plan 2012)

|                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decreasing energy usage costs in public buildings and on public property through cost-effective energy technologies                                                                             |
| Developing opportunities to encourage energy efficiency improvements on private property                                                                                                        |
| Investing in energy efficiency through performance-based energy contracting                                                                                                                     |
| Controlling energy costs and usage through energy use audits, reviews of energy purchase processes and agreements, and negotiation of lower energy rates with existing and new energy providers |
| Promoting economic development to attract alternative energy jobs while continuing to support existing energy industries                                                                        |
| Reduce municipal energy use by 15% below 2007 baseline                                                                                                                                          |

Since publishing its Green Plan in 2012, Pomona has made great strides in EE through partnerships with utility ratepayer-funded EE programs. The city was an early participant in and champion of the SoCalREN Public Agency Programs. Pomona was, in fact, the second-ever SoCalREN public agency enrollment. In 2016, the city used Energy-Efficiency and Conservation Block Grant (EECBG) funding to retrofit 4,130 streetlights to LEDs (SGVEWP 2016). This streetlight retrofit project saved almost 1 million kWh in energy annually, comprising 22% of the city’s goal of reducing municipal energy use by 15% below baseline (City of Pomona Energy Action Plan 2012). Based on these energy savings, the city reached gold tier Energy Leader Partner status as an active participant of Southern California Edison and San Gabriel Valley Energy Wise Partnership (City of Pomona 2016). While the City of Pomona has made significant

progress toward its long-term climate and energy goals, capital and staff time constraints mean that the city continues to rely on no-cost EE programs to seek out energy reduction opportunities and move these projects forward.

## **SoCalREN Public Agency Programs: A Holistic and Scalable Project Development Model**

In response to the unique needs of the public sector, the SoCalREN Public Agency Programs offer no-cost project management and technical assistance to help agencies identify and implement EE retrofits. SoCalREN's service delivery model addresses the holistic “project delivery gap” in the EE programs landscape (Vance and Perkins 2014). SoCalREN connects each enrolled agency with a dedicated project manager and SoCalREN engineer to guide them from project identification through completion as shown in Figure 1 below. SoCalREN project managers and engineers are trained to provide keen attention to the specific needs of public agencies. Since the development of this comprehensive project delivery model, SoCalREN has scaled to over 200 enrolled agencies and continues to add new services to address market gaps.



Figure 1. SoCalREN's holistic project delivery model.

The City of Pomona has leveraged the following SoCalREN no-cost EE services:

- Comparative energy analysis
- Project management
- Financial analysis, including review of incentive and financing programs
- Audit calculations with design/scope of work
- Incentive application assistance
- City Council report review support
- Sourcewell cooperative procurement assistance
- Construction management support

In March 2019, SoCalREN analyzed the city’s utility consumption data and presented a Comparative Energy Analysis report to the city. This report identified the Pomona Public Library and Palomares Park Community Center as top energy users and potential candidates for EE upgrades. After discussing opportunities with the city, SoCalREN supported EE audits at both sites. These audits identified whole-building retrofit opportunities with high electricity and natural gas savings potential, as outlined in Table 2.

Table 2. City of Pomona EE measures identified through SoCalREN audits

| <b>Facility</b>                     | <b>Identified measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Estimated electricity savings (kWh/year)</b> | <b>Estimated natural gas savings (therms/year)</b> |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|
| Pomona Public Library               | <ul style="list-style-type: none"> <li>- Occupancy sensor controlled basement HVAC</li> <li>- Chiller optimization</li> <li>- Air handler unit variable flow upgrade: fan wall</li> <li>- Interior LED troffer retrofits kits</li> <li>- LED exterior lighting</li> <li>- Boiler replacement</li> <li>- Vending misers</li> <li>- Thermal energy storage system</li> <li>- Retrocommissioning</li> <li>- New energy management system</li> </ul> | 212,984                                         | 1,886                                              |
| Palomares Park and Community Center | <ul style="list-style-type: none"> <li>- Interior LED troffer retrofits kits</li> <li>- LED interior lamps and fixtures</li> <li>- LED exterior lighting</li> <li>- Packaged HVAC unit replacement</li> <li>- Sports field lighting controls system</li> <li>- New energy management system</li> </ul>                                                                                                                                           | 77,851                                          | N/A                                                |

## Stranded Savings and High Opportunity

SoCalREN’s EE audits at Pomona’s Public Library and Palomares Park Community Center identified measures with high savings potential, but with minimal incentive opportunities available through traditional EE incentive programs. Most EE programs only incentivize savings above Title 24 code or Industry Standard Practice (ISP). For Pomona, this meant that only about 30% of the identified savings at each facility would be eligible for cash incentives. The city’s SoCalREN project manager, however, identified the two facilities as strong candidates for a new performance-based incentive program, offered by Southern California Edison, to secure incentives inclusive of all energy conservation measures at each facility.

Southern California Edison launched the Public Sector Performance-Based Retrofit Program (PSPBRP) to capture untapped below or to-code energy savings. PSPBRP offers a performance-based EE incentive, leveraging a normalized metered energy consumption (NMEC) approach to tracking and verifying energy savings at the meter. PSPBRP recognized the need to encourage deep EE exploration in older public sector facilities with inefficient equipment operating beyond the typical useful life (SCE 2016). Through PSPBRP, participating agencies receive incentive payments on a reimbursement basis at 3 months, 12 months, and 24 months after construction completion, based on actual savings achieved at the meter. Incentives are capped at 80% of total project costs. PSPBRP’s NMEC approach encourages holistic whole-building upgrades, rather than piecemeal retrofits, by requiring at least 10%-15% energy savings at the meter (SCE 2018).

Not only does a meter-based program encourage holistic upgrades that yield greater overall energy savings, but persistence-based payments encourage ongoing measurement and verification to ensure long-term savings are maintained. This approach also holds substantive co-benefits to energy use reduction, including alignment with public sector climate action plans and more granular energy management using smart meters (SCE 2018). Figure 2 illustrates the high opportunity for verified energy savings afforded through a whole-building NMEC approach. Several EE program administrators have since launched comparable performance-based incentive programs leveraging the NMEC methodology. These include PG&E’s Whole Building Performance Based Program Offering (PG&E 2021) and the SoCalREN Metered Savings Program (SoCalREN Metered Savings Program 2022).

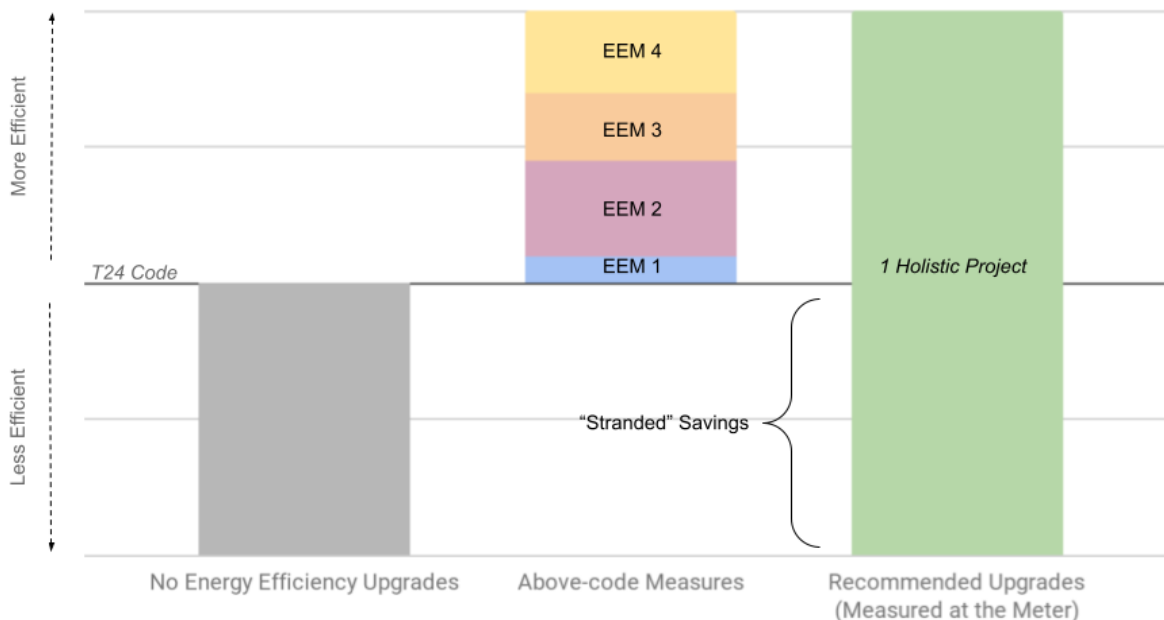


Figure 2. Stranded energy savings potential captured through an NMEC approach.  
*Source:* SoCalREN 2021.

## **Overcoming Up-Front Capital Constraints Through SoCalREN Revolving Savings Fund Bridge Financing**

Performance-based incentives and 0% interest on-bill financing (OBF) are paid out after project installation is completed through Southern California Edison's (SCE) PSPBRP and similar NMEC programs. Therefore, the City of Pomona and other underserved public agencies face an additional barrier to project implementation: limited up-front capital to cover project costs at the front end of the project. Gross costs of the measures at both the Pomona Public Library and Palomares Park totaled over \$1.5 million. The city's ability to implement some or all of these upgrades hinged on support that could alleviate this up-front capital barrier. This story is familiar to the SoCalREN Public Agency Programs, and this common EE program gap inspired the development of the SoCalREN Revolving Savings Fund (RSF).

The SoCalREN RSF is an equity-focused program that removes the up-front capital barrier to EE projects in underserved communities by providing 0% interest financing to public agencies for EE projects (SoCalREN RSF 2022). The RSF complements reimbursement-based EE funding and financing options by disbursing funds before equipment is purchased and construction begins, accelerating the implementation of EE projects that would otherwise be delayed by budgetary constraints (SoCalREN RSF 2022, 3). Once a participating agency secures their long term project funding or financing, i.e. budget allocation or utility OBF check, the agency repays the RSF loan that floated the cost of the project. In this way, the RSF bridge financing expedites energy savings and increases access to reimbursement-based EE programs for underserved communities like the City of Pomona. If an agency needs more time to acquire the full funds needed to cover gross project costs, they can request an RSF repayment term of up to 5 years. Benefits of the RSF include:

- 0% interest rate with no interest paid over the lifetime of the loan;
- An easy process, including a simple application, efficient processing, and allocation of funds by check within 2 weeks of executing the loan agreement; and
- Repayment term of up to 5 years with no early repayment penalty.

With the support of a SoCalREN project manager, the City of Pomona applied for and secured a \$1.5-million RSF loan to cover the entire cost of proposed EE improvements at both the Public Library and Palomares Park. While incentives and OBF with a 10-year repayment term covered part of the total project cost, the RSF loan affords the city the opportunity to repay the net project costs minus incentives and OBF over a 5-year period with 0% interest. Should participating agencies find that it is not financially feasible to complete all measures scoped in the original loan application, the agency can return unused funds without penalty. Alleviating this risk helps agencies garner internal buy-in to take advantage of this program offering. When Pomona begins repaying its RSF loan upon construction completion, the replenished RSF funds will support future public sector EE projects, creating a cooperative and ever-growing pipeline of EE projects among SoCalREN's 200+ enrolled agencies.

## **Realizing Holistic Retrofits through Cross-Program Coordination and**

## Start-to-Finish Technical Assistance

The whole-building projects at the Pomona Public Library and Palomares Park Community Center, along with others like them, are possible because of SoCalREN's comprehensive customer support from project identification through completion (Bain and Rothschild 2016). The SoCalREN Public Agency Programs offer a model for successful start-to-finish project support and coordination with resource acquisition programs. Every project supported by SoCalREN receives an objective, third-party analysis of all available incentive and financing pathways to optimize project payback and return on investment. For the City of Pomona, this analysis found that a combination of incentives available through SCE PSPBRP and the Statewide Water Heating Program, alongside Revolving Savings Fund bridge financing and OBF long-term financing, produced a payback and project return on investment that could overcome the barriers needed to garner internal buy-in to move forward as highlighted in Figure 3 below.

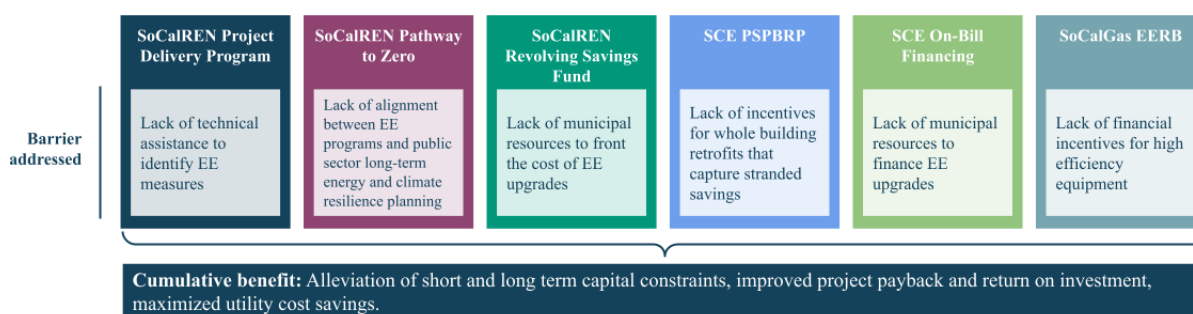


Figure 3. EE programs leveraged for the Pomona Public Library and Palomares Park Community Center energy efficiency projects.

A dedicated SoCalREN project manager navigates the EE program landscape on behalf of each enrolled SoCalREN agency, coordinating with key stakeholders to ensure projects move forward and savings are realized. Once funding and financing applications are approved, the SoCalREN project manager continues to oversee the project through implementation to ensure the agency receives all applicable funding and financing disbursements.

Each of the programs used by the City of Pomona as outlined above filled a capacity constraint or market gap in the project development process:

**SoCalREN Public Agency Project Delivery Program.** SoCalREN's flagship Project Delivery Program identified the savings opportunities at both sites through utility data analysis and EE audit services.

*Barrier Addressed:* lack of technical assistance to identify EE measures.

**SoCalREN Pathway to Zero Program.** SoCalREN's Pathway to Zero program is informed by the understanding that public agencies face many competing priorities when considering sustainability. By presenting EE as a critical first step on the path to long-term climate resilience, the program builds buy-in to bundle efficiency with distributed energy resources (DER) and other resilience strategies. Upon identification of potential EE measures at the City of Pomona's

facilities, Pathway to Zero delivered a high-level analysis of DER strategies available at city facilities, including solar, battery storage, electric vehicle charging, permanent load shifting, and demand response. Pathway to Zero also delivered a pre-and post-retrofit facility performance analysis utilizing Energy Star Portfolio Manager<sup>®</sup>. The Pathway to Zero program provided the city with a dedicated project manager to assist with project funding/financing application assistance and tailored support throughout project implementation.

*Barrier Addressed:* lack of alignment between EE programs and public sector long-term energy and climate resilience planning.

**SoCalREN Revolving Savings Fund.** The Revolving Savings Fund offers 0% interest bridge financing to public agencies to support energy retrofit projects. With the support of a SoCalREN project manager, the city applied for and secured a \$1.5 million loan to complete EE projects at both facilities. This loan was then disbursed to the city before the purchase or installation of EE equipment. The city's loan repayments are set to begin after construction is completed, with a prorated amount to be returned upon the city's receipt of their PSPBRP incentives and SCE OBF following utility verification of successful project completion.

*Barrier Addressed:* lack of public agency resources to cover the up-front cost of EE upgrades.

**SCE Public Sector Performance-Based Retrofit Program.** SCE PSPBRP provided application assistance for both projects, including a project feasibility study and measurement and verification plan for each facility. SCE is currently reviewing applications for \$29,000 in potential incentives.

*Barrier Addressed:* lack of resources to incentivize whole-building retrofits for facilities with stranded savings.

**SCE On-Bill Financing Program.** As a participant of PSPBRP, Pomona is able to take advantage of SCE's 0% OBF. OBF is designed as a bill-neutral vehicle for customers to repay the costs of EE improvements over a 10-year period directly on their utility bills (SCE 2019). SCE and SoCalREN helped Pomona apply for approximately \$300,000 in OBF across both facilities. The availability of incentives and OBF reduced the amount of internal funding needed for the City to repay the remaining RSF loan amount over the 5 year repayment term.

*Barrier Addressed:* lack of public agency capital resources to finance EE upgrades.

**Southern California Gas Company (SoCalGas) Energy Efficiency Rebates for Business Program.** SoCalGas offers rebates for qualified high-efficiency natural gas consuming equipment, including boilers and water heaters (SoCalGas, 2022). These rebates reduce the costs associated with choosing high efficiency equipment over a like-for-like replacement. The City of Pomona plans to combine this program with SCE's meter-based incentives to replace two boilers, thereby reducing natural gas consumption at the Pomona Public Library.

*Barrier Addressed:* lack of financial incentives for high efficiency equipment.

SoCalREN successfully coordinates and delivers services through ongoing communication between program implementers. The SoCalREN Public Agency Programs convene monthly with stakeholders from both SCE and SoCalGas to minimize customer confusion and ensure services provided for each project are complementary, not duplicative.

## Conclusion

This case study on the development of two EE projects with the City of Pomona illustrates the need for—and substantial benefit provided by—comprehensive programs that address barriers to EE projects in the public sector. To scale whole-building retrofits at the rate needed to advance local, state, and federal climate goals, EE program administrators must design and implement programs that incentivize deep retrofits while lifting barriers to implementation, particularly in under-resourced communities. The matrix of programs leveraged to move EE forward at two critical facilities within the City of Pomona suggests ongoing demand for programs that encourage expedited EE implementation. The SoCalREN Public Agency Programs offer a scalable blueprint for successful program coordination to deliver services that remove project barriers and help agencies realize deep energy savings.

EE programs should continue to invest in performance-based retrofit projects to capture stranded savings up to Title 24 building code and beyond. To scale energy efficiency across California with equity at the forefront, EE programs must offer financing mechanisms that alleviate up-front cost barriers, rather than only offering incentives or financing upon project completion. Further, EE programs should offer increased incentives for projects that provide benefits to under-resourced communities. Finally, EE programs should align their offerings with long-term climate resilience by empowering a connected investment in energy efficiency, electrification, and distributed energy resources to build a more energy resilient public sector.

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