

Driving Energy Efficiency in the Public Sector - A Model for Success

Rupal Bain and Laurel Rothschild for The Energy Coalition

ABSTRACT

The “Rosenfeld Effect” is the observed fact that since the 1970s, electricity use per capita in California has been virtually flat, while use across the United States it has risen 50 percent over that time. This has been attributed to energy efficiency and California recognizes that public agencies play a pivotal role in contributing to the energy efficient economy in the United States (De Leon, 2015). Public agencies represent a significant group of energy end users through the operation of facilities and public amenities ranging from police stations and schools, to wastewater treatment plants and streetlights. As a result, public agencies have a unique opportunity to “lead by example”- by contributing cost savings to the economy and inspiring local action. California continues to be aggressive in further curbing energy use in existing buildings, including legislative efforts such as 2009’s AB 758 to motivate the retrocommissioning of existing buildings found to be below code, 2015’s AB 802 benchmarking and tracking of realized energy savings, and 2015’s SB 350, which mandates existing buildings increase energy efficiency by 50 percent by 2030. While the public agency sector may be ripe with opportunity, capturing the savings is not always straightforward. The Energy Network, administered by the County of Los Angeles, has proven to be an effective model based on results in the field with public agencies. This paper describes the current market dynamics in the public sector and how The Energy Network is addressing these challenges with speed and scale.

Introduction

While many public agencies recognize the importance of saving energy, relatively few regard energy efficiency as a resource unto itself. For many agencies, energy efficiency is deemed a luxury they cannot afford as boards and councils focus on public safety, development, or other city services. Even in those that do recognize the resource capacity of energy efficiency, common roadblocks faced by staff include insufficient expertise, funding or staff time itself. Therefore, a successful energy efficiency program must not only address barriers within the broader market, but also within the public agency organizations themselves. The Energy Coalition (TEC), a non-profit 501(c)3 organization, designed and implemented The Energy Network Public Agency Program (Program) to address these barriers and help drive the market towards transformation. TEC has over 40 years experience designing and implementing resource conservation programs that transform resource use, generate capital and move people to action. As a social change organization, TEC helps create an abundant and healthy world by inspiring others to be architects of our sustainable future. This innovative non-resource pilot Program employs a collaborative approach with utilities, public agencies and service providers to deliver comprehensive (start to finish) services that are customized for each local government’s unique needs. The Program is based in Southern California and the territory is shown on the map in Figure 1.



Figure 1. The Energy Network territory

Public Agency Market Gaps

Before discussing the Program model, it is important to understand the market dynamics in the energy sector as it pertains to public agency energy consumption. Within Southern California, the landscape consists of three significant participants: public agencies, service providers and investor owned utilities (*Figure 2*). Public agencies represent the demand or need in the market as customers. Investor owned utilities such as Southern California Gas Company (SoCalGas) and Southern California Edison (SCE), not only provide energy services, but also incentives and financing programs for public agencies to reduce their usage and demand. They also administer local government partnership (LGP) programs, which offer additional financial incentives and technical assistance for participating public agencies. Consultant service providers offer a la carte services and include a variety of industry players such as engineering firms, contractors and third-party financing firms, and full-suite, turnkey service providers such as energy performance contracting (EPC) companies and energy service companies (ESCO). This market sector provides technical analysis such as audits, design scopes of work, project financing and/or construction services to complete projects.

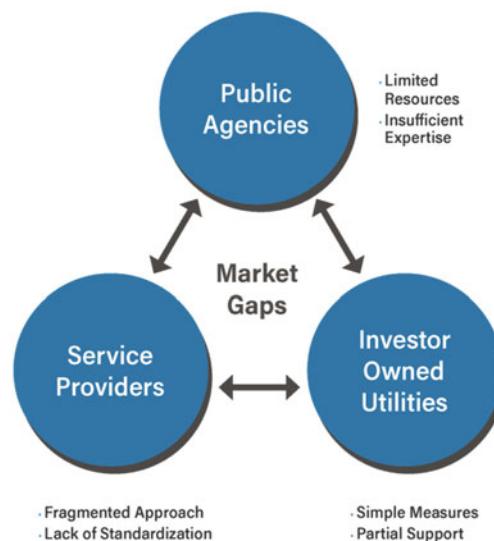


Figure 2. Three elements of the public agency market in Southern California

Each of these three participants represents a unique perspective. For example, many service providers drive for large investments from their customers by bundling projects and measures across multiple sites to create a cost-effective proposal. Risk averse public agencies are challenged with justifying all the costs and possibly shelving all the projects as a result. Investor owned utilities design and deliver programs based on broad customer categories, such as small business, industrial and large commercial. Local governments own and operate a variety of building types that may not be properly targeted for utility programs and assets such as streetlights that do not fit the mold of a typical utility program.

In addition, several common public agency characteristics, including those listed below, contribute to the creation of market gaps:

- Need for transparency
- Complex decision-making process
- Multiple constituencies and stakeholders
- Multiple and competing goals
- Aversion to risk
- Diversity in priorities and needs
- Political dynamics
- Unique funding constraints
- Hard to reach communities

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

Service providers, in most cases, have the specific knowledge and expertise to support key aspects of energy efficiency project implementation. However, these services are not always contiguous, as customers are often required to engage several different firms representing the various trades on a single project. For example, one project may have three different firms representing engineering, architecture and contracting. This results in a fragmented approach to services and a lack of ownership and accountability. EPC and ESCO companies offer a consolidated solution, but lack of transparency, limited procurement control and high costs associated with these options often make them untenable for public agencies (Vance, C. and C. Perkins. 2014).

Investor owned utilities in Southern California provide support to public agency energy efficiency projects in three ways 1) financial incentives, rebates and on-bill financing (OBF), 2) limited advisory support, and 3) partial technical support. Financial support for energy efficiency projects through incentives, rebates and OBF is important, but generally favors projects with discrete simple measures, thus leaving more complex projects to be delayed or stalled indefinitely (Vance, C. and C. Perkins. 2014). SoCalGas and SCE also provide advisory and

administrative support for public agencies by dedicating account representatives to each customer. Some public agencies receive further support during project development through their LGPs such as benchmarking, audits and additional incentive payments for projects. While these services are useful for public agencies, they are not offered consistently, can be difficult to access and do not comprehensively address all agency barriers and needs.

The Energy Network - A Demonstration Program

The Energy Network Public Agency Program was designed to address the market gaps as listed below and provide public agencies with an integrated, objective and comprehensive solution (*Figure 3*). Services include, but are not limited to energy planning, energy use analysis, investment grade audits, and design scope of work, incentive and financing support, financial analysis, procurement assistance, bid analysis, and construction management support. In addition, these customers receive project management services to guide them through the entire process. In fact, the most effective aspect of the Program is that it can expand and contract to meet each agency's needs with customized services.

Figure 3. Services provided by The Energy Network to fill market gaps

Demonstration in Speed

The Program model addresses specific challenges with speed and scale. Based on the Program's experience, a typical public agency energy efficiency project in Southern California can take between 18 and 24 months, from initial agency enrollment to final project completion. This type of information was generally derived from TEC's Salesforce database, which has tracked the 100 projects that have been completed to date. The comprehensive project delivery process can be summarized into four key stages for the purposes of discussing timeline: development, procurement, approval and construction (*Figure 4*) (Vance, C. and C. Perkins. 2014).

The Energy Network's participation fluctuates between stages and is customized to match agency needs. As a result, the Program has varying levels of influence and control over project timelines. The diagram below outlines the four stages showing key steps that require significant staff and Program resources. It is The Energy Network's experience that while many agencies and projects are able to move through the process rather quickly, others may need additional time. Each project timeline depends on many variables such as project financials, political support and available funding.

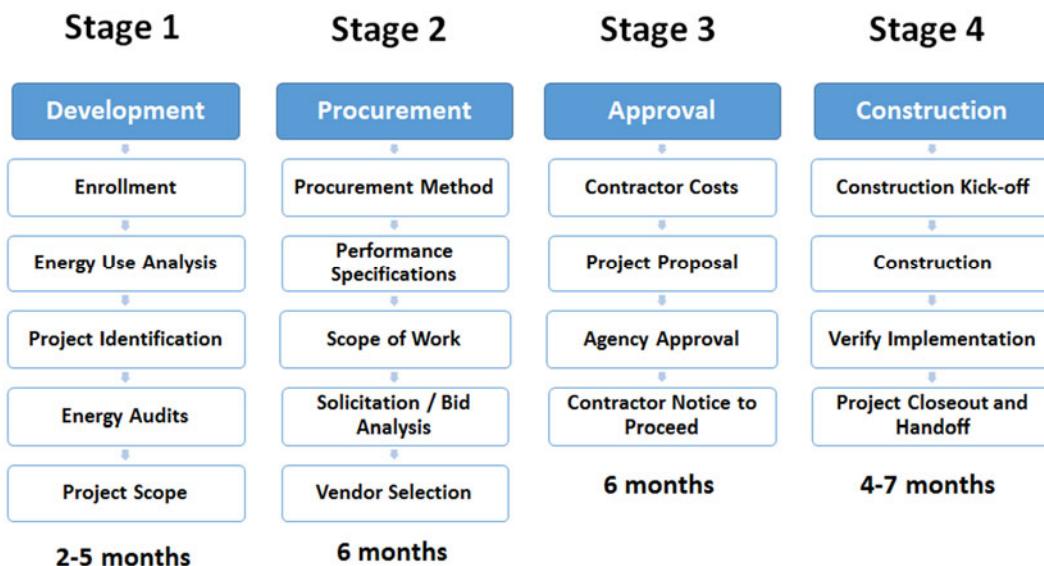


Figure 4. Typical project timelines for energy efficiency projects in the public sector

The Energy Network analyzed the typical project schedule and determined the most potential for project acceleration was in Stages 2 and 3. The Program has a substantial impact on timing during Stage 1 due to its high involvement with project deliverables. While The Energy Network is a participant in Stages 2 and 3, it is in a supportive role to the agency. Therefore, it can be difficult to drive action. The contractor primarily leads Stage 4 with oversight from the agency. As a result, the agency is driving timelines and the Program has little to no influence.

To aid in accelerating Stage 2, The Energy Network developed an alternative procurement solution to the traditional design-bid-build process, called expedited procurement. During Program design, the Program partnered with the National Joint Powers Alliance (NJPA) to conduct a solicitation for contractors based on typical jobs in a standard energy efficiency task catalog. This model greatly expands and enhances upon a job order contracting approach first implemented in Northern California by the San Francisco Public Utilities Commission (Vance, O'Sullivan, and Rao, 2012). This method enables agencies to access pre-qualified, competitively bid contractors. It avoids the lengthy bid process and allows agencies to move from design directly into construction. The Energy Network's solution is able to reduce timing of Stage 2 by 3-4 months.

Since the Program launched in 2013, 12 agencies (34 projects) have already leveraged The Energy Network's expedited procurement solution by citing California Government Code Section 6502 (Joint Powers Agreements) or 4217 (Single Source Supplier) (California Energy Codes Code 6502 and Code 4217). Another 25 agencies (70 projects) are in process of utilizing

the expedited procurement in 2016; a statistic that has nearly doubled in the last year, showing a growing trend in adoption and scale. Cumulatively, these projects are projected to save over 3 years of staff time and resources based on average timelines of projects using traditional versus expedited procurement. As a result, these public agencies will enjoy energy savings and project benefits that much sooner.

Approval (Stage 3) is arguably the most important phase in a project cycle as it is the culmination of all development work and necessary approvals for implementation. The Energy Network took a different approach to increase speed in this particular stage by focusing its efforts on public agencies with dedicated project management services. Specifically, the Program took time to analyze the customer decision-making process to identify milestones and risks and offer support services where necessary. For example, the agency's assigned project manager leads weekly meetings with appropriate project stakeholders to ensure projects are on track and the approval process is successful. This project manager plays a pivotal role by shepherding the project through all phases. The Energy Network's solution is able to reduce timing of Stage 3 by 2-3 months and also relieves the burden on staff resources.

The Program not only provides this high level of active project management for the agency, but also complements this service with support on agency deliverables. The Program develops and customizes a project proposal for each opportunity. This can be used to build political support for the project with council or board members. The Program also provides support for agency staff by writing staff reports or attending board/council meetings. Stage 3 is where the most unknowns tend to arise and why the Program has been so successful: it adapts to provide as-needed services to public agencies in a timely and effective manner. These efforts of the Program to reduce project timelines in Stage 2 and 3 have identified a total 5-7 months that can be saved during the typical project timeline, reducing the project cycle by nearly 30 percent and further reducing the demand on staff time and financial resources.

Demonstration in Scale

TEC has been scaling up The Energy Network Public Agency Program since late 2013. As of February 2016, the Program has identified 480 various energy efficiency opportunities for public agencies, including mechanical, lighting, street lighting, water pumping and process optimization. Cumulatively, the current Program pipeline is projected to save nearly 30 million kWh and 300,000 therms. Moreover, it is actively supporting 340 projects through implementation services to 76 different public agencies. This is over 10 percent of the available public agency sector market in the Energy Network territory, a region whose population is equivalent to the size of Arizona, Massachusetts and Indiana combined (*Figure 5*) (US Census, April 1, 2010 to July 1, 2015). The Program's proven track record and demand from new agencies ensures it will continue its strong trajectory of growth in coming years.

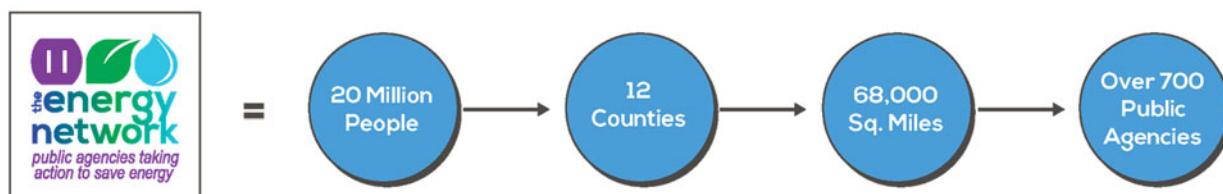


Figure 5. Characteristics of The Energy Network's territory

The Program also works to reach scale not only with numbers, but also in diversity. *Figure 6* below shows the different public agency sub-segments currently enrolled in the Program. Each agency sub-segment has unique requirements for its buildings and infrastructure and therefore needs customized services.

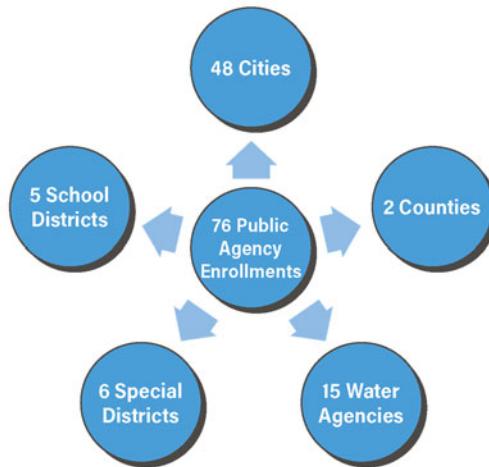


Figure 6. The Energy Network public agency types and enrollment

An accelerating level of public agency participation in the Program and their increased awareness and adoption of energy efficiency actions as shown in *Figure 7* have validated the success of this approach. The Program maintains 40 percent participation from agencies with disadvantaged communities and strives to serve customers in geographically remote areas. In addition, the team is coordinating efforts with 12 local government partnerships (LGP) programs. Each agency type and partnership requires a flexible approach that must be adapted with a unique set of services, often on a project by project basis.

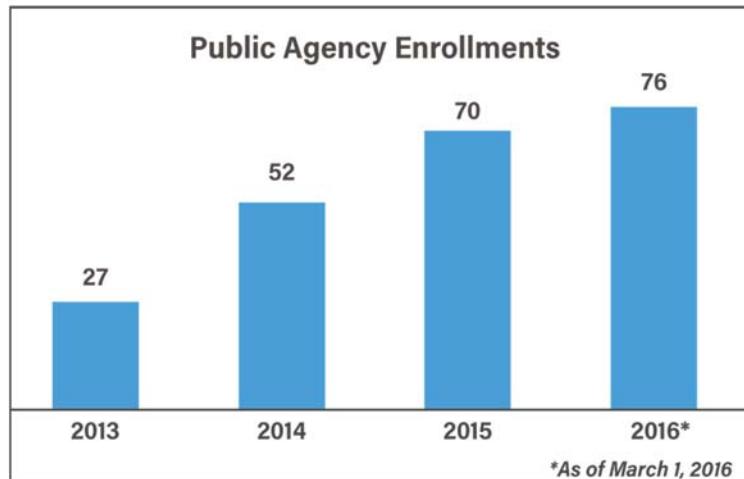


Figure 7. The Energy Network agency participation

A Model for Program Success

Implementing energy efficiency with speed and scale requires a successful program model. Based on three years of experience in the field, The Energy Network has developed and refined its core principles and approach to ensure active participation of agencies and, more importantly, project results in the form of energy savings.

Core Principles

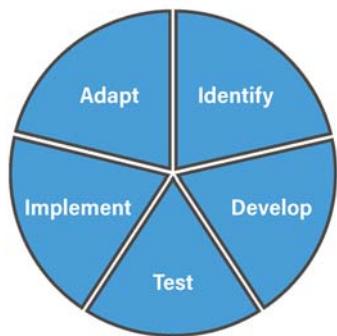
The Program found ten principles to be critical keys to success as outlined in Table 1.

Table 1. Principles of a successful energy efficiency program model

Principle	Description of a successful model
Agency engagement	Engage a variety of public agencies with diverse climate zones, population sizes, population densities, and other demographic conditions in order to demonstrate comprehensive services.
Utility coordination	Implement a protocol that promotes early and ongoing cooperation with utilities to ensure the Program complements and supplements existing services and outreach efforts.
Stakeholder collaboration	Promote open and transparent communication with Program stakeholders to ensure challenges are identified early and solutions are developed collaboratively.
Standardized tools and templates	Design and maintain a comprehensive set of project delivery instructions, which help guide the project team in successful coordination and implementation of energy projects.
Innovative solutions	Develop innovative and transformative solutions like expedited procurement and innovative financing products to decrease project timelines.
Marketing and communications	Design and implement a successful marketing and communications strategy that supports project activities and drives enrollment.
Evaluation and reporting	Complete ongoing evaluation to ensure the Program is on track to meet goals and targets as well as keep stakeholders fully informed of operations and outcomes.
Workforce development	Support workforce development initiatives by measuring and reporting on job creation metrics that drive the local economy.
Disadvantaged communities	Identify and enroll agencies serving disadvantaged communities, providing them with specialized services and deliverables.
Customer satisfaction	Continuously monitor customer and program feedback to identify potential enhancements and ensure the program is delivering per its objectives.

Flexible Approach

Integration of these principles is paramount in any program design, along with mindful execution of an adaptive approach. The Energy Network implements a flexible and iterative approach to project delivery that addresses several types of market barriers (*Figure 8*). The detailed approach is summarized below.



The Energy Network Approach

- **Identify** areas for improvement through demand and customer need
- **Develop** innovative solutions that address barriers and drive implementation
- **Test** solutions to determine effectiveness and areas for improvement
- **Implement** solutions with a targeted approach and verify results
- **Adapt** solutions to new market dynamics and circumstances

Figure 8. The Energy Network adaptive approach to addressing barriers

Faced with current market dynamics and knowledge that the industry is constantly evolving, The Energy Network recognizes that there are three major categories of barriers and overcomes each of them with three distinct methods. First, there are barriers that can be assumed will occur based on market research, historical data and experience. (Expected Barriers) For example, it is recognized by the California Public Utilities Commission and known from experience that the public agency sector typically needs comprehensive support for energy efficiency projects. Second, there are barriers that can possibly occur, but are not certain to occur. These (Possible Barriers) include typical project risks such as cost, budget and schedule. Third, there are barriers that cannot necessarily be planned for such as agency staff transitions. (Unpredictable Barriers). These last barriers arise during implementation and usually without warning.

Table 2. Typical barriers

Expected barriers	Possible barriers	Unpredictable barriers
<ul style="list-style-type: none">• Limited agency expertise and capacity• Limited agency funding• Slow procurement process	<ul style="list-style-type: none">• High initial project costs• Lack of available project data• Changes with financial resources (i.e. Utility incentive)	<ul style="list-style-type: none">• Competing agency priorities• Agency staff transitions• Agency timing constraints

The following section presents a specific example of each of these methods and how The Energy Network leveraged its principles and approach to overcome the barrier.

Method for addressing Expected Barriers. As mentioned above, many public agencies in Southern California have limited staff time and expertise and capital resources that they can rely on for implementing energy efficiency projects. The Energy Network addresses this barrier with objective, third party technical and project management services for public agencies. It pairs

each customer with a team that can provide expertise based on specific needs. Moreover, this team can flex and adapt to provide different services project to project and year after year. Developing the right expertise for these services starts with an extensive set of instructions and guidelines. The Energy Network maintains 500 pages of detailed procedures, processes, templates and best practices to guide the entire project delivery process from start to finish. As a result of effectively addressing this barrier, several agencies consider The Energy Network team an essential extension of their staff.

Method for addressing Possible Barriers. Financial resources, such as incentives and financing, are subject to change in an evolving marketplace. This is an example of a barrier that is possible, but may or may not occur. It is the responsibility of a program like The Energy Network to be aware of potential barriers like this and develop a plan for mitigation. As such, the Program is currently implementing a strategy that involves several stages. First, it identifies those market variables with high impact to agencies and project implementation such as availability of utility programs. Each team member is then assigned to these high impact variables to monitor and report out on trends. The Program also works to anticipate barriers with stakeholders using frequent and open communication. For example, The Energy Network maintains key relationships with industry stakeholders to discuss pending changes such as the minimum level of codes and standards. Lastly, the Program takes an active role in communicating challenges on behalf of this market segment. Together with industry experts, the Program works to shape policy in the future and ensure the market is moving towards transformation.

Method for addressing Unpredictable Barriers. It is understood that customers may find it difficult to always align with Program goals and metrics due to events outside of their control, such as staffing changes. This is an example of a barrier that is both unpredictable and unexpected. These barriers are the most difficult to manage. However, The Energy Network developed a strategy to mitigate risks with detailed schedules, contingency planning and collaboration. This requires open communication, transparency and disciplined project management from the team. The Program works closely with each agency customer to understand new challenges as they arise and ensure the Program maintains a consistent high level of customer service. In return, the Program asks agencies to move projects on a calendar year basis to coincide with how the Program is measured. Presenting agencies with a quarterly status report allows the team to discuss project risks and potential solutions systematically.

Implementing the above core principles and an adaptive approach to barriers is how The Energy Coalition developed an effective strategy for delivering results in the public agency sector. Essentially, the Program brings commercial and private sector innovation to an increasingly resource challenged public sector. This model resolves barriers proactively and drives projects to completion faster than before. As a result, the program has delivered 100 projects and 12 GWh in energy savings through utility programs to date with increasingly more expected as agencies continue to integrate The Energy Network into their operation strategy. Figure 9 shows the growing trend as tracked through the Program's Salesforce database.

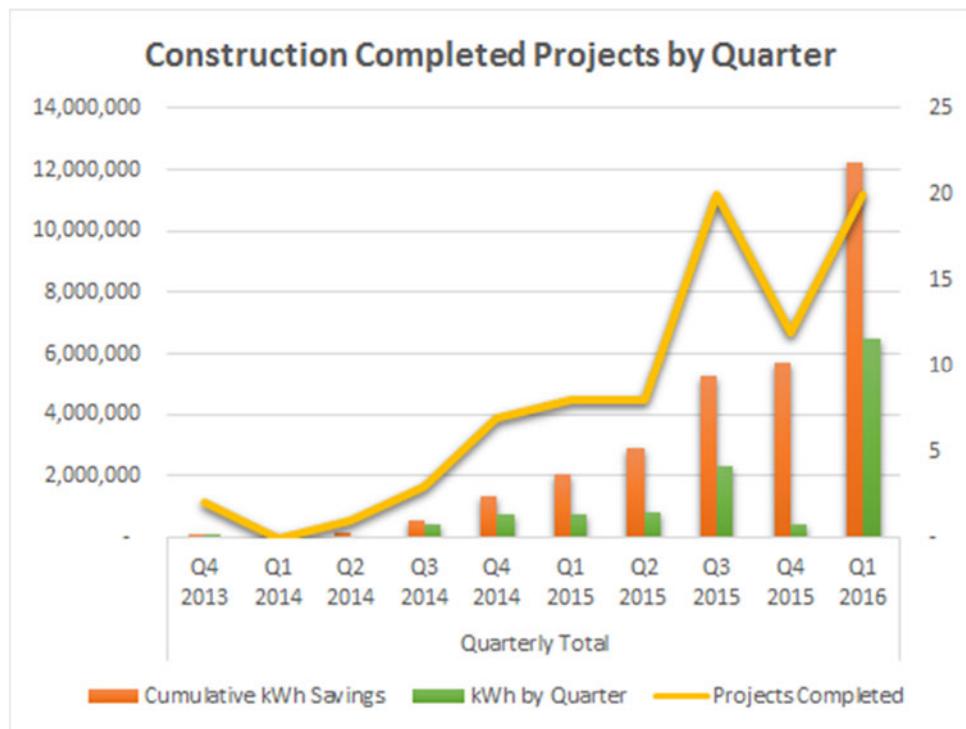


Figure 9. The Energy Network energy efficiency projects and associated energy savings completed by quarter

Conclusion

The Energy Network Public Agency Program is a model for success in the public agency market addressing barriers of staff time, expertise and financial resources. As a result, this model drives the public agency sector towards action and results. As a pilot, this Program has been offered only in Southern California, but with its significant documented success to drive diverse projects to completion faster, it could be scaled to provide public agency sector services in the rest of California, as well as in other states. Since this is a non-resource program, there are no current studies to determine the program's cost-effectiveness, but as Figure 9 shows, the program continues to build and deliver energy savings.

Ultimately, The Energy Network model not only provides a solution for achieving energy efficiency results in a customer sector that is ripe with opportunity, but also demonstrates how this model can be leveraged for speed and scale to create a solid foundation for public agencies to develop deeper energy resiliency and reliability within their communities.

References

- De Leon, Kevin. 2015. "SB-350 Clean Energy and Pollution Reduction Act of 2015." *State of California*.

Vance, C. and C. Perkins. 2014. *Scaling Up Fast and Transforming Markets with Regional Energy Networks*. The American Council for an Energy-Efficient Economy.

California Energy Codes Code 6502 and Code 4217

US Census, National Totals: Vintage 2015, Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015

Vance, O'Sullivan, and Rao. 2012. *Picking Up the Pace with the San Francisco Building Retrofit Program: EECBG Retrofits at Lightning Speed while Stretching Funding*.