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ENERGY EFFICIENCY

in California's Public Power Sector

A 2015 Status Report



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TABLE OF CONTENTS

1.	Executive Summary.....	1
2.	Introduction.....	3
3.	Overview of Energy Efficiency and Public Power.....	5
3.1.	A Public Power Perspective.....	5
3.2.	Diversity with a Common Objective.....	6
3.3.	Complementing Statewide Efforts.....	12
4.	Methodologies & Assumptions.....	18
5.	Investments in Energy Efficiency Programs.....	21
6.	Evaluation, Measurement, and Verification.....	28
7.	Conclusions & Policy Considerations.....	29
7.1.	Conclusions.....	29
7.2.	Policy Considerations.....	30
	Appendices.....	33
	Appendix A – Descriptions of Utility Programs.....	A-1
	Appendix B – 10-Year Energy Savings Targets.....	B-1

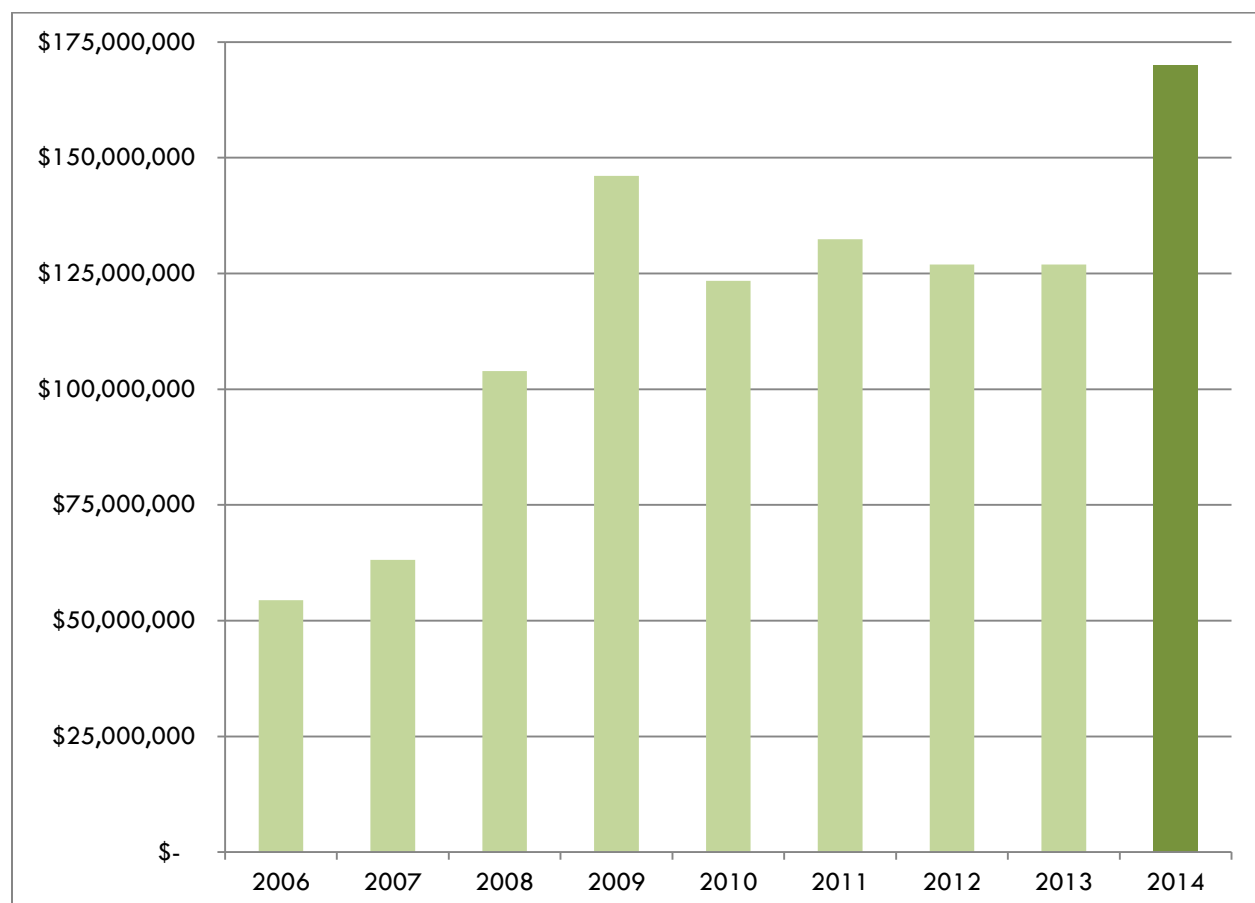
1. EXECUTIVE SUMMARY

The California Municipal Utilities Association (CMUA), the Northern California Power Agency (NCPA), and the Southern California Public Power Authority (SCPPA) are pleased to submit this report, *Energy Efficiency in California's Public Power Sector: A 2015 Status Update*.

CMUA, NCPA, and SCPPA have been working collaboratively since October 2005 to measure energy efficiency program effectiveness and report program savings in a consistent and comprehensive manner. In December 2006, the first joint report on energy efficiency was submitted to the California Energy Commission (CEC). This ninth report takes into consideration the latest available results from public power's wide range of energy efficiency programs.

Public power's long-standing commitment to energy efficiency is an extension of fundamental principles dedicated to social and environmental responsibility, ensuring reliability, and keeping rates low for the communities they serve. While customer participation levels in individual utility programs varies from year to year, collectively publicly owned utility (POU) programs incentivizing customer investments in energy efficiency have totaled over \$100 million annually since 2008.

Total Program Expenditures, 2006-2014



As discussed further in **Chapter 7: Conclusions & Policy Considerations**, the principal findings and conclusions of this analysis for FY13/14 are as follows:

- **Record-High Investment:** POUs spent nearly \$170 million on energy efficiency programs. This represents public power's highest single year investment energy efficiency and is the seventh consecutive year the \$100 million threshold has been exceeded.
- **Peak Demand Reduction:** Public power programs reduced peak demand by more than 110 megawatts.
- **Energy Savings:** Gross annual energy savings totaled over 625,000 (MWh).
- **\$1 Billion Success:** Since 2006, POUs have invested over \$1 billion in energy efficiency programs, reduced peak demand by more than 766 megawatts, and achieved more than 4 million MWh in savings.

Summary of Programs, 2006-2014

Year	Peak kW Savings	Annual MWh Savings	Lifecycle MWh Savings	Total Utility Expenditures (\$)
FY05/06	52,552	169,303	2,249,214	\$ 54,412,728
FY06/07	56,772	254,332	3,062,361	\$ 63,151,647
FY07/08	82,730	401,919	4,473,801	\$ 103,907,266
FY08/09	117,435	644,260	6,749,912	\$ 146,093,107
FY09/10	93,712	522,929	5,586,299	\$ 123,433,250
FY10/11	81,121	459,459	4,604,364	\$ 132,372,795
FY11/12	82,561	439,710	4,638,521	\$ 126,936,631
FY12/13	89,305	521,478	5,722,100	\$ 126,936,631
FY13/14	110,437	625,187	6,413,468	\$ 169,901,735
TOTAL	766,624	4,038,576	43,500,040	\$ 1,047,145,791

- **Cost-Effectiveness:** Applying the Total Resource Cost (TRC) societal test, the principal measure used in the industry to determine whether programs are cost-effective, the aggregated TRC for public power is 3.25 in FY13/14.
- **Most Savings:** Lighting continues to dominate public power energy efficiency programs, accounting for almost half of the total gross energy savings achieved (46.4%).
- **Efficacy of Programs:** The average cost per kWh saved from all POU programs is \$0.272/kWh. The cost per kWh saved over the lifetime of the various energy efficiency measures is \$0.024/kWh.

2. INTRODUCTION

Legislative & Statutory Requirements

Three pieces of legislation govern the compilation of this report. Senate Bill 1037 (Kehoe, 2005), requires POUUs to annually report to its customers and the CEC on its investments in energy efficiency and demand reduction programs. Assembly Bill 2021 (Levine, 2006) directs POUUs to identify all potentially achievable cost-effective, reliable, and feasible electricity efficiency savings and establish 10-year statewide energy efficiency savings targets. Assembly Bill 2227 (Bradford, 2012) changed the frequency of the energy efficiency 10-year target setting requirements from once every three years to once every four years.

In particular, this report is provided to the CEC in compliance with §9505 of the Public Utilities Code:

9505. (a) By March 15, 2013, and by March 15 of each year thereafter, each local publicly owned electric utility shall report to the Energy Commission and to its customers all of the following:

- (1) Its investments in energy efficiency and demand reduction programs.*
- (2) A description of each energy efficiency and demand reduction program, program expenditures, cost-effectiveness of each program, and expected and actual energy efficiency savings and demand reduction results that reflect the intent of the Legislature to encourage energy savings and reductions in emissions of greenhouse gases resulting from providing service to existing residential and nonresidential buildings, while taking into consideration the effect of the program on rates, reliability, and financial resources.*
- (3) The sources for funding of its energy efficiency and demand reduction programs.*
- (4) The methodologies and input assumptions used to determine the cost-effectiveness of its energy efficiency and demand reduction programs.*

(b) By March 15, 2013, and by March 15 of every fourth year thereafter, each local publicly owned electric utility shall identify all potentially achievable cost-effective electricity efficiency savings and shall establish annual targets for energy efficiency savings and demand reduction for the next 10-year period. A local publicly owned electric utility's determination of potentially achievable cost-effective electricity efficiency savings shall be made without regard to previous minimum investments undertaken pursuant to Section 385. A local publicly owned electric utility shall treat investments made to achieve energy efficiency savings and demand reduction targets as procurement investments.

(c) Within 60 days of establishing annual targets pursuant to subdivision (b), each local publicly owned electric utility shall report those targets to the Energy Commission, and the basis for establishing those targets.

(d) Each local publicly owned electric utility shall make available to its customers and to the Energy Commission the results of any independent evaluation that measures and verifies the energy efficiency savings and the reduction in energy demand achieved by its energy efficiency and demand reduction programs.

Outline of the Report

Nearly forty utilities detail their energy efficiency activities in this document. These POU's provide more than 25 percent of the retail customer electric load served in California and implement energy efficiency programs to support these customers. Beyond the informational requirements described in the abovementioned statute, this document is designed in a manner that provides a comprehensive assessment that can be utilized by state policymakers and interested stakeholders to gauge the effectiveness of energy efficiency programs within the public power community.

Chapter 3: Overview of Energy Efficiency and Public Power describes public power's unique perspective regarding energy efficiency and the role customer programs play in our communities. The chapter explores economic factors that directly influence customer decisions to participate in utility programs and invest in energy efficiency improvements. In addition, this chapter also identifies key differences among POU's and the respective customers they serve.

Chapter 4: Methodologies & Assumptions provides a description of the methodologies used by the public power community to report energy savings from different measures and programs.

Chapter 5: Investments in Energy Efficiency Programs offers a summary of utility expenditures and energy savings stemming from customer programs. This chapter highlights the range of POU programs currently available to customers. Descriptions of individual utility programs can be found in **Appendix A**.

Chapter 6: Evaluation, Measurement, and Verification discusses POU commitment to independent, third-party, evaluation, measurement and verification (EM&V), as well as current POU EM&V activities. Additional information regarding EM&V activities is included in the utility descriptions in **Appendix A**.

Chapter 7: Conclusions & Policy Considerations synthesizes the collective expertise of public power into recommendations on how to achieve additional energy savings. With aggressive codes & standards updates planned, ambitious goals for existing buildings, and utility program maturation, it is imperative that the CEC, POU's, local planning departments, energy service companies, contractors, building owners, and other stakeholders work in a more coordinated manner to foster customer investments in energy efficiency improvements. This chapter identifies opportunities and likely barriers to future energy efficiency efforts.

Appendix A is a compendium of POU program data, including a description of each utility and their energy efficiency programs, as well as categorized summaries of energy savings and utility investments by program. In addition, this appendix describes EM&V funding and activities.

Appendix B summarizes the 10-year energy savings targets adopted by POU's, based on the Energy Efficiency Resource Assessment Model tool developed by Navigant to support target-setting efforts, for FY2014-2023

Appendix C is a list of references utilized in the compilation of this report.

3. OVERVIEW OF ENERGY EFFICIENCY AND PUBLIC POWER

3.1 A Public Power Perspective

The long-standing commitment of California's POU's to energy efficiency and demand reduction programs is an extension of fundamental principles dedicated to social and environmental responsibility, ensuring reliability, and keeping rates low for our communities. POU's are not-for-profit public agencies similar in structure to other municipal utility services such as water, sewer, and waste management. POU's are governed by locally-elected boards and are answerable to the very customers they serve. Energy efficiency is a critical element of the resource planning process for generation, transmission, distribution, and demand-side management resources. Public power's commitments to energy efficiency are guided by four important concepts:

- **Social and Environmental Responsibility:** POU's place a high priority on energy efficiency, as well as renewable power supplies, low-income programs, and economic development. Local elected officials govern public power to ensure accountability on these issues to customers.
- **Operational Efficiency:** Public power offers important programs to reduce and/or shift peak demand to optimize generation and transmission, and ensure more efficient operation of the grid.
- **Demand-side Energy Efficiency:** This is a major focus of POU's. It includes, but is not limited to: appliances, air-conditioners, building codes and standards, education, electricity management, and weatherization, all coordinated with customer-specific programs.
- **Cost-effective Energy Efficiency:** Cost-effective energy efficiency lowers the cost of providing electricity to our communities. POU customers are "shareholders" and benefits related to energy efficiency are realized by all customer-owners.

POU energy efficiency programs are extensive and comprehensive. Residential programs focus on energy audits, Energy Star® appliance rebates and replacements, lighting improvements, attic insulation, as well as incentives to install highly-efficient heating, ventilation and air conditioning (HVAC). Commercial and industrial programs target lighting, HVAC, and manufacturing/food processing equipment. POU's also partner with schools and public institutions to educate residents and implement a variety of beneficial programs. POU's across the state are currently evaluating and developing more advanced programs in the areas of commercial/industrial demand response, thermal energy storage, on-bill financing, customer behavior change, and "whole building" retrofits.

POU's maintain a rich tradition of customer service that is distinctly local. POU's maximize the success of energy efficiency programs and services because of their unique relationships with customers and their ability to tailor programs to meet the specific needs of their communities. While harnessing the advantages of global innovations, and in many cases helping advance emerging energy technologies through progressive programs and procurement, POU's are responsive to local concerns, allowing them to maximize the value of all energy efficiency programs.

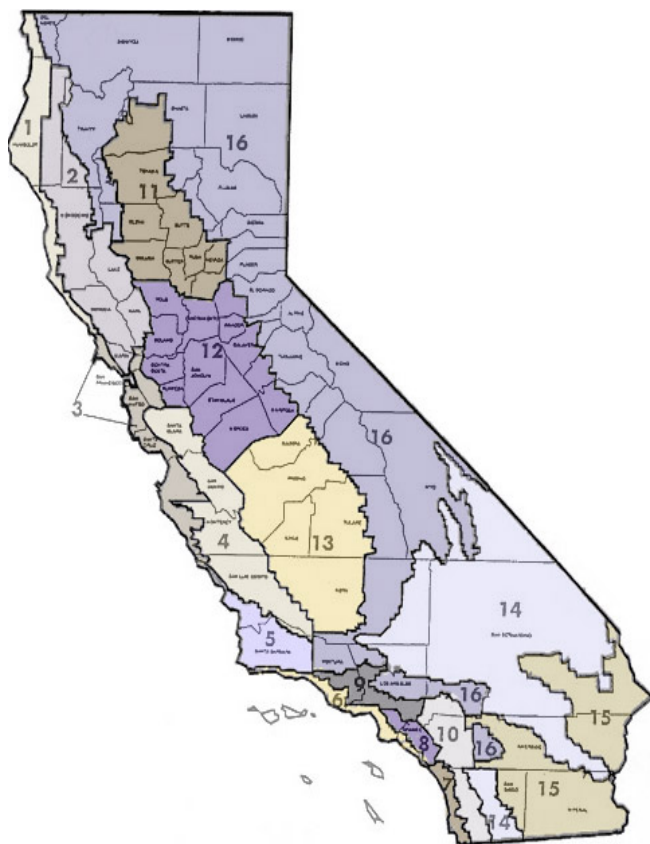
3.2 Diversity with a Common Objective

POUs serve a diverse range of customers. Effective utility energy efficiency programs need to be tailored to the specific interest of individual POU communities. Key factors that distinguish POUs and their customers include climate zone, customer class, overall size of the utility, and local economic conditions. Common to all POUs is the desire to create programs that are effective, innovative, and invest in effective energy efficiency measures, technologies, and programs to optimize benefits in their local communities.

Climate Zones

California is divided into 16 separate and distinct climate zones, defined by a range of characteristics, including summer temperature range, record temperature highs and lows, annual precipitation, and seasonal differences. California's POUs can be found in 13 of the 16 climate zones, ranging from Truckee Donner over the Sierra Crest to Merced in the heart of the Central Valley to downtown Los Angeles, the nation's second largest city. With such a wide geographic footprint, public power utilities recognize the importance of unique programs and tailor their programs to best serve the needs of their local communities.

Figure 1. Map of California's Climate Zones



Map Source: Pacific Gas & Electric

Climate Zone is one of the primary factors driving utility energy efficiency program design. Customer heating and cooling needs vary significantly among climate zones. As a result, the energy savings from HVAC retrofits differ dramatically across utilities and climate zones.

For example, an HVAC retrofit in the City of Needles in Climate Zone 15 – characterized by extremely hot and dry – yields considerably greater energy savings than a similar HVAC retrofit in a cooler coastal community like Lompoc (Climate Zone 5).

The climatic conditions that make for a cost-effective energy efficiency investment in one utility service territory may not necessarily make sense for a similarly situated customer of another utility.

Customer Class

Customer class distributions vary from utility to utility, which also impacts energy efficiency planning and program efforts.

Figure 2 to the right illustrates that the share of retail sales attributable to residential customers across the POUs varies considerably. Collectively, non-residential customers constitute two thirds of the retail sales (**66.6%**) for all POUs.

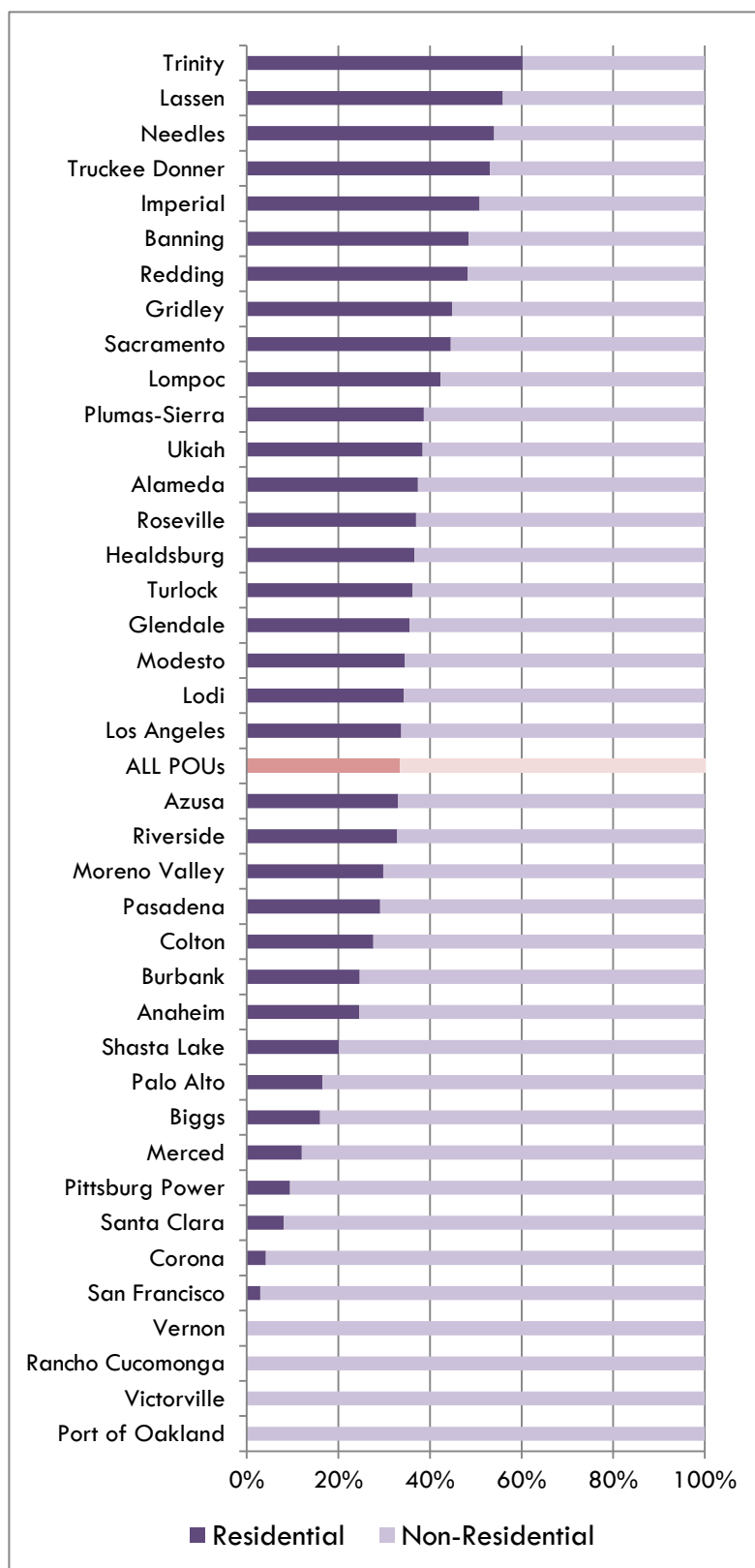
Non-residential customers, in general, consume more energy per account than residential customers. Nowhere is this dynamic more obvious than in Biggs where a single industrial customer represents 66% of the annual retail sales.

Important differences exist even among utilities with similar customer class distributions. Moreno Valley is a relatively new POU and started serving customers in 2004 with facilities about ten years old or newer. By comparison, Modesto has provided electric service for more than 100 years and has older building stock with different energy efficiency opportunities.

The Port of Oakland serves arguably the largest electric vehicle load of all POUs – large shipping vessels. The Port of Oakland loads and discharges more than 99% of the containerized goods moving through Northern California, the nation's fourth largest metropolitan area.

For more information on the innovative programs offered by each utility, see **Appendix A**.

Figure 2. Percent of Retail Sales (MWh)



Source: U.S. Energy Information Administration

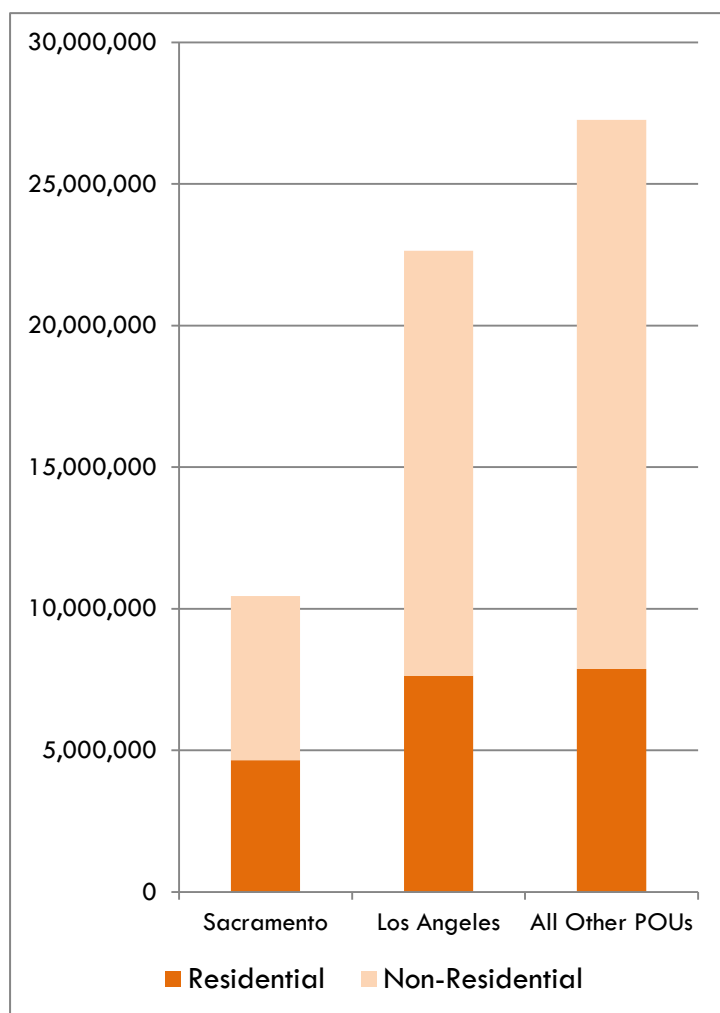
Utility Size – Annual Retail Sales

POUs vary a great deal in size and this impacts the energy efficiency programs each offers. Larger utilities typically serve customers with a broader range of energy needs than smaller utilities. As such they will offer a larger portfolio of incentives and rebates. In contrast, smaller utilities with fewer overall customers and customer types focus on more limited offerings.

At the large end of the POU spectrum are the Los Angeles Department of Water and Power (LADWP) and the Sacramento Municipal Utility District (SMUD). Together, LADWP and SMUD represent over half (54.8%) of total POU retail sales. The ten largest POUs account for the lion's share of retail sales (84.1%).

On the other end of the spectrum are POUs serving much smaller communities, such as the Pittsburg Power Company and the City of Biggs. The ten smallest POUs are little more than one percent of total retail sales (1.17%).

Figure 3. Retail Sales by POU (MWh)



Source: U.S. Energy Information Administration

Utility Size is important to consider as retail sales reflect a utility's resources for managing energy efficiency programs and reporting results to policymakers and stakeholders.

Program administration can be a challenge for smaller utilities with limited resources. In some cases, a utility may have a single staff member manage their energy efficiency programs, among other duties.

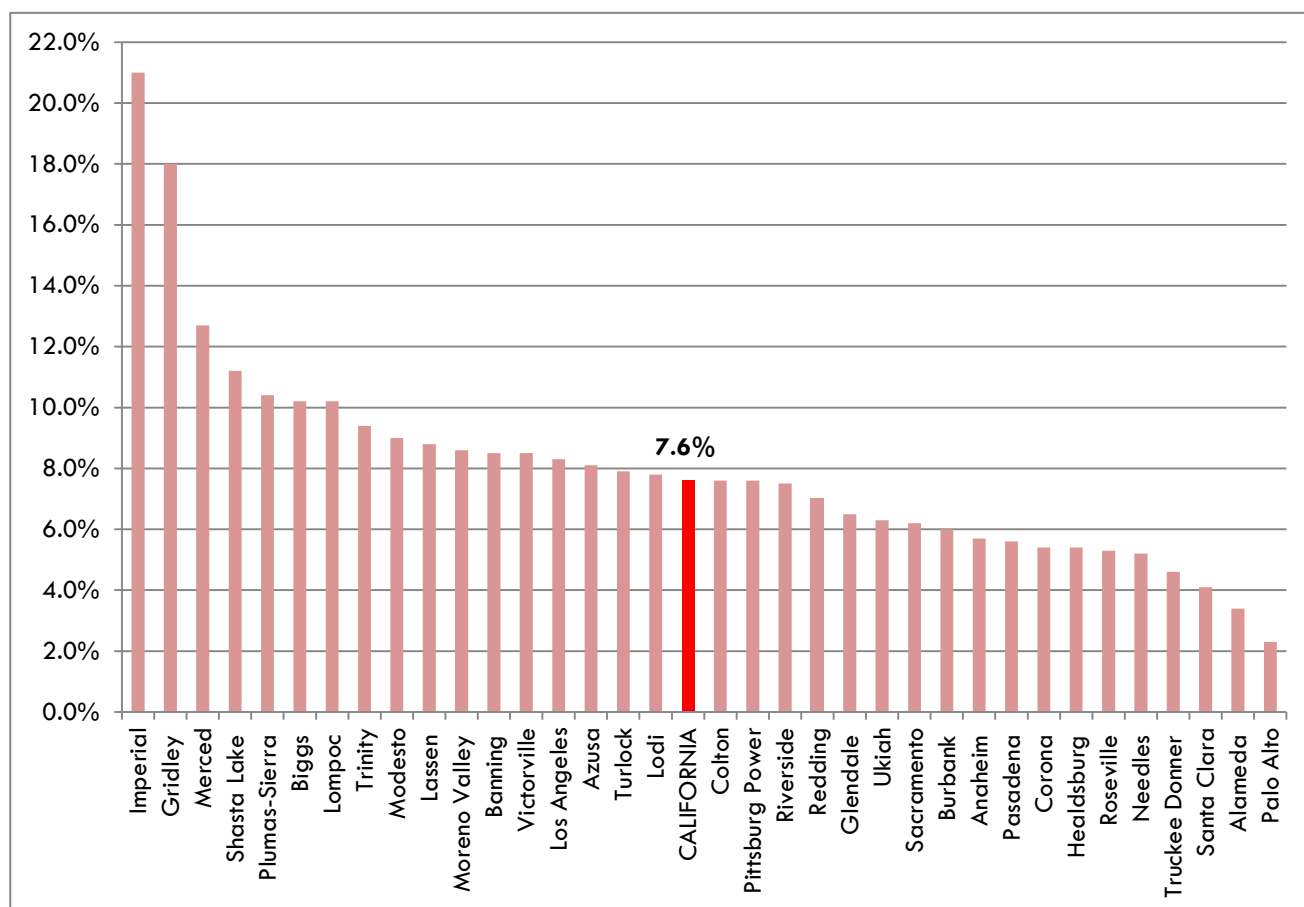
The collaborative nature of the public power community allows for the development of joint resources and sharing of best practices. CMUA, NCPA, and SCPPA serve as forums for discussing and pursuing projects on behalf of groups or all POUs.

The tools developed to support this report's compilation are an example of POU collaboration. For more information on the report tools, see **Chapter V: Methodologies & Assumptions.**

Local Economic Factors

The state of the local economy, as a reflection of customer purchase power, also informs utility decision-making about which programs deploy. Many POU communities are located in areas with unemployment rates higher than the state average. Imperial Irrigation District (21%) and the City of Gridley (18%) serve constituents with the highest rate of unemployment. In contrast, a Bay Area enclave – the Cities of Palo Alto (2.3%), Alameda (3.4%), and Santa Clara (4.1%) – all serve communities that are riding the recent wave of economic recovery and serve communities with unemployment rates well below the state average.

Figure 4. POU Community Unemployment Rates, 2014 Average



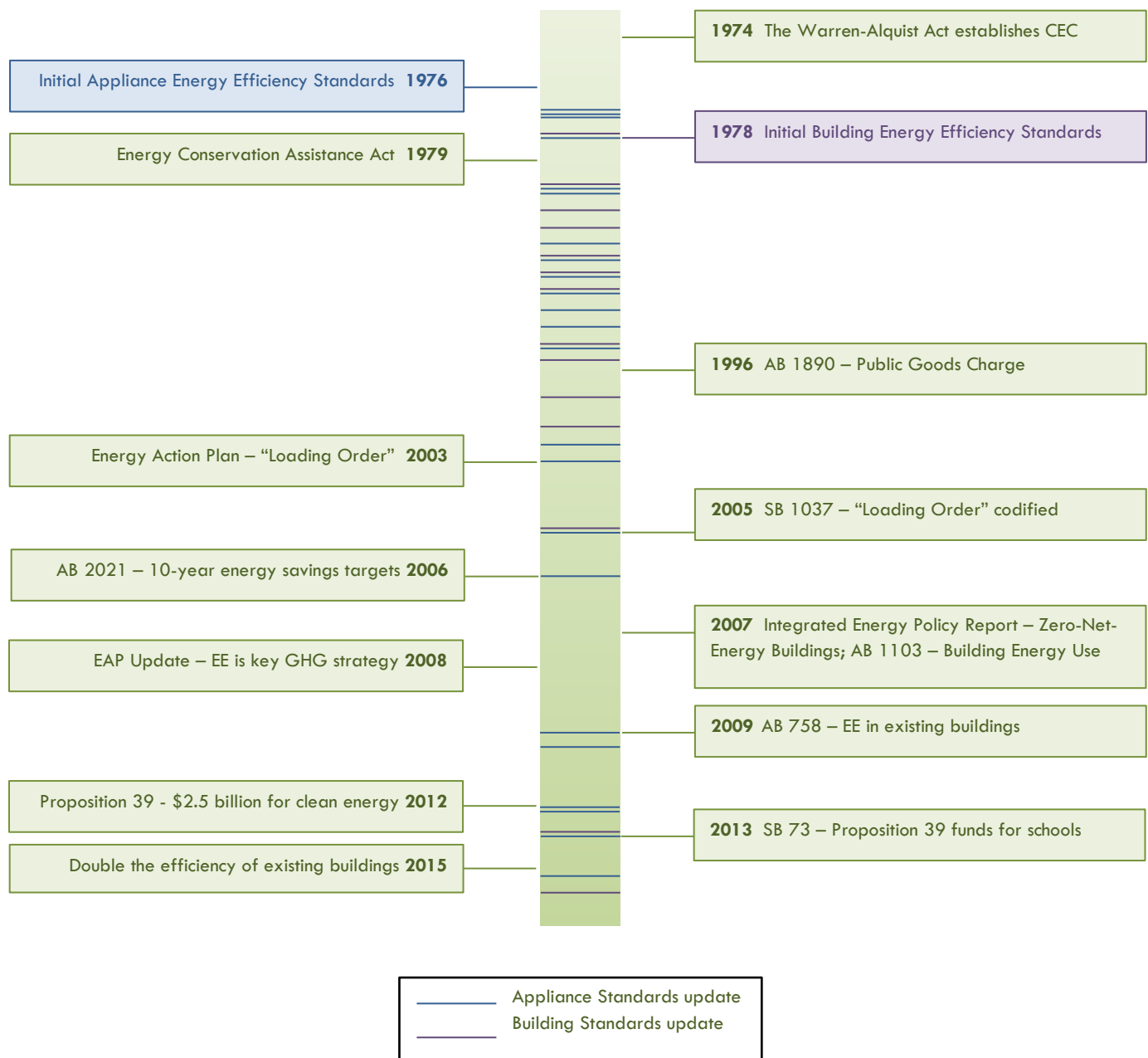
Source: California Employment Development Department

Economic vitality empowers customers to invest in distributed energy resources, including energy efficiency, rooftop solar systems, and electric vehicles. Just as flourishing job markets can spur customer-funded and utility supported clean energy retrofits, struggling local economies may limit the ability of other customers to make similar investments. Customers with a lack of disposable income and/or access to low-interest financing are often precluded from making energy efficiency investments, even if those investments require little upfront capital and would produce energy savings that would pay for itself in a short timeframe. For recommendations on how POUs, the State, and a broad range of stakeholders can collaborate to support customer investments in clean energy, see **Chapter 7: Conclusions & Policy Considerations**.

3.3 Complementing Statewide Efforts

Public power programs are one of the many facets of the state's efforts to reduce energy use. As **Figure 5** illustrates, California has promoted energy efficiency for nearly 40 years. Many of the state initiatives are active programs that continue to be implemented and improved by the CEC, utilities, and a wide range of industry and community stakeholders. The following sections review five major statewide energy efficiency program areas – Codes & Standards, the Public Goods Charge, Energy Efficiency in Existing Buildings, Zero-Net-Energy Buildings, and Proposition 39 – and examine their relationships to one another.

Figure 5. Timeline of Major Energy Efficiency Initiatives in California



Codes & Standards

Since its creation nearly 40 years ago, the California Energy Commission (CEC) has been tasked with prescribing standards for minimum levels of operating efficiency and promoting the use of energy and water efficient appliances through the Appliance Energy Efficiency Standards (Title 20). In addition, the CEC prescribes building standards that increase the efficiency in the use of energy and water for new building construction through the Building Energy Efficiency Standards (Title 24).

The state's three large investor-owned utilities (IOUs) fund the vast majority of the research on which updates to the appliance and buildings energy efficiency standards are based. Some POU's are now beginning to play a more active role in the development, evaluation, and adoption of updates to Title 20 and Title 24 standards as well. As a general practice, POU's will report savings from C&S only if they provide resources to support the development and/or enforcement of C&S updates, which will be noted in their narratives in **Appendix A: Description of Utility Programs**.

As depicted in **Figure 5**, the initial Title 20 appliance standards were adopted in 1976. In general, between 1977 and 2010, the CEC adopted 21 updates to the Title 20 standards. Similarly, the initial Title 24 building standards were issued in 1978. Between 1980 and 2013, the CEC adopted 12 updates to the Title 24 standards. The CEC estimates that since their inception, Title 20 appliance standards and Title 24 building standards have saved California consumers over \$37 billion and \$30 billion respectively.

The CEC recognizes the effectiveness of codes and standards (C&S) updates in achieving energy savings. As noted in the *2013 Integrated Policy Report (2013 IEPR)*, "building standards ensure that cost-effective efficiency features are incorporated into each building during construction, the point at which these features are least expensive and most cost-effective. Similarly, appliance standards benefit consumers by ensuring that the most cost-effective efficiency is incorporated into their purchases." Cost-effective and feasible standards that are demonstrated to achieve energy savings have been and will continue to be one of the state's most successful energy and environmental policies, and POU's support ongoing efforts to systematically adopt cost-effective and feasible building and appliance standards updates.

There is a direct relationship between energy savings from C&S updates and the claimed energy savings from POU customer incentive programs. In general, utilities only report energy savings that are above code. As the CEC mandates higher energy efficiency standards, the savings a utility reports for a measure in one year may diminish greatly or no longer be claimed the next year, which has a dramatic impact on utility program planning as well as annual progress towards 10-year energy savings targets.

Updates to codes and standards that are complicated and create significant burdens on customers to implement have an adverse impact on customer decisions to pursue energy saving retrofits. The 2013 update to Title 24 regarding commercial lighting retrofit projects instituted much greater procedural hurdles than previous code and significantly increased project cost, which severely limited the activities utilities could provide incentives for. **Chapter 7: Conclusions & Policy Considerations** discusses this in further detail and includes recommendations for the role POU's can play in the implementation of future code updates.

Public Goods Charge

POU efforts to encourage customers to invest in energy efficiency predate the passage of SB 1037 in 2006. AB 1890 (Brulte, 1996) also established the POU public goods charge (PGC), a non-bypassable charge collected from all customers to fund investments by the utility in any of the following program areas:

- Cost-effective energy efficiency and energy conservation
- Renewable energy resources and technologies
- Research, development, and demonstration to advance science and technology
- Low-income customer services

Per section 385 of the Public Utilities Code, each POU is required to collect a public goods charge equal to 2.85% of the utility's annual revenue in perpetuity. The statute allows POUs to focus their PGC funds on programs that best meet the needs to their particular customers. A POU local governing board serving a customer base with higher unemployment rates may elect to dedicate more of their PGC funds on low-income programs compared to another POU that tailors programs to support small businesses to lower their monthly electricity bill through energy saving retrofits.

PGC-funded energy efficiency programs typically provide incentives for measures that perform above current Title 20 and Title 24 standards. The CEC correctly notes in the *2013 IEPR* that “as energy efficiency codes and standards continue to improve, energy efficiency savings from incentives programs may diminish unless those programs continue to expand beyond traditional efficiency measures. To accomplish this, the state may need to modify its incentive mechanisms to provide value for both compliance with the standards and the total energy savings from upgrading inefficient equipment and building measures.” This concept is being considered and evaluated during 2015 by the California Technical Forum, as discussed below. The results of this evaluation may provide additional guidance or insight on how to reach the necessary balance in energy savings above- and below-code. As the state policies evolve to capture energy savings from existing buildings and to develop new construction that is zero net energy, the role of the utility should also be allowed to adapt to the changing environment, which will also be explored further in **Chapter 7: Conclusions & Policy Considerations**.

Energy Efficiency in Existing Buildings

For decades, public power has focused on providing financial incentives and other assistance to customers to reduce energy usage in their homes and businesses. Assembly Bill 758 (Skinner, 2009) requires the CEC, in collaboration with the California Public Utilities Commission (CPUC) and stakeholders, to develop a comprehensive program to achieve greater energy efficiency in the state's existing buildings. Specifically, the CEC is directed to develop a portfolio of strategies that will achieve greater energy efficiency in existing residential and nonresidential structures that fall significantly below the current standards in Title 24.¹ In response, CEC staff issued the *Draft Action Plan for the Comprehensive Energy*

¹ §25943(a)(1) of the Public Resources Code

Efficiency Program for Existing Buildings (AB 758 Draft Action Plan) in July 2013, and which was revised and reissued on March, 6 2015. The AB 758 Draft Action Plan consists of three categories of strategies:

- **No Regrets Strategies** are intended to provide critical foundational resources, such as broader access to relevant information, code compliance support, widespread education and outreach, and high-quality targeted workforce development.
- **Voluntary Pathways** are broadly defined as market support activities that build on past efforts, which include ramping up current programs for market segments that have low participation rates, such as multi-family dwellings and leased commercial buildings.
- **Mandatory Approaches** may be necessary depending on the success of no regrets strategies and voluntary pathways. If determined to be necessary, mandatory approaches would be intended to make the market more transparent and move mature measures into wider use.

The AB 758 Draft Action Plan looks beyond utilities, and recognizes that a large range of stakeholders and groups are involved in facilitating customer involvement in energy efficiency retrofits. Public power strongly supports this approach and CEC efforts to improve coordination, collaboration, and communication amongst the stakeholders in implementing strategies to reach the goals of AB 758, which in itself advances the foundational principle of the “Loading Order” of energy efficiency as the preferred energy resource, as well as the state’s commitment to ambitious greenhouse gas emission reductions.

Public power has and continues to offer customer energy efficiency programs focused on improvements to existing buildings. One of the barriers to customer participation has been stakeholder and policymaker pressure to limit utility incentives and other financial assistance for measures that exceed current energy efficiency codes and standards. Achieving energy savings in buildings significantly below Title 24 code may be greatly supported by reconsidering the measures and activities that utilities are encouraged to fund and report savings from.

Zero-Net-Energy (ZNE) Buildings

A ZNE building is one where the net amount of energy produced by on-site renewable energy resources is equal to the amount of the energy consumed annually by the building, at the level of a single “project” seeking development entitlements and building code permits, measured using the CEC’s Time Dependent Valuation metric.

The CEC first introduced the concept of ZNE buildings in the *2007 Integrated Energy Policy Report*. This proposal was incorporated into the CPUC’s *Long Term Energy Efficiency Strategic Plan* in 2008 as one of the four “Big Bold” energy efficiency strategies. Specific legislation was not passed directing either the CEC or the CPUC to pursue a ZNE policy or program. However, both agencies cite AB 32 (Núñez, 2006), the Global Warming Solutions Act of 2006, SB 1037 (Kehoe, 2005), and AB 2021 (2006, Levine), as well as multiple Governor’s Executive Orders, as establishing the policy imperative for pursuing the statewide policy that all new residential construction by 2020, and all new commercial construction by 2030, will be ZNE.

To accomplish the ZNE goal, the Title 24 updates for 2016 and 2019 are planned to reduce energy consumption by 40% - 60% compared to the 2013 update, which as previously noted was itself a 25% improvement over the 2008 residential building code. This represents an unprecedented effort to reduce energy usage in new buildings.

With regard to the portion of the ZNE definition that requires each building to produce a net amount of energy on-site equal to the value of energy consumed annually by the building, the CEC states in the 2013 *IEPR*, "To ensure that all buildings have a pathway to compliance, the Energy Commission anticipates establishing reasonable exceptions to account for building and building site limitations, including the need for "development entitlements" for off-site renewable energy resources, such as community based renewable energy generation." The CEC correctly recognizes that not all future buildings will be suitable for on-site renewable energy resource installations and that alternative arrangements will need to be developed. Whether the renewable resource is located on-site or off-site, this requirement will have a significant impact on utility operations and resource planning. In addition, the potential for significant new development of off-site renewable energy resources designed to service a new housing development will likely impact local zoning and planning ordinances.

Proposition 39

In November 2012, the voters of California passed Proposition 39, which amended the state's corporation tax code in a manner that was estimated by the Legislative Analyst's Office to generate approximately \$1 billion in additional tax revenue for the state. For the first five years, beginning in fiscal year 2013, half of new tax revenue (\$2.5 billion total) is required to be spent funding energy efficiency and clean energy project. The Legislature and Governor agreed to focus Prop 39 funds on projects at K-14 public schools. SB 73 (Committee on Budget and Fiscal Review, 2013) appropriated the funds for energy efficiency and clean energy projects for fiscal year 2014, as follows:

- \$381 million to local educational agencies (LEA) (e.g., school districts, county offices of education)
- \$47 million to California community college districts
- \$28 million to the CEC for low-interest/no-interest revolving loans and technical assistance
- \$3 million to the California Workforce Investment Board for workforce training grants
- \$5 million to the California Conservation Corps to perform energy surveys and other activities

Each LEA is allocated Prop 39 funding based on a legislatively established formula. In order to receive their allocation from the California Department of Education, a LEA must submit an expenditure plan to the CEC for review.² Since many schools lack qualified energy management staff, utilities will play a vital role in supporting schools in their applications for and administration of Prop 39 grant funds. Most POU's have been working closely with their schools on energy efficiency and rooftop solar projects for years. In many cases, POU's have designated key accounts staff to their school districts. Given the generally smaller

² §26235(f) of the Public Resources Code

geographic footprint of many POU service territories and a strong interest in their local communities, public power is uniquely positioned to assist schools successfully implement Prop 39-funded projects. As a practical matter, to the extent a POU dedicates resources to support a LEA in applying for Prop 39 funding, prioritizing projects, selecting third-party administrators, and/or managing energy efficiency or clean energy projects, the POU will report the energy savings from Prop 39-funded projects in forthcoming annual reports.

Utilities will play a critical role in the implementation of Prop 39, even if LEAs do not request assistance. SB 73 requires a LEA, as a condition of receiving their funding, to authorize its local electric and gas utilities to provide 12 months of past and ongoing usage and billing records at the school facility site level to the CEC.³ The CEC, as noted in the *Proposition 39: California Clean Energy Jobs Act – 2013 Program Implementation Guidelines*, has interpreted the statute to require a LEA to provide access to their utility billing records through 2023. The CEC also requires LEAs to provide the utility billing data for all of its meters, not just the site(s) where Prop 39 funds will be spent. The access to utility billing records must be granted at the time of application for funds by completing the CEC standardized Utility Data Release Authorization form. However, since the CEC has yet to establish a process for the utility to provide usage and billing records. It is unclear what specific data a utility will be required to provide and in what form that data should be sent to the CEC. POUs will continue to work closely with the CEC to resolve these critical implementation issues.

* * * * *

Public power actively participates in these many different energy efficiency forums, workshops, and program proceedings to provide perspective and feedback from our diverse communities. Many of the program areas overlap with one another, facing similar challenges and sharing similar opportunities. Achieving the state's visionary energy efficiency goals, and realizing the attendant greenhouse gas emissions reductions and other non-energy benefits, requires a great deal of collaboration among stakeholders and coordination among programs. POUs look forward to continuing to work with the CEC and the growing universe of stakeholders on ensuring that the development implementation of programs in pursuit of energy savings are 'efficient' in their own right.

³ §26240(a) of the Public Resources Code

4. METHODOLOGIES & ASSUMPTIONS

This section provides a brief overview of the analytical tools developed by the public power community to report its energy efficiency savings and develop energy efficiency targets, as well as activities being undertaken to further refine the processes used to verify reported savings. In evaluating public power energy efficiency programs it is absolutely critical to understand how energy savings estimates attributed to programs are interpreted and measured.

As a practical matter, energy savings attributable to utility energy efficiency programs are defined as the difference between the expected energy use of a proposed efficiency measure and expected energy use under baseline conditions and assumptions. In most cases, baseline energy usage is governed by the Title 20 and Title 24 energy efficiency standards, as well as Federal Appliance Standards. For some custom projects, these standards do not apply, so industry standard practice is used for the baseline.

Database for Energy Efficient Resources

The Database for Energy Efficient Resources (DEER) is a CEC and California Public Utilities Commission (CPUC) sponsored database designed to provide well-documented, verifiable and consistent estimates of energy and peak demand savings values, measure costs, and effective useful life (EUL) from one data source. DEER accounts for the new baselines established through the Title 24 building standards, as well as new federal energy standards. For consistency, POUs have historically used the DEER.

As noted in the draft *2014 DEER Update Study*, a number of stakeholders have expressed concerns with the DEER database. Several parties voiced concern when a large number of measures that were originally included in DEER2005 were removed as part of the 2011 DEER update. The parties argued that some of those measures are still prominent in program accomplishments and requested that updates to restore the measures be included in DEER as soon as possible. IOUs also expressed concern that DEER measure definitions sometime lag current industry standards.

In response to both the removal of measures in 2011 and the definitions lagging industry standard, IOUs have relied upon their own workpapers to provide energy savings estimates that are more representative than the DEER database. In some cases, measures covered by an IOU workpaper may comprise a large portion of the portfolio of savings. In short, DEER, the estimated energy savings tool or resource that was funded by IOUs, to be used by IOUs, is not being used by the IOUs due to its serious shortcomings.

POUs share many of the concerns voiced by IOUs and other stakeholders regarding the DEER database. For many measures, the DEER database continues to provide energy savings estimates that align with results from POU EM&V reports of their programs. However, for other programs the estimated DEER savings are not consistent with the actual measure and program results, so POUs must rely on other sources or studies. The process in which DEER is updated and the basis on which changes to the DEER database are made are not transparent – at least not to public power.

Technical Reference Manual

Recognizing that the DEER database is not a viable resource for public power to continue to use, POUs contracted for the development of a technical reference manual (TRM) modeled after the Northwest Regional Technical Forum resource in 2013.

Silicon Valley Power first initiated a project to develop an energy savings estimate database specific to their respective programs as an alternative to DEER. Energy & Resource Solutions (ERS) was retained to develop the TRM solely for Silicon Valley Power, which was later expanded by Palo Alto Utilities to include additional measures specific to their programs as well. The 12 remaining members of NCPA, all 11 SCPPA members, and 7 CMUA members, including SMUD, then contracted with ERS for a larger TRM tool that could be used by utilities in different climate zones across the state. The TRM was completed last spring and replaced DEER as the basis for which many POUs based their energy efficiency programs.

The TRM provides the methods, formulas, and default assumptions used for estimating energy savings and peak demand impacts from energy efficiency measures and projects in a very clear and open format. . The energy savings estimates are used to report program accomplishments and measure progress towards program goals. Energy efficiency measures are documented and classified as either unit energy savings (UES) measures, semi-custom measures, or custom measures. The manual includes both nonresidential and residential measures. Each measure type is presented in separate sections and grouped by technology type. Measure information is presented in a consistent tabular format.

The TRM includes the main manual as well as supporting spreadsheets. All references and data resources are identified in the table footnotes. The reference manual also includes spreadsheets that provide detailed and transparent measure calculations and, for semi-custom measures, energy savings calculators for estimating energy savings for project-specific measures. The measure spreadsheet includes summary tables for transferring measure savings data into the program's regulatory compliance reporting tool.

As needed, each section also contains supplementary tables and charts to provide additional measure details. Measures with multiple savings values (savings by size, building use, varying levels of efficiency, etc.) will have both savings and cost data listed in a supplementary table. The last section of the manual provides the custom measure protocol, which outlines a process for estimating and documenting custom measure savings.

Energy savings calculators are also provided as part of the reference manual. The calculators are Excel spreadsheet-based engineering models for estimating semi-custom measures per the described methodology. They provide a consistent, transparent, and user-friendly approach for estimating project-specific energy savings.

The TRM is accessible to the public via the CMUA website at <http://cmua.org/energy-efficiency-technical-reference-manual>. The TRM provides a much higher degree of transparency to POUs, policymakers, and interested stakeholders regarding the energy savings estimates underpinning public power's energy efficiency programs.

California Technical Forum

IOUs and POU recognize a common need for transparent and technically-sound energy savings estimates. This is particularly true as utilities pursue energy savings from more complex systems-wide and whole-building retrofit projects. In addition to the development and maintenance of the TRM, public power has taken on a leadership role within the California Technical Forum (Cal TF).

The Cal TF, modeled on the Northwest Regional Technical Forum, is a collaborative of energy efficiency industry experts who use independent professional judgment and a transparent, robust process to review and endorse technical information related to California's energy efficiency portfolio. Led by the Natural Resources Defense Council, the Cal TF was created in 2014 by a broad group of stakeholders.

The mission of the Cal TF is "[t]o support the growth and success of energy efficiency through independent and transparent peer review of California energy efficiency values." It is organized as an independent body that supports IOU and POU energy efficiency programs by developing the energy savings estimates for different energy efficiency measures. To this end, one of the Cal TF's first projects will be to evaluate a select group of key measures from the POU TRM. In addition to evaluating the accuracy of the TRM data, the Cal TF will also consider the format, design, and best practices of the TRM as a model for which the build a similar statewide database for all utilities. Until such a time as there is a Cal TF resource appropriate for use by public power, POUs will continue to maintain and update the TRM. In addition, during 2015 the Cal TF will undertake the evaluation and determination of possible processes and tools to calculate energy savings "below code" using a standardized baseline of existing conditions, or something similar, as referenced above.

For more information on the California Technical Forum, visit their website at <http://www.caltf.org/>.

Energy Efficiency Reporting Tool

Since SB1037 was passed in 2005, public power has significantly invested in the development of tools and resources to use for reporting the results of their energy efficiency programs. The company Energy and Environmental Economics (E3) has provided public power with their considerable expertise in this effort.

The Energy Efficiency (EE) Reporting Tool is an Excel Spreadsheet developed by E3. It contains the TRM database of energy efficiency measures developed by Energy Resource Solutions (ERS). Utilities select the measures that best represent the programs they have implemented and enter the relevant data. E3 designed the EE Reporting Tool to minimize the data input required by the utilities. Relying on default values and assumptions contained in the EE Reporting Tool, utilities may enter as little as the number of units installed, the incentive provided to the customer and overhead costs to report meaningful results. Alternatively, utilities may modify or enter their own assumptions and create customized measures that better reflect their programs or service territory. The EE Reporting Tool then provides summary tables by program category that report the units installed, achieved savings, program costs and cost effectiveness.

E3 developed and maintains the Distributed Energy Resources Avoided Cost Model and E3 Calculator adopted by the California Public Utilities Commission (CPUC) to report on the cost-effectiveness of investor-owned utility (IOU) energy efficiency programs. The EE reporting tool is a simplified reporting tool that uses the same avoided costs and cost-tests adopted by the CPUC. To reduce file size and complexity, avoided costs and EE measure load shapes are represented using six time-of-use periods (rather than 8,760 hourly resolution). Also the TRM measures developed by ERS are a consolidated and representative subset of the much larger number of measures in the DEER database. Both of these simplifications make the model much simpler and more user-friendly than the E3 calculator for the diverse range of utilities within the public power community.

The avoided costs used to report IOU EE cost-effectiveness were last updated in 2011. More recent avoided costs have been developed for other proceedings. However, for consistency, the EE Reporting Tool for the public utilities uses the same avoided costs most recently adopted for the E3 Calculator for reporting by the IOUs. The avoided costs and load shapes in the EE Reporting Tool remain unchanged from the previous year. The methodology for calculating each of the respective cost-tests also remains unchanged.

The TRM measure database included this year replaces the previous measures developed by KEMA, which were tied to DEER. The ERS database includes measures for each climate zone that can be selected by individual utilities for inclusion in their reporting. The EE Reporting Tool matches 2011 DEER net-to-gross ratios based on measure type. TOU load shapes developed from the DEER load shapes used in the E3 Calculator are matched to EE measures based on measure type and climate zone. As in prior years, utilities may select from the measure database or enter "custom" measures specific to their program.

The program sectors and categories are also the same as in prior years based on CEC reporting requirements. The summary table has been expanded slightly to include both gross and net annual and lifecycle energy savings and to include both a portfolio level Program Administrator Cost-test (PAC) as well as Total Resource Cost-test (TRC) ratio. The summary table also reports GHG savings (in standard tons) based on marginal heat rates developed for and used in the CPUC adopted avoided costs. The value of avoided GHG emission are included in the TOU period avoided cost values in the EE Reporting Tool and are not reported separately.

5. INVESTMENTS IN ENERGY EFFICIENCY PROGRAMS

This section provides an aggregate overview and discussion about current and future energy efficiency programs and savings that apply to California's public power utilities. A detailed overview of specific utility program descriptions, expenditures, and energy savings can be found in **Appendix A**.

Figure 6 provides a comprehensive summary of energy efficiency savings and an aggregated measure of cost effectiveness of all POU. The table reveals a range of savings, which is largely a reflection of utility size and economic considerations. LADWP (35.3 MW), SMUD (25.5 MW), and IID (24.0 MW) had combined demand savings of nearly megawatts 85 MW. Another 8 utilities (Anaheim, Riverside, Pasadena, Glendale, SVP, Burbank, Modesto, and Roseville) had demand savings that fell in the range of 1-8 MW. LADWP alone reports over 251,556 MWh of gross energy savings, which is greater than the total gross savings of All Other POU, excluding SMUD, (198,260 MWh).

Figure 7 reviews the aggregated results by program sector. From the tables, it is clear that lighting and cooling programs once again account for the largest share of the savings. Regarding specific program results, lighting (particularly non-residential direct installations) continues to dominate public power energy efficiency programs, accounting for almost half of the total energy savings achieved (48.7%). Customer rebates account for the majority of program expenditures (55.2%), with the remaining costs dedicated to utility marketing, administrative costs, and evaluation, measurement, and verification (EM&V) efforts.

Figure 8 and **Figure 9** summarize POU energy efficiency program savings and cost information for fiscal years 2006 through 2013.⁴ During FY13/14, POU spent nearly \$170 million on energy efficiency programs, the seventh consecutive year utility energy efficiency investments have exceeded \$100 million. When added to investments since the signing of SB1037, public power has spent over \$1 billion on energy efficiency. Supporting those investments were reductions in peak demand last year of 110 MW as well as gross savings of more than 625,000 MWh over the course of the reporting year.

Figure 10 provides the FY13/14 data for the 15 utilities with the highest annual net savings. These 15 utilities provided 97.5% of the total amount reported by the entire POU community. The majority of energy efficiency program impacts reflect public power's two largest utilities: LADWP and SMUD. In order to understand the diversity within public power, it is important to recognize the energy efficiency program trends of the other POU across the state. **Figure 11** highlights public power's commitment to energy efficiency programs, excluding LADWP and SMUD. During F13/14, the remaining utilities spent nearly \$51 million on energy efficiency programs and achieved some of the highest energy (and demand savings) results since reporting began in 2006.

⁴ Imperial Irrigation District, Merced Irrigation District, Modesto Irrigation District, Plumas-Sierra Rural Electric Cooperative, Sacramento Municipal Utility District, Turlock Irrigation District, and Truckee Donner Public Utility District all operate on a fiscal year that extends on a calendar year basis. As such, each utility's data for FY13/14 is actually calendar year 2014.

Figure 6. Summary of Utility Results, FY13/14

POU SUMMARY		Resource Savings Summary					Cost Summary		
Utility	Gross Annual kWh Savings	Gross Lifecycle kWh Savings	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Alameda	1,033,587	7,963,727	92	941,242	7,148,315	3,890	124,271	626,277	750,548
Anaheim	32,322,879	307,886,483	6,402	32,322,879	307,886,483	188,889	4,265,833	-	4,265,833
Azusa	2,896,975	21,616,153	528	2,607,585	19,344,806	11,495	689,011	191,342	880,353
Banning	75,066	950,049	18	71,178	900,522	530	36,834	71,144	107,978
Biggs	1,758	14,784	0	1,199	9,719	-	495	-	495
Burbank	11,730,959	97,005,344	3,097	10,809,473	87,303,678	52,808	2,300,966	1,049,702	3,350,668
Colton	1,888,167	6,785,136	318	1,799,268	6,196,563	3,599	1,172,535	-	1,172,535
Corona	49,670	539,970	-	15,830	168,687	100	14,300	10,148	24,448
Glendale	14,807,069	93,559,045	2,488	14,743,479	92,680,218	57,564	1,441,550	116,839	1,558,389
Gridley	195,190	2,201,763	41	164,983	1,861,718	1,016	28,877	52,920	81,798
Healdsburg	699,837	9,796,607	86	592,111	8,292,461	4,580	130,672	123,923	254,595
Imperial ID	26,715,045	332,096,437	24,029	23,560,261	290,005,341	174,375	11,327,621	2,081,408	13,409,029
LADWP	251,556,177	3,537,885,604	35,284	251,556,177	3,537,885,604	2,045,207	32,346,202	45,653,772	77,999,974
Lassen	99,554	1,264,983	18	59,769	760,143	402	39,000	-	39,000
Lodi	1,732,045	20,388,387	232	1,383,729	16,285,871	8,926	204,552	75,324	279,876
Lompoc	74,323	811,774	9	54,227	593,989	325	20,086	20,000	40,086
Merced	2,593,518	25,955,497	0	5,606	66,188	36	186,329	200,078	386,407
Modesto	9,126,617	123,371,807	1,333	7,332,723	99,013,911	54,300	1,098,062	1,509,737	2,607,799
Moreno Valley	54,291	547,748	15	46,148	465,585	275	10,354	-	10,354
Needles	8,225	164,500	8	8,225	164,500	104	150,000	14,326	164,326
Oakland	-	-	-	-	-	-	-	-	-
Palo Alto	9,665,856	93,537,460	599	8,218,060	75,954,743	43,728	1,044,691	1,369,277	2,413,968
Pasadena	18,741,109	173,163,713	2,420	18,661,712	172,358,513	103,102	2,617,670	485,695	3,103,365
Pittsburg	121,345	1,172,372	29	113,411	1,077,167	597	18,033	12,780	30,813
Plumas-Sierra	134,088	2,126,754	11	48,137	487,752	265	35,156	15,566	50,722
Rancho Cucamonga	336,867	5,363,562	32	336,867	5,363,562	3,173	45,510	32,000	77,510
Redding	1,270,250	19,355,901	689	930,663	13,702,265	8,282	1,594,522	359,133	1,953,655
Riverside	25,792,954	311,780,290	1,999	20,719,092	244,416,052	147,565	3,946,497	-	3,946,497
Roseville	5,272,981	47,426,725	1,994	4,773,803	43,059,442	24,957	1,271,807	991,558	2,263,365
Sacramento	175,370,000	1,340,435,713	25,470	141,979,000	1,072,164,596	526,980	21,780,033	19,260,968	41,041,001
San Francisco PUC	2,268,546	34,028,190	207	2,068,546	31,028,190	16,723	1,791,386	227,213	2,018,599
Shasta Lake	326,126	3,456,911	61	261,674	2,753,884	1,486	94,913	71,312	166,225
Silicon Valley	14,482,280	227,222,789	1,745	12,274,647	192,881,703	104,296	1,616,548	1,898,251	3,514,799
Trinity PUD	-	-	-	-	-	-	-	-	-
Truckee Donner	2,409,720	22,466,963	165	1,687,453	15,769,261	8,120	404,977	425,093	830,070
Turlock ID	7,682,029	47,547,710	384	6,094,153	37,349,471	20,246	417,400	244,693	662,092
Ukiah	535,956	3,594,813	320	437,438	2,884,221	1,518	152,322	47,042	199,365
Vernon	3,215,060	37,543,383	334	2,299,256	25,942,823	14,800	233,165	51,035	284,200
Victorville	-	-	-	-	-	-	-	-	-
Summary	625,286,121	6,961,029,046	110,455	568,980,004	6,414,227,943	3,634,258	\$92,652,180	\$77,288,555	\$169,940,735

Figure 7. Summary of Energy Savings by Program Sector, FY 13/14

All POU Summary		Resource Savings Summary								Cost Summary		
Program Sector (Used in CEC Report)	Category	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Appliances	Res Clothes Washers	375,636	4,569,768	712	577	233,673	2,899,220		1,602	280,408	313,910	594,317
HVAC	Res Cooling	13,125,684	248,382,206	5,246	8,018	10,197,217	189,871,928		117,150	7,969,453	3,176,367	11,145,820
Appliances	Res Dishwashers	162,992	2,022,852	75	75	117,980	1,471,687	29,897	779	140,852	50,142	190,995
Consumer Electronics	Res Electronics	4,512,822	44,338,764	1,473	1,473	3,185,481	31,169,852		17,505	681,922	1,107,460	1,789,382
HVAC	Res Heating	44,883	1,088,730			1,556	15,561		8	9,000		9,000
Lighting	Res Lighting	62,978,472	514,521,628	8,204	6,352	45,099,308	366,866,136	67,939	205,293	8,604,075	2,618,005	11,222,080
Pool Pump	Res Pool Pump	3,251,021	37,892,646	500	796	2,646,855	30,236,253		17,374	1,356,849	941,056	2,297,904
Refrigeration	Res Refrigeration	17,874,701	146,795,041	2,003	2,218	15,727,591	134,931,528		75,941	5,764,879	4,185,667	9,950,545
HVAC	Res Shell	19,669,437	214,794,433	2,159	4,482	16,752,155	184,358,945	1,419	109,407	4,761,187	2,829,362	7,590,549
Water Heating	Res Water Heating	301,012	5,119,281	11	28	204,072	3,518,400		1,960	67,915	72,830	140,746
Comprehensive	Res Comprehensive	26,519,742	134,876,564	3,449	6,165	23,332,678	116,069,030		68,564	5,828,397	7,087,737	12,916,135
Process	Non-Res Cooking											
HVAC	Non-Res Cooling	49,895,893	656,061,437	4,986	8,245	48,295,211	632,981,841		377,519	8,345,494	3,880,300	12,225,794
HVAC	Non-Res Heating	729,876	8,028,636	262	262	729,876	8,028,636	243,750	4,876	239,710	87,987	327,697
Lighting	Non-Res Lighting	227,562,331	2,108,032,640	13,365	46,289	213,955,176	1,992,494,630		1,143,737	32,471,305	35,138,677	67,609,981
Process	Non-Res Motors	5,214,355	69,371,259	4	560	4,594,213	60,880,645	212,069	33,240	1,572,227	238,435	1,810,662
Process	Non-Res Pumps	4,291,764	64,412,917	36	36	4,199,748	63,063,940		34,992	93,397	228,590	321,987
Refrigeration	Non-Res Refrigeration	16,801,144	180,097,289	1,794	1,964	14,917,078	158,828,357		79,961	1,850,324	1,152,081	3,002,405
HVAC	Non-Res Shell	15,278,932	80,507,129	2,381	3,649	14,356,152	69,523,842		41,684	1,890,322	460,177	2,350,500
Process	Non-Res Process	105,615,256	1,843,949,027	1,928	13,780	102,959,502	1,805,492,191		994,664	2,804,928	6,813,458	9,618,386
Comprehensive	Non-Res Comprehensive	48,476,652	564,223,947	2,644	5,407	45,150,810	533,599,112		291,985	7,221,225	6,711,094	13,932,319
Other	Other	2,603,516	31,942,853	119	80	2,323,671	27,926,208		16,016	698,313	195,219	893,533
SubTotal		625,286,121	6,961,029,046	51,351	110,455	568,980,004	6,414,227,943	\$ 555,074	\$ 3,634,258	\$ 92,652,180	\$ 77,288,555	\$ 169,940,735
T&D	T&D	\$ 1,128,137	\$ 27,803,838	\$ 207	\$ 207	\$ 1,128,137	\$ 27,803,838		\$ 15,003	\$ 0	\$ 77,524	\$ 77,524
Total		626,414,259	6,988,832,884	51,557	110,662	570,108,141	6,442,031,781	555,074	\$ 3,649,261	\$ 92,652,180	77,366,080	170,018,260
EE Program Portfolio	TRC Test	3.25										
	PAC Test	4.71										

Figure 8. Summary of Energy Savings from All Programs, 2006-2014

Year	Peak kW Savings	Annual MWh Savings	Lifecycle MWh Savings	Total Utility Expenditures (\$)
FY05/06	52,552	169,303	2,249,214	\$ 54,412,728
FY06/07	56,772	254,332	3,062,361	\$ 63,151,647
FY07/08	82,730	401,919	4,473,801	\$ 103,907,266
FY08/09	117,435	644,260	6,749,912	\$ 146,093,107
FY09/10	93,712	522,929	5,586,299	\$ 123,433,250
FY10/11	81,121	459,459	4,604,364	\$ 132,372,795
FY11/12	82,561	439,710	4,638,521	\$ 126,936,631
FY12/13	89,305	521,478	5,722,100	\$ 126,936,631
FY13/14	110,437	625,187	6,413,468	\$ 169,901,735
TOTAL	766,624	4,038,576	43,500,040	\$ 1,047,145,791

*For FY05/06 to FY12/13, Annual MWh Savings and Lifecycle MWh Savings were reported as net numbers; in FY13/14, these values are in Gross terms. See Figures 6 & 7 for net values as well.

Figure 9. Total Program Expenditures, 2006-2014

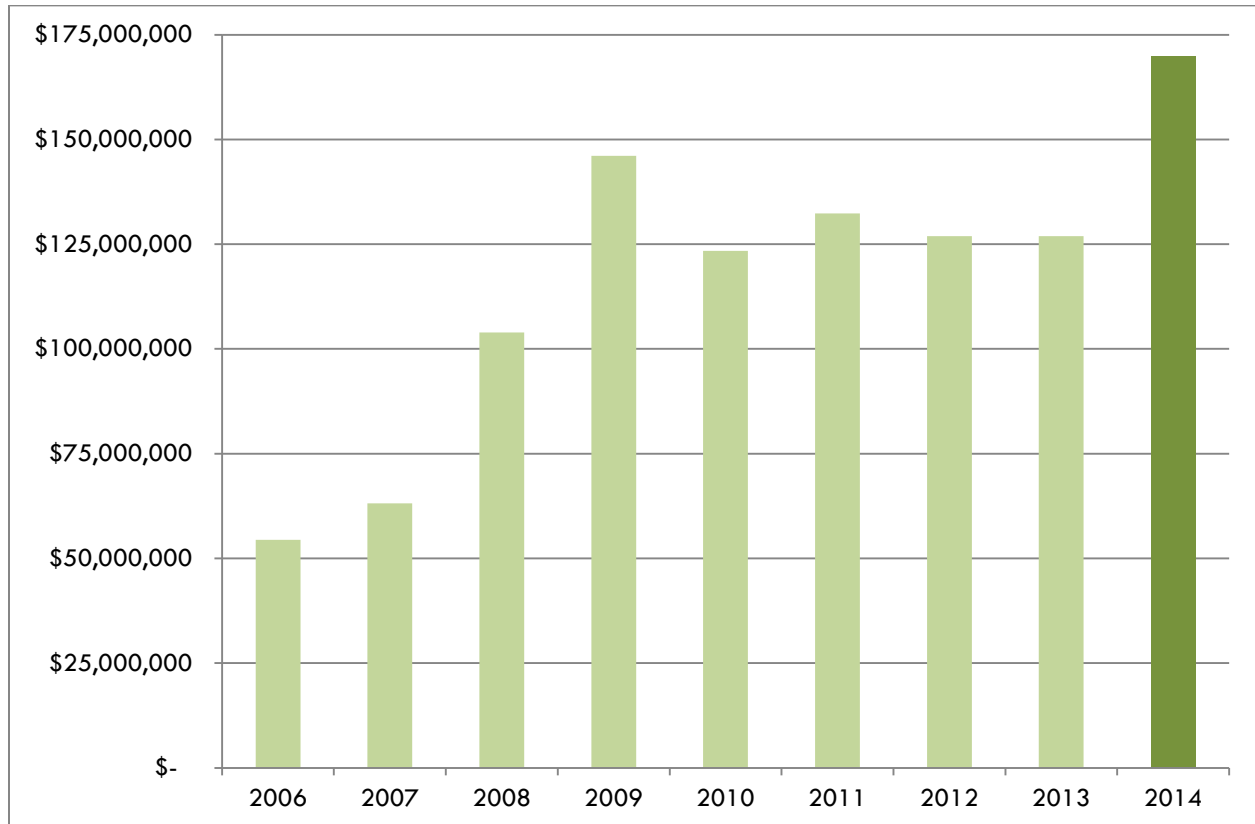


Figure 10. 15 Utilities With The Highest Gross Annual Savings (kWh)

Rank	Utility	Gross Annual Savings (kWh)	Share of Total Savings (%)	Cumulative Share of Total Savings (%)
1	LADWP	251,556,177	40.2%	40.2%
2	Sacramento	175,370,000	28.1%	68.3%
3	Anaheim	32,322,879	5.2%	73.5%
4	Imperial ID	26,715,045	4.3%	77.7%
5	Riverside	25,792,954	4.1%	81.9%
6	Pasadena	18,741,109	3.0%	84.9%
7	Glendale	14,807,069	2.4%	87.2%
8	Silicon Valley	14,482,280	2.3%	89.5%
9	Burbank	11,730,959	1.9%	91.4%
10	Palo Alto	9,665,856	1.5%	93.0%
11	Modesto	9,126,617	1.5%	94.4%
12	Turlock ID	7,682,029	1.2%	95.7%
13	Roseville	5,272,981	0.8%	96.5%
14	Vernon	3,215,060	0.5%	97.0%
15	Azusa	2,896,975	0.5%	97.5%

Figure 11. All POU Programs (excluding LADWP & SMUD), 2006-2014

Utility	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Lifecycle GHG Reductions (Tons)	Total Utility Cost (\$)
LADWP	251,556,177	3,537,885,604	35,284	2,045,207	\$ 77,999,974
Sacramento	175,370,000	1,340,435,713	25,470	526,980	\$ 41,041,001
All Other POUS	198,260,390	2,081,442,747	49,683	1,061,669	\$ 50,860,761

Understanding Public Power Energy Efficiency Funding Sources

Section 9505(a)(3) of the Public Utilities Code requires POUs to include “the sources of funding for its investment in energy efficiency and demand reduction program investments.” To that end, unless otherwise noted, program funding for energy efficiency programs within the public power community comes from the public goods charge that is collected from each utility customer pursuant to Section 385 of the Public Utilities Code.

The public goods charge is designated not only for energy efficiency, but also for renewable investment, electricity-related research and development, and low income assistance. When the Legislature authorized the imposition of the public goods charge beginning in 1998, local governing boards were afforded full discretion regarding how these funds would be allocated. Over the years, certain restrictions have been imposed on this discretion, limiting how future dollars can be allocated. As an example, under the California Solar Initiative, public utilities are precluded from reducing their expenditures on energy efficiency or low income assistance to fund its solar programs. That said, local governing boards allocate the majority of their public benefits expenditures to energy efficiency programs.

In some instances, local governing boards allocate dollars above and beyond public benefits expenditures, or even increase the public benefits surcharge to a level above the minimum 2.85% of sales requirement. Additional dollars as a practical matter come from the general fund of each jurisdiction, but could, from an energy policy context, be considered a means to defer procurement investment, to put it in context that is consistent with Section 9505(a)(3).

Critical to the ultimate success of public power energy efficiency programs is the ability to optimize the use of public dollars that are dedicated to energy efficiency activities. Putting aside the growing costs of measurement and verification, the majority of expenditures represent direct incentives to the customer and direct installation costs. By keeping overhead costs low, POUs are able to maximize the flow of money into their respective communities, which fosters economic development and customer investment into existing building infrastructures. In turn, these investments help to retain local jobs as well as promote local job growth.

The average cost per kWh saved for all POUs is 27.2 cents per kWh. However, this total does not capture the full electricity savings over the lifetime of different measures. The cost per kWh saved over the lifetime of the energy efficiency measures is an estimated at less than 2.5 cents per kWh. It is clear that California’s POUs have established a high benchmark for efficient and effective delivery of energy efficiency programs.

6. EVALUATION, MEASUREMENT, AND VERIFICATION

Section 9505(d) of the Public Utilities Code requires that each local publicly owned electric utility shall make available to its customers and to the CEC the results of any independent evaluation that measures and verifies the energy efficiency savings and the reduction in energy demand achieved by its energy efficiency. Public power has strategically responded to this directive in a manner that confirms the accuracy of reported savings while optimizing the exchange of program information across the entire range of public power utilities, large and small.

The EM&V process used to provide utility program managers with feedback relies generally on the approaches articulated in the National Action Plan for Energy Efficiency, adopted CPUC protocols, and the innovation and expertise of firms experienced in program evaluation. To further enhance the value of the information obtained from these reports, the public power community has been working closely with CEC staff to develop a consistent set of evaluation guidelines for third-party consultants that are retained to evaluate utility programs. During the past three years, the CEC has conducted several workshops regarding the EM&V process and has created a working version of evaluation guidelines, and these insights are already adding value to the analyses being undertaken across the public power community. CMUA, SCPPA and NCPA continue their active collaboration in this regard, sharing best practices and coordinating the distribution of program evaluation information throughout the public power community.

EM&V reports are intended to help utilities to understand the effectiveness of specific program areas with the purpose of enhancing program offerings in the future. Many of the EM&V studies completed to date focused on measures with high savings and measures that exhibit the greatest levels of uncertainty. Key findings from the reports submitted by POUs continue to confirm high realization rates for utility-reported energy savings, corroborating that public power's energy efficiency reporting provides a reliable source of data to help state policymakers gauge the success of the state's overall energy efficiency efforts.

The economic slowdown has had an impact on program evaluation and savings realization rates. In some cases, businesses participating in energy efficiency programs do not survive the economic downturn, even though the efficiency measures they paid for were installed, but ultimately are not being utilized as intended. In essence, unanticipated vacancies can negatively impact realization rates. In addition to the economic impacts, the continuing debate surrounding the use of net-versus-gross savings, especially when empirical data is not readily available, has made it difficult for evaluators to conduct a reliable net-to-gross analysis. Such debate is not exclusively focused on public power. The IOUs have effectively abandoned the use of net savings, something the public power community will consider going forward.

At the time this report was published, the public power community had made available more than 75 separate EM&V studies. Unless otherwise noted, each document is available at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>. A number of utilities are currently in the process of completing EM&V studies for 2014 programs. These and other subsequent reports will be posted to the above URL as they become available. POU-specific information regarding EM&V activities can also be found in the utility narratives contained in **Appendix A**.

7. CONCLUSIONS & POLICY CONSIDERATIONS

7.1 Conclusions

CMUA, NCPA, and SCPPA appreciate the opportunity to provide this report on the results of the energy efficiency programs administered by public power in California during fiscal year 2013/2014. This section highlights the continued commitment of the POUs to making significant investments in energy efficiency on behalf of the customers and communities they serve. In the following section, public power offers policy considerations regarding future energy efficiency programs in furtherance of the state's interrelated energy, environmental, and economic goals.

FY13/14 Energy Efficiency Program Results

Regarding POU programs provided in FY13/14, the principal findings of this analysis are as follows:

- **Record-High Investment:** POUs spent nearly \$170 million on energy efficiency programs. This represents public power's highest single year investment energy efficiency and is the sixth consecutive year the \$100 million threshold has been exceeded.
- **Peak Demand Reduction:** Public power programs reduced peak demand by more than 110 megawatts.
- **Energy Savings:** Gross annual energy savings totaled over 625,000 (MWh).
- **\$1 Billion Success:** Since 2006, POUs have invested over \$1 billion in energy efficiency programs, reduced peak demand by more than 766 megawatts, and achieved more than 4 million MWh in savings.
- **Cost-Effectiveness:** Applying the Total Resource Cost (TRC) societal test, the principal measure used in the industry to determine whether programs are cost-effective, the aggregated TRC for public power is 3.25 in FY13/14.
- **Most Savings:** Lighting continues to dominate public power energy efficiency programs, accounting for almost half of the total gross energy savings achieved (46.4%).
- **Efficacy of Programs:** The average cost per kWh saved from all POU programs is \$0.272/kWh. The cost per kWh saved over the lifetime of the various energy efficiency measures is \$0.024/kWh.

7.2 Policy Considerations

California's 40 years of energy efficiency policy represents a significant environmental and ratepayer accomplishment, and public power is proud of our role in the state's clean energy legacy. The state is embarking on an ambitious clean energy future that will rely even more heavily on energy efficiency. As policies pursue greater energy savings goals, collaboration between the state, utilities, industry partners, building owners, and customers will become even more a requisite of success. Public power is uniquely situated in our communities to facilitate these broader partnerships and we look forward to working even closer with the CEC in furtherance of the state's energy efficiency and larger climate change goals.

Public power's foundational principle of energy efficiency policy is this: Customers are ultimately responsible for making energy efficiency investments; to achieve energy efficiency goals, policies and programs should aim at removing barriers to customer investments. Based on our collective experience administering energy efficiency programs, POUs respectfully offer the following observations, which are intended to guide energy efficiency policy discussions going forward.

I. The Influence of Non-Energy Benefits and Non-Monetary Costs

A thorough understanding of the factors and motivations that influence customer decision-making is vital to the achievement of the state's energy efficiency goals. To this end, POUs go to great lengths to plan, develop, and implement energy efficiency programs that recognize the unique needs and motivations of the customers they serve. The relationship between POUs and their customers is critical to developing successful programs that garner participation and encourage energy efficiency investments.

In many cases a residential customer's decision to make energy efficiency improvements is not primarily motivated by reducing their monthly utility bill or a specific attitude towards energy efficiency. Arthur Rosenfeld, prior to becoming a CEC Commissioner, co-authored research (Mills & Rosenfeld, 1996) that framed customer motivations as follows:

*"From a consumer perspective, it is often the non-energy benefits that motivate (or can be used to promote) decisions to adopt energy-efficient technologies... From the perspective of energy consumers, non-energy benefits can equal or even exceed the importance of the energy cost avoided, thus meriting greater consideration in private investment decisions, marketing strategies, design and evaluation of utility programs, and government policies designed to promote energy efficiency."*⁵

Nearly 20 years later, the findings of the research are no less true. Understanding customer motivations for investing – and not investing – in energy efficiency is particularly critical to policies and programs targeting

⁵ Mills, E. and Rosenfeld, A. 1996. "Consumer Non-Energy Benefits as a Motivation for Making Energy-Efficiency Improvements." *Energy* (21)7-8: 707-720

energy savings in existing buildings. While there remain significant energy savings opportunities in existing buildings, motivating customers to pursue improvements to realize those savings presents real challenges.

Whereas non-energy benefits can motivate customers to make investments, non-monetary costs can actively dissuade residential customers from pursuing energy efficiency retrofits. A recent Energy Institute at Haas working paper explored the impact of non-monetary costs on customer participation, or lack thereof, in a free weatherization program. As noted in the working paper, the Weatherization Assistance Program that was studied provides free energy efficiency improvements to low-income households and is the largest residential energy efficiency program in the country. Participating households receive a free energy audit and a home retrofit that typically includes some combination of insulation, window replacements, furnace replacement, and infiltration reduction. The average value of the efficiency retrofits provided to participating households in the study exceeded \$5,000 per home.

The working paper further notes that although households incur no direct monetary costs to participate, the process of applying for weatherization is onerous and time intensive, at least partially to prevent fraud. Applicants must submit extensive paperwork documenting their eligibility, including utility bills, earnings documentation, social security numbers and deeds to the home. Despite being eligible for an average of \$5,000 in energy efficiency improvements at no cost to the customers, the paper concluded that there is “striking evidence that individuals and households bypass opportunities to improve energy efficiency that require zero out-of-pocket expenditures and are widely believed to be privately beneficial.”⁶

In addition, the researchers found that participation in the program is only modestly increased by extraordinary education and outreach efforts to customers about the sizeable benefits and zero monetary costs. Specifically, the rate at which households pursued a weatherization retrofit increased nominally from less than 1% to almost 6% when provided the additional education and outreach. On average, it cost an additional \$1,000 per household in program administration costs for the education and outreach.

The findings of both of the research papers cannot be understated.

- **Energy savings and monthly utility bill cost savings are often NOT the motivating factor behind a residential customer’s decision to invest in energy efficiency.**
- **Many residential customers will NOT pursue energy efficiency retrofits, even if they receive sizeable benefits at no monetary costs, if the process to complete the retrofits is onerous and burdensome.**

⁶ Fowlie, M., Greenstone, M., and Wolfram, C. 2015. “Are the Non-Monetary Costs of Energy Efficiency Investments Large? Understanding Low Take-up of a Free Energy Efficiency Program.” *Energy Institute at Haas WP 256*

II. The Impact of the 2013 Title 24 Update on Customers, Contractors, and Utilities

While the working paper cited above focuses on a program for residential customers, recent trends in the California commercial lighting industry reflect a similar phenomenon – if the process to complete energy efficiency retrofits is onerous and burdensome, then many customers will simply not make the investment.

The 2013 Title 24 update establishes significant new requirements for non-residential lighting retrofit projects, which represents a departure from the norm in which updates focus on provisions for new – not existing – buildings. As evidenced by public comments submitted to the CEC, lighting retrofit projects have been stymied. For example, in its comments dated March 4, 2015, American Lighting states:

“The new regulations of Title 24 have had a devastating impact to the world of lighting retrofit. What was once a booming industry with many opportunities is now shriveling to a small group of contractors who are just trying to survive until the next project.”⁷

The stagnation of the lighting retrofits is also attributed to rules adopted by the California Public Utilities Commission (CPUC) that prevent the IOUs from offering rebates for measures required by code. While the CPUC does not have jurisdiction over public power energy efficiency programs, many POUs also decided to limit rebates for lighting retrofits to those that exceed Title 24. Under this approach, commercial customers – especially small and medium size businesses – have simply not been able to pursue lighting retrofits as they had been prior to the adoption of the 2013 Title 24 Update.

The consequences of the CEC retrofit requirements coupled with the CPUC decision to limit IOU rebates to “above code” projects has adversely impacted commercial customers, contractors, and utilities. By creating barriers for lighting retrofits, customers aren’t reducing their bills, lighting contractors aren’t able to find work, and utilities aren’t realizing energy savings. As such, the practical impact of the 2013 Title 24 Update is in direct conflict with state policies of 1) reducing customer bills, 2) spurring economic activity in the California clean energy industry, and 3) reducing greenhouse gas emissions from the electricity sector.

To the CEC and the CPUC’s credit, both commissions are currently rewriting their policies. It remains to be seen to what extent their respective revisions will reverse current commercial lighting trends, and if lessons learned from the 2013 Title 24 update will prevent provisions from inclusion in future code updates.

- Title 24 updates should focus primarily on new construction.
- To the extent Title 24 updates apply to existing buildings, policymakers should consider encouraging utilities to provide incentives for retrofits that meet code.

⁷ Available: http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/comments_pt_1-6/

III. The Competition with Distributed Energy Resources

California policies over the last two decades have helped facilitate a significant transformation in the distributed energy resources (DER) marketplace. Customers have access to a far greater range of technologies that can meet their energy needs and directly compete with energy efficiency. Consider for example, rooftop solar systems, thermal energy storage, and EnergyStar HVAC systems can all individually help customers manage their air conditioning loads and/or the costs associated with that load, albeit it in very different manners:

- Rooftop solar reduces customer demand to avoid the more expensive rates of higher tiers.
- Thermal energy storage shifts electricity usage to off-peak periods and reduces demand charges.
- EnergyStar HVAC systems use less energy to provide AC services than the older units they are replacing – especially when coupled with smart thermostats.

Current state policy requires utilities to first and foremost pursue all cost-effective, reliable, and feasible energy efficiency; however, no such requirements are in place for customers. While not the only driver, for customers who do decide to make energy investments, these decisions are often based on economics and cash-flow. Faced with a choice between financing a larger rooftop solar system – potentially with no money down – and having to pursue energy efficiency retrofits that entail additional permits and longer project completion timelines, customers may opt for the simpler, quicker option of installing solar.

The deployment of specific customer-sited DERs does and will continue to vary significantly across POU service territories. With that caveat, innovations in technology available today and those forthcoming in coming years will accelerate the level of competition between energy efficiency and other DER options. In addition, multiple DER technologies support state policies focused on reducing greenhouse gas emissions, promoting job growth in local communities, and reducing monthly utility bills for customers. As such, technology-specific policies can hinder customer investments in DERs by micro-managing utility incentive programs and forcing POUs that serve diverse communities to comply with ‘one-size-fits-all’ mandates.

The challenge for state policymakers will be to provide a regulatory environment that encourages customer choice, allowing customers to select the energy solutions that best fit their individual needs while not adversely impacting other utility customers.

- Technology-specific POU procurement mandates for DER resources fail to account for the central role customers play in the deployment of DER.
- POUs can, do, and will continue to support the state’s clean energy policies that depend on customer investments by collaborating with the CEC and other stakeholders to encourage customer decision-making.

APPENDIX A: DESCRIPTIONS OF UTILITY PROGRAMS

This appendix consists of detailed narratives of each publicly owned utility's energy efficiency programs, as well more general descriptions of the utilities. Utility-specific summaries of their energy programs for FY13/14, compiled using the E3 Reporting Tool, can be found at the end of each utility's narrative.

The table below summarizes the energy savings and programs investments made by all POUs in FY13/14. For more analysis on statewide energy efficiency data, see **Chapter V: Investments in Energy Efficiency Programs**.

All POUs – Summary of Energy Efficiency Programs, FY13/14

POU SUMMARY		Resource Savings Summary					Cost Summary		
Utility	Gross Annual kWh Savings	Gross Lifecycle kWh Savings	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Alameda	1,033,587	7,963,727	92	941,242	7,148,315	3,890	124,271	626,277	750,548
Anaheim	32,322,879	307,886,483	6,402	32,322,879	307,886,483	188,889	4,265,833	-	4,265,833
Azusa	2,896,975	21,616,153	528	2,607,585	19,344,806	11,495	689,011	191,342	880,353
Banning	75,066	950,049	18	71,178	900,522	530	36,834	71,144	107,978
Biggs	1,758	14,784	0	1,199	9,719	-	495	-	495
Burbank	11,730,959	97,005,344	3,097	10,809,473	87,303,678	52,808	2,300,966	1,049,702	3,350,668
Colton	1,888,167	6,785,136	318	1,799,268	6,196,563	3,599	1,172,535	-	1,172,535
Corona	49,670	539,970	-	15,830	168,687	100	14,300	10,148	24,448
Glendale	14,807,069	93,559,045	2,488	14,743,479	92,680,218	57,564	1,441,550	116,839	1,558,389
Gridley	195,190	2,201,763	41	164,983	1,861,718	1,016	28,877	52,920	81,798
Healdsburg	699,837	9,796,607	86	592,111	8,292,461	4,580	130,672	123,923	254,595
Imperial ID	26,715,045	332,096,437	24,029	23,560,261	290,005,341	174,375	11,327,621	2,081,408	13,409,029
LADWP	251,556,177	3,537,885,604	35,284	251,556,177	3,537,885,604	2,045,207	32,346,202	45,653,772	77,999,974
Lassen	99,554	1,264,983	18	59,769	760,143	402	39,000	-	39,000
Lodi	1,732,045	20,388,387	232	1,383,729	16,285,871	8,926	204,552	75,324	279,876
Lompoc	74,323	811,774	9	54,227	593,989	325	20,086	20,000	40,086
Merced	2,593,518	25,955,497	0	5,606	66,188	36	186,329	200,078	386,407
Modesto	9,126,617	123,371,807	1,333	7,332,723	99,013,911	54,300	1,098,062	1,509,737	2,607,799
Moreno Valley	54,291	547,748	15	46,148	465,585	275	10,354	-	10,354
Needles	8,225	164,500	8	8,225	164,500	104	150,000	14,326	164,326
Oakland	-	-	-	-	-	-	-	-	-
Palo Alto	9,665,856	93,537,460	599	8,218,060	75,954,743	43,728	1,044,691	1,369,277	2,413,968
Pasadena	18,741,109	173,163,713	2,420	18,661,712	172,358,513	103,102	2,617,670	485,695	3,103,365
Pittsburg	121,345	1,172,372	29	113,411	1,077,167	597	18,033	12,780	30,813
Plumas-Sierra	134,088	2,126,754	11	48,137	487,752	265	35,156	15,566	50,722
Rancho Cucamonga	336,867	5,363,562	32	336,867	5,363,562	3,173	45,510	32,000	77,510
Redding	1,270,250	19,355,901	689	930,663	13,702,265	8,282	1,594,522	359,133	1,953,655
Riverside	25,792,954	311,780,290	1,999	20,719,092	244,416,052	147,565	3,946,497	-	3,946,497
Roseville	5,272,981	47,426,725	1,994	4,773,803	43,059,442	24,957	1,271,807	991,558	2,263,365
Sacramento	175,370,000	1,340,435,713	25,470	141,979,000	1,072,164,596	526,980	21,780,033	19,260,968	41,041,001
San Francisco PUC	2,268,546	34,028,190	207	2,068,546	31,028,190	16,723	1,791,386	227,213	2,018,599
Shasta Lake	326,126	3,456,911	61	261,674	2,753,884	1,486	94,913	71,312	166,225
Silicon Valley	14,482,280	227,222,789	1,745	12,274,647	192,881,703	104,296	1,616,548	1,898,251	3,514,799
Trinity PUD	-	-	-	-	-	-	-	-	-
Truckee Donner	2,409,720	22,466,963	165	1,687,453	15,769,261	8,120	404,977	425,093	830,070
Turlock ID	7,682,029	47,547,710	384	6,094,153	37,349,471	20,246	417,400	244,693	662,092
Ukiah	535,956	3,594,813	320	437,438	2,884,221	1,518	152,322	47,042	199,365
Vernon	3,215,060	37,543,383	334	2,299,256	25,942,823	14,800	233,165	51,035	284,200
Victorville	-	-	-	-	-	-	-	-	-
Summary	625,286,121	6,961,029,046	110,455	568,980,004	6,414,227,943	3,634,258	\$92,652,180	\$77,288,555	\$169,940,735

ALAMEDA MUNICIPAL POWER

Alameda Municipal Power (AMP) At a Glance

- 1887, oldest utility in California
- Climate Zone 3A
- Number of accounts – 34,565 (88% residential and 12% commercial)
- Percent of retail sales by customer class – residential: 37%, commercial: 63%
- FY 2014 electric revenues: \$50,990,972
- Budgeted energy efficiency: \$1,039,950
(from annual budget which includes Public Benefits)
- Actual energy efficiency expenditures: \$785,763

AMP Overview

AMP electric sales continue to decline, partially to new solar photovoltaic systems and energy efficiency, but largely due to the economic recession and the sluggish East Bay economy. For example one large business park in Alameda had a vacancy rate of 35% in 2014.

Year	Actual Retail Sales (MWh/yr.)
2011	382,634
2012	373,787
2013	363,444
2014	353,913

Due to Alameda's maritime temperate climate and small amount of industry, the peak demand for electricity is in the winter (December and January) in the early evening. AMP's electric load is relatively flat compared to most California utilities.

In 2014 AMP began planning for the installation of advanced meters; the installations will start January 2015.

Major Program Changes

My Energy: As part of the My Energy program, the first Home Energy Reports (HERs), powered by Opower, were mailed to half of Alameda residential service accounts in November 2013. Reports were sent to a random sample of half the residents, while all residents have access to the online portal. Five reports are to be sent each program year. The opt-out rate for fiscal year 2014 was 0.26%. Customers, on average, spent over two minutes and 30 seconds on the site. In addition to energy efficiency benefits, AMP has also been able to use My Energy as an opportunity to engage customers in energy efficiency

programs by including AMP information and web addresses in the tip actions available in the HERs and on the web portal.

In FY 2012 and 2013 AMP offered a pilot contractor-driven commercial lighting program. In 2014, based upon lessons learned from that program and additional funding for energy efficiency programs for FY 2015, AMP developed plans for a new direct install commercial lighting program for FY 2015. A prescriptive and customized commercial lighting rebate program was provided to customers in FY 2014.

Program Highlights

AMP's most successful program varies by metric, but My Energy, a residential behavioral program, has the largest impact by total customer count. My Energy, through the HER, directly touches half of all residential service accounts (15,000 accounts). 0.26 percent of customers receiving the report requested to be removed from the program in FY 2014, which equates to a 99% retention rate for the program. The total energy savings per participant is 22 kWh/year or about \$3 a year in energy cost savings.

Considerable effort was made in FY 2014 to partner with both the Alameda Unified School District and the College of Alameda in preparing projects for their Proposition 39 funding.

Program Descriptions

Residential Lighting

- CFL Light Exchange: This program allows customers to visit the AMP service center and exchange three incandescent lights for three CFLs. AMP celebrated Public Power Week in Oct 2013 by giving away two CFLs for each customer who stopped in the service center. This program was quite popular and over 1,000 CFLs were given out during Public Power Week.
- LED Give Away: AMP used the Earth Day celebration as an opportunity to encourage customers to both create an online login for My Energy (Opower) and receive a free LED light bulb. Over 100 customers participated in the "create a login; get an LED" opportunity at the Earth Day festival.
- LED Rebate Program: AMP's LED rebate program is a superb deal for customers. They receive an expert lighting audit and purchase advice, as well as saving \$0.20 per kWh. Customers that participated in the program have told AMP staff that they are appreciative of the assistance they received.
- Holiday Light Exchange: The holiday light exchange in 2013 allowed AMP customers to exchange two strands of incandescent holiday lights for two strands of new LED holiday lights. Demand far exceeded supply for this free program as AMP staff made a second order of LED lights after the first set of lights were gone within the first week of the offering.

Residential Refrigeration

- Energy Star Refrigerator and Freezer Rebate & Recycle Program: This program provides a \$100 rebate to customers who purchase an Energy Star refrigerator or freezer and recycle their old appliance with AMP's recycler. Part of the goal of the program is to educate customers about Energy Star and encourage the purchase of other Energy Star appliances and equipment.

Because there is no residential air conditioning in Alameda, the refrigerator is usually one of the biggest energy users in an Alameda home.

- Second Refrigerator or Freezer Pick-Up Program: This program provides customers a rebate to get rid of their extra refrigerator or freezer and recycle it properly with our recycler.

Residential Shell

- Weatherization Cash Grant Program: This program is for customers who heat their home with permanently installed electric heat and provides grants of \$960/unit for single family and \$480/unit for multifamily up to 80% of project cost for adding insulation. AMP is at, or near, technical saturation with this program.

Residential Other

- Monitor Lending Program: Borrow a Kill A Watt monitor to measure the energy use of appliances.
- Onsite Energy Audits: Residential audits at no cost.
- Online Energy Audit: Online residential energy audit and associated tools such as an appliance calculator and energy library on AMP's website.
- My Power Program: As part of the My Energy program a home energy report is mailed to 50% of Alameda residential customers every two months that includes a summary of the homes historical and recent energy use, energy efficiency tips, and a comparison of their energy use to their neighbors.

Non-Residential Cooling

- Commercial HVAC Retrofit Program: Prescriptive rebates for retrofitting existing buildings with energy-efficient HVAC equipment.

Non-Residential Lighting

- Commercial Lighting Retrofit Program: A program with rebates, both prescriptive and custom, for retrofitting lighting with energy efficient equipment.

Non-Residential Process

- Commercial Customized Rebate Program: A program with customized rebates based upon the kWh/year savings not covered by the lighting or HVAC program

Non-Residential New Construction

- New Construction Design Assistance: Grants of up to \$10,000 for energy-efficient design work.
- New Construction Rebates: Whole building and systems rebates for energy-efficient new construction.

Non-Residential Other

- Commercial On-Site audits: Free audits for lighting, HVAC, refrigeration, process systems, etc.

EM&V

AMP does EM&V for each year, but completes the actual EM&V process every two years. This method is a more economical use of staff resources. The most recent EM&V was done for FY 2012 and 2013 by Energy & Resource Solutions. This is the link to that report - http://www.ncpa.com/images/stories/EnergyEfficiency/emv_reports/AMP_2012_2013_MV_report_ERS_Final.pdf . The typical budget for EM&V is \$40,000 for two years. The next EM&V will be for FY 2014 and 2015.

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- ***Sources of Energy Savings***

With a goal of getting the most accurate energy savings, AMP staff used a variety of sources. For the residential lighting energy savings the TRM 2014, actual data from pre- and post-installation inspections, and historical AMP customer program data was used. The energy savings figures for the residential refrigerator programs were from the TRM 2014. The energy savings from My Energy, AMP's residential behavior program, were from actual AMP billing records and compared the test group, those that received the printed HER, to the control group that did not receive HERs. Opower, the vendor responsible for My Energy, handled these calculations. The City of Alameda Public Utilities Board requested that staff use a net to gross ratio of 1.0 for the My Energy program.

All of the energy savings from the commercial lighting measures are from the actual pre- and post-installation inspections. The commercial custom measure was a server virtualization project in which AMP metered the circuits before and after the installation. Lastly, the commercial HVAC energy savings were based upon engineering calculations from a third party, kW Engineering.

Complimentary Programs

- **Renewable Energy Programs:**

Alameda Green, AMP's optional green power program, saw participation grow during FY14, most significantly in the commercial sector, where a Park Street outreach in February 2014 netted an additional 17 businesses. At the end of FY13, Alameda Green had 642 participants, 10 of which were commercial. One year later, participation had grown to 800 participants, 31 of which were commercial. 3 Degrees, the vendor that manages the program, and AMP staff encouraged enrollment through Alameda Green mentions in the AMP's residential newsletter, The Flash, four bill inserts, and a contest among Customer Service Representatives. Staff expects similar, or better, growth in FY15.

- **Low-Income Programs:**

AMP continues to provide financial assistance to Alameda's low-income families through the EASE (Energy Assistance Through Supportive Efforts) and EAP (Energy Assistance Program) Programs. For FY 2014, EASE, an emergency relief program, helped 88 households receive a total of \$6,391.71 in electric bill assistance. A maximum amount of \$200 is available per household within a three-year period through the EASE program. EAP provides a 25 percent monthly discount on the electric bill. A total of \$80,835.94 was allocated to 802 Alameda households. These programs are funded through the public purpose component of AMP's energy charge.

- Electric Vehicles:

In FY 2014 there were a total of 190 AMP customers registered to receive the electric vehicle (EV) discount, of which 58 registered in FY 2014. AMP participated in a joint grant application with the Bay Area Air Quality Management District and was chosen in April 2014 for an \$85,000 grant for electric vehicle charging infrastructure from the California Energy Commission. The grant will cover a majority of the costs for AMP to install two DC fast chargers in its public parking lot at 2000 Grand Street.

Alameda		Resource Savings Summary							Cost Summary					
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances HVAC Appliances Consumer Electronics HVAC Lighting Pool Pump Refrigeration HVAC Water Heating Comprehensive Process HVAC HVAC Lighting Process Process Refrigeration HVAC Process Comprehensive Other	Res Clothes Washers													
	Res Cooling													
	Res Dishwashers													
	Res Electronics													
	Res Heating													
	Res Lighting	17,122	374,984	717,575		14	352,912	537,910		271	\$13,100	\$147,301	\$160,401	\$0.34
	Res Pool Pump													
	Res Refrigeration	367	131,302	884,660		15	91,911	619,262		336	\$24,025	\$41,420	\$65,445	\$0.13
	Res Shell													
	Res Water Heating													
	Res Comprehensive													
	Non-Res Cooking													
	Non-Res Cooling	1	37,800	567,000		3	36,288	544,320		334	\$4,158	\$69,322	\$73,480	\$0.20
	Non-Res Heating													
	Non-Res Lighting	7	489,501	5,794,492		60	460,131	5,446,822		2,949	\$82,987	\$368,234	\$451,222	\$0.11
	Non-Res Motors													
	Non-Res Pumps													
Non-Res Refrigeration														
Non-Res Shell														
Non-Res Process														
Non-Res Comprehensive														
Other														
SubTotal		17,497	1,033,587	7,963,727		92	941,242	7,148,315		3,890	\$124,271	\$626,277	\$750,548	\$0.14
T&D														
Total		17,497	1,033,587	7,963,727		92	941,242	7,148,315		3,890	\$124,271	\$626,277	\$750,548	
EE Program Portfolio		TRC Test	0.75											
		PAC Test	0.94											

ANAHEIM PUBLIC UTILITIES

Anaheim Public Utilities at a Glance

- Established in 1894
- Climate Zone 8
- 177,830 meters, 115,418 are electric and 62,917 are water
- Percent of electric retail sales by customer class – 24% residential, 31% commercial, 44% industrial and 1% miscellaneous
- Budgeted amount for energy efficiency programs: \$4,095,437, amount actually expended: \$5,879,911 and funding source: Electric Revenue.
- Load growth: 1.6%

Utility Overview

Anaheim Public Utilities provides electricity and water to a community of 346,161 residents, approximately 9,000 businesses, and more than 20 million annual visitors over an area that covers more than 50 square miles. While the Anaheim Resort area accounts for a large proportion of the energy and water consumed in Anaheim, significant amounts of energy and water are consumed by businesses in the 3,000-acre industrial area known as The Anaheim Canyon. New developments in the planning stage include three hotels in The Anaheim Resort, 15 new industrial buildings on a former Boeing campus in The Anaheim Canyon, and 6,500 new dwelling units in the 800-acre Platinum Triangle near Anaheim Stadium.

Current trends affecting energy efficiency programs in Anaheim include changing codes and standards that reduce the amount of potential claimed energy savings, customer reluctance to make significant investments in energy efficiency, the slow economic recovery and higher-than-average unemployment among residents, a built-out community with fewer properties changing hands and therefore fewer tenant improvement projects, and a diverse residential population with differing needs and priorities.

Customers are increasingly interested in options to traditional sources of electricity. In particular, solar energy systems have grown in acceptance and now generate approximately 8.9 MW of power each year in Anaheim. As part of our solar program, we strongly encourage customers to “lean out” their properties by adopting energy efficiency measures before committing to installing new solar equipment. Customers who do so sometimes find energy efficiency to be more cost-effective than solar energy and consequently abandon their plans for solar. These experiences validate the loading order established by the State and encourage increased integration of energy efficiency and renewable energy efforts.

Major Program Changes

We are continually updating and modifying our program portfolio to take advantage of new opportunities, which is especially important as changes in technology and codes and standards mean that traditional energy efficiency programs such as CFL distributions and lighting retrofits become less reliable sources of kilowatt hour savings. In FY 2013/2014, we developed three new programs, primarily targeting commercial

and industrial customers where there are opportunities for significant energy savings. The new programs are expected to contribute significantly to our energy savings accomplishments in future years.

- Small/Medium Business Refrigeration Program – A turn-key program which provides customers assistance in identifying and installing approved refrigeration energy efficiency measures which reduce both energy consumption and demand.
- Air Compressor Program – Provides free comprehensive audits which approach this technology and its operation on a systemic basis and awards incentives for installing qualifying system components which improve energy system efficiency.
- Upstream Air Conditioning - Provides rebates to the sales channel that most influences the stocking and selling of qualifying high efficiency equipment; the goal is to facilitate the purchase by the high efficiency equipment by the end-use customer.

Program Highlight

The Customized Energy Efficiency Incentives Program continues to be the program that best meets our customers' needs. In addition receiving incentives, large commercial customers can receive free energy audits, which they often use as multi-year energy efficiency work plans. Unsurprisingly, this combination of audit and customized incentives is valued by our customers who can receive up to \$0.15 per kWh or \$400 per kW saved.

Commercial Customer Programs Descriptions

Total annual program cost: \$3,030,842.90

Resulting in: 4,335.24 kilowatt demand reduction and 19,053,620.93 kilowatt-hour savings

Non-Res Cooling

- Energy Efficient Incentives Program - Customized financial incentives for installation of high-efficiency air conditioning, motors, and other production related equipment.

Non-Res Heating

- Heat Pump Programs - Encourage installation of high-efficiency heat pumps.

Non-Res Lighting

- Comprehensive Energy Audits - Customized on-site audits and recommendations designed to improve energy operating efficiency and help customers reduce costs.
- LED Exit Sign Program - Financial incentives for up to 50 percent of the cost to retrofit incandescent bulbs or fluorescent lamps in exit signs with more efficient exit sign lighting technology.
- Lighting Incentives – Provides incentives to improve energy efficiency for a variety of lighting applications.

- Small/Medium Business Program - Provides customers of less than 50 kilowatt demand with energy use evaluations, retrofit funding, and installation assistance; focusing on lighting upgrades, programmable thermostats, air conditioning, and refrigeration tune-ups.

Non-Res Pumps

- Commercial & Residential Water Savings Resulting from Equipment Rebates -Businesses and residents are eligible for rebates by installing or retrofitting with qualifying water-saving devices through the "SoCal Water\$mart " Program in partnership with Metropolitan Water District. Water savings result from the application of measures such as;
 - Landscape Performance
 - Rotating Nozzle Rebates
 - SmarTimer Rebates

Non-Res Comprehensive

- Operations Program – Produces energy savings by turning off large transformers that are not customers' serving loads.

Other

- Codes and Standards - Savings are drawn from the Statewide allocation of energy savings credits for FY 2013/2014 due to Codes and Standards, based on Anaheim's percent share of statewide load.
- Small/Medium Business Audits - Customized on-site audits and recommendations designed to improve energy operating efficiency and help customers reduce costs.

Residential Customer Programs Descriptions

Total annual Program Costs: \$1,142,060.27

Resulting in: 1,355.79 kilowatt demand reduction and 2,580,180.64 kilowatt-hour savings.

Res Cooling

- TreePower - Provides complimentary shade trees and incentives for residential customers. Shade trees, when properly placed, can help reduce air conditioning costs.

Res Lighting

- Home Utility Check-Up Equipment-CFL Direct Install - A customized in-home survey of water and energy use and existing appliances. Customers receive free installation of up to five CFLs.
- LED Distribution – Distribution of two 9.9 watt 800 lumen bulbs to residents via Anaheim's Public Libraries.

Res Refrigeration

- Refrigerator Recycling Program – Provides a rebate to customers who recycle an old, operational refrigerator or freezer.

Res Comprehensive

- Home Incentives - Rebates for purchase and installation of high efficiency ENERGY STAR® rated appliances and high efficiency conservation measures.
- On-Line Home Utility Check-Up and click on Public Utilities to complete a detailed survey online. Either way, customers receive money saving advice, and learn about incentives designed to help them be more water and energy efficient.
- Home Utility Check-Up - A customized in-home survey of water and energy use and existing appliances; or an option to go to www.anaheim.net.

EM&V

APU has initiated their EM&V analysis for both its Small Business Energy Management Assistance Program and its Small/Medium Business Refrigeration Program and anticipates completion the third quarter of the FY14/15.

Complimentary Programs

Neighborhood Comprehensive Revitalization – Provides comprehensive revitalization and retrofits to existing income-qualified neighborhood developments. Funding is provided to install high efficiency conservation measures and Energy Star appliances.

Lighten-Up CFL Fundraiser - Provides free CFLs to students to sell as a fund raising activity to attend outdoor environmental camp (or other specified extracurricular activity).

Large Landscape Water Use Surveys - Customers receive expert analysis of outdoor landscape water use, specific irrigation system upgrade recommendations, and an explanation how incentives may help fund improvements.

Economic Development/Business Retention Rate - Qualifying businesses receive rate discounts with an efficiency measures installation component.

New Construction - Customers receive design assistance and incentives for new construction and facility expansions that install energy-efficient equipment that exceed Title 24.

- Renewable Energy Programs:
Green Power Program - Customers pay an extra charge to support renewables. The funds go towards purchasing solar, wind, geothermal, hydroelectric and other renewable generation.
Solar Energy Incentives – Customers and schools can receive incentives for systems that do not exceed 100% of their historic consumption. In addition, permit fees are waived.
- Low-Income Programs:

Income-Qualified Senior or Disabled Energy Credit - Provides a 10 percent reduction on the electric portion of bills to seniors or long-term disabled customers at or below 80 percent of the Orange County median income.

Dusk to Dawn Income-Qualified Assistance - In addition to receiving a free outdoor light, income-qualified residents may also have the light installed by one of Anaheim's approved and licensed electrical contractors free of charge.

Emergency Assistance – Provides a one-time electric utility payment for customers in economic hardship.

- Research, Development, and Demonstration:

Plug-in Electric Vehicles Incentives – Customers are reimbursed for out-of-pocket expenses up to \$1,500 per charger. Eligible expenses include the charger purchase price, and installation costs. In addition to the \$1,500 rebate, permit application fees related to the installation of the EV charger are waived.

Anahelm			Resource Savings Summary							Cost Summary				
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
	Res Cooling HVAC	2	154,011	3,066,304	131	131	154,011	3,066,304		1,956	\$368,367		\$368,367	\$0.18
	Res Dishwashers													
	Consumer Electronics													
	Res Heating HVAC													
	Res Lighting	6	1,328,203	8,178,626	808	314	1,328,203	8,178,626		4,639	\$317,159		\$317,159	\$0.05
	Pool Pump													
	Refrigeration	2	1,033,340	7,242,140	373	362	1,033,340	7,242,140		4,088	\$365,034		\$365,034	\$0.06
	HVAC	1	61,999	867,988	44	32	61,999	867,988		517	\$91,500		\$91,500	\$0.14
	Water Heating													
Comprehensive	Res Comprehensive													
	Process													
	Non-Res Cooking HVAC	6	16,610,143	143,624,395	2,790	2,790	16,610,143	143,624,395		92,475	\$806,093		\$806,093	\$0.01
	Non-Res Heating HVAC	1	729,876	8,028,636	262	262	729,876	8,028,636		4,876	\$97,361		\$97,361	\$0.02
	Non-Res Lighting	4	9,755,619	104,969,410	2,319	2,319	9,755,619	104,969,410		62,171	\$1,765,153		\$1,765,153	\$0.02
	Process													
	Non-Res Motors													
	Process													
	Non-Res Pumps													
	Refrigeration HVAC	1	542,372	5,966,092	96	96	542,372	5,966,092		3,325	\$242,988		\$242,988	\$0.05
Comprehensive	Non-Res Shell													
	Process	1	1,162,840	17,442,600	96	96	1,162,840	17,442,600		9,630	\$119,248		\$119,248	\$0.01
	Non-Res Comprehensive	1	944,477	8,500,293			944,477	8,500,293		5,213	\$92,930		\$92,930	\$0.01
	Other	25	32,322,879	307,886,483	6,919	6,402	32,322,879	307,886,483		188,889	\$4,265,833		\$4,265,833	\$0.02
Subtotal														
T&D														
Total			25	32,322,879	307,886,483	6,919	6,402	32,322,879	307,886,483	188,889	\$4,265,833		\$4,265,833	
EE Program Portfolio			10.27											
TRC Test			10.27											
PAC Test			10.27											

AZUSA LIGHT & WATER

Azusa Light & Water At a Glance

- The City of Azusa was incorporated in 1898, the water utility established in 1900 and the electric utility followed shortly after in 1904
- Climate Zone 9
- The utility serves approximately 16,500 retail electric customers in a community of approximately 47,842 residents (2013)
- Percent of retail sales by customer class – 40% residential, 60% commercial/industrial
- Budgeted amount for energy efficiency programs was (\$968,665), amount actually expended (\$871,281) and customer line item utility charge funding sources (\$843,911); specifically if unused, EE dollars are reallocated to other Public Benefits program (no excess)
- Annual load growth was approximately 1%

Utility Overview

Since inception of the energy efficiency programs, Azusa Light & Water has expended almost \$10 Million toward providing energy conservation information to the Azusa community and rewarding businesses and residents for upgrading inefficient energy consuming equipment with more energy efficient equipment. These efforts have resulted in an annual peak demand and energy use reductions of approximately one percent.

Major Program Changes

Over the past few years the direct install programs have been ramped up, resulting in additional savings for the smaller businesses and hard to reach customers.

Program Highlight

The Small Business Audit/Retrofit Program and the “Keep Your Cool” direct install programs provided the greatest impact on meeting the needs of the harder to reach businesses and small retailers within the service territory. These hard to reach customers have a very tight cash flow and in many times are unable to participate in the rebate programs unless there is little to no up-front monetary outlay. Both of these programs allow the customers to immediately see the savings and avoid the initial cash outlay associated with the typical rebate type programs.

Commercial and Industrial Customer Programs:

- Business Partnership Program: Retrofit existing buildings and factories with high efficiency lighting, air conditioning and process equipment.
- Free Energy Audits: Provide suggestions on the most energy efficient equipment and more cost effective methods of operations.
- New Business Retrofit Program: Encourage the use of the most energy efficient equipment in the design and construction of new buildings and factories.

- Small Business Audit/Retrofit Program: Provide free utility audit, free CFL retrofit, free packaged A/C tune-ups, the first \$1,500 free lighting retrofit and recommendations for further energy saving measures with a corresponding 50% rebate up to a maximum rebate of \$10,000 per customer account.
- "Keep Your Cool Audit/Retrofit Program": Provide free utility audit, free LED case lighting retrofits, free refrigeration tune-ups, free case seal replacements, auto door closers and fan controllers.

Residential Programs Descriptions

- Home Weatherization Rebate Program: Rebates are offered for a variety of home weatherization measures.
- EnergyStar® Appliance Program: Rebates are offered for most high efficiency appliances that have the EnergyStar® rating, including but not limited to, refrigerators, air conditions, LED Televisions and computer monitors, dishwashers, clothes washers, pool pumps, ceiling fans and various lighting measures.
- Free Home-in-Home Energy Audits: Provide recommendations for the effective use of energy within the residence.
- Free On-Line Home Energy Audit Program: Customers can enter various parameters that match their home and lifestyle, and receive an immediate list of conservation recommendations and measures along with an estimate of what each appliance within the home is using in the way of energy.

Public Facilities Program Description

- Program guidelines are essentially the same as the current commercial and industrial programs; therefore they are included in that category for funding and savings.

City Schools Program Description

- LivingWise: Provide an interactive 6th grade conservation education program to all 6th grade classes within the City of Azusa, both private and public.

EM&V

Azusa Light & Water contracted with Lincus Energy in 2010 to complete a study of the various FY 2008-09 energy efficiency programs and associated savings. The Lincus study is available on the CMUA website and the Azusa light & Water website (<http://www.ci.azusa.ca.us/DocumentCenter/View/26058>). Azusa Light & Water will continue to make EM&V reports available to the CEC and other parties as they are completed and will continue with its EM&V programs and practices in the future.

Complimentary Programs

- Low-Income Programs: The Azusa Light & Water Low Income Assistance Program is outlined in Rule No. 18 of Azusa Light & Water's Rules and Regulations. Interested customers are required to

fill out an application and provide documentation of income. In general, Azusa Light & Water's guidelines for qualifying customers follow the low income thresholds used by the State.

- Research, Development, and Demonstration: Azusa Light & Water has, jointly with the Southern California Public Power Authority (SCPPA), applied for and was rewarded an APPA DEED Grant in the amount of \$60,000 to fund the proposed Residential TES Program that will demonstrate the value of combining TES with small air conditioning (AC) units.

Azusa			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances HVAC Appliances Consumer Electronics HVAC Lighting Pool Pump Refrigeration Refrigeration HVAC Water Heating Comprehensive Process HVAC Non-Res Heating Non-Res Lighting Process Non-Res Motors Process Refrigeration HVAC Non-Res Shell Non-Res Process Comprehensive Other	Res Clothes Washers													
	Res Cooling HVAC													
	Res Dishwashers													
	Res Electronics	1	5,980	53,820		2	2	5,980	53,820	33	\$6,555	\$588	\$7,143	\$0.16
	Res Heating HVAC													
	Res Lighting	1	1,019,382	9,174,438		111	111	815,506	7,339,550	4,163	\$9,072	\$58,209	\$67,281	\$0.01
	Res Pool Pump													
	Res Refrigeration													
	Res Refrigeration													
	Res Shell HVAC	1	10,942	196,956		7	7	8,754	157,565	94	\$4,110	\$1,385	\$5,496	\$0.05
	Res Water Heating													
	Res Comprehensive Process	3	416,625	1,985,340		30	30	333,300	1,588,272	968	\$87,339	\$22,016	\$109,355	\$0.09
	Non-Res Cooking HVAC	8	348,343	3,786,674		143	143	348,343	3,786,674	2,422	\$160,160	\$46,839	\$207,000	\$0.07
	Non-Res Heating HVAC													
	Non-Res Lighting	14	95,700	1,461,230		25	25	95,700	1,461,230	865	\$59,394	\$13,484	\$72,877	\$0.07
	Process	3	38,112	600,880		31	31	38,112	600,880	335	\$25,400	\$4,689	\$30,089	\$0.07
	Non-Res Pumps													
	Non-Res Process	3	48,520	558,923		6	6	48,520	558,923	312	\$16,364	\$4,446	\$20,810	\$0.05
	Non-Res Refrigeration	5	908,881	3,744,012		168	168	908,881	3,744,012	2,274	\$292,398	\$39,258	\$331,656	\$0.12
Non-Res Shell														
Non-Res Process	4	4,490	53,880		4	4	4,490	53,880	30	\$28,218	\$428	\$28,646	\$0.70	
Non-Res Comprehensive														
Other														
SubTotal		43	2,896,975	21,616,153	497	528	2,607,585	19,344,806		11,495	\$689,011	\$191,342	\$880,353	\$0.06
T&D														
Total		43	2,896,975	21,616,153	497	528	2,607,585	19,344,806		11,495	\$689,011	\$191,342	\$880,353	
EE Program Portfolio		2.04												
TRC Test														

CITY OF BANNING

Banning At a Glance

- Established in 1922.
- 27 employees.
- Of the 11,863 customers, 90% are residential.
- Average demand during FY 13/14 was 16.9 MW, down 1.7% from the prior period.
- Peak demand during FY 13/14 was 40.5 MW, down 13.6% from the prior period. Peak demand is primarily due to air conditioning load during the summer.
- Retail energy sales in FY 13/14 were 138,926,320 kWh, up 0.1% from the prior period. Retail sales are broken down as 48 percent residential and 52 percent commercial/industrial/institutional.

Utility Overview

During FY 13/14, Banning spent \$107,978 in Energy Efficiency programs, which have provided 75,066 kWh energy savings. It should be noted that the City of Banning is located in an economically disadvantaged area. A significant portion of the City's population is either low income or senior citizens living on a fixed income. Due to the economic demographics of Banning's population, the majority of Public Benefits dollars are utilized to provide low-income assistance through reduced rates.

Major Program Changes

One of Banning's main goals for FY 2014/15 is to expand participation in its commercial retrofit and refrigeration programs, primarily through the adoption of significantly increased monetary incentives for low-income businesses. To accomplish this, Banning will work with community organizations to further increase awareness of and overall participation in existing programs, including amongst our commercial customers. Additionally, we will be hiring a third-party vendor to assist in promoting our new commercial programs.

Program Descriptions

- Air Conditioner: Monetary incentives to replace an existing central air conditioning unit with a new high-efficiency unit.
- EnergyStar® Appliances: Monetary incentives for purchasing products that meet the Energy Star® criteria.
- EnergyStar® Refrigerator: A monetary incentive for replacing an old inefficient refrigerator with a new energy efficient unit.
- Recycle: Rebates offered to remove and recycle operating old and inefficient refrigerators and freezers.
- Energy Weatherization: Monetary incentives to replace inefficient materials with products that will improve the energy efficiency of their facility and reduce energy use.

- Shade Tree: Rebates offered to plant shade trees around homes to help reduce the amount of energy used for air conditioning.
- Commercial Programs: Monetary incentives for commercial customers to install more energy-efficient equipment such as lighting, signage, refrigeration, etc.
- New Construction: Monetary incentives for new construction projects that exceed the energy efficiency above California's Title 24 standards.
- Energy Audits: Provides customers with a variety of recommendations for reducing energy consumption.
- Low Income Assistance: An electric utility reduced Baseline Rate for qualified customers. As mentioned above, the majority of the Public Benefits funds are spent providing low income assistance.

EM&V

The City of Banning Electric Utility has hired third-party firms, such as Lincus, Inc., to perform EM&V studies in previous years. The City will continue with its EM&V programs and practices.

Complimentary Programs

The City of Banning is committed to reaching 33 percent renewables by 2020. In support of this goal, Banning is doing all of the following:

- The City has contracted for geothermal energy from two generating facilities. Together they supply approximately 13 percent of the City's energy need.
- The City has reached an agreement to divest itself of its interest in the San Juan Generating Station Unit 3 by 2017. Once this divestiture is complete, the City will be replacing this coal-based energy with renewable energy. The City is already in negotiations for long-term renewable energy contracts that will increase the City's renewables to greater than 60% of retail sales.
- Banning has met its California SB1 requirements by providing \$2.4 million in rebates for the installation of solar photovoltaic systems in its service territory. The rebates have helped install approximately 0.75MW of customer-owned solar photovoltaic capacity in the city.

Banning			Resource Savings Summary								Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	22	3,754	41,294			3,566	39,229		23	\$1,350	\$3,015	\$4,365	\$0.14
	Res Cooling	70	10,920	163,800		4	10,374	155,610		98	\$14,375	\$17,308	\$31,683	\$0.28
	Res Dishwashers	21	1,218	12,180			1,157	11,571		7	\$1,050	\$840	\$1,890	\$0.21
	Res Electronics													
	Res Heating													
	Res Lighting													
	Res Pool Pump													
	Res Refrigeration	86	21,939	179,634		3	20,842	170,652		96	\$5,410	\$12,013	\$17,424	\$0.13
	HVAC	6,800	13,318	260,320		6	12,652	247,304		147	\$1,833	\$18,121	\$19,954	\$0.12
	Water Heating													
Comprehensive	Res Comprehensive													
	Non-Res Comprehensive													
	Non-Res Cooking													
	HVAC													
	Non-Res Heating													
	Lighting	139	12,981	124,461		4	12,197	116,213		69	\$8,619	\$9,271	\$17,890	\$0.20
	Process													
	Non-Res Motors													
	Non-Res Pumps													
	Refrigeration	19	10,936	168,360		1	10,389	159,942		89	\$4,197	\$10,575	\$14,772	\$0.13
Comprehensive	HVAC													
	Non-Res Shell													
	Non-Res Process													
Other	Non-Res Comprehensive													
	Other	7,157	75,066	950,049		18	71,178	900,522		530	\$36,834	\$71,144	\$107,978	\$0.17
T&D														
Total		7,157	75,066	950,049		18	71,178	900,522		530	\$36,834	\$71,144	\$107,978	
EE Program Portfolio		0.99												
PAC Test		1.00												

CITY OF BIGGS

Biggs Municipal Utilities at a Glance

- Electric utility established in 1904
- Biggs is located in climate zone 11
- The electric utility has 688 retail customer connections servicing 638 retail customers
- Percent of retail sales by customer class are as follows: residential, 28%, commercial, 6% and industrial, 66%
- Budgeted amount for energy efficiency programs for FY 13/14 was \$14,900.00. The amount actually expended was \$11,214.10, funded through a 2.85% Public Benefits Surcharge. Unallocated funds were re-appropriated to augment funding for our Solar PV Incentive Program.
- The City again faced negative load growth in fiscal year 13/14 with a drop of .15%.

Utility Overview

Economic conditions in Biggs and the surrounding communities remain depressed, dampening customer enthusiasm for any investments in energy efficiency measures. Of the 628 residential units served by Biggs Municipal Utilities during this reporting period, an average of 30 units per month were empty, due to foreclosure or abandonment. Of the 37 commercial properties we serve, 13 are empty and 9 are simply relay stations for cable, telephone service or rail road signals. An additional 4 are church properties used once or twice a week. Our summer cooling load is relatively high, due to our high summer temperatures and aging housing stock with non-efficient cooling systems. Few households rely on electric heating during the cold winter months.

Major Program Changes

There have been no major changes in programs offered or budgeted funds for energy efficiency programs during this reporting cycle. With low customer participation, some unused funds were re-appropriated to support our Solar PV Program.

Program Highlight

Our Residential Appliance Program, comprised of refrigerator recycling and replacement rebates, appears to have the greatest impact on customer energy use. We are currently designing a Residential Shell Program and a residential HVAC Tune-Up program that, in addition to window replacement and insulation, will offer substantial rebates for whole-house air sealing and a once a year rebate for HVAC tune-up.

Program Descriptions

- Commercial Lighting Program: Customized Lighting Retrofit Rebate Program available to all commercial customers and educational facilities.
- Commercial HVAC Program : Customized HVAC Retrofit & Optimization Program provides generous incentives for businesses and educational facilities to update aging HVAC units or tune-up units that don't need replacement.

- Residential Appliance Program: This program offers incentives to residential customers for the purchase of Energy-Star rated refrigerators and the recycling older units.
- Residential HVAC Program: Tiered incentives for replacement of aging HVAC units at residential properties. The greater the SEER level above Title 24 requirements, the greater the potential incentive. The Res. HVAC program also provides incentives for tune-ups of HVAC units and the installation of 7-day programmable thermostats.
- Residential Shell Program: This program offers incentives for increasing insulation levels and installation of dual-pane windows to replace single-pane. Future programs may include whole-house air sealing.

EM&V

In 2007, in response to AB 2021, Biggs hired a third-party contractor to formulate an EM & V plan. In 2008, 2009 & 2010, Biggs contracted with Navigant Consulting to perform Energy Efficiency Program Evaluation studies of all programs the city offers. Those studies can be found on the NCPA website and our city website. With the understanding that all programs need not be evaluated every year, Biggs moved to evaluation of all programs, in three year blocks.

Complimentary Programs

- Renewable Energy Programs: Biggs offers incentives to customers who install up to 3 kW of solar PV capacity for residential service and custom incentive programs for commercial customers.
- Low-Income Programs: Biggs works with Community Action Agency of Butte County to provide weatherization, appliance replacement, lighting replacement and HEAP grants to income-qualified household within our service territory.

Biggs		Resource Savings Summary								Cost Summary					
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances HVAC Appliances Consumer Electronics HVAC Lighting Pool Pump Refrigeration HVAC Water Heating Comprehensive Process HVAC Lighting Process Process Refrigeration HVAC Process Comprehensive Other	Res Clothes Washers														
	Res Cooling														
	Res Dishwashers														
	Res Electronics														
	Res Heating														
	Res Lighting														
	Res Pool Pump														
	Res Refrigeration	4	1,548	10,584			1,084	7,409				\$400		\$400	\$0.07
	Res Shell	1	210	4,200			116	2,310				\$95		\$95	\$0.06
	Res Water Heating														
	Res Comprehensive														
	Non-Res Cooking														
	Non-Res Cooling														
	Non-Res Heating														
	Non-Res Lighting														
	Non-Res Motors														
	Non-Res Pumps														
	Non-Res Refrigeration														
	Non-Res Shell														
	Non-Res Process														
Non-Res Comprehensive															
Other															
SubTotal		5	1,758	14,784			1,199	9,719			\$495		\$495	\$0.07	
T&D	T&D														
Total		5	1,758	14,784			1,199	9,719			\$495		\$495		
EE Program Portfolio	TRC Test	0.18													
	PAC Test	0.24													

BURBANK WATER AND POWER

Burbank Water and Power (BWP) at a Glance

- Established in 1913.
- Located in Climate Zone 9.
- 43,000 residential and 6,500 commercial service connections, serving a total population of 105,000 residents and more than 3,300 businesses.
- 1,186 million kWh in total retail sales. Percent of retail sales by customer class – 25% residential, 75% commercial.
- The Fiscal Year (FY) 2013-14 budget for energy efficiency programs was \$3.3 million. Of this, \$2.5 million (76%) was spent. BWP's funding source for energy efficiency programs is the Public Benefits Charge. BWP can reallocate unspent budgeted dollars to other Public Benefits programs or, more typically, invests them in the following fiscal year. In FY 2014-15, BWP has budgeted \$2.9 million for energy efficiency programs. The 12% decrease in budget is as a result of having to commit \$1 million dollars in FY 2014-15 for solar photovoltaic (PV) rebates, per the requirements outlined in Senate Bill (SB) 1.
- Load growth is estimated at less than one percent per year, which we seek to offset through energy efficiency.

Utility Overview

Burbank is known as the Media Capital of the World, and is home to two of the world's largest studios, Warner Bros. and Disney. The city is also home to thousands of smaller businesses, many of whom moved to Burbank in the early 1990s after the aerospace industry contracted and real estate became plentiful and cheap. From BWP, these businesses have come to expect cost-effective and reliable electric service, as well as additional services such as fiber optic networking.

At the same time, Burbank has a vibrant residential community, with a housing mix of about 18,500 single family homes that ranges from post-war bungalows to two story view homes. There are also about 27,000 multifamily homes, a figure that continues to increase with infill and high-density development. As a result of nearly 20 years of energy efficiency history, increasingly stringent codes and standards, and a community ethos of sustainability, the average Burbank household uses less than 500 kWh per month. This efficient baseline makes it a challenge to design programs that can squeeze more energy efficiency juice out of an increasingly shrinking lemon.

BWP's energy efficiency portfolio has been designed to reflect our organizational goal of continuing to provide sustainable, affordable, and reliable service to all of our residents and businesses. At the same time, BWP is adjusting to changes in the utility industry, including concepts such as:

1. The "Utility Death Spiral," where lower solar PV costs have led to increased customer penetration and lower sales for the utility; and,

2. The “Duck Curve”, where customer solar PV generation in the afternoon leads to a steep ramp up in the amount of electricity required to be supplied by the utility in the evening. This results in a daily load profile that resembles a duck.

To address the operational challenges of the Duck Curve, in FY 2013-14, BWP implemented several strategies to reduce peak demand in the early evening when solar PV generation decreases to zero. These include efficient lighting upgrades, new rebates for smart thermostats, and higher rebates for ENERGY STAR central air conditioners and variable speed pool pumps. In FY 2014-15, BWP implemented a first-of-its kind policy to restrict solar PV rebates to systems that are westerly-facing. These initiatives are discussed in further detail below.

Major Program Changes

BWP consistently evaluates each of our programs and reviews market conditions in order to improve services to residents and businesses. Research has consistently shown that energy efficiency program success is a three-legged stool, with the three legs represented by financial attractiveness, installation availability, and awareness. As a result, most of our programs are free for customers to participate and also have a direct install component. The remaining leg, awareness, is addressed through frequent print and digital communications to our customers emphasizing our role as a community utility. The following provides examples of how innovative communication methods can be incorporated into traditional energy efficiency programs to increase energy savings and customer engagement.

- Home Energy Reports – In FY 2013-14, BWP completed its third year implementing and operating mailed paper reports to residents that spur behavioral change and energy savings. The program saved more than 3 million kWh and is BWP’s largest and most cost-effective residential energy efficiency program. Along with a companion customer web portal, MyBWP, households can view their reports online, daily and hourly energy use, and a library of efficiency tips. BWP can also provide tailored tips that reduce evening electricity use and mitigate the effects of the Duck Curve.
- Energy Solutions – Currently open to any business customer, this program provides rebates for any type of energy efficiency project. In FY 2013-14, BWP doubled the rebate for LED lighting projects to \$0.10 per kWh of annual energy saved. This increased rebate has led to a more than 600 percent increase in the amount of savings from LED lighting projects. BWP also began sending a customized digital newsletter, known as “The Wire”, to program participants and other large business customers that provides technical and operations assistance to save energy and water. The newsletter allows BWP to promote its rebate and other programs and gives customers the ability to interact with their key account managers and other experts.

Program Highlight

For residents, BWP’s flagship program is Green Home House Call, available at no charge to participants. BWP introduced the program in November 2009 as a whole house, direct install program and has been expanding it ever since. The program was designed to reduce electric use and BWP has partnered with the Southern California Gas Company and the Metropolitan Water District of Southern California to leverage

additional funding and reduce natural gas and water use as well. The program has several components, including an in-home audit with energy and water education and installation of CFL and LED lamps and water savings devices. In addition, BWP assesses single family homes for additional services including the installation of attic insulation, duct testing and sealing, central air conditioning tune-ups and air sealing, as well as outdoor water conservation measures.

In FY 2013-14, BWP installed measures in about 875 households, with an average savings of nearly 1,000 kWh per household. In addition, BWP expanded its partnership with the Southern California Gas Company to provide even more extensive services for residents, including air sealing services for single family homes. Through the end of FY 2013-14, the program has served nearly 5,000 households, or more than ten percent of all Burbank households, after less than five years of operation. With current changes to the program, many of our participating residents are now qualified to receive incentives through the state's Advanced Energy Upgrade California Program. In addition, the program continues to receive awards, including from the California Municipal Utilities Association (CMUA) and the American Council for an Energy-Efficient Economy (ACEEE).

Program Descriptions

Instead of providing a detailed listing of specific programs, BWP staff has grouped programs by the associated sector-category classifications used in the E3 Reporting Tool summary table.

The following is a sampling of BWP's largest programs:

- Residential Cooling and Non-Residential Cooling: BWP provides services that address all aspects of space cooling for residential homes and commercial homes, including rebates for the purchase of high-efficiency air conditioners and heat pumps, and free HVAC tune-ups. In FY 2013-14, BWP became one of the few utilities in the country to offer rebates for smart thermostats, which can be controlled remotely and programmed automatically. Through the first six months of FY 2014-15, BWP has already seen a 50 percent increase in smart thermostat rebate applications. BWP's combination of rebates for efficient equipment and controls makes it easier for customers to live comfortably during dry, hot summers while still reducing peak demand and saving energy.
- Residential Lighting: BWP provides free compact fluorescent and LED lamps to residents through our Green Home House Call program, as well as to participants in our Refrigerator Roundup program and attendees at our community events. In FY 2013-14, BWP provided residents with nearly 1,550 LED lamps, an increase of more than 35 percent from the previous fiscal year. The use of LED lamps is another proven strategy for mitigating the effects of the Duck Curve.
- Residential Refrigeration: BWP provides rebates for the purchase of ENERGY STAR refrigerators, and also provides new ENERGY STAR refrigerators at no cost to income-qualified customers. In addition, BWP also removes and recycles residents' second refrigerators at no cost in order to reduce their bills and lessen these older appliances' impact on the grid. Through these programs, more than 700 inefficient refrigerators were replaced with more efficient models.

- Non-Residential Lighting: BWP provides free direct installation services, including for high efficiency lighting, to all qualified small businesses in Burbank. In addition, BWP provides rebates per annual energy saved for customized lighting projects, including \$0.10 per kWh double rebates for LED lighting.

EM&V

Along with most other POU's in California, BWP uses the E3 Reporting Tool to ensure accurate reporting of energy and peak demand savings and cost-effectiveness. In order to verify these savings, and meet the requirements of AB 2021, BWP also builds evaluation, measurement, and verification elements into every program and facilitates independent third-party studies. BWP's previous EM&V studies can be found at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>.

Complementary Programs

- Renewable Energy Programs: BWP continues to offer its Solar Support Rebate program to both residential and commercial customers. In FY 2013-14, the rebate for residential customers was \$1.28 per watt installed, and \$0.97 per watt installed for commercial customers. Due to falling equipment prices, our Solar Support program continues to be very popular and has been fully subscribed. At the same time, more than two-thirds of new residential solar photovoltaic (PV) systems are being installed without a rebate, which demonstrates the increasing cost-effectiveness of solar PV systems. In FY 2014-15, BWP plans to provide rebates only for solar PV systems that are westerly-facing, in order to minimize the effects of the Duck Curve.
- Low-Income Programs: BWP offers a Lifeline rate to about 2,000 income-qualified customers, which is a 40% discount off the standard residential rate, among the most generous in the state. BWP also developed the Refrigerator Exchange program for Lifeline customers to replace the existing primary, and often inefficient, refrigerator with an ENERGY STAR model at no cost to them. In addition, BWP requires Lifeline customers to participate in BWP's free Green Home House Call program to further reduce their electric, water, and natural gas bills.
- Research, Development and Demonstration: BWP operates a demonstration program of 34 Ice Bear units installed at City-owned buildings and large businesses. The Ice Bear is a peak-shifting thermal energy storage unit that works with air conditioners. The unit is simply a tank containing water that is frozen during off-peak hours; the ice is then used to provide cooling, in substitution of the air conditioner's compressor, during peak hours. In FY 2013-14, the units provided about 164 kW of peak demand capacity reduction. Also, in FY 2013-14, BWP began implementing a pilot program targeting not-for-profit facilities. The goal of the program is to upgrade inefficient facilities in this cash-strapped sector and create demonstration centers of efficient technologies and operations.

Burbank		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg. EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
EE Program Portfolio	Appliances	371	13,727	150,997			4,255	46,809		28	\$18,250	\$380	\$18,630	\$0.48	
	Res Cooling HVAC	4,423	514,190	7,864,789		560	447,611	7,016,045		4,527	\$273,600	\$149,662	\$423,262	\$0.08	
	Appliances	260	6,760	67,600			4,056	40,560		24	\$9,540	\$310	\$9,850	\$0.29	
	Res Dishwashers														
	Consumer Electronics														
	Res Electronics														
	HVAC														
	Res Heating														
	Lighting	3,594	143,748	1,273,860		13	113,027	1,000,204		567	\$56,010	\$6,994	\$63,004	\$0.08	
	Res Pool Pump	47	31,678	316,780		1	19,007	190,068		114	\$7,650	\$1,656	\$9,306	\$0.06	
	Pool Pump														
	Refrigeration	717	343,611	2,629,702		42	282,474	2,189,594		1,236	\$112,184	\$37,168	\$149,352	\$0.08	
	Refrigeration														
	HVAC	181,209	3,709,186	11,555,041		150	3,551,683	9,729,411		5,792	\$635,688	\$95,281	\$730,969	\$0.08	
	Res Shell														
	Water Heating														
	Comprehensive														
	Process	Res Comprehensive													
	Non-Res Cooking														
	HVAC	3,324	1,707,717	18,268,990		975	1,503,228	16,436,034		10,513	\$193,655	\$267,196	\$460,852	\$0.03	
Non-Res Heating															
Lighting	5	4,751,620	50,373,960		1,229	4,406,025	46,486,736		27,533	\$806,023	\$448,831	\$1,254,854	\$0.03		
Process	Non-Res Lighting	2	120,330	1,237,649		28	114,480	1,149,889		641	\$44,761	\$9,632	\$54,393	\$0.06	
Refrigeration	Non-Res Motors														
Process	Non-Res Pumps														
HVAC	Non-Res Refrigeration														
Process	Non-Res Shell	6	388,391	3,265,977		99	363,626	3,018,328		1,833	\$143,604	\$32,593	\$176,197	\$0.07	
Comprehensive	Non-Res Process														
Other	Non-Res Comprehensive														
Subtotal	Other	193,958	11,730,959	97,005,344		3,097	10,809,473	87,303,678		52,808	\$2,300,966	\$1,049,702	\$3,350,668	\$0.05	
T&D															
Total		193,958	11,730,959	97,005,344		3,097	10,809,473	87,303,678		52,808	\$2,300,966	\$1,049,702	\$3,350,668		
EE Program Portfolio		2.14													
TRC Test PAC Test		3.79													

COLTON ELECTRIC UTILITY

Colton Electric Utility At a Glance

- Colton Electric Department (CED) was established in 1895 by the City of Colton
- Climate Zone(s)-10
- Number of retail customer connections - 18,302
- Percent of retail sales by customer class – residential-28%, commercial-25%, industrial-47%,
- Budgeted amount - \$ 1,049,669.00 for Energy Efficiency (EE) programs, amount actually expended \$346,524.61; \$703,144.39 Unused EE dollars were reallocated to Public Benefits program for Fiscal Year 2014/2015.

Colton Electric Utility Overview

Fiscal year 2013/2014 expenditures increased 324% (\$346,524.61 from \$81,580) from the previous reporting year. Additional staffing added to assist in program development and program availability has been a contributing factor for the increase in participation. CED expects to see a continued increase through fiscal year 2014/2015 with additional EE programs being developed.

Major Program Changes

Over the past year CED has entered into additional Southern California Public Power Authority (SCPPA) contract agreements to provide more direct install EE measures for residential and commercial customers. This assistance is a contributing factor of the increased program participation. In 2011 several customers were given home energy audits but did not have the funds to install the recommendations. This reporting year CED funded the installations of the measures from the recommendations increasing the efficiency savings in this reporting year. This reporting year, CED funded two direct installation programs to reach small businesses and businesses with refrigeration needs. This increased the utilities energy saving portfolio and offered an opportunity to reach out to a customer class that did not have a specific EE program for them.

Program Highlight

The Keep Your Cool (KYC) program made the greatest impact in terms of energy savings and customer satisfaction. This program was developed mid-year and only had 35 commercial participants but saved 248,048.07 kWh's. 53% of the EE measures were from the installation of Electronically Commutated (EC) motors which provided 132,474 kWh savings. Customers contacted CED offering their appreciation who participated in the KYC program when they noticed a decrease in their electric bill.

Program Descriptions

- EE Rebates Non-Res: Commercial and industrial customers participated in lighting and equipment upgrades offering \$0.05 per kWh saved on the projected first year's savings.
- EE Rebates Res: Residential customers participated in varying energy efficient upgrades installed in their homes such as A/C upgrade rebates. Rebates vary depending on measure installed.

- Refrigerator Replacement Program (ARCA): CED assisted customers with replacing old inefficient refrigerator with new energy efficient models. The utility provided the new unit for \$15 a month, billed for 12 consecutive months on the customer's account. Total unit cost to the customer is \$180.
- A/C Tune-Up: CED entered into a professional services agreement with CSR, a third party vendor, to provide A/C Tune-ups to residents of Colton who sign up. To participate in the program customers A/C units could not exceed 5 tons. This was provided at no cost to the customer.
- KYC: Keep Your Cool was a new program offered to small commercial businesses with inefficient refrigeration, lighting and cooling. The program provided \$3,000 per location in EE upgrades.
- Richard Heath & Associates (RHA) Res: Residential customers with annual energy usage of over 10,000 kWh or previously participated in an energy audit received direct install EE measures.
- RHA Non-Res: Small business customers with less than 20 kW participated in an energy audit and direct install of EE measures.

EM&V

CED budgeted \$5,000 for EM&V but not did receive any bids in this budget. Fiscal year 2014/2015 CED will increase the budget amount to \$10,000. Currently CED is utilizing the E3 reporting tool for EM&V.

Sources of Energy Savings

The sources used to calculate program performance were the TRM and DEER. The TRM was utilized for all measures that had not been updated in the 2013 Title 24 code changes.

Complimentary Programs

- Renewable Energy Programs: This reporting year Public Benefit Funds did not fund any renewable energy programs. The Electric Utility enterprise fund, funded solar photovoltaic rebates for residential customers and funded the planning and construction of a community solar project expected to be completed end of FY2014/2015.
- Low-Income Programs: Low Income applicants were provided a one-time fiscal year credit of up to \$150 on the electric portion of their utility bill. This reporting year the Low-Income Program was evaluated for possible changes to make the program more equitable in FY2014/2015.
- Research, Development, and Demonstration (RD&D): This reporting year CED did not participate in any RD&D. In the next reporting year CED will partner with SCPA to participate in a fume hood study for codes & standards development.
- Electric Vehicles: Colton Electric Utility is an active member of the Electric Vehicle Working Group through SCPA. This reporting year CED applied for grant funding from the California Energy Commission to install two Electric vehicle charging stations at two businesses located 1 mile from Freeway entrances. Both businesses will have installation complete in 2015.
- Energy Storage: Colton Electric Utility participated in an energy storage working group through SCPA. After evaluating the costs for energy storage it was determined to not be cost effective for the Utility at this time.

Column		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings(kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	23	1,377	17,940		1	1,135	14,682		9	\$11,860		\$11,860	\$1.09	
	Res Cooling HVAC														
	Res Dishwashers														
	Consumer Electronics														
	HVAC														
	Res Heating														
	Res Lighting	26	151,992	689,822	69	69	151,904	688,497		391	\$41,692		\$41,692	\$0.07	
	Res Pool Pump	9	6,066	60,660			3,640	36,396		22	\$1,800		\$1,800	\$0.06	
	Refrigeration	166	59,926	378,812		7	41,948	265,168		150	\$49,584		\$49,584	\$0.23	
	Res Shell HVAC	14	5,361	82,773		1	1,722	23,841		14	\$2,812		\$2,812	\$0.17	
	Water Heating														
	Res Comprehensive														
	Process														
	Non-Res Cooking HVAC	2	847	9,138			847	9,138		6	\$673		\$673	\$0.09	
	HVAC														
	Non-Res Heating														
	Lighting	1,235	404,168	2,755,117	29	75	339,642	2,367,966		1,402	\$987,460		\$987,460	\$0.50	
Process															
Non-Res Motors															
Process															
Non-Res Pumps															
Refrigeration	2	256,504	1,761,704	37	37	256,504	1,761,704		982	\$76,344		\$76,344	\$0.05		
HVAC	1	998,034	998,034	128	128	998,034	998,034		606						
Process															
Non-Res Process															
Comprehensive															
Other	1	3,892	31,137			3,892	31,137		17	\$311		\$311	\$0.01		
SubTotal		1,479	1,888,167	6,785,136	263	318	1,799,268	6,196,563		3,599	\$1,172,535		\$1,172,535	\$0.22	
T&D															
Total		1,479	1,888,167	6,785,136	263	318	1,799,268	6,196,563		3,599	\$1,172,535		\$1,172,535		
EE Program Portfolio	TRC Test	1.40													
	PAC Test	0.61													

CORONA DEPARTMENT OF WATER AND POWER

Corona Department of Water and Power (DWP) At a Glance

- Electric utility began serving retail customers in 2001 with unbundled generation services to existing investor-owned utility customers and bundled service to new facilities located in the designated service territory.
- DWP provides electric service to approximately 2,200 customers in climate zone 10.
- Peak demand for the utility was 26.7 megawatts (0.5% more than last year) and annual energy sales were 145,700 megawatt-hours (2.7% more than last year).
- Ninety-seven percent of energy sales were to non-residential customers.

Utility Overview

All bundled customers' facilities are less than 11 years old and met the 2003 or 2008 Title 24 requirements. These newer facilities provide less energy efficiency upgrade opportunities.

Program Highlights

- \$34,100 was expended to complete 8 on-site energy audits that identify specific opportunities to improve energy operating efficiency and reduce load requirements.
- 270 rebates were provided for the purchase and installation of Energy Star® washing machines to reduce electric and water customer usage. \$13,500 was contributed by DWP and \$22,950 was contributed by Metropolitan Water District of Southern California.
- DWP serves municipal facilities that can be interrupted as scheduled.

Program Descriptions

- Energy Audits: On-site energy audits and recommendations designed to improve energy operating efficiency and reduce load requirements. Rebates are available for energy efficiency upgrades identified in these audits. Verification services to ensure appropriate installation of recommended measures are also provided.
- Energy Efficiency Technical Support: Technical support to facilitate installation and operation of air conditioning and lighting controls.
- Energy Usage and Demand Analysis: Analyze commercial customer energy usage and demand to facilitate customer efficiency measures and demand-side management.
- Energy Efficiency Kits: Energy efficiency kits for all residential customers that include a refrigerator thermometer, two 15 watt CFL bulbs, draft stoppers, air filter whistle, low flow showerhead, low flow faucet aerators, toilet dye tabs, and energy conservation tips.
- Appliances: Rebates are provided to customers who purchase and install Energy Star® washing machines.
- Lighting Incentives: Provides incentives to improve energy efficiency for a variety of lighting applications, which reduce energy usage by a specified amount.

- Custom Energy Efficiency Incentives: Offers financial incentives for cost-effective energy-savings opportunities, not served by existing offerings, (including HVAC, motors, pumps, refrigeration, process and other) which reduce energy usage or load requirements by a specified amount.
- Utility-Side Projects/Activities: Direct funding for projects/activities on the utility-side of the meter that promote customers benefits in terms of improved safety, system integrity, energy efficiency, conservation, or research and development.

EM&V

Engineering analysis programs are the basis for energy savings and incentive calculations.

Complimentary Public Benefit Programs:

- Solar Initiative Program: The Solar Incentive Program provides financial incentives to qualifying customers to reduce the cost of renewable energy generation. The 2014 rebate incentive is equal to the estimated performance of the installed solar system multiplied by \$0.98/watt AC.
- Net Metering Program: A net metering tariff schedule is available to qualifying customers.
- DWP Solar Installations: DWP has installed 350 kW of photovoltaic systems.

Corona			Resource Savings Summary								Cost Summary				
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	270	48,870	537,570			15,150	166,647		99	\$13,500	\$10,025	\$23,525	\$0.18	
	Res Cooling														
	Appliances	Res Dishwashers													
		Res Electronics													
	HVAC	Res Heating													
		Res Lighting													
	Pool Pump	Res Pool Pump													
		Res Refrigeration													
	HVAC	Res Shell													
		Res Water Heating													
	Comprehensive	Res Comprehensive	8	800	2,400			680	2,040		1	\$800	\$123	\$923	\$0.49
		Non-Res Cooking													
	HVAC	Non-Res Cooling													
		Non-Res Heating													
	Lighting	Non-Res Lighting													
		Non-Res Motors													
	Process	Non-Res Pumps													
		Non-Res Refrigeration													
	HVAC	Non-Res Shell													
		Non-Res Process													
Comprehensive	Non-Res Comprehensive														
	Other														
Sub Total		278	49,670	539,970			15,830	168,687		100	\$14,300	\$10,148	\$24,448	\$0.19	
T&D															
Total		278	49,670	539,970			15,830	168,687		100	\$14,300	\$10,148	\$24,448		
EE Program Portfolio		0.54													
PAC Test		0.80													

GLENDAL WATER & POWER

Glendale Water & Power (GWP) At a Glance

- Established in 1909
- Climate Zone 9
- 86,012 total electric meters all classes
- Total retail sale of electricity for FY 2013-14 of 1,059,372 MWh
- Retail sales (MWh) by customer class – Residential (33%), Commercial (31%), Industrial (35%), Street lighting (1%)
- Budgeted \$1,411,120 for energy efficiency programs and actually expended \$1,441,551
- Load growth from FY 2012-13 to FY 2013-14 was 1.93%. Load growth from FY 2009-10 to FY 2013-14 was 5.67%

Utility Overview

With the installation of digital meters, Glendale Water & Power (GWP) can develop new innovative energy efficiency, load management, and demand response programs for its customers. Our customers are eager to take advantage of the many benefits and new programs a modernized utility system offers. Trends in utilities are leading towards digital communications, need for real time and near real time usage information that will help consumers take charge of their energy use and give them the tools to manage it.

A modernized electric grid greatly expand data acquisition and data sharing across business units, lowering system losses, preventing energy theft and dramatically improving outage and asset management, reducing maintenance and capital costs with the goal of keeping downward pressure on consumer prices. For the current FY2013-14 reporting year, GWP's energy efficiency programs saved 14,743 MWh (1.39% of retail sales) and reduced peak demand by 2.4 MW (0.78% of peak demand). With a modernized utility system, GWP will offer more programs and increase customer engagement through mobile applications to enable our customers to be stewards in conservation by giving them the tools to empower them.

Major Program Changes

- Many of our energy efficiency programs that were delayed in the previous fiscal year due to contract process were fully launched this current year and contributed to a higher annual savings.

Program Highlights

OPOWER Home Energy Reports program and our Business Energy Solutions program had the greatest impact. OPOWER had the greatest impact on our residential customers, we are currently among the top reporting energy efficiency utilities from OPOWER's portfolio. This program also reached the majority of our customers and provides constant communication and engagement. Our Business Energy Solutions program is a CMUA award winning program that is designed to allow GWP large business customers the flexibility to define their own needs and develop their own energy efficiency projects.

Program Descriptions

Glendale Water & Power is a leader in many aspects of the utility industry. Along with aggressive conservation efforts, for the past 10 years, GWP has been giving back to the Community through its Public Benefit Programs. These programs not only assist low-income customers with their electric bills, they also provide funding and education for all customers to invest in new technologies helping them save money and lower their energy and water consumption.

- OPOWER Home Energy Reports - Provides six print paper reports annually to 50,000 residential customers on their energy use. Reports also include action steps for each household to help them reduce their electricity consumption. Currently, the program is integrating the existing two month billing data and a wealth of external data sources to educate customers on how they can save energy. With the installation of digital meters throughout Glendale's service territory, customers are mailed a home energy report that includes their Smart Grid data and access to the website where they can review their energy usage.
- OPOWER Web Portal - Provides customers with web-access to electric usage information from their digital meters. The software analytics engine enables the coupling of insightful messaging with specific, targeted action steps for each household to help the customer reduce their electricity consumption. The addition of interval electric usage data has given customers the ability to view their usage in monthly, weekly, daily or hourly intervals. Access to granular information coupled with the analytic engine will provide customers with greater insight into their usage and provide more in-depth ways for them to save energy and money.
- Smart Home Energy and Water Savings Rebates - Provides incentives to promote the purchase of approved energy and water saving appliances and devices. Currently offering an online platform that allows customers the ability to apply for a rebate online. Over 44,000 rebates have been processed since July 2001.
- Smart Home AC Tune-Ups - Provided by Proctor Engineering, helps residential customers save energy by ensuring that their air conditioning and duct systems are functioning at their optimal level. Over 10,000 tons of HVAC have been tuned since February 2000.
- Livingwise® - Provides energy and water conservation education materials for Glendale public and private school students. These materials support 10 hours of intensive energy education as well as installation of energy saving devices including compact florescent light bulbs. Over 17,900 students have participated in this program since July 2001.
- Tree Power - Provides up to three free shade trees and arborist services to ensure that the trees are planted correctly. When properly sited and cared for, a healthy, mature shade tree helps provide shade that cools the home and helps reduce air conditioning use. This program has planted over 3,000 trees since July 2004.
- Smart Business Energy Saving Upgrades is our CMUA award winning program that provides small business customers with comprehensive no-cost energy surveys, customized written reports, energy education, and directly installs as much as \$2,000 worth of cost-effective energy conservation measures. This program has conducted over 4,000 energy audits and retrofits since July 2001.

- Smart Business AC Tune-Ups - Provided by Proctor Engineering, helps small business customers save energy by ensuring that their air conditioning and duct systems are functioning at their optimal level. Over 7,500 tons of HVAC have been tuned since February 2000.
- Business Energy Solutions (BES) - Provides incentives to complete pre-approved energy audits and retrofit projects. Incentives are limited to the lesser of 20% total project costs for retrofit projects, 100 percent of the above Title 24 remodeling and/or new construction investments, or \$0.06 per kWh saved over the life of the installed measures. This program has supported 302 retrofit projects since January 1999.

New Programs – FY 2014-2015

- CEIVA/Thermostat Program - GWP partnered with CEIVA Energy, LLC to provide a unique In-Home Display (IHD) solution to residential and small business customers. The CEIVA IHD is a digital picture frame that integrates customer's personal photographs with meaningful and useful historical water usage information and near real time electric consumption information. The CEIVA IHD works as a home gateway that simultaneously communicates with GWP's electric digital meters as well as the customer's existing home networks via Wi-Fi or Ethernet. In addition to providing interval energy and water consumption usage information, GWP has the ability to enhance outreach, by pushing energy efficiency program, conservation and event messages directly to the IHD. GWP is currently piloting 72 IHD's with a broad cross section of residential and small business customers. GWP will be expanding our current pilot with CEIVA from 72 to 1,000 customers, and add integrated smart thermostats, and remote provisioning/web portal software. New capabilities will provide customers the added capability to: Remotely adjust set points, monitor temperature, control system status, manage thermostat schedules remotely via web and mobile applications, automatically respond to demand response events, receive customized energy conservation tips and notifications via digital frame.
- Behavioral DR - GWP partnered with Opower to design a residential behavioral demand response (BDR) program which leveraged AMI data analytics, behavioral science, and multi-channel communications to give customers personalized insights on how to best trim their electricity use during peak events. This program targeted 40,000 utility residential customers to receive electronic, IVR, and paper communication using a behavioral science approach, the communications encourages customers to adjust their energy consumption during periods of peak energy demand. BDR is an innovative approach to residential demand response because it gives customers personalized feedback on their performance shortly after a peak event is complete. Customers no longer have to wait until their monthly bill to see how much they saved and this is paramount to locking in positive peak shaving behaviors for future events.
- Small and Medium Business Analytics - The business website portal and mobile platform will seek to engage small to medium-sized business customers over a mobile platform that provides comprehensive energy management information designed to provide insight and business customer interaction related to energy and water usage, energy efficiency and conservation, and

device/appliance management for continuous improvement on energy management and energy decisions.

- Unusual Usage Alerts - GWP and Opower are partnering to launch Unusual Usage Alerts (UUAs) to all GWP customers that sign up for the service. UUAs are designed to analyze and consume AMI data to help customers save energy and money when they are likely to consume more energy than usual for a billing period. Before the end of a billing period, UUAs inform customers that they are likely to have high energy use, and they provide insights to help customers reduce their consumption before the billing period ends. Unusual Usage Alerts target multiple priorities for GWP. It shows the value of the smart meters to customers, empowers customer to save energy and money, creates an opportunity to prevent high bill CSR calls, provides tips to lower energy consumption and it empowers customers to control their energy usage.
- Conservation Voltage Reduction (CVR) - GWP will work with Dominion Voltage, Inc. to provide their EDGE solution, a conservation voltage reduction (CVR) program, as a pilot. CVR conserves electricity by operating electric customer voltages in the lower half of the ten percent (10%) voltage band required by equipment standards. Based on studies, DVI estimates that GWP should see energy savings of between 2% and 4%.
- Mobile My Connect - GWP is piloting its first free mobile application through its Smart Customer Mobile engagement program which offers customers a new and interactive app to better manage their energy and water usage on a SmartPhone, Tablet and Web anytime and anywhere. The user-friendly portal platform, provided by Smart Utility Systems (SUS), delivers real-time usage information and two-way communication between the customer and GWP. The new mobile app, called GWP – Mobile My Connect, and features the GWP logo, will allow customers to view current and historical bills as well as pay bills, set budget goals, submit service requests, view/report outages, send messages directly to GWP and obtain electric vehicle or solar panel usage information. The pilot program is free and will be offered to the first 2,000 Glendale residential customers.
- Meter Data Analytics - GWP will work with Detectent, Inc. to provide a Meter Data Analytics Program solution. GWP believes that between 2% and 4% of its current energy losses are non-technical in nature, and can be mitigated through an effective Meter Data Analytics Program. This program will provide GWP with the ability to integrate the large amounts of customer related data it is now receiving from various intelligent devices it has installed in the field to enhance customer program efficiencies and reduce costs.

EM&V

Glendale Water & Power plans to initiate EM&V analysis of energy efficient programs in FY 2015-16 in support of AB2021. For FY 2015-16 Glendale has budgeted \$50,000 to its energy efficiency budget to conduct EM&V studies that will be conducted through the use of a third-party contractor. GWP will select energy efficiency programs based on the kWh savings. The purpose of the EM&V study is to ensure that measures are installed as claimed by GWP and to lend credibility to GWP's savings reports as compared to the industry standards that were available at the time of GWP's program processing and implementation. It

is Glendale's plan to review all energy efficiency programs in terms of cost effectiveness, customer participation and administration.

Glendale Water & Power consistently performs the following in support of EM&V activities:

- A pre-and post-inspection of 100% of all large commercial retrofit projects under the Business Energy Solutions program, including a review of their energy-saving calculations.
- All residential and commercial solar PV installations are field inspected and verified by city personnel for program compliance.
- Audits and installations performed by third-party contractors for the direct install Smart Business Energy Saving Upgrades program have high inspection rates that are performed by the consultant.

Complimentary Programs

Renewable Energy Programs: This program provides incentives to install solar photovoltaic systems in Glendale. Funding supported by Public Benefit Funds and distributed between residential, small business and large business customers.

- **Smart Home Solar Solutions** - This program provides incentives to promote the installation of grid-connected solar photovoltaic systems in Glendale. A total of .47 MW in new grid-connected residential solar photovoltaic installations in FY 2013-14.
- **Smart Business Solar Solutions** - This program provides incentives to promote the installation of grid-connected solar photovoltaic systems on small businesses in Glendale. A total of .11 MW in new grid-connected small business solar photovoltaic installations in FY 2013-14.
- **Large Business Solar Solutions** - This program provides incentives to promote the installation of grid-connected solar photovoltaic systems on large businesses in Glendale. An existing total of .55 MW in grid-connected large business solar photovoltaic installations that generate a total of 961 MWh in FY 2013-14.

Low-Income Programs:

- **Senior Care** - This program provides electric bill discounts for low-income seniors and disabled customers 55 and older. Senior Care was closed to new participants in 2009 when Glendale Care was implemented.
- **Glendale Care** - This program offers all eligible low-income customers a discount of \$13 on their electric bills.
- **Guardian** - This program provides bill discounts for households with special electrically powered medical equipment needs.
- **Helping Hand** - This program provides bill payment and deposit assistance for low-income customers.

Research, Development, and Demonstration:

- **Codes & Standards** - GWP has included our respective share of the energy savings that are attributable to the State's Building Codes and Appliance Standards that are applied and enforced by the City of Glendale.

Glendale		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances HVAC Consumer Electronics HVAC Lighting Pool Pump Refrigeration HVAC Water Heating Comprehensive Process HVAC Lighting Process Refrigeration HVAC Process Comprehensive Other SubTotal	Res Clothes Washers	368	31,894	350,834				9,887	108,759	65	\$29,076	\$114	\$29,189	\$0.35	
	Res Cooling HVAC	480	50,318	1,258,080		43	40,254	1,006,464		649	\$53,978	\$1,831	\$55,809	\$0.10	
	Appliances	199	6,454	64,540				3,872	38,724	23	\$7,743	\$38	\$7,781	\$0.25	
	Res Electronics														
	Res Heating HVAC														
	Res Lighting	1,342	246,391	2,463,912			246,391	2,463,912		1,398	\$55,398	\$2,230	\$57,628	\$0.03	
	Res Pool Pump	29	19,546	195,460		1	11,728	117,276		70	\$3,258	\$132	\$3,390	\$0.04	
	Refrigeration	538	69,940	979,160			52,455	734,370		414	\$39,387	\$697	\$40,084	\$0.07	
	Res Shell HVAC	1,018	209,003	2,090,032		354	205,369	2,053,686		1,223	\$73,084	\$2,149	\$75,233	\$0.05	
	Water Heating														
	Res Comprehensive	1,343	5,964,689	6,987,293		110	5,964,689	6,987,293		4,432	\$481,120	\$12,289	\$493,409	\$0.07	
	Non-Res Cooking Process														
	Non-Res Cooling HVAC	5	2,386,492	49,318,840		733	2,386,492	49,318,840		31,547	\$195,796	\$64,601	\$260,397	\$0.01	
	Non-Res Heating HVAC														
	Non-Res Lighting	238	2,348,911	24,947,021		581	2,348,911	24,947,021		14,775	\$439,372	\$27,030	\$466,401	\$0.02	
	Non-Res Motors Process														
	Non-Res Pumps Process														
	Non-Res Refrigeration HVAC	336	3,246,640	4,223,500		525	3,246,640	4,223,500		2,565	\$18,540	\$5,014	\$23,554	\$0.01	
	Non-Res Shell HVAC														
	Non-Res Process	223	226,791	680,373		140	226,791	680,373		403	\$44,801	\$714	\$45,515	\$0.07	
Comprehensive															
Other															
SubTotal		6,119	14,807,069	93,559,045		2,488	14,743,479	92,680,218		57,564	\$1,441,550	\$116,839	\$1,558,389	\$0.02	
T&D															
Total		6,119	14,807,069	93,559,045		2,488	14,743,479	92,680,218		57,564	\$1,441,550	\$116,839	\$1,558,389		
EE Program Portfolio	TRC Test PAC Test	1.96 7.96													

GRIDLEY MUNICIPAL UTILITIES

Gridley Municipal Utilities (GMU) At a Glance

- Year Established: 1910
- Climate Zone: 11
- Number of Retail Customers Served: 2833
- Percent of Retail Sales by Customer Class: 83.5% Residential, 16.5% Commercial/Industrial
- Energy Efficiency Program Budget: \$200,000; Energy Efficiency Program Expenditures: \$148,991
The balance of the budgeted funds were used to cover internal administrative expenses at GMU.
- Load Growth: 4%

Gridley Municipal Utilities Overview

GMU feels a significant responsibility to its community/ratepayers to invest their Public Benefits funds in such a way as to impact both energy savings and financial savings/positive economics in Gridley. GMU offers a comprehensive menu of rebates to all of our customers. However, because of the economic downturn that has affected the City for several years, the number of customers taking advantage of the rebate offers have been relatively low.

To compensate for this, GMU has offered direct install programs that provide energy efficiency measures to customers at no cost to them. In FY14, the Keep Your Cool program provided refrigeration upgrades to two commercial customers, providing them with immediate energy savings and direct economic benefits to Gridley. This is a very popular program, and the benefits have been helpful and appreciated by Gridley citizens.

Two commercial customers participated in the Commercial Lighting program. In addition, a relatively small number of residential customers participated in the appliance, HVAC and weatherization rebate programs.

Major Program Changes

GMU's FY2013 energy efficiency efforts were heavily focused on the residential sector, offering a direct install program focused on lighting and hot water saving measures at no cost to the customers. In FY14, GMU shifted the emphasis to the commercial sector, offering the KYC program to commercial customers. The net annual kWh savings of 164,983 in FY14 represents 97% of GMU's AB2021 goal 170,000 kWhs.

Looking forward to FY15, GMU has increased the incentives on many of its measures in order to encourage greater participation in the EE programs. In addition, GMU will be increasing the marketing of its EE programs to our customers to increase their awareness of EE programs.

Program Highlight

The Commercial Lighting Program delivered the greatest percentage of savings in FY14. In addition to rebate programs, GMU responds to customer inquiries regarding ways to reduce their energy use. GMU

regularly meets with customers in their homes and business to look for opportunities to reduce/manage their energy use.

Program Descriptions

GMU manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on peak load reduction and energy conservation. For residential customers, rebates are offered for the installation of various energy efficiency measures. For commercial customers, rebates are available for upgraded lighting, refrigeration equipment and in cases where an analysis is performed rebates can be offered for additional equipment that reduces energy use and/or demand.

- Residential Audit Program [Res Comprehensive]: On-site energy audits are provided by GMU energy specialists. Energy efficiency measures are recommended and additional visits are completed upon request.
- Residential Lighting Program [Res Lighting]: GMU offers rebates to homeowners who install ENERGY STAR® qualified compact fluorescent lamps (CFLs), ceiling fans and LED holiday lights.
- Residential Cooling Program [Res Cooling]: GMU offers rebates to homeowners who install high performance heat pumps, central air-conditioners, or evaporative coolers that exceed current state requirements. GMU also offers a rebate for regular maintenance of cooling equipment (tune-ups every 3 years).
- Residential Equipment Program [Res Clothes Washers; Res Cooling; Res Dishwashers; Res Pool Pump; Res Refrigeration]: GMU offers rebates to homeowners who purchase new ENERGY STAR qualified products, including clothes washers, room air conditioners, dishwashers, pool pumps, refrigerators and freezers.
- Residential Weatherization Program [Res Shell]: GMU offers rebates to homeowners who invest in weatherizing their homes, including attic/wall/duct insulation, window treatments/replacement, air/duct sealing and radiant barriers.
- Residential Water Heater Rebate Program [Res Water Heating]: GMU offers rebates to homeowners who purchase a new, energy efficient electric water heater.
- Commercial Refrigeration Direct Install Program (Keep Your Cool) [Non-Res Comprehensive]: Refrigeration audits are performed on commercial customer sites, and energy efficiency upgrades are made to motors, motor controls, ASH controls, strip curtains, LED case lighting, door closers and door gaskets.
- Commercial Audit Program [Non-Res Comprehensive]: On-site energy audits are provided by GMU energy specialists. Energy efficiency measures are recommended and additional visits are completed in order to provide technical assistance for implementation of measures. Energy efficiency rebates are available for upgrades identified during these audits.
- Commercial Lighting Program [Non-Res Lighting]: GMU offers rebates to business owners who invest in the installation of energy efficiency lighting upgrades. There is a prevalence of T-12 lighting throughout the city and most high bay lighting uses high intensity discharge fixtures instead of more efficiency fluorescent or LED fixtures.

- Commercial Custom Program [Non-Res Comprehensive]: GMU offers rebates to business owners based on site-specific consumption. Rebates are tailored to the individual business owner's needs based on the audit and the potential energy savings associated with the customer project.

EM&V

GMU's last EM&V report was performed on work completed between July 1, 2008 and June 30, 2009.

GMU has budgeted \$5,000 in FY2015 for evaluation of work completed between July 1, 2009 and June 30, 2012. GMU is currently exploring the opportunity of partnering with Shasta Lake Utilities and City of Ukiah on this EM&V effort in order to gain economies of scale.

Sources of Energy Savings

Sources referenced varied by measure. Sources include Deer 2005/2008/2001, KEMA 2009 and IOU work papers. For FY15, GMU has revised the savings estimates based on the TRM.

Gridley		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	4	1,884	20,724	4	4	1,601	17,615		9	\$300	\$13,150	\$13,450	\$0.98	
	Res Cooling														
	Appliances	Res Dishwashers	1	58	638			46	510			\$60	\$381	\$441	\$1.11
		Res Electronics													
	HVAC	Res Heating													
		Res Lighting													
	Pool Pump	Res Pool Pump													
		Refrigeration	2	363	5,082			272	3,812		2	\$150	\$3,850	\$4,000	\$1.44
	HVAC	Res Shell	1	818	16,368			573	11,468		6	\$600	\$2,897	\$3,497	\$0.47
		Water Heating													
	Comprehensive	Res Water Heating													
		Res Comprehensive	1	381	1,143			305	914		1				
	Process	Non-Res Cooking													
		Non-Res Cooling													
	HVAC	Non-Res Heating													
		Non-Res Lighting	1	116,928	1,484,986	28	28	99,389	1,262,238		700	\$12,300	\$27,038	\$39,338	\$0.04
	Process	Non-Res Motors													
		Non-Res Pumps													
	Refrigeration	Non-Res Refrigeration	1	74,758	672,822	8	8	62,797	565,170		298	\$15,467	\$5,603	\$21,071	\$0.05
		Non-Res Shell													
Process	Non-Res Process														
	Non-Res Comprehensive														
Comprehensive	Other														
Subtotal		11	195,190	2,201,763	41	41	164,983	1,861,718		1,016	\$28,877	\$52,920	\$81,798	\$0.06	
T&D															
Total		11	195,190	2,201,763	41	41	164,983	1,861,718		1,016	\$28,877	\$52,920	\$81,798		
EE Program Portfolio	TRC Test PAC Test	1.77 2.47													

HEALDSBURG ELECTRIC DEPARTMENT

Healdsburg Electric Department at a Glance

- Healdsburg's Electric Department was established in 1899
- Healdsburg is located in Climate Zone 2
- Healdsburg serves roughly 4,728 residential customers, 983 commercial services, and 49 industrial services.
- Percent of retail kilowatt-hour sales by customer class is 40% residential, 51% commercial, and 9% industrial.
- Fiscal Year 2014-budgeted amount for Energy Efficiency rebates was \$240,000, actual rebates paid in FY 2014 was \$130,672. Unspent moneys are allocated to low income discounts and solar rebates.
- Average load growth for Healdsburg is less than 1%.

Utility Overview

Healdsburg's Electric Department manages a comprehensive energy efficiency program for residential and commercial customers focusing on energy conservation as well as peak load reduction. For residential customers, rebates incentivize the installation of a variety of energy efficiency measures. For commercial customers, rebates are available for upgrading lighting, refrigeration, HVAC, and custom programs where detailed analysis shows a benefit to cost ratio consistent with the Electric Department's existing programs.

Major Program Changes

The City of Healdsburg recognized the need for a dedicated Utility Conservation Analyst to better serve utility customers and to facilitate and grow rebate programs. The position was created and filled in November 2014. The main focus of this position will be: streamline of current residential and commercial programs; customer education and outreach to increase program participation; design of new rebate programs; reporting and other administrative functions.

In 2014, the City of Healdsburg has been worked to coordinate energy and water conservation projects and programs to offer a more holistic conservation approach for customers. This focus will continue through 2015 as water resources continue to be constrained and awareness of the energy-water nexus increases.

Program Highlight

Calendar year 2014 saw continued interest and participation in the City's commercial energy efficiency program. This program offers an incentive per kilowatt-hour as well as an adder ("kicker") for peak demand reduction. The incentive for demand reduction provides higher value to projects that reduce system peak demands. This, as well as the residential programs lead to 699,837 kWh saved; roughly 1% of Healdsburg annual sales.

Program Descriptions

For residential customers the City offers the following programs:

- Energy Efficiency Hotline: The City's electrical customers can call a local number to answer questions and provide information on energy efficiency related matters.
- Free Energy Audits: On-site energy audits are available to residential customers. Energy efficiency measures are recommended based on each audit and upon request, the customer is provided a written report summarizing findings and recommendations to reduce the customer's monthly energy consumption.
- Appliance Rebates: The City provides rebates for the purchase of several ENERGY STAR® rated appliances.
- Residential Heat Pump and Efficient Air Conditioning Rebates: The City offers rebates for residential and small business customers who install high performance heat pumps, central air conditioners or evaporative coolers that exceed current state requirements.
- Residential Lighting Rebates: The City offers rebates to homeowners who install ENERGY STAR® qualified compact fluorescent lamps (CFLs), LED lamps, and LED holiday lighting.
- Residential Electric Water Heater: The City offers customers a rebate toward the installation of new, energy efficient electric water heaters.
- Weatherization/Window Incentives: The City provides financial incentives for homeowners who invest in home weatherization and window replacement projects.

For commercial customers the City provides the following programs:

- Energy Audits and Rebates: This program offers complementary, on-site energy audits for both commercial and industrial customers. Energy efficiency recommendations and follow up visits support implementation of recommended energy efficiency measures. Energy efficiency rebates are available for upgrades identified through these audits.
- Commercial Lighting: This program engages local lighting and electrical contractors to promote and install energy efficient lighting upgrades through technical assistance and financial incentives available from Healdsburg's Electric Department.
- Commercial Refrigeration and HVAC: The City offers commercial customers a wide selection of refrigeration and HVAC rebates. These rebates are performance based and provided greater reward to projects that reduce system peak demand.
- Custom Energy Efficiency Programs: The Healdsburg Electric Department will consider custom energy efficiency programs for site-specific consumption. The Electric Department will require that the City's contractor review and endorse all custom programs. This review may result in a small cost adder to the proposed project but validates the benefit to cost ratio of the program. The Healdsburg Electric Department retains the sole right to approve or deny custom projects.

EM&V

Past EM&V reports can be found through the following link; <http://www.ncpa.com/current-issues/energy-efficiency-reports.html> The City plans to complete additional EM&V reports in calendar year 2015.

Sources of Energy Savings

The City of Healdsburg relies on TRM data to calculate energy savings.

Complimentary Programs

- Renewable Energy Programs: The City still continues to provide incentives for solar installations but is nearing the end of this program. As a lower cost alternative, the City provides a “Green Rate” for customers choosing to fully cover their energy use from non-carbon sources.
- Low-Income Programs: The City actively supports a low-income discount for low-income customers. Annually this discount supports over 270 customers or nearly 6% of the City’s residential customers.
- Research, Development, and Demonstration: The City of Healdsburg did not complete any research, development or demonstration projects in 2014. In 2015, the City expects to implement energy savings rebates and programs for vineyard and winery customers to help achieve large reduction in energy usage and demand.
- Electric Vehicles: The City of Healdsburg has two electric vehicle charging stations that were installed in 2013. Since installation, these charging stations have supplied 23 MWh of energy and saved more than 9,800 kg of GHG. The City has plans to install six new electric vehicle charging stations in 2015.

Healdsburg			Resource Savings Summary								Cost Summary				
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	4	1,136	12,496			352	3,874		2	\$300	\$362	\$662	\$0.22	
	Res Cooling	12	502	7,158			399	5,685		3	\$975	\$1,362	\$2,337	\$0.57	
	Res Dishwashers	3	387	3,870			232	2,322		1	\$180	\$217	\$397	\$0.22	
	Res Electronics														
	Res Heating														
	Res Lighting	1,757	69,654	363,360	70	10	58,640	301,351		152	\$4,595	\$27,969	\$32,564	\$0.12	
	Res Pool Pump	5	3,370	33,700			2,022	20,220		10	\$750	\$1,892	\$2,642	\$0.17	
	Refrigeration	14	1,653	23,013			1,159	16,133		9	\$1,025	\$2,015	\$3,040	\$0.26	
	Res Shell	7	1,197	23,940	1	1	658	13,167		7	\$1,050	\$1,785	\$2,835	\$0.33	
	Water Heating														
	Res Comprehensive														
	Process														
	Non-Res Cooking	1	1,406	21,090			1,195	17,927		11	\$409	\$389	\$798	\$0.06	
	Non-Res Heating														
	Non-Res Lighting	24	620,532	9,307,980	73	73	527,452	7,911,783		4,385	\$121,388	\$87,932	\$209,320	\$0.04	
	Non-Res Motors														
	Non-Res Pumps														
Refrigeration															
Non-Res Refrigeration															
Non-Res Shell															
Non-Res HVAC															
Non-Res Process															
Non-Res Comprehensive															
Other															
SubTotal		1,827	699,837	9,796,607	145	86	592,111	8,292,461		4,580	\$130,672	\$123,923	\$254,595	\$0.04	
T&D															
Total		1,827	699,837	9,796,607	145	86	592,111	8,292,461		4,580	\$130,672	\$123,923	\$254,595		
EE Program Portfolio		2.40													
TRC Test		3.55													
PAC Test															

IMPERIAL IRRIGATION DISTRICT

Imperial Irrigation District (IID) At a Glance

- Established in 1936 (Power Industry)
- Climate Zone 15
- 152,136 Customers
- Percent of retail sales by customer class -
 - Residential – 51.9%
 - Commercial – 44.88%
 - Industrial – 1.08%
 - Agriculture – 2.14%
- Public Benefits Budget - \$20,359,000
- Expenditures - \$10,572,325 for energy efficiency programs and \$6,643,540 allocated to other public benefits programs (ie low income rate assistance). The unused budget of \$3,143,135 is maintained in a fund balance to be applied toward qualifying projects, programs and services.
- Load growth .83%

Utility Overview

As the sixth largest utility in California, IID controls more than 1,100 megawatts of energy derived from a diverse resource portfolio that includes its own generation, and long- and short-term power purchases. IID's Energy Department provides electric power to more than 150,000 customers in the Imperial Valley and parts of Riverside and San Diego counties.

As a consumer-owned utility, IID works to efficiently and effectively meet our customers' demands at the best possible rates, tying our area's low-cost of living directly with low-cost utilities. Our diverse resource portfolio provides our customers with some of the lowest cost rates in southern California which is critical given unemployment rates within the service territory are among the highest in the nation.

IID's energy efficiency programs are a key factor in the utility's overall goal. These programs provide a positive impact on utility cost by stabilizing energy consumption and reducing purchases of expensive peak power. Additionally, customers are provided with an opportunity to take charge of their energy utilization and by doing so, reducing their electricity consumption and cost.

Major Program Changes

A mid-year modification was made to the incentive levels for several measures within the prescriptive rebate program. With an initially high incentive level resulting in increased participation over the previous year and a significant reduction of funds sooner than forecasted, the attic insulation incentive was reduced by 50% to allow the opportunity for more customers to participate. The shade screen incentive was increased by 25% and evaporative coolers were added to the list of incentivized products.

Program Highlight

In 2014, IID offered a Quality AC Maintenance Program to residential and small commercial customers for the second consecutive year. Regarded as one of the warmest areas in the state, this program proved extremely successful. IID's service territory falls within climate zone 15 where temperatures reach 120 degrees in the summer. The program had over 2,500 participating customers, generating savings of over 6,500,000 kWh.

Commercial Program Descriptions

- Custom Energy Solutions Program (CESP) – designed to promote energy efficiency by offering financial incentives to commercial customers who install energy-efficient equipment. IID provides qualifying electrical account customers with expertise to assist in identifying energy efficiency measures and cost saving opportunities. (Sector/Category codes: 13, 15, 16, 17, 18, 19, 20)
- New Construction Energy Efficiency Program – is a new construction and renovation energy efficiency program that combines an integrated design process with financial incentives for energy saving design at least 10% over the current Title 24 requirements for a building envelope; or as a *systems approach* method for individual measures. (Sector/Category codes: 13, 15, 16, 17, 18, 19, 20)
- Quality AC Maintenance Program – participating small commercial customers may receive a variety of services that include duct test & seal (DTS), refrigerant charge adjustment (RCA), inspection of all electrical connections & tightening, inspection of all moving parts & lubrication, inspection of condensate drain, inspection of system controls & thermostat settings and cleaning of evaporator & condenser air conditioning coils. (Sector/Category codes: 13, 19)
- Learning Energy Awareness Program (LEAP) – improves the energy efficiency of participating school's facilities by lowering their energy consumption through energy efficiency upgrades. Qualifying measures must retrofit, replace or upgrade old equipment with new, energy efficient technologies that exceed the applicable Title 24 energy efficiency requirements. (Sector/Category codes: 13, 15, 19)
- Open for Business Direct Install Program – helps small businesses decrease their operating costs by installing energy saving measures. A certified contractor will work with eligible small businesses to evaluate their energy use, identify energy-saving opportunities and install energy-efficient retrofit replacement equipment at no cost to the customer. (Sector/Category codes: 15, 16, 18)
- Small Commercial Energy Audits – allows commercial customers (demand less than 100 kW) to quantify energy consumption and evaluate measures that can be applied to make a facility more energy efficient. An assessment will identify problems that may, when corrected, save the customer a significant amount of money over time. (Sector/Category codes: 13, 15, 17, 18, 19, 20, 21)
- Large Commercial Energy Audits - allows commercial customers (demand greater than 100 kW) to quantify energy consumption and evaluate measures that can be applied to make a facility more energy efficient. An assessment will identify problems that may, when corrected, save the

customer a significant amount of money over time. (Sector/Category codes: 13, 15, 17, 18, 19, 20, 21)

Residential Program Descriptions

- Energy Rewards Rebate Program – offers residential customers prescriptive rebates for qualified energy efficient measures. Qualifying residential measures must retrofit, replace or upgrade old equipment with new, energy-efficient technologies that meet and exceed the Title 24 standards in effect at the time of installation. (Sector/Category codes: 2, 6, 7, 8, 9, 11)
- Quality AC Maintenance Program – participating residential customers may receive a variety of services that include duct test & seal (DTS), refrigerant charge adjustment (RCA), inspection of all electrical connections & tightening, inspection of all moving parts & lubrication, inspection of condensate drain, inspection of system controls & thermostat settings and cleaning of evaporator & condenser air conditioning coils. (Sector/Category codes: 2)
- Residential Energy Audits – allows residential customers to quantify energy consumption and to determine measures that can be applied to make a customer's home more energy efficient. An assessment will identify conditions that may, when corrected, save the customer a significant amount of money over time. IID offers energy audits and customized reports to customers. (Sector/Category codes: 6, 11)
- Refrigerator Recycling – IID offers free refrigerator pick up and proper recycling services. In addition, customers also receive a \$50 incentive for each qualified refrigerator or freezer. (Sector/Category codes: 8)

Program Sector (Used in CEC Report)	Category	Code	Program Sector (Used in CEC Report)	Category	Code	Program Sector (Used in CEC Report)	Category	Code
Appliances	Res Clothes Washers	1	Refrigeration	Res Refrigeration	8	Lighting	Non-Res Lighting	15
HVAC	Res Cooling	2	HVAC	Res Shell	9	Process	Non-Res Motors	16
Appliances	Res Dishwashers	3	Water Heating	Res Water Heating	10	Process	Non-Res Pumps	17
Consumer Electronics	Res Electronics	4	Comprehensive	Res Comprehensive	11	Refrigeration	Non-Res Refrigeration	18
HVAC	Res Heating	5	Process	Non-Res Cooking	12	HVAC	Non-Res Shell	19
Lighting	Res Lighting	6	HVAC	Non-Res Cooling	13	Process	Non Res Process	20
Pool Pump	Res Pool Pump	7	HVAC	Non-Res Heating	14	Comprehensive	Non Res Comprehensive	21

EM&V

IID contracts with an independent third party to complete an Evaluation Measurement & Verification (EM&V) of energy efficiency programs on a bi-annual basis, covering programs for the two-year cycle. Not all programs are evaluated in each evaluation cycle. Programs that generate the most energy savings are included in each evaluation and others are included on an as-needed basis. An EM&V has been completed for program years 2012 and 2013. Full results and report will be submitted to SCPA and incorporated in the SB1037 report accordingly.

Copies of IID's EM&V reports for previous program years are available online at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>.

Sources of Energy Savings

For 2014 savings, IID used a combination of figures from TRM, E3, utility work papers and custom savings analysis, when applicable. For prescriptive rebates and the direct install programs, with the exception of the Keep Your Cool Program, TRM was used as the primary resource. KEMA 2009 was referenced when figures weren't available in the TRM.

Complimentary Programs

- LED Lightbulb Event:

During the 2014 calendar year, IID sponsored two LED lightbulb give-away events for its Imperial County and Coachella Valley customers to help them save energy and money. The events provided one LED lightbulb per verified residential account.

- Green Grants:

Funding is available to non-profit organizations located in IID's service area and is limited to energy efficiency/management upgrades and investments in renewable resources that are not covered under any other existing public benefit program offered by IID.

- Renewable Energy Programs:

- SB1 Solar Solutions Program - IID offers incentives to customers who install solar systems. Two types of incentives are offered: Expected Performance Based Incentive (EPBI) and Performance Based Incentive (PBI). The EPBI incentive is a one-time payment based on verified solar energy system characteristics such as location, system size, shading and orientation. The PBI incentive is a flat cents-per-kWh paid annually, for all verified output from a solar energy system over its initial five years of operation.
- Net Energy Metering – IID pays net-surplus customers for generating excess electricity produced by eligible solar or wind power systems. Customers can also elect to receive a kilowatt credit rather than monetary compensation at rates established by the utility.

- Low-Income Programs:

As a large number of IID's residential customers participate in our income-qualified programs, a significant portion of revenue generated through the public benefits charge is allocated toward these programs. Program expenditures for the 2014 year totaled over \$6.4M, with enrollment of over 14,800 customers.

- Residential Energy Assistance Program – provides customers with a discounted rate on their electric bill. Qualification is based on the number of residents per household and the total gross income of all the income sources in the home.
- Emergency Energy Assistance Program – provides financial assistance to customers facing a financial crisis and disconnection for nonpayment.
- Medical Equipment Energy Assistance Program – provides a reduced electrical rate for a defined quantity of electricity used to operate medical equipment. The household must include a full-time resident who requires specific medically necessary electric equipment to sustain life or prevent deterioration of a person's medical condition.

Imperial ID		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	7,957	2,602,675	41,773,208	1,379	2,127	2,264,327	36,342,691		22,996	\$3,337,931	\$353,973	\$3,691,904	\$0.15	
	Res Cooling HVAC														
	Res Dishwashers														
	Consumer Electronics														
	HVAC														
	Res Heating														
	Lighting	370	8,510	42,550		9	7,234	36,168		21	\$562	\$2,115	\$2,677	\$0.08	
	Res Pool Pump	198	285,891	2,858,910		51	248,725	2,487,252		1,485	\$39,600	\$18,422	\$58,022	\$0.03	
	Refrigeration	988	195,166	1,982,568		12	155,802	1,656,404		935	\$113,463	\$10,260	\$123,723	\$0.10	
	HVAC	1,882,519	8,044,333	119,433,274	1,768	3,457	6,677,465	100,821,919		60,022	\$2,137,086	\$611,450	\$2,748,537	\$0.04	
	Water Heating														
	Comprehensive														
	Process														
	Non-Res Cooking HVAC	2,410	1,727,517	27,360,431	392	489	1,637,220	25,798,146		16,045	\$1,846,621	\$224,635	\$2,071,256	\$0.11	
	HVAC														
	Lighting	47,987	6,152,067	72,054,403	1,259	15,486	5,723,687	65,307,388		38,680	\$2,380,172	\$529,101	\$2,909,273	\$0.06	
	Process														
Non-Res Pumps															
Refrigeration	3,254	2,133,179	15,642,750	246	228	1,969,054	13,870,122		7,730	\$267,077	\$72,015	\$339,093	\$0.03		
HVAC	13,513	5,449,554	49,206,018	1,478	2,115	4,779,176	42,221,699		25,644	\$1,184,200	\$247,900	\$1,432,100	\$0.04		
Process	1	116,155	1,742,325	55	55	97,570	1,463,553		816	\$20,908	\$11,536	\$32,444	\$0.03		
Comprehensive															
Other															
Subtotal		1,959,198	26,715,045	332,096,437	6,576	24,029	23,560,261	290,005,341		174,375	\$11,327,621	\$2,081,408	\$13,409,029	\$0.06	
T&D															
Total		1,959,198	26,715,045	332,096,437	6,576	24,029	23,560,261	290,005,341		174,375	\$11,327,621	\$2,081,408	\$13,409,029		
EE Program Portfolio															
TRC Test		0.61													
PAC Test		2.73													

PITTSBURG POWER DBA ISLAND ENERGY

Island Energy At a Glance

- Year established: **1996**
- Climate Zone(s): **3**
- Number of retail customer connections: **527**
- Percent of retail sales by customer class: **9% residential, 91% commercial**
- All Energy Efficiency Programs are funded by Island Energy's Public Benefits Fund (PBF). For FY13-14, the annual PBF collection is about \$89,000 from electricity sales. Approximately \$59,000 of the collection is allocated to IE's Solar Incentive Program; approximately \$30,000 is allocated to Island Energy's Energy Efficiency Programs. During Fiscal Year 2013-14, \$6,080 is expended on Commercial Lighting Retrofit Program, \$425 expended on Residential Appliance Efficiency Program and \$ 43,207 is spent on Solar Incentive Program in the form of utility rebates. Unused fund in each program is carried forward to next year's respective program.

Utility Overview

Island Energy is a very small publically owned utility provides electric and natural gas distribution services to a decommissioned Navy base named Mare Island, which now hosts many different kinds of businesses and 287 residential homes. Most of the residential units were built in 2007 and 2008 with good insulation and high energy efficient appliances. Residential Energy Efficiency Programs include free onsite energy audits to make sure residents reach their energy efficiency goals.

Most commercial buildings were built over 60 years ago. Now many of them have been refurbished and repurposed for different kinds of businesses. Island Energy tailored its Commercial Energy Efficiency Programs to meet the needs of business owners on Mare Island. Commercial lighting is in high demand as most lights in old buildings need to be replaced. The Commercial Motors & Process Improvement and Compressed Air System Replacement are designed for industrial users to help reduce their energy usage. Island Energy provides rebates to these improvements to help lower business owners' initial investments and diminish their payback period.

Major Program Changes

To encourage solar penetration on, Island Energy offered \$1.48/watt rebate for residential and commercial solar projects during FY 13-14, which helps many home owners to put solar panels on their roofs. Island Energy adopted the Net Energy Metering Program, which allows net surplus solar customers to be compensated at a rate equals to the utility's avoided cost for energy for a 12-month period. Since now solar customers can bank their energy credits and cash on the credits, the utility has observed that Net Metering Program incentivize customers to be more energy efficient and more mindful about their electricity usage.

Program Highlight

The Commercial Lighting program has the greatest impact among all Energy Efficiency Programs and contributes over 85% of energy savings to Island Energy's Annual Energy Reduction Goal. Most commercial buildings on Mare Island have outdated lighting layouts and fixtures. Island Energy provides rebates for one-for-one lighting fixture replacement, de-lamping, time controls, sensors as well as customized lighting retrofit projects. Most commercial lighting projects update the whole lighting layout with fewer and much more efficient lights or LEDs, resulted in 65% -80% wattage reductions and energy savings. With the rebates that Island Energy offers, the payback period for such lighting project is usually 1-2 years. The Commercial Lighting Program is definitely the most cost-effective energy saving measure on Mare Island.

Program Descriptions

- Commercial Lighting Program: Lighting Redesign, Overhaul or Retrofit Projects for Commercial Buildings. Incentive is based on one-for-one replacement or calculated based on expected annual energy Savings.
- Commercial Motors & Process Improvement: Replacement of Old Motors with NEMA Premium Efficiency Motors
- Compressed Air System: Installation of New Compress Air System or Redesign/Retrofit of Old Compress Air System
- Commercial Solar Incentive Program: Rebate for photovoltaic solar systems for commercial buildings and parking structures
- Residential Home Energy Audit: Free On-Site Energy Advisory Service to Residential Customers
- Residential Retail Lighting: Free CFL Light Bulbs & LED Lights to Residential Customers
- Residential Appliance Efficiency: Rebates for Energy Star Qualified Clothes Washers, Dishwashers, Air Conditioners and Refrigerators.
- Residential Solar Incentive Program: Rebate for photovoltaic solar systems for residential properties.
- Residential Net Energy Metering Program: Allow solar customers to bank their energy generation credits and to choose to be compensated at a rate equal to the Utility's avoided energy cost
- LED Street Light: Rebates for LED Street Lights

EM&V

The utility files EM&V reports as part of public utilities reporting compliance. Coming into year 2015, staff will focus more resources on R&D demonstration and educational programs on renewable energy resources and technologies for the public interests, such as community solar and green-energy programs.

Sources of Energy Savings

Energy Efficiency Programs are administered and monitored in the same way that they have been in the past. Staff review Energy efficiency applications and monitor closely on energy consumption changes after EE measures are installed. Utility has dedicated staff time to monitor and maintain spreadsheets and data for energy savings from energy efficiency and solar incentive programs.

Complimentary Programs

- Renewable Energy Programs: Island Energy has adopted the Solar Incentive Program since 2007 and still offers the highest rebate rate among investor and publicly owned utilities. The utility plans on teaming up with solar service companies to host educational workshops to introduce the concept of community solar and green energy projects to its customers.
- Low-Income Programs: Island Energy offers 20% discount on electric and natural gas charges to qualified low-income customers.
- Research, Development, and Demonstration: Island Energy staff continuously research and evaluate new renewable energy technologies, perform cost benefit analysis for energy storage and electric vehicle stations on Island Energy. Despite its small size, Island Energy prides itself on keeping up with other publically owned utilities on energy efficiency and renewable energy programs.

Pittsburg		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	2	568	6,248			568	6,248		3	\$150	\$470	\$620	\$0.13	
	Res Cooling	1	13	117			13	117			\$50	\$126	\$176	\$1.87	
	Res Dishwashers	1	58	580			58	580			\$50	\$138	\$188	\$0.41	
	Res Electronics														
	Res Heating														
	Res Lighting														
	Res Pool Pump														
	Res Refrigeration														
	Res Shell														
	HVAC	1	171	2,394			171	2,394		1					
	Water Heating														
	Comprehensive														
	Process														
	HVAC														
	Lighting														
	Process														
	Refrigeration														
HVAC															
Process															
Comprehensive															
Other															
Subtotal		220	121,345	1,172,372	30	29	113,411	1,077,167		597	\$18,033	\$12,780	\$30,813	\$0.04	
T&D															
Total		220	121,345	1,172,372	30	29	113,411	1,077,167		597	\$18,033	\$12,780	\$30,813		
EE Program Portfolio		1.07													
TRC Test															
PAC Test															

LASSEN MUNICIPAL UTILITY DISTRICT

Lassen Municipal Utility District (LMUD) At a Glance

- Lassen Municipal Utility District (LMUD) was established in 1988.
- It serves 10,500 customers (12,500 meters).
- 50% of energy sales are residential, with the remaining 50% primarily commercial with a few agricultural and industrial customers.
- The median residential income in Lassen is at or below the poverty level.
- There is little or no difference in load demands for LMUD between winter and summer. Its annual energy use is 131 gigawatt-hours.
- LMUD's energy reduction target for FY2014 was 150,000 kWh. They exceeded this annual goal by 110,800 kWh with a total net energy reduction of 260,804 kWh.
- LMUD's EE program portfolio was delivered at a Total Resource Cost of 0.59 in FY2014.

LMUD Overview

LMUD's mission is to provide reliable, quality power to our community at the best possible price. LMUD works closely with all of the other local agencies to promote planned economic growth in our service area.

LMUD's annual power content is largely hydroelectric (depending on the time of year) due to the utility's power purchase contract with Western Area Power Administration and its base resource allocation from the Central Valley Project. The remaining power is mixed between various renewable and non-renewable power. Recently, LMUD added a small amount of locally produced geothermal. They have also entered into a purchase power agreement with HL Solar, LLC., to purchase the energy produced by a 5MW solar array. The array is expected to go online in early 2016.

LMUD manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on peak load reduction and energy conservation. For residential customers, rebates are offered for the installation of various energy efficiency measures. For commercial customers, rebates are available for upgraded lighting, refrigeration equipment, HVAC equipment, and in cases where an analysis is performed rebates can be offered for additional equipment that reduces energy use and/or demand.

Program Descriptions

- Residential Rebate Program: LMUD provides rebates to customers who purchase and install ENERGYSTAR® appliances and energy efficient electric water heaters and solar water heaters. LMUD also provides a residential lighting program, providing rebates for replacing incandescent bulbs with CFLs and LEDs along with a variety of other lighting incentives. LMUD also offers rebates for the installation of energy efficiency heat pumps, central air conditioning and evaporative coolers.

- Custom Energy Projects: LMUD offers customized rebate programs to larger customers who have special projects that do not fit into existing rebate categories.
- Energy Audits: Commercial customers may request an onsite energy audit, provided free of charge by LMUD.
- "SmartLight": *SmartLight* was introduced in 2008 and is LMUD's commercial lighting retrofit program. The program offers commercial customers rebates for replacing inefficient lighting with new technology, such as removing existing T-12 fluorescent bulbs and replacing them with T-8s, T-5s, LEDs and other qualifying measures.
- "Community Projects" Program: Local non-profit entities submit projects based on the four guidelines of AB 1890. Qualifying projects are eligible for financial incentives equal to 50 percent of the project expenses (with a limit of \$25,000).
- Energy Conservation Assistance Program "ECAP": ECAP is LMUD's low-income rate assistance program. The program is income based and allows between a 50% and 20% discount on customers first 1,000 kWh. The program also works with local service agencies to provide energy conservation classes to participating customers.
- Consumer Education: LMUD strives to reach each of our customers to educate them and help them reduce their energy consumption. The LMUD web site, Facebook page and "*Ruralite*" magazine offer current energy conservation tips and advice on how to implement energy conservation measures. Through the website and the *Ruralite* magazine, customers are encouraged to call our efficiency experts for help to determine their energy usage and identify appropriate conservation measures.

EM&V

LMUD undertook its first EM&V report in 2009/2010. The report focused on the program that produced the largest amount of savings during the year, the Keep Your Cool program. Keep Your Cool provided LMUD customer's refrigeration door gaskets, strip curtains and door closers at no cost to the customers. The evaluation indicated that the program was well received overall and that most demand and consumption savings figures were reasonable and close. The one exception was glass reach-in freezer auto-closers which appeared to indicate a discrepancy between kW demand reduction, kWh savings and reasonable hours of operation. That issue is under consideration for the upcoming year.

Utilities have the option of performing EM&V annually, or once every three years. LMUD continually and routinely performs EM&V using internal resources.

Lassen			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
	Res Cooling													
	Res Dishwashers	17	986	9,860			592	5,916		3	\$595		\$595	\$0.13
	Res Consumer Electronics													
	Res Heating													
	Res Lighting	1,044	10,695	139,035		5	5,775	75,079		38	\$25,220		\$25,220	\$0.45
	Res Pool Pump													
	Res Refrigeration	52	6,782	94,948			4,747	66,464		36	\$2,600		\$2,600	\$0.05
	Res Shell													
	Res Water Heating	593	39,045	390,450		10	23,427	234,270		125	\$6,600		\$6,600	\$0.04
	Res Comprehensive													
	Process													
	Non-Res Cooking													
	Non-Res Cooling													
	Non-Res Heating													
HVAC	Non-Res Lighting													
	Non-Res Motors													
	Non-Res Pumps													
	Non-Res Refrigeration	14	42,046	630,690		3	25,228	378,414		200	\$3,985		\$3,985	\$0.01
	Non-Res Shell													
	Non-Res Process													
	Non-Res Comprehensive													
Other														
		1,720	99,554	1,264,983		18	59,769	760,143		402	\$39,000		\$39,000	\$0.07
	T&D													
	T&D													
	Total	1,720	99,554	1,264,983		18	59,769	760,143		402	\$39,000		\$39,000	
EE Program Portfolio	TRC Test	0.20												

LODI ELECTRIC UTILITY

Lodi Electric Utility At a Glance

- Established in 1910
- Climate Zone 12
- 25,733 customers (22,547 residential; 3,186 commercial/industrial; FY 13-14)
- Residential Customer sales: 148,762,783 kWh (34%)
- Commercial Customers sales: 158,198,308 kWh (36%)
- Industrial Customer sales: 130,333,102 kWh (30%)
- Budgeted amount for energy efficiency programs, funded by the Public Benefits Program: \$746,000
- Load growth: 0.34% (from FY 12-13 to FY 13-14)

Utility Overview

Lodi's commercial and industrial customers continue to produce the majority of energy savings achieved in Lodi Electric Utility's (LEU) energy efficiency program portfolio. For the FY 13-14, commercial lighting upgrades accounted for 50% of the acquired energy savings. Three large motor and VFD projects accounted for another 43% of the savings acquired. Several smaller projects, including building envelope retrofits and HVAC, accounted for the remainder of the savings in the commercial sector.

Lodi's residential customers continue to achieve the greatest energy savings through HVAC replacements, air delivery/duct system improvements and the purchase and installation of EnergyStar[®] appliances (refrigerators and front-load clothes washers).

Major Program Changes

LEU made no significant changes to the energy efficiency programs provided during FY 13-14. Marketing and outreach efforts continued for all customers (residential and non- residential), through newspaper advertisements, utility bill inserts and our web site.

Program Highlights

Since 1998, LEU has spent more than \$7 million on demand-side management rebates and programs designed to increase energy efficiency for the community. The G-3 to I1 Commercial/Industrial Rebate Program continued to be the main "driver" in regards to overall energy savings achieved. Through key accounts management, the utility maintains a proactive relationship with Lodi's largest energy consumers. These relationships have encouraged large commercial and industrial customers to engage and pursue lighting retrofits, process equipment improvements, etc...

Commercial/Industrial Program Descriptions

- Lodi Commercial (G-1 & G-2) Rebate Program: Provides rebates for small and medium- sized commercial customers who install designated energy efficiency measures, such as: attic

insulation, window tinting/shade screens, programmable thermostats, ceiling fans, appliances, high efficiency lighting retrofits and maintenance of refrigeration/HVAC equipment; rebates range from \$250 to \$7,500 for smaller to medium-sized customers.

- Lodi Commercial/Industrial (G-3 to I-1) Rebate Program: Provides rebates of up to \$25,000 to large commercial and industrial customers; the rebate is for pumps/motors, process equipment improvements, building envelope improvements, HVAC/chiller replacements, and high efficiency lighting retrofits.
- Lodi Energy Efficiency (On-Bill) Financing Program: two-year, interest free loans of up to \$150,000 are available for commercial and industrial customers who install designated and approved energy efficiency measures. The customer may also be eligible for the aforementioned energy efficiency rebates, in conjunction with this financing program.

Residential Programs Descriptions

- Lodi Appliance Rebate Program: Provides rebates to all customers who purchase an EnergyStar[®] refrigerator, dishwasher and or front-loading clothes washer.
- Lodi Energy Efficient Home Improvement Rebate Program: Provides rebates to customers for installing attic/wall insulation, attic fans, whole house fans, shade screens/window tinting, radiant barriers, as well as for repairing/replacing HVAC duct systems, and for installing high efficiency (15+ SEER) air conditioning units.
- HVAC System Performance Test: Provides a rebate for customers who utilize a select list of HVAC contractors capable of performing a high-end duct system performance test (the test measures air flow, air return and system balance).

Commercial and Residential Program Descriptions

- Lodi Energy Audit Program: LEU offers on-line and on-site energy audits to residential and small commercial customers.

School/In-Classroom Program Descriptions

- Lodi LivingWise Program: Provides energy efficiency “kits” and manuals to 447 6th grade students in Lodi schools; the program is designed to teach the students the basics of energy and water conservation.
- Lodi Solar Schoolhouse Program: Provides teacher mini-grants and teacher training regarding solar/renewable energy resources; also via this program, we sponsor various solar fairs and events at individual school (students and teachers build solar-powered fountains, model race cars, houses, ovens, etc.).
- Youth Energy Summit: Provides scholarship opportunities for juniors and seniors in high school; the eligible students must participate in a two-day workshop (known as the Youth Energy Summit), then complete a community service learning project, based upon the information they garner from the Summit/training. After completing their “project,” the student teams then present their findings and projects to a panel of judges, who in turn award the scholarship funds.

Low-Income Residential Program Descriptions

- Lodi C.A.R.E. Package Program: Provides grants to very low-income customers in need of assistance paying their electric utility account; the program coordination/customer screening is performed by the Lodi Salvation Army. In order to secure a grant payment, customers must consent to in an in-home energy audit.
- Lodi SHARE Discount Rate: LEU provides a rate discount of 30% for qualifying residential customers on their electric utility monthly billing statement; \$400,000 annually is budgeted for this rate discount from the Lodi Public Benefits Program fund.

EM&V

LEU has implemented an Evaluation, Measurement & Verification (EM & V) Plan, and has completed six consecutive annual assessments (reports) of randomly selected programs and large rebates as part of the designed EM & V Plan. Due to recent staffing changes, the annual assessment for FY 13-14 has been delayed, with completion expected by April 30, 2015. Note: LEU has retained the services of ERS for the FY13-14 assessment project.

Lodi		Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg. EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	54	25,434	305,208	55	55	21,619	259,427		131	\$2,700	\$810	\$3,510	\$0.02	
	Res Cooling HVAC	241	22,370	288,420	36	36	17,856	230,025		142	\$23,000	\$1,975	\$24,975	\$0.15	
	Res Dishwashers														
	Res Electronics														
	Res Heating HVAC														
	Res Lighting	29	5,162	51,620	3	3	2,787	27,875		14	\$2,320	\$87	\$2,407	\$0.11	
	Res Pool Pump	6	3,573	35,730			2,465	24,654		12	\$1,200	\$77	\$1,277	\$0.07	
	Refrigeration	57	10,285	143,990	1	1	7,714	107,993		59	\$2,850	\$453	\$3,303	\$0.04	
	Res Shell HVAC	48	8,086	151,144	9	9	5,579	106,078		60	\$4,701	\$483	\$5,184	\$0.07	
	Water Heating														
	Comprehensive	1	26,430	396,450	31	31	21,144	317,160		195	\$17,700	\$2,706	\$20,406	\$0.09	
	Process														
	Non-Res Cooking HVAC	82	24,450	366,750	7	7	19,560	293,400		178	\$16,775	\$2,342	\$19,117	\$0.09	
	Non-Res Heating HVAC														
	Non-Res Lighting	1	862,175	11,208,275	90	90	689,740	8,966,620		4,969	\$94,125	\$42,301	\$136,425	\$0.02	
	Process	1	744,080	7,440,800			595,264	5,952,640		3,166	\$39,181	\$24,091	\$63,272	\$0.01	
	Process														
	Refrigeration HVAC														
	Process														
Comprehensive															
Other															
Subtotal		519	1,732,045	20,388,387	232	232	1,383,729	16,285,871		8,926	\$204,552	\$75,324	\$279,876	\$0.02	
T&D															
Total		519	1,732,045	20,388,387	232	232	1,383,729	16,285,871		8,926	\$204,552	\$75,324	\$279,876		
EE Program Portfolio		3.20													
TRC Test		6.30													
PAC Test															

CITY OF LOMPOC

City of Lompoc Electric at a Glance

- Established in 1923
- Climate Zone 5
- 14,940 retail customer connections
- The percent of sales are broken down as follows: 39% residential; 50% commercial, 11% public use. The City has no agriculture sales.
- The budgeted amount for energy efficiency programs for fiscal year 2013-2014 was \$115,000.00 from Public Benefit Charge collected fees. The amount expended was \$86,208.46. Any collected fees not expended is restricted and carried over to succeeding years.

Utility Overview

The economic downturn from previous years continues to affect the City of Lompoc and the customers' ability to perform energy efficiency upgrades due to the initial costs.

Although Lompoc serves both residential and commercial customers, 89% of its retail connections are residential. Of the residential customers, 35% live in multifamily rental housing; 75% are considered to be low to moderate income customers and 21% of these are below the poverty level (taken from the 2010 census). In order to encourage participation in energy efficiency programs, the City has created programs that heavily subsidize the initial purchase of appliances.

The City's largest customers are the City of Lompoc, Wal-Mart, Lompoc Valley Hospital, a community college, three large grocery store chains and a few manufacturing companies. Energy efficiency upgrades have been made by the above mentioned customers. The majority of the City's commercial customers are small businesses that rent their location and have relatively low electric bills, and are unwilling to perform retrofits due to the initial costs. Since there is little need for air conditioning in our coastal climate and heating is primarily done with gas, most of our rebate programs are for lighting retrofits. Most of the larger commercial customers or demand customers who have long-term leases or who own the property, have taken advantage of lighting retrofit programs and refrigeration gasket programs offered in the past. A small number of manufacturing facilities are located in the City. The facilities have been evaluated and have taken advantage of energy efficiency upgrade programs.

Major Program Changes

The City of Lompoc provides both electric and water services to its customers. Due to drought conditions experienced in the area, the City has been encouraging water efficiency in the home and business. As a result, there has been an increased interest in the replacement of non-Energy Star clothes washers and dishwashers through City incentive programs. These programs are not funded through Public Benefit Funds and are not included in the reporting since the water supply is predominately heated by gas. Since the electricity used to pump and process water is significant, these programs are mentioned.

An LED lamp replacement rebate and LED commercial lighting rebate will be added in fiscal year 2014-2015.

Program Highlight

Because the majority of customers are residential customers, the City's rebate programs have been concentrated on and are most used by residential customers. The most popular programs were Residential Refrigeration and Low Income Refrigeration programs. The low income program is popular due to the larger incentive. The residential refrigeration programs and non-residential lighting programs did provide the largest energy savings.

Program Descriptions

Residential Refrigeration Programs:

- A rebate of \$144 is offered for the purchase of an Energy Star refrigerator or freezer if the old refrigerator or freezer is in working order, if there is an expected energy savings of a minimum of 316 Kwh per year and if the appliance is recycled at the City landfill.
- Refrigerator/Freezer Recycle Program - A rebate of \$35 is available for any working refrigerator or freezer that is recycled at the City landfill. The City offers free delivery to landfill.
- Low Income Refrigerator Program - The City will pay a participating appliance dealer up to \$635 toward the purchase of an Energy Star refrigerator to replace a customer's primary refrigerator. The old refrigerator must be in working order and there must be an expected minimum energy savings of 316Kwh per year. The customer must repay the City \$240 over a twelve month period.

Residential Lighting Program:

- LED Holiday Light Rebate: The City offers a rebate of up to \$8 per light string purchased. Each customer is limited to a rebate of up to five strings per year.

Non-Residential Lighting Program:

- Commercial Lighting Rebate: Provides rebates for energy efficient lighting upgrades from T12 to T8 lighting.
- Exit Sign Rebate: Provides a \$15.00 rebate to replace an incandescent exit sign with an LED exit sign.

EM&V

Lompoc's EM&V reports can be found at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>. An evaluation of the residential refrigeration program is planned to be conducted in the 2014-2015 fiscal year.

Sources of Energy Savings

The 2014 TRM and Energy Star were used the most to determine energy savings. The Kouba-Cavallo Associates, Inc. Energy Rating Database for refrigerators, IOU workpapers, KEMA 2009 report, PG&E workpapers were also used.

Complimentary Public Benefits Programs

- Renewable Energy Programs:
Solar Rebate: Lompoc offered residential and commercial customers an incentive of \$1.50 per watt AC up to \$50,000 or one-half of the cost of the system in the fiscal year 2013-2014. The fiscal year 2014-2015 rebate will be \$1.00 per watt AC. Rebates are projected to be eliminated in 2017.
- Low Income Programs:
Customers below low to moderate income levels (as determined by HUD) receive up to \$9.00 per month discount off their electric usage charge. These customers can apply for the Income Qualifying Refrigerator and Clothes Washer programs.
- Clothes Washer Programs (water utility rebate):
A rebate of \$120 is offered for the purchase of an EnergyStar clothes washer if the old clothes washer is in working order and is not Energy Star rated and if the appliance is recycled at the city landfill. For income qualifying customers, the City will pay a participating appliance dealer up to \$600 toward the purchase of an Energy Star clothes washer to replace the clothes washer in operation. The customer must repay the City \$240 over a twelve month period.
- Dishwasher Program (water utility rebate):
A rebate of \$50 is offered for the purchase of an Energy Star dishwasher if the old dishwasher is in working order and is not EnergyStar rated and if the appliance is recycled at the city landfill.

Lompoc			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling													
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	118	826	4,130		2	446	2,230		1	\$944	\$54	\$998	\$0.51
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration	72	50,167	543,562		2	35,117	380,493		206	\$12,470	\$12,332	\$24,802	\$0.09
HVAC	Res Shell													
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling													
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	630	23,330	264,082		5	18,664	211,266		117	\$6,672	\$7,614	\$14,286	\$0.09
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration													
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive													
Other	Other													
Subtotal		820	74,323	811,774		9	54,227	593,989		325	\$20,086	\$20,000	\$40,086	\$0.09
T&D	T&D													
Total		820	74,323	811,774		9	54,227	593,989		325	\$20,086	\$20,000	\$40,086	
EE Program Portfolio	TRC Test PAC Test	1.62 1.51												

LOS ANGELES DEPARTMENT OF WATER AND POWER

Los Angeles Department of Water and Power (LADWP) At A Glance

- Established in 1902 to deliver water to the City of Los Angeles. Electricity distribution began in 1916.
- Climate Zones include CZ6 and CZ9
- Serves almost 4 million people via 1.46 million electric and 676,000 water connections. Nearly 70% of electricity usage is by the commercial/industrial sectors and over 30% by residential customers.
- Budgeted amount for FY 4-15 energy efficiency programs is \$101,493,200.
- A peak demand of 6,396 MW was registered in the September 16, 2014.
- Annual energy use is 24.6 million megawatt-hours.
- Load for the years 2001 to 2012 grew by 0.55. When taking into consideration energy efficiency programs, load growth is forecasted to average 0.3% between 2013 and 2033.

Utility Overview




LADWP is the largest municipal utility in the nation, and the third largest utility in California. The utility faces significant challenges as it works to comply with environmental and code mandates while maintaining quality delivery of services. Increasing renewable energy to 33% by 2020, the continued rebuilding of coastal generation units, replacement of coal, infrastructure reliability investments, and ramping up energy efficiency and other demand side programs are all critical and concurrent strategic actions that LADWP has to carry out over the coming decade.

As part of its planning process, LADWP has committed to a number of energy efficiency activities to meet regulatory mandates and to meet the City's energy needs, including the following goals:

- * Leverage energy efficiency as part of the strategy for eliminating coal from LADWP's energy portfolio
- * Achieve an energy efficiency goal of 15% by 2020
- * Contribute to greenhouse gas emissions reduction through reduced energy usage

Major Program Changes

LADWP is continuing with a dramatic ramp-up in energy efficiency investments and results over previous years. In FY 2013-14, LADWP:

-  Increased the annual EE budget from \$55M to \$115M+
-  Continued to implement the 8 guiding principles adopted in 2012 to guide this increased investment to ensure equity of access to EE for all customers, leverage this investment for job creation, commitment to transparency, and leverage community groups to reach hard- to- reach customers (guiding principles may be found in the LADWP Portfolio Business Plan)
-  Updated the detailed Business Plans for the portfolio that are comparably specific to what the IOUs create for their EE funding requests to the CPUC. These plans include the continuation of roughly 20 existing programs and 10 new programs. Water Conservation Programs have been added to the Fiscal Year 2014/15 – 2019/20 Portfolio Business Plan for the first time

- ✚ Continued LADWP's partnership with SoCal Gas to deliver joint programs in order to offer mutual customers electric, gas, and water savings in a "one stop shop". Eleven new programs have been launched under this successful partnership, with 5 more pending
- ✚ Dedicated approximately \$60M of the EE portfolio to Direct Install programs (equipment and installation completely free) to serve LADWP's low- moderate- and fixed-income customers, both residential and non-residential. These include the Home Energy Improvement Program, Small Business Direct Install, and LAUSD Direct Install Program
- ✚ Achieved 27% more energy savings in FY 13/14 than in FY 12/13, resulting in a doubling of annual achieved savings between FY 11/12 and FY 13/14.

Mass Market Program Descriptions

- Small Business Direct Install: The Small Business Direct Install Program is a free direct-install program that targets small and medium business customers in the LADWP service territory. LADWP is partnering with Southern California Gas Company on this Program to offer a tri-resource efficiency program aiming to reduce the use of electricity, water and natural gas. (Non-Res Lighting)
- Los Angeles Unified School District Direct Install (LAUSD DI): The Los Angeles Unified School District Direct Install Program is designed to improve energy and water efficiency throughout LAUSD's facilities through upgrades in electric, water and natural gas consuming systems, in partnership with the Southern California Gas Company (SoCalGas). This Program provides energy efficiency design assistance, project management experience and retrofitting installation, utilizing LADWP engineering and ISS (Integrated Support Staff), to assist LAUSD facilities in need of aid in reducing energy usage and corresponding utility expenses. (Non-Res Lighting)
- Home Energy Improvement Program (HEIP): The Home Energy Improvement Program is a comprehensive direct install whole-house retrofit program that offers residential customers a full suite of free products and services to improve the energy and water efficiency in the home by upgrading/retrofitting the home's envelope and core systems. While not limited to low-income customers, HEIP's priority is to serve the most needy customers. (Res Shell, Res Lighting)
- Low-Income Refrigerator Replacement Program (LIREP): The Low-Income Refrigerator Replacement Program is a free refrigerator replacement program designed to target customers that qualify on either LADWP's Low-Income or its Senior Citizen/Disability Lifeline Rates. This Program leverages a 3rd Party Contractor, ARCA (Appliance Recycling Centers of America), to administer the delivery of the Program and provides energy efficient refrigerators for this customer segment to replace older, inefficient, but operational models.(Res Refrigeration)
- Refrigerator Turn-in and Recycle (RETIRE)Program: The Refrigerator Turn-in and Recycle Program offers a \$50 rebate, along with free pick-up, to residential customers to turn-in old refrigerators and freezers, for recycling. Eligible units must be fully operational and satisfy certain age and size requirements. LADWP leverages a 3rd Party Contractor, ARCA (Appliance Recycling Centers of America), to administer the delivery of the Program. (Res Refrigeration)

- Consumer Rebate Program (CRP): The Consumer Rebate Program offers incentives of up to \$500 or more, to its residential customers to promote and advance comprehensive energy efficiency measures, including whole house solutions, plug load efficiency, performance standards and opportunities for integration. CRP is designed to offer and promote specific and comprehensive energy solutions within the residential market sector. (Res Cooling, Res Shell, Res Refrigeration, Res Pool Pump)
- Energy Upgrade California™ (EUCA): The Energy Upgrade California™ Program is a collaborative effort among California counties, cities, non-profit organizations, the state's investor-owned utilities, and publicly owned utilities to deliver a California statewide "whole house" residential retrofit energy efficiency program, in which LADWP partners with Southern California Gas Company (SoCalGas). EUCA offers incentives to homeowners who complete selected energy-saving home improvements on single-family residences or 2-4 unit buildings, such as townhouses, condominiums, etc. (Res Cooling, Res Comprehensive, Res Lighting, Res Water Heating, Res Shell)

Commercial, Industrial, Institutional (CII) Program Descriptions

- Commercial Lighting Incentive Program (CLIP): The Commercial Lighting Incentive Program is a new program, launched October 1, 2014, designed to leverage the previous lighting program successes while offering greater flexibility to lighting projects. This new design is intended to make CLIP as user friendly as possible, streamlining the application and administration process, leveraging participating contractors and the Trade Ally Program, to the degree possible and to capture the maximum energy savings and enhance the customer experience. (Non-Res Lighting)
- Savings By Design (SBD): The Savings By Design (SBD) Program is a California statewide non-residential new construction program, in which LADWP will partner with Southern California Gas Company (SoCalGas) to offer a uniform, multi-faceted program designed to consistently serve the needs of the commercial building community. SBD encourages energy-efficient building design and construction practices, promoting the efficient use of energy by offering up-front design assistance, owner incentives, design team incentives, and energy design resources. (Non-Res Comprehensive)
- Retrocommissioning (RCx) Express: The Retrocommissioning Express Program offers cash incentives to customers who undertake a "tune-up" of their existing building system equipment to restore equipment to its original performance level, as designed, if not higher. Incentives are offered for measures on a prescriptive menu of options, including replacement or repair of certain lighting sensors, air conditioning economizers, restoration of fan and pump variable frequency drives, operations set point strategies for supply air, temperature or duct pressure, chilled water and condenser water, operating schedules and boiler lockout. (Non-Res Comprehensive)
- Chiller Efficiency Program (CEP): The Chiller Efficiency Program offers incentives for all types of high efficiency chillers, from air-cooled to water-cooled chillers, with rebates up to \$193 per ton and 100% of the incremental cost. CEP is designed to assist large offices, hotels, hospitals, medical facilities, institutional facilities, or any business with a chiller based air-conditioning system. (Non-Res Cooling)

- Refrigeration Program: The Refrigeration Program offers incentives to encourage retrofit measures and technologies to reduce energy consumption in supermarkets, liquor stores, convenience stores, restaurants, etc. Rebates are offered for commercial food appliances and refrigerator cases, ice machines, reach-in freezers/refrigerators, display cases, walk-in coolers, etc., as well as other refrigeration equipment. (Non-Res Refrigeration)
- Custom Performance Program (CPP): The Custom Performance Program offers cash incentives for energy saving measures not covered by existing prescriptive programs, such as equipment controls, industrial processes and other innovative energy saving strategies exceeding Title 24 or Industry Standards that are not included in other LADWP non-residential energy efficiency programs. Program offerings include incentives for equipment controls, CO monitoring systems, hotel guest room controls, variable frequency drives, cutting edge high-efficiency lighting technologies, and other innovative strategies. (Non-Res Cooling, Non-Res Comprehensive, Non-Res Motors, Non-Res Lighting, Non-Res Refrigeration)
- California Advanced Home Program (CAHP): The California Advanced Home Program is an incentive program that utilizes the statewide CAHP through its partner utility, Southern California Gas Company, to incentivize cost-effective energy efficiency upgrades in residential new construction. CAHP targets high density residential new construction, including single and multi-family high rise buildings, as this is the area with the greatest new construction energy savings potential in LADWP's service territory. (Res Comprehensive)
- Energy Efficiency Technical Assistance Program (EETAP): The Energy Efficiency Technical Assistance Program is a non-resource program that goes a step beyond the assistance offered by standard programs. EETAP was designed to assist commercial, industrial, and institutional customers in closing the gap between project development and implementation for more complex building systems. By providing incentives for project development services including energy auditing and project management, through this program, LADWP aims to help its customers to strategically plan, follow through and realize energy savings in the most cost-effective manner. (Non-Res Comprehensive)

Cross Cutting Program Descriptions

- Codes, Standards & Ordinances (CSO): The Codes, Standards & Ordinances Program conducts advocacy activities to improve building, appliance and water use efficiency regulations. These activities include monitoring and active participation in code and standard development, compliance and enforcement support with our sister agency LA Department of Building and Safety, legislative review, sponsorship of local ordinances, and participation in policy efforts with other City departments, state agencies, and utilities. The goal of this program is to promote sustainability with regard to water and energy use. The principal audience includes the LA City Department of Building and Safety, LA City Planning, LA City Department of Public Works, and the LA City Council, which together develop and adopt codes and standards specific to Los Angeles that go beyond state and federal regulation. Other audiences include state agencies, which conduct periodic rulemakings to update energy efficiency and water conservation regulations and

standards, and industry groups that conduct research and develop industry specific standards. (Non-Res Process)

- Million Trees Program (MTP): The Million Trees Program provides free shade trees for residents and property owners in Los Angeles to promote the planting of trees to improve building energy efficiency. This is a joint program managed by Million Trees LA and supported by LADWP. Through this partnership, MTLA is able to provide free shade trees for residents and property owners in the City of Los Angeles along with information on where to plant the trees for maximum energy efficiency benefits. MTP currently focuses on providing trees for residential customers but will also provide trees to commercial customers. (Res Cooling, Res Shell)
- LADWP Facilities Upgrade: The LADWP Facilities Upgrade Program strives to improve energy and water efficiency throughout LADWP's facilities with energy efficiency upgrades in HVAC and lighting and water efficiency upgrades in plumbing fixtures, leak correction and landscaping improvements. It identifies and assists those LADWP facilities to reduce energy and water usage, which will result in a reduction in energy and water consumption and procurement expense for LADWP that would otherwise be borne by LADWP customers. (Non-Residential Cooling)
- LADWP Emerging Technologies Program (ETP): The LADWP Emerging Technologies Program is designed to accelerate the introduction of innovative energy and water efficient technologies, applications, and analytical tools that are not yet widely adopted in California. By reducing both the performance uncertainties associated with new products, as well as institutional barriers, the ultimate goal of this Program is to increase the probability that promising energy and water efficiency technologies will be commercialized and adopted throughout Los Angeles.
- Program Outreach & Community Partnerships: The Program Outreach & Community Partnerships Program is an advocacy program that strives to improve customer awareness among "Hard-to-Reach" customers of LADWP on electric and natural gas energy efficiency and water conservation programs through community based outreach organizations. In FY 2013/14, this Program offers \$45,000 grants to 17 local non-profit organizations that are selected to work in each Los Angeles Council District or on an at-large basis to provide community/customer awareness of LADWP's core energy efficiency and water conservation programs.

Evaluation, Measurement & Verification

LADWP entered into an agreement with Navigant Consulting in November 2013 for EM&V services of the entire energy efficiency portfolio within the next three years inclusive of programs in FY 11-12 through FY14-15 both existing and planned. Results will be published on The Northern California Power Agency's (NCPA) website. <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>

LADWP has opted to evaluate its programs and activities from a holistic standpoint. Moving forward, LADWP has tasked Navigant to evaluate the energy efficiency market impacts of all the combined efforts of City of Los Angeles (inclusive of LADWP's efficiency programs). The Market Transformation (MT) evaluation is scheduled to be produced by end of 2016 and submitted to the CEC March of 2017. One of

the end results of the MT evaluation would quantify the incremental energy savings due to market intervention introduced by the City of Los Angeles. LADWP EM&V activities are described below:

Program	Fiscal Year(s) Evaluated	EM&V Activities	Final EM&V Report to the CEC
Commercial Lighting Efficiency Offer (CLEO) – Eval 1	FY11-12 and FY12-13	Early 2014	March 2015
Custom Performance Program (CPP) – Eval 1			
Small Business Direct Install Program			
Chiller Efficiency Program (CEP)			
Refrigeration Program (Commercial Grocery Related)			
Consumer Rebate Program (CRP)	FY13-14		
Low Income Refrigerator Exchange Program			
RETIRE Program			
Codes & Standards (C&S) Program	FY12-13 and FY13-14	Late 2014	October 2015
Energy Upgrade California (EUCA) Program – Process Only	FY13-14		
Retrocommissioning (RCx) Express Program	FY13-14 Through 14-15	Late 2014- Early 2015	
Home Efficiency Improvement Program (HEIP)	FY13-14 Through 14-15	Late 2014- Early 2015	
LADWP Facilities (Lighting & HVAC) Upgrade Program	FY13-14 Through 14-15	Late 2014- Early 2015	
Savings By Design Program (Commercial New Construction) - Process Only	FY14-15	2015	March 2016
California Advanced Home Program (CAHP)			
Commercial Lighting Efficiency Offer (CLEO) – Eval 2			
Custom Performance Program and Energy Efficiency Technical Assistance Program (CPP)			

Program	Fiscal Year(s) Evaluated	EM&V Activities	Final EM&V Report to the CEC
+ EETAP) – Eval 2			
Market Transformation Evaluation	FY15-16	2016	March 2017

The total budget for EM&V over the 3 year contract period is \$3,705,437 which is equivalent to 0.74% of the total portfolio budget on an annual basis.

LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP)

Time Period for Reporting Data: Fiscal Year ending 6/30/2014

LADWP		Resource Savings Summary					Cost Summary		
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Lifecycle Energy Savings (kWh)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Appliances	Res Clothes Washers								
HVAC	Res Cooling	771	215,933		239	3,065,949	\$233,171	\$241,322	\$474,493
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Heating								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump	1,935	1,257,899		201	12,578,991	\$966,719	\$546,946	\$1,513,665
Refrigeration	Res Refrigeration	12,240	9,271,966	597	661	94,972,182	\$3,474,894	\$1,994,541	\$5,469,436
HVAC	Res Shell	434,295	1,830,457		44	54,908,408	\$1,068,201	\$1,843,316	\$2,911,516
Water Heating	Res Water Heating								
Comprehensive	Res Comprehensive	655,820	4,388,786		2,606	57,475,679	\$3,341,770	\$5,712,889	\$9,054,660
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	6,604,718	11,381,634		964	173,824,854	\$2,466,240	\$1,446,655	\$3,912,895
HVAC	Non-Res Heating								
Lighting	Non-Res Lighting	25,194,783	111,791,243		16,159	1,190,895,377	\$15,865,435	\$26,702,496	\$42,567,931
Process	Non-Res Motors	937,894	937,894		152	9,378,940	\$70,532	\$50,369	\$120,901
Process	Non-Res Pumps	2	3,573,803			53,607,045		\$162,257	\$162,257
Refrigeration	Non-Res Refrigeration	3,011	1,039,199		66	12,574,322	\$72,605	\$104,488	\$177,093
HVAC	Non-Res Shell								
Process	Non-Res Process	15,119,479	86,301,078		11,756	1,574,826,778	\$1,207,187	\$5,008,992	\$6,216,179
Comprehensive	Non-Res Comprehensive	17,469,600	19,566,285		2,436	299,777,079	\$3,579,447	\$1,839,499	\$5,418,947
Other	Other								
SubTotal		66,434,548	251,556,177	597	35,284	3,537,885,604	\$32,346,202	\$45,653,772	\$77,999,974
Total		66,434,548	251,556,177	597	35,284	3,537,885,604	\$32,346,202	\$45,653,772	\$77,999,974

MERCED IRRIGATION DISTRICT

Merced Irrigation District (MID) At a Glance

- For more than 75 years, the Merced Irrigation District (MID) has been in the business of generating wholesale electrical power.
- Fourteen years ago, MID determined the best way to leverage its investment in low-cost generating facilities, and to benefit Eastern Merced County communities was to develop its own electric delivery system.
- In 1996, MID created the Electric Services Department, and Foster Farms in Livingston, CA became the District's first electric customer.
- MID's electric distribution system has continued to grow with the addition of a 34-mile transmission loop and a sophisticated distribution system supporting customers in Eastern Merced County.
- MID sells electricity generated at its New Exchequer hydro power plant to PG&E under a long-term contract that expires in 2014.

Program Highlights

In 2000, MID-Electric Services created and implemented the Public Benefit Programs. These programs promote, assist and educate all electric customers to participate and install energy efficiency measures.

Commercial Programs Descriptions

- Commercial/Industrial Lighting Program: The Commercial Lighting Program is a turnkey lighting retrofit rebate program with a financial rebate menu for energy saving lighting equipment retrofits. The menu includes generous rebates for the replacement of T-12 lamps, Metal Halide Fixtures, Incandescent Lighting, and Exit Signs. The program also provides rebates for the addition of lighting controls including Photocells and Occupancy Sensors.
- Commercial/Industrial Mechanical Equipment Program: The Commercial/Industrial Retrofit Program is a turnkey mechanical equipment rebate program with a financial rebate menu for energy saving mechanical equipment retrofits. The menu includes generous rebates for the replacement of mechanical equipment with more energy efficiency equipment including: Refrigeration Equipment, Air Conditioning Equipment, Chillers, Motors, and Pumps. The program also provides rebates for Variable Frequency Drives on pumps, motors, and fans. Rebates are also available for Cooling Load Reduction measures to include Duct Sealing, Cool Roofs, Window Film, and Programmable Thermostats.
- Customized Commercial/Industrial Retrofit Program: The Customized/Industrial Retrofit Program enables qualifying commercial and industrial customers to apply for financial incentives on more specialized and comprehensive energy saving measures that do not fall under the Commercial Lighting Program or the Mechanical Equipment Retrofit Program. Applications for this program are evaluated and approved on an individual per application basis. Financial incentives for qualifying customer projects are paid for annual kilowatt hour savings in a one year period on approved projects.

Residential Programs Descriptions

- Residential Rebate Program: This program encourages residential customers to purchase EnergyStar® labeled products, home appliances and energy-efficient compact fluorescent light bulbs.
- Appliance Recycle Program: This program allows residential customers to receive a \$35.00 rebate for recycling qualified refrigerators or freezers.
- Residential Energy Assistance Program (CARE): Since 2000, MID has been providing a 20 percent discount on monthly energy bills for Low-Income Families, and the Medical Baseline and Life-Support Program for those who depend on electrically powered medical equipment.

Complimentary Programs

- Solar Incentive Program
The Solar Incentive Program provides financial incentives to qualifying customers to buy down installed solar generation projects and to help offset the customer's investment in renewable energy generation. The rebate incentive is equal to the estimated performance of the installed solar system multiplied by \$1.50/wattAC. The rebate incentive for commercial/industrial solar systems are capped at \$37,500 (25kW) and \$4,500 (3kW) for residential.

Merced			Resource Savings Summary							Cost Summary					
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	41	1,517	16,687			470	5,173		3	\$3,075	\$11,616	\$14,691	\$3.66	
	Res Cooling	3	186	2,790			149	2,232		1	\$1,470	\$10,900	\$12,370	\$7.74	
	Res Dishwashers	17	272	2,720			163	1,632		1	\$1,275	\$3,670	\$4,945	\$3.83	
	Res Electronics														
	Res Heating														
	Res Lighting														
	Res Pool Pump														
	Res Refrigeration	43	6,488	74,200			4,542	51,940		28	\$4,105	\$156,789	\$160,894	\$4.14	
	Res Shell	6	1,006	18,610			282	5,211		3	\$540	\$17,103	\$17,643	\$5.12	
	HVAC														
Water Heating	Res Water Heating														
	Comprehensive														
	Process														
	Non-Res Cooking														
	HVAC														
	Non-Res Cooling														
	HVAC														
	Non-Res Heating														
	Lighting														
	Non-Res Motors														
Process	Non-Res Pumps														
	Non-Res Refrigeration	1	252,201	2,522,010							\$16,956		\$16,956	\$16,955.89	
	Non-Res Shell														
	Non-Res Process														
	Non-Res Comprehensive														
	Other	1	11,440	114,400							\$801		\$801	\$800.80	
	SubTotal	117	2,593,518	25,955,497			5,606	66,188		36	\$186,329	\$200,078	\$386,407	\$7.85	
	T&D														
	Total		117	2,593,518	25,955,497			5,606	66,188		36	\$186,329	\$200,078	\$386,407	
	EE Program Portfolio	TRC Test	0.02												
	PAC Test	0.02													

MODESTO IRRIGATION DISTRICT

Modesto Irrigation District (MID) At a Glance

- Established in 1887; electric service began in 1923
- Entire service area is Climate Zone 12
- 116,000 active retail service connections/customers served
- Retail electric sales by customer class are: 35% residential; 29% commercial; 31% industrial; 4% agricultural and pumping; 1% other (based on GWH)
- \$4,808,000 budgeted for Energy Efficiency (EE) programs (including overhead); \$2,608,000 actually expended; under expenditure was due to lower customer participation (unused incentives); EE programs are funded by a combination of public benefits allocation and resource procurement; unused EE funds typically accrue to reserves (they cannot be reallocated to other Public Benefits programs without specific authorization by the Board)
- Load growth for 2014 was 0.1 % (based on GWH)
- Other - MID's mission is to deliver superior value to irrigation, electric and domestic water customers through teamwork, technology, and innovation (www.mid.org)

Utility Overview

MID electric sales have remained essentially “flat” over the past decade. The last major increase in energy sales occurred in 2004 (+3%) and significant reductions occurred in the recession years of 2009 and 2010 (-3% and -4%, respectively). Regarding capacity, MID hit an all time system peak in 2006 of 687 MW (controlled), whereas the peak for 2014 was only 642 MW (uncontrolled). Clearly, the economy in the central valley continues to affect MID and its customers, which in turn impacts EE program participation and results.

Another trend in the MID service area is a significant installation of leased solar systems, which require little or no out-of-pocket cost for the homeowner. The customer motivation for installing these systems includes high utility rates and the perceived certainty of reduced future electric bills. Installation of these systems has reduced system load growth and may dampen residential customer interest in pursuing EE projects.

Major Program Changes

MID made no major changes to its EE programs in 2014. However, MID continues to make incremental modifications to its lighting programs to reflect changing codes and standards. MID maintained funding levels for EE programs consistent with its energy saving targets.

Industrial customers are the largest single variable on MID's EE program budgets and energy savings because they are large energy consumers and their energy projects tend to be substantial. Several industrial customers deferred projects scheduled for 2014, which contributed to overall program results that were well below the target.

Program Highlight

The number of rebates for pool pumps replacements increased this year. Due to the hot summers, many home owners in the Modesto area have installed swimming pools. In an effort to reduce their electric costs, an increasing number of pool owners are replacing their pool pumps with variable speed models, due in part to MID's pool pump rebate. Also, due to high demand and overall customer satisfaction, MID is budgeting more funds for low income weatherization programs in 2015.

Program Descriptions

MID offers incentive programs that cover a wide variety of energy efficiency measures. The common theme for these programs is for customers to be MPowered. The correlation between these program offerings and the Sector /Category classifications used in the summary table of the E3 reporting tool are shown below:

Program Sector	Category	Corresponding MID Program(s) Offered*
Appliances	Res Clothes Washers	MPower Home
HVAC	Res Cooling	MPower Home; Weatherization
Appliances	Res Dishwashers	NA
Consumer Electronics	Res Electronics	Weatherization
HVAC	Res Heating	NA
Lighting	Res Lighting	Weatherization
Pool Pump	Res Pool Pump	MPower Home
Refrigeration	Res Refrigeration	Mpower Home; Weatherization
HVAC	Res Shell	MPower Home; Weatherization
Water Heating	Res Water Heating	MPower Home; Weatherization
Comprehensive	Res Comprehensive	MPower New Home
Process	Non-Res Cooking	MPower Custom
HVAC	Non-Res Cooling	MPower Business: Express & Custom
HVAC	Non-Res Heating	NA
Lighting	Non-Res Lighting	MPower Business: Express, Custom & New Construction
Process	Non-Res Motors	NA
Process	Non-Res Pumps	MPower Business: Custom
Refrigeration	Non-Res Refrigeration	MPower Business: Express & Custom
HVAC	Non-Res Shell	MPower Business: Custom & New Construction
Process	Non Res Process	MPower Business: Custom & New Construction
Comprehensive	Non Res Comprehensive	MPower Business: New Construction
Other	Other	MPower Business: Custom & New Construction
* see MID website (www.mid.org) for program details		

EM&V (Evaluation, Measurement & Verification)

MID continued its ongoing efforts to obtain independent, third-party review of its EE programs. To that end, MID hired Power Services, Inc. (CVMP qualified) to perform M&V on selected 2014 projects - in conjunction with the rebate approval process - which included control systems, refrigeration and compressed air. In 2014, MID also collaborated with Turlock and Merced Irrigation Districts and jointly hired Navigant Consulting to conduct EM&V on 2013 EE programs. MID's annual budget for EM&V work is \$75,000 and completed studies can be found at: <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>

The independent studies have consistently found the Realization Rate for MID's EE program portfolio to be within a few percentage points of 100%. Those results demonstrate that MID is accurately reporting the savings from its EE programs. The accuracy of reporting is due in part to the quality assurance practices MID staff applies on an ongoing basis throughout the approval cycle of applications for its EE programs.

Sources of Energy Savings

MID offers two types of rebates: express and performance, which are based on deemed and calculated savings, respectively. The deemed savings for the express rebates are based on KEMA, DEER and IOU work paper data from the prior version of the E3 reporting tool (pre-TRM). The calculated savings for the performance rebates are based on ex-anti and ex-post data from the specific project.

In 2015, MID will transition to the TRM as the source for its deemed savings wherever possible. In some cases, that will necessitate changing the structure of the rebate to match the savings unit of TRM. For example, MID's residential AC rebates are per unit (same rebate for a 2 ton unit as a 5 ton unit) and the TRM savings units are per ton, so MID will revise its program to offer rebates that align with the TRM.

Complimentary Programs

The formalization of Public Benefits programs came about through AB1890 (09/24/96), which defined four broad categories of public benefits programs, established a minimum funding level and codified the concept via Public Utilities Code section 385. While Energy Efficiency is the focus of this report, MID's activities in the three other public benefits categories, plus Energy Storage are briefly noted here:

- **Renewable Energy Programs**

MID's renewable energy programs are no longer funded from public benefits. Rather, they are conducted in accord with subsequent legislative or regulatory mandates, such as the Renewable Portfolio Standard (RPS) and the California Solar Initiative (CSI/SB1). To date, MID has procured enough renewable energy to satisfy the renewable energy trajectory that was established by the CEC for the three compliance periods.

- **Low-Income Programs**

MID's low income programs are comprised of weatherization, CARE rate discount and educational outreach. Energy savings from the weatherization program are included in the results for the SB1037 report. Customer demand for weatherization exceeds the annual amount budgeted and the rate discount alone represents a substantial portion of the total public benefits funding allocation. However, MID continues to facilitate new partnerships with other organizations and

agencies to increase its outreach and provide additional weatherization services to low-income customers.

- Research, Development and Demonstration Activities

MID remains open to partner with other utilities or agencies in opportunities to leverage the limited funding it can allocate to this program area.

- Energy Storage

MID has been working with the flow battery developer Primus Power since 2010 to investigate the potential benefits that energy storage may provide to MID and to help Primus gain a better understanding of utility operations and potential needs. In a continuation of this partnership, MID and Primus have agreed to install a 250kW flow battery pilot project within the MID service area. This pilot project will help to validate the battery's operating characteristics and will also help to determine how effectively flow batteries could be used to meet MID's operational needs.

Mode to			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	220	13,640	163,680	30	30	11,594	138,128		70	\$7,700	\$2,234	\$9,934	\$0.09
	Res Cooling HVAC	365	87,374	1,547,998	105	87	73,161	1,297,830		800	\$100,696	\$61,737	\$162,433	\$0.19
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics	92	6,900	103,500			6,900	103,500		52	\$10,283	\$2,553	\$12,836	\$0.17
HVAC	Res Heating													
Lighting	Res Lighting	3,205	126,024	826,730	144	12	126,024	826,730		416	\$43,738	\$20,410	\$64,148	\$0.09
Pool Pump	Res Pool Pump	101	32,421	324,210	6	6	22,370	223,705		113	\$20,200	\$3,601	\$23,801	\$0.13
Refrigeration	Res Refrigeration	344	329,404	3,072,188	30	30	248,540	2,674,995		1,451	\$169,201	\$80,137	\$249,338	\$0.13
HVAC	Res Shell	1,037	171,853	3,001,188	178	178	115,232	1,934,862		1,092	\$121,373	\$50,662	\$172,035	\$0.13
Water Heating	Res Water Heating	58	6,757	82,300			5,998	71,212		38	\$1,288	\$1,777	\$3,064	\$0.06
Comprehensive	Res Comprehensive	23	4,220	63,300			3,572	53,585		33	\$11,500	\$2,352	\$13,852	\$0.36
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	193	346,948	5,204,213	80	30	277,558	4,163,370		2,531	\$45,459	\$103,300	\$148,759	\$0.05
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	16,867	2,683,603	34,586,481	397	265	2,149,724	27,700,440		15,351	\$137,268	\$402,695	\$539,963	\$0.03
Process	Non-Res Motors													
Process	Non-Res Pumps	4	421,004	6,315,060	36	36	336,803	5,052,048		2,687	\$29,470	\$61,011	\$90,481	\$0.03
Refrigeration	Non-Res Refrigeration	70,715	1,507,999	17,359,259	154	165	1,244,451	14,195,147		7,484	\$145,202	\$169,282	\$314,484	\$0.03
HVAC	Non-Res Shell	1,241	743,104	11,041,195	66	66	594,483	8,632,956		4,915	\$73,443	\$118,878	\$192,320	\$0.03
Process	Non-Res Process	4	1,313,919	19,708,785	145	120	1,051,135	15,767,028		8,385	\$51,240	\$191,553	\$242,793	\$0.02
Comprehensive	Non-Res Comprehensive	1	165,399	2,480,985	55	242	132,319	1,984,788		1,223	\$50,000	\$52,644	\$102,644	\$0.07
Other	Non-Res Comprehensive Other	1	1,166,049	17,490,735	106	68	932,839	13,992,588		7,660	\$80,000	\$184,912	\$264,912	\$0.03
Subtotal		94,470	9,126,617	123,371,807	1,534	1,333	7,332,723	99,013,911		54,300	\$1,098,062	\$1,509,737	\$2,607,799	\$0.04
T&D														
Total		94,470	9,126,617	123,371,807	1,534	1,333	7,332,723	99,013,911		54,300	\$1,098,062	\$1,509,737	\$2,607,799	
EE Program Portfolio	TRC Test	1.42												
	PAC Test	4.17												

MORENO VALLEY UTILITY

-
- ***Moreno Valley Utility (MVU) At a Glance***
- Moreno Valley Utility (MVU) began serving its first customers in February 2004
- Climate Zone: 10
- Number of retail customer connections: 5,874
- Percent of retail sales by customer class: 72% Commercial and Industrial, 28% Residential
- Peak Demand: 32 megawatts
- Annual Energy Use: 125.1 gigawatt-hours
- Budgeted amount for energy efficiency programs: \$180,000

Utility Overview

The Mission statement for Moreno Valley Utility is to provide safe, reliable, and economical public electric service with a focus on customer needs, infrastructure enhancement, growth and responsible resource management. All of our customers' facilities are approximately ten years old or less, occupying buildings that meet Title 24 requirements. Most of the customer and sales growth has been in the industrial class.

Major Program Changes

The utility implemented the direct install program through the fiscal year, helping small commercial customers with energy efficiency upgrades.

Program Highlights

The direct install programs helped 12 small commercial customers save over 33,000kWh with energy efficiency upgrades.

Program Descriptions

- Energy Efficiency Program: Moreno Valley Electric Utility offers incentives to developers for buildings that exceed California Title 24 requirements by more than 10 percent. The utility also offers rebates for existing commercial customers that retrofit above Title 24 requirements.
- Energy Audits: Provides customers with a variety of recommendations for reducing energy consumption, when requested. Audits can be provided by community organizations that increase awareness of existing energy efficiency programs.
- Residential Energy Efficiency Programs: MVU held direct-to-customer LED light bulb giveaways during the reporting period.
- Direct Install Program: Working with SCPPA vetted contractors, MVU has contracted with RHA to perform a direct install program on small commercial business.
- Outreach Programs: The utility contracts with Automated Energy to provide medium to large sized commercial customers with detailed usage information to help them efficiently manage their energy consumption.

Complimentary Programs

- Ice Bear Thermal Energy Storage: The City of Moreno Valley has contracted with Ice Energy to install Ice Bear TES units on commercial customers' air conditioners. During the reporting period, ten units were installed on commercial retail buildings. In general, thermal energy storage is growing increasingly popular for public power utilities located in areas that have high summer peak demand usage, such as the City of Moreno Valley. The product is designed to reduce peak electrical demand by utilizing electric energy to produce ice at night during off-peak hours and then use the ice for cooling during the day.

- Moreno Valley Utility Solar Rebate Program: In support of Senate Bill 1, the City of Moreno Valley has a generous solar rebate program. For the fiscal year 2013/2014 the utility provided approximately \$450,000 in rebates for 63 residential customers. The rebate for the fiscal year was \$2 /watt and the program installed over 300kW of generation, estimating to generate over 543,000 kWh annually.

EM&V

Engineering analysis programs, such as DOE-2, are the basis for calculated energy savings and incentive calculations.

Moreno Valley				Resource Savings Summary						Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling													
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting													
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration													
HVAC	Res Shell													
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling													
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	403	51,724	515,659			43,965	438,310		260	\$9,331		\$9,331	\$0.03
Process	Non-Res Motors	3	1,650	24,750		14	1,403	21,038		12	\$788		\$788	\$0.05
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	1	917	7,339			780	6,238		3	\$235		\$235	\$0.05
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive													
Other	Other													
SubTotal		407	54,291	547,748		15	46,148	465,585		275	\$10,354		\$10,354	\$0.03
T&D	T&D													
Total		407	54,291	547,748		15	46,148	465,585		275	\$10,354		\$10,354	
EE Program Portfolio		6.29												
PAC Test		5.41												

CITY OF NEEDLES

Needles At a Glance

- The City of Needles Public Utilities Department was established in 1982.
- Needles is located in Western Area Power Authority Administration control area and is not part of the CAISO grid.
- Needles has 2,840 meters, serving 2,418 residential customers, 432 commercial customers, 53 commercial demand customers, and 4 master metered and 1 municipal customers.
- Total energy sales are 52,752,000 kilowatt-hours (FY 2013-14); 46 percent is residential sales, 54 percent is commercial and the remainder is master metered and municipal sales.
- Approximately 47% of Needles power comes from hydroelectric
- Peak demand is 19.1 megawatts
- Needles is an extreme summer peaking utility. Summer temperatures (late June through early September) can reach 130 degrees, and daytime temperatures range from minimum temperatures in the mid-90s with afternoon temperatures between 100 and 120 degrees.

Program Highlights

On an annual basis, Needles' load factor is less than 37 percent. The Needles City Council approved Resolution No. 7-24-07 1 on July 24, 2007 adopting the provisions of California Assembly Bill 2021 – *Public Utilities Energy Efficiency*. The budget amount of \$150,000.00 adopted for the program was based upon the Rocky Mountain Institute's analysis "to identify all potentially cost-effective electricity efficiency savings and establish annual targets for energy efficiency savings and demand reduction for the next 10-year period"

The City of Needles' energy efficiency programs are designed to reduce the summer air conditioning loads and increase the annual load factor. In FY 2013-14, the City of Needles' energy efficiency programs reduced peak demand by 164 kilowatts and 164,326 kilowatt-hours Western Area Power Authority approved Integrated Resource Plan Annual Progress Report for 2014). *Note: The kilowatt savings are derived from the number of hours that air conditioners are used in Needles (essentially all hours when temperature is greater than 90 degrees – April through October).*

Note: At FYE 6/30/2013 the total combined residential and commercial usage was 53,505,000 kilowatt hours. At FYE 6/30/14, the combined residential and commercial usage was 52,752,000 kilowatt hours, a decrease of 753,000 kilowatt hours or 1.4073451%.

The City of Needles will continue to budget \$150,000 annually for the existing energy efficiency programs and will allocate additional funding if customer demand is greater than the program allocation. The \$150,000.00 is funded by ratepayers via a line item on their electric bill (*Mandated Conservation* at \$0.0037/kWh). The prerequisite for eligibility for the energy efficiency program (City pays for 14 or higher SEER rated air conditioners, evaporative coolers and refrigerators) is that the rate payer's apply for

weatherization through the San Bernardino Community Action Coalition ("HEAP"). Needles budgeted \$50,000 for solar programs in FY 2013/14.

Residential Programs Descriptions

- Air conditioner, evaporative cooler, refrigerator replacement with SEER 14 or higher with proof of home weatherization completed.
- Air Conditioning Rebate Program: Provides installation support and financial rebates to facilitate upgrades to more efficient lighting and air conditioning systems.
- Sun Shade Program: Provides rates for the installation of residential sun shades, designed to lower house temperatures during the summers.

Demand Reduction Program Description

The City of Needles demand reduction program reduction target calls for 0.2mW for FY 2014-2015.

Needs			Resource Savings Summary								Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	35	8,225	164,500		8	8,225	164,500		104	\$150,000	\$14,326	\$164,326	\$1.54
HVAC	Res Cooling													
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting													
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration													
HVAC	Res Shell													
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling													
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting													
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration													
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive													
Other	Other													
SubTotal		35	8,225	164,500		8	8,225	164,500		104	\$150,000	\$14,326	\$164,326	\$1.54
T&D	T&D													
Total		35	8,225	164,500		8	8,225	164,500		104	\$150,000	\$14,326	\$164,326	
EE Program Portfolio	TRC Test	1.86												

• CITY OF PALO ALTO UTILITIES

City of Palo Alto Utilities (CPAU) At a Glance

- Established: 1896
- Only municipal utility providing electric, natural gas, commercial fiber optics, waste water treatment and water services to their customers.
- California Climate Zone: 4.
- Meters: 29,300 electric, 23,600 gas and 20,040 water.
- Percentage of retail sales by customer class:
 - Residential 19%
 - Commercial 59%
 - Industrial 22%
- Customer base: 90% residential, 9% commercial, and less than 1% industrial.
- Electric efficiency program spending:
 - Budgeted (FY 2014): \$3.62 million.
 - Actual (FY 2014): \$2.66 million.
 - Source of funding: 2.85% of sales revenue set aside for public benefit plus supply funds.
- Electric efficiency goal for FY 2014: 0.60% of total sales.
Electric efficiency achieved in FY 2014: 0.91% of total sales.
- Projected electric load growth (2015-2025): 0.2% for electric.

Utility Overview

CPAU has implemented a variety of energy efficiency programs since the 1970s. In 1998, in response to California's landmark energy legislation (AB 1890), CPAU established the Electric Public Benefits (PB) Program and increased the Electric PB program budget to 2.85 percent of projected annual revenue, supplemented by a one-time infusion from the Electric Supply funds during the 2001 energy crisis. Since 2008, CPAU's annual electric efficiency program budget has been supplemented with supply funds in order to meet the state's mandate that publicly owned electric utilities, in procuring energy, shall first acquire all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.

CPAU is committed to supporting environmental sustainability through efficient consumption of electric, gas and water resources, promoting distributed renewable generation, and modifying consumer demand through incentives and education. In March 2013, Palo Alto City Council approved a Carbon Neutral Electric Resource Plan committing CPAU to using carbon neutral electric resources beginning in 2013.

In addition to energy efficiency programs, CPAU is also pursuing research and development initiatives. One example is the Demand Response Pilot Program, designed to help participating large commercial customers reduce their electricity use on days when demand is high, which helps to reduce Palo Alto's annual peak electricity demand. CPAU is also running a pilot program to evaluate changes in energy and water use for residential customers provided with advanced meters and equipment to view their energy and

water consumption through an online portal. The pilot program has 300 customers participating, of which up to 150 will be on a time-of-use (TOU) electric rate schedule. The pilot is scheduled to continue through 2015.

Commercial Program Descriptions

- Commercial Advantage Program (CAP): Incentives offered to commercial customers for investments in efficiency lighting, motors, HVAC and custom projects that target peak demand and energy reductions. In FY 2014, CAP recorded gross annual electric savings of 3,492,731 kWh and gross annual gas savings of 3,767 Therms.
- Commercial and Industrial Energy Efficiency Program (CIEEP) is managed by Enovity, Inc. This program assists commercial and industrial customers by helping them evaluate and implement energy efficiency projects. In FY 2014, CIEEP recorded gross annual electric savings of 170,098 kWh and annual gas savings of 24,920 Therms.
- Laboratory Energy Efficiency Program (LEEP) is managed by Willdan Energy Solutions (WES). This program assists customers with at least 50% lab space in their facilities to evaluate and implement energy efficiency measures that resulted energy savings. In FY 2014, LEEP recorded gross annual electric savings of 477,777 kWh and annual gas savings of 2,918 Therms.
- RightLights+ is an ongoing program focusing on energy efficiency savings from lighting retrofit. In FY 2014, RightLights+ recorded gross annual electric savings of 2,280,162 kWh.
- Hospitality program helps hotels implement energy efficiency measures such as Key Card Entry, LED lighting and HVAC equipment improvement. In FY 2014, Hospitality recorded gross annual electric savings of 121,943 kWh and an annual gas savings of 63,600 Therms.
- Keep Your Cool program focuses on helping commercial customers implement energy efficient refrigeration measures. In FY 2014, Keep Your Cool recorded gross annual electric savings of 240,296 kWh.
- Commercial Loan Program the Commercial Loan Program was discontinued on June 30, 2014 due to lack of participation. There are currently three remaining loans with a total outstanding loan balance of \$31,103.
- Business New Construction (BNC) Customer projects going through the BNC program have a long lead time starting with the project design phase and ending after construction and commissioning is completed. During FY 2014, six different BNC projects were completed, with combined electric savings of 704,179 kWh and gas savings of 40,947 therms. This includes the completion of the 40,000 sq. ft., LEED Platinum-certified, Mitchell Park Library.

Residential Program Descriptions

- Smart Energy Program is a comprehensive energy efficiency incentive program for residential customers to promote shell improvements, and high efficiency HVAC equipment, pool pumps, appliances and lighting. Launched an LED lightbulb program in which residents had access to coupons enabling them to purchase LED lightbulbs at 50% less than market price. In FY 2014,

Smart Energy recorded annual electric savings of 116,573 kWh and annual gas savings of 11,590 Therms.

- Residential Low-Income Assistance Program (REAP) provides weatherization and equipment replacement services to low-income residents. This program has equal focus on efficiency as well as comfort, and therefore is not cost effective. In FY 2014, REAP recorded annual electric savings of 176,471 kWh and annual gas savings of 6,163 Therms. In FY 2014 the program began installing high-efficiency air source heat pumps for residents that previously had no heat source.
- Home Energy Report provides Palo Alto residents with individualized reports comparing their home energy use with neighbors in similarly sized homes. Approximately 20,000 residents receive the Home Energy Report by mail once every quarter. In FY 2014, the Home Energy Report recorded annual electric savings of 1,789,926 kWh and annual gas savings of 169,788 Therms. These savings are slightly higher than savings reported in previous years due to a different methodology used to avoid double counting energy savings between the Home Energy Report program and the Smart Energy program.
- New Residential Construction program provides incentives to customers who build new homes which save 20% more energy than required by California Title 24 requirements. In FY 2014, the New Residential Construction program recorded annual electric savings of 10,238 therms and 28,169 kwh.
- Refrigerator Recycling provides residents an option to have old, energy intensive refrigerators responsibly recycled. In FY 2014, 109 units were recycled for a total of 67,144 kwh savings
- Community Energy Education Program: CPAU offers free residential online audits and other energy conservation and efficiency education programs to target groups in the community. Activities include hosting commercial Facility Manager Network meetings for key account customers, residential energy workshops, participation in Chamber of Commerce meetings, neighborhood association events, and local fairs and special events.

Public School Program Descriptions

- CPAU provides annual grants of \$50,000 to the Palo Alto Unified School District (17 schools with 10,000 students total) to support teacher training programs and the development of curriculums and education projects that promote energy and water efficiency. CPAU participates in monthly sustainability committee meetings and gives educational presentations to classes on energy efficiency, renewable energy, and safety.

Complimentary Programs

- Customer-side Renewable Generation:
CPAU offers rebate programs for customers who install both solar electric or photovoltaic (PV) and solar water heating (SWH) systems. Both programs are governed by state law in regard to development, implementation and administration. These customer-side generation systems are not included in the utility's Renewable Portfolio Standard (RPS) supply requirements.

- Customer-sited, Utility-interconnected Renewable Generation:
The Palo Alto CLEAN (Clean Local Energy Accessible Now) program offers a feed-in tariff for commercial sized PV systems installed on the utility-side of the electric meter where all of the generated electricity is procured for use in Palo Alto's Renewable Portfolio Standard (RPS). For fiscal year 2014, the price is 16.5 ¢/kWh fixed for 20 years.
- Program for Emerging Technologies:
CPAU launched this program in 2012 to partner with individuals and companies who want to evaluate, test and implement innovative emerging technologies. The goal is to find and nurture creative products and services that will manage and better use electricity, gas, water and fiber optic services. Examples of projects implemented during FY 2014 include an advanced lighting control system for parking garages and distributed solar on street light poles.
- Demand Reduction Pilot:
CPAU's current demand response pilot program offers incentives to large commercial customers to voluntarily reduce their electricity use during high load periods in the summer months. The program is coordinated with a third-party vendor, Autogrid, providing DR-related communications to customers as well as calculating the financial incentives based on the customer's load reduction.

Evaluation, Measurement & Verification

For fiscal year 2014, CPAU contracted with Cadmus to undertake impact and process evaluation for the Business New Construction program. A final EM&V report is expected to be available by March 2015.

Paleo Alto			Resource Savings Summary										Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)		
Appliances	Res Clothes Washers	288	48,384	580,688			38,707	464,486		234	\$7,154		\$7,154	\$7,154	\$0.02	
	Res Cooling HVAC	55	28,546	568,377			28,459	567,135		346	\$109,539	\$9,659	\$119,198	\$119,198	\$0.32	
	Res Dishwashers															
	Res Electronics															
	Res Heating HVAC	3	2,223	22,230			1,556	15,561		8	\$600		\$600	\$600	\$0.05	
	Res Lighting	2,288	197,059	2,051,611	37	36	156,297	1,605,999		808	\$37,744		\$37,744	\$37,744	\$0.03	
	Res Pool Pump	9	6,703	67,030			4,692	46,921		24	\$1,600		\$1,600	\$1,600	\$0.04	
	Res Refrigeration	222	86,177	557,830	13	13	68,236	436,391		237	\$17,941	\$23,081	\$41,022	\$41,022	\$0.11	
	Res Shell HVAC	1,705	16,539	262,460	13	13	12,067	188,632		106	\$34,580	\$20,040	\$54,620	\$54,620	\$0.43	
	Water Heating	1	2,683	32,196			2,281	27,367		15	\$200	\$147	\$347	\$347	\$0.02	
Process	Res Comprehensive	25,864	1,789,969	1,790,270			1,789,960	1,790,194		901	\$172	\$54	\$226	\$226		
	Non-Res Cooking HVAC	85	124,395	1,929,081	11	11	102,741	1,594,800		971	\$23,273	\$70,976	\$94,249	\$94,249	\$0.09	
	Non-Res Heating HVAC															
	Non-Res Lighting	803	2,737,962	39,821,280	455	453	2,165,885	31,344,822		17,371	\$288,123	\$492,237	\$760,360	\$760,360	\$0.03	
	Non-Res Motors															
	Non-Res Pumps	1	52,100	573,100			44,285	487,135		245	\$6,513		\$6,513	\$6,513	\$0.02	
	Refrigeration	703	246,584	3,396,625	6	6	197,060	2,721,915		1,435	\$50,319	\$20,820	\$71,138	\$71,138	\$0.04	
	Non-Res Shell HVAC	319	121,943	2,438,860	67	67	85,360	1,707,202		950	\$69,818	\$14,232	\$84,050	\$84,050	\$0.08	
	Non-Res Process	4	386	4,634			178	2,132		1	\$800	\$17	\$817	\$817	\$0.50	
	Comprehensive Other	3,955,674	4,204,202	39,441,268			3,520,257	32,954,051		20,078	\$416,316	\$718,014	\$1,134,330	\$1,134,330	\$0.04	
Subtotal		3,987,994	9,665,856	93,537,460	603	599	8,218,060	75,954,743		43,728	\$1,044,691	\$1,369,277	\$2,413,968	\$2,413,968	\$0.04	
T&D				1,806	604,028	12,080,568	147	147	604,028	12,080,568			\$77,524	\$77,524		
Total				3,989,800	10,269,885	105,618,028	750	746	8,822,068	88,035,311			\$1,446,801	\$2,491,492		
EE Program Portfolio			TRC Test	1.43												
			PAC Test	2.08												

PASADENA WATER & POWER (PWP)

Pasadena Water & Power (PWP) At a Glance

- Established: 1906
- Climate Zone: 9
- Service Territory Population: 140,879 (Source: California Department of Finance, January 2014)
- Retail sales: 1,110 GWh (\$184,152,862)
 - Residential connections: 56,491 (27.7% of retail sales)
 - Commercial and Industrial connections: 8,543 (72.3 % of retail sales)
 - 0.33% increase in sales revenue versus FY2012/13
- Budget for energy efficiency programs:
 - \$3,065,619 expended (includes administration and marketing costs)
 - Funding source: Public Benefits Charge ("PBC"), as authorized under Public Utilities Code 385(a), funds all AB1890 programs (current PBC revenue rate = \$0.00685/kWh)
 - Expended 1.66% of FY13/14 retail electric sales revenues on energy efficiency rebates.
 - Energy Efficiency programs (Rebates, Services, Direct Install, Marketing, Administration, and Program Evaluation, Measurement and Verification) represent approximately 43% of Pasadena's Public Benefit expenditures, solar incentive programs represent 43%, Research Development and Demonstration 2%, and income qualified rate assistance represents 12%.

Utility Overview

Trends in the utility and the local community which impact energy efficiency programs include:

- Pasadena's local economy has continued to gain momentum in 2014 and strong investments from the private sector in a variety of projects during the past few years are now translating into new construction in Pasadena.
- Approved new power rates to help achieve energy efficiency and environmental goals.
- Aggressive energy efficiency goals have led to flat energy load projections in the future.

Major Program Changes

Major changes to PWP's energy efficiency programs during the FY13/14 program year include:

- Increased expenditures for small business direct install ("WeDIP") program to keep up with customer demand.
- Introduced a packaged program for income qualified customers called "Under One Roof" which includes, energy efficiency rebates, residential solar PV installations, and exterior home repairs.
- Increased incentive levels for commercial customized incentive program in response to Title 24 changes.

Program Results and Highlights

Summary efficiency program energy savings results by customer type (see Tables 1 and 2 below):

Residential: 4,539 MWh

Non-Residential: 10,832 MWh

T&D and C&S*: 3,814 MWh

Total: 19,185 MWh

* Transmission and Distribution ("T&D") and Codes and Standards ("C&S")

Table 1: PWP Energy Efficiency Program Results (by program)

	Units Installed	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Utility Incentives (\$)
TOTAL EE PORTFOLIO	8,204	2,480	19,185,821	\$ 2,579,924
Residential Rebate Program	1,871	45	155,162	\$ 131,142
Home Energy Reports	1		3,403,710	\$ 308,000
Residential Audits	233	13	33,815	\$ 21,299
Residential Giveaways	5,001	146	583,583	\$ 70,215
T&D	N/A	60	524,109	\$ 0
C&S	N/A	413	3,224,700	\$ 0
Commercial Customized EEP	47	1,272	8,598,657	\$ 1,119,048
Commercial Direct Install WeDIP	519	458	2,299,235	\$ 743,352
Low Income Refrigerator Exchange	532	74	362,851	\$ 186,868

Energy efficiency program with the greatest impacts:

- Energy Efficiency Partnering Program ("EEP") (8,598,657 kWh savings): Commercial efficiency incentive program that encourages energy saving and load reduction projects.
- Home Energy Reports (3,403,710 kWh savings): Six printed reports mailed to 25,000 customers, reminding them of efficiency and rankings to encourage reductions in their energy usage; savings are tracked from actual metered data; no cost to participant.
- Water & Energy Direct Install Program ("WeDIP") (2,299,235 kWh savings): Small businesses direct install program to conduct retrofits; no cost to participant.

Program Descriptions

- Res Lighting
 - *Energy Star® Home Incentives Program* provided prescriptive rebates on efficient refrigerators and light fixtures; promoted no-cost refrigerator/freezer recycling services
 - *Lighting Distribution Program* provides vouchers for efficient light bulbs upon request as well as a reward for participating in income-qualified and refrigerator recycling programs
- Res Cooling
 - *Efficient Cooling Home Incentive Program* provided prescriptive rebates for the installation of efficient air conditioning, skylights/windows and sun shade screens

- Non-res Lighting, Non-res Shell and Non-Res Cooling
 - EEP – custom incentive program
 - WeDIP – no-cost audits and direct installs
 - *Codes and Standards (“C&S”)* PWP has included 3.2 GWH and 413 kW of energy and peak demand savings that are occurring in our service territory due to the State building codes and appliance standards that are encouraged and enforced by the City’s Building Department.
- Non-Res Pumps
 - PWP’s water efficiency programs saved 30.3 million gallons, resulting in 370,646 kWh annual energy savings (shown on the E3 as “Non-Res Pumps”); PWP’s PBC Fund provided \$57,414 rebate to PWP’s Water Conservation Fund for the value of these savings.
- T&D Efficiency Gains
 - Distribution system upgrades, including the conversion from 4kV to 17 kV, yielded energy savings of 524 MWh
- Res Comprehensive
 - Home Energy Reports mailed to 25,000 customers, reminding them of efficiency and rankings to encourage reductions in their energy usage; savings are tracked from actual metered data.

Evaluation, Measurement and Verification (EM&V)

PWP expended \$133,727 on energy efficiency program EM&V to justify program design, expenditures and verify results:

- Residential Programs
 - Energy Star, Efficient Cooling and Pool Pump programs: Contractors performed site verifications on 10% of all residential efficiency equipment purchases and installations, and on 100% of refrigerator/freezer recycling and refrigerator exchange program participants
- Non-Residential Programs
 - EEP and Program: Utility staff and contractors performed pre-and post-installation equipment and installation verification, on site, for 100% of customer projects.
 - Of the 46 non-residential customer projects completed, over 30% had an independent engineering analysis conducted by a PWP engineering consultant
 - Mechanical Equipment Retrofits: PWP engineering contractor calculated energy savings and demand reduction using DOE’s eQuest building modeling software
 - Lighting: Engineer-certified Excel workbook used to calculate lighting retrofit project energy savings based on the actual hours of operation
 - Data Loggers: Data loggers and CT’s were occasionally used to verify operating hours and equipment savings

Pasadena		Resource Savings Summary							Cost Summary						
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	311	12,001	132,011			3,720	40,923		24	\$3,290	\$700	\$3,990	\$0.13	
	Res Cooling	1,278	70,814	496,968	17	28	67,091	444,131		287	\$63,043	\$8,780	\$71,823	\$0.20	
	Res Dishwashers	3	174	1,740			104	1,044		1	\$180	\$17	\$197	\$0.24	
	Res Electronics														
	Res Heating														
	Res Lighting	3,389	305,551	4,881,833	147	148	305,551	4,881,833		2,769	\$40,286	\$4,116	\$44,412	\$0.01	
	Res Pool Pump	50	33,700	337,000		1	20,220	202,200		121	\$11,025	\$3,738	\$14,763	\$0.09	
	Res Refrigeration	1,057	503,058	3,297,950	74	85	453,566	2,815,694		1,589	\$242,403	\$49,179	\$291,582	\$0.12	
	Res Shell	1,316	255,695	2,578,230	1	3	251,343	2,534,706		1,509	\$35,675	\$2,493	\$38,169	\$0.02	
	Res Water Heating														
Comprehensive Process	Res Comprehensive	234	3,437,525	3,437,525	13	13	3,437,525	3,437,525		2,218	\$329,299	\$64,790	\$394,089	\$0.12	
	Non-Res Cooking	7	2,362,680	47,253,600	268	268	2,362,680	47,253,600		30,226	\$376,562	\$95,571	\$472,133	\$0.02	
	Non-Res Heating														
	Non-Res Lighting	206	6,430,196	70,732,156	1,259	1,233	6,430,196	70,732,156		41,893	\$1,053,428	\$156,435	\$1,209,863	\$0.02	
	Non-Res Motors	6	769,636	12,314,176		117	769,636	12,314,176		6,863	\$102,983	\$16,727	\$119,709	\$0.01	
	Non-Res Pumps	1	244,857	3,917,712			244,857	3,917,712		2,183	\$57,414	\$6,322	\$62,736	\$0.02	
	Non-Res Refrigeration	173	1,024,610	20,492,200	101	101	1,024,610	20,492,200		11,421	\$267,415	\$77,483	\$344,898	\$0.03	
	Non-Res Shell	174	3,290,613	3,290,613	422	422	3,290,613	3,290,613		1,999	\$34,657	\$344	\$35,001	\$0.01	
	Non-Res Process														
	Non-Res Comprehensive														
Other															
SubTotal		8,205	18,741,109	173,163,713	2,302	2,420	18,661,712	172,358,513		103,102	\$2,617,670	\$485,695	\$3,103,365	\$0.02	
T&D		1	524,109	15,723,270	60	60	524,109	15,723,270		8,763	\$0		\$0		
Total		8,206	19,265,218	188,886,983	2,362	2,480	19,185,821	188,081,783		111,865	\$2,617,670	\$485,695	\$3,103,365		
EE Program Portfolio		3.01													

PLUMAS-SIERRA RURAL ELECTRIC COOPERATIVE

Plumas-Sierra Rural Electric Cooperative (PSREC) At a Glance

- Established 1937
- PSREC serves climate zone 12 in Northern California
- PSREC serves approximately 7,807 retail customers through approximately 8,477 meters
- Percent of retail sales by customer class – residential = 43%, commercial = 12%, industrial = 38%, agriculture = 7%
- Budgeted amount for energy efficiency programs in 2014 was \$108,000. The amount actually expended was \$89,000. Funding for energy efficiency programs is collected on member bills through the Public Benefits Charge.
- PSREC had load reduction of 2.3% in 2014

Utility Overview

Founded in 1937, Plumas-Sierra Rural Electric Cooperative (PSREC) is a member-owned electric distribution utility providing electrical power and related services to more than 7,800 member/owners in Plumas, Lassen, and Sierra counties in California and portions of Washoe County in Nevada. We are a true cooperative, controlled by the membership through an elected seven-person board of directors.

Our goal is to provide utility services with a high level of reliability for fair and reasonable costs. We are also dedicated to improving the quality of life of our member-owners and our local communities.

Major Program Changes

A large portion of PSREC's energy savings have historically been achieved through our once highly successful Ground Source Heat Pump (GSHP) Program. Most GSHP installations are in newly constructed homes, due to PSREC's robust outreach and education to encourage custom home contractors to incorporate GSHPs in their construction plans.

With the near halt of new construction and economic downturn, our forecasted energy efficiency goals have been drastically impacted. Due to this dramatic decrease in new construction, GSHP installation has nearly stopped. The construction decline has devastated our community, as well as our energy efficiency objectives. We are hopeful to see the market recover in future years and would anticipate our dedicated contractor network to again assist us in encouraging the installation of GSHPs.

In the meantime, PSREC continues to introduce contractors to new technologies for building more energy efficient homes. Additionally, attempts to diversify programs to include small commercial and irrigation members have provided results and participation far from exceptional.

The E3 model has limitations in how coincident peak demand savings are reported since PG&E's load profile is applied as the default. An important aspect to note is PSREC's unique peak demand occurs

during winter hours of 5 a.m. to 10 a.m. Therefore, the most cost-effective program concentration will be to reduce demand in the winter.

PSREC introduced weatherization and air source heat pumps into the programs last year. As a heating utility, very little savings are achieved for cooling. Members realize more benefit from retrofitting outdated and oversized baseboard heaters to ductless mini-split systems and sealing their homes with weatherization and insulation measures. Building envelope upgrades and heating system retrofits proved to have more value to our members who needed it most, typically those with low or middle class income.

Program Highlight

We again experienced the greatest impact and higher participation than anticipated in our Weatherization Window Replacement Program. PSREC's diverse territory of essentially older, rural mobile and single family homes, many of which have single pane windows or are extremely below code, have recently seen many foreclosures and changes in ownership contributing to renovating and upgrading drafty windows and sealing air leaks.

Program Descriptions

- Geothermal Heating/Cooling Loans - 0% interest ground source heat pump loop loans available for installation of ground-source heat pumps. This program has suffered due to the near halt of construction in our area.
- ENERGY STAR® Appliance - ENERGY STAR® Appliance Rebates: Rebates available for the purchase of an ENERGY STAR® refrigerator, dishwasher, clothes washer or other small electronics.
- ENERGY STAR® Lighting - ENERGY STAR® LED Lamp Program: Offered rebates for the purchase and installation of LED lamps.
- ENERGY STAR® Lighting - LED Holiday Light Rebate: Rebates provide an incentive to replace incandescent holiday light strands with qualified new ENERGY STAR LED holiday light strands.
- Appliance Recycling - Non-essential Freezer/Fridge Retirement: Rebates offered for recycling a non-essential freezer or refrigerator.
- Efficiency/Green Building Education - Education/Outreach: Provide energy efficiency and conservation information to interested members to help them reduce their bill, understand their energy consumption and make their home more efficient. This program has successfully addressed high bill concerns by empowering members to use information such as our 'Do-It-Yourself Energy Audit' to learn more about their home and how they use energy.
- Efficiency/Green Building Education - Energy Audits: PSREC significantly increased efforts to provide free comprehensive energy audits to assist members with energy conservation or troubleshooting high energy consumption in their home. This program has been successful in educating members about efficiency and conservation and assisting in reduction of energy use, especially in low-income homes. Commercial Energy Audits: Provide free energy audits to businesses to assist members with energy conservation or troubleshooting high energy

consumption in their business. With the suffering economy, our local businesses are also suffering. This program has been successful in assisting business owners in making decisions in efficiency upgrades and conservation.

- Water Heaters - Marathon Water Heater Program: Discounted sales of high-efficiency electric water heaters. This program remains steady, yet has been impacted with the halt of new construction.
- Ag Irrigation - Irrigation Efficiency Program: To encourage the installation of energy efficient equipment in agricultural irrigation systems PSREC offers rebates for pump tests, NEMA Premium motor replacement and installation of variable frequency drives.
- Weatherization - Weatherization Program: By retrofitting a home to above-code R-Values, and upgrading windows to double-pane high-performance windows, members will not only realize the added comfort, but also gain increased home values and curb-side appeal. PSREC encourages members to invest in weatherization measures prior to, or in addition to, investing in a new heating source for energy conservation.
- HVAC – HVAC Rebates: PSREC provides members with rebate options to encourage installation of energy-efficient electric heat pumps and ground-source heat pumps in new construction and existing homes and small businesses. Upgrading to an energy-efficient heating and cooling system will contribute to increased comfort in homes or businesses while helping to reduce overall energy use.

EM&V

PSREC EM&V reports can be found online at: <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>.

PSREC developed its five year EM&V plan in 2011 to focus on improving existing energy efficiency programs with a yearly internal review to evaluate effectiveness and improvement areas. PSREC has committed to seek third party evaluation of its programs every five years, dependent upon budget. Plumas-Sierra's Five Year Evaluation, Measurement and Verification Plan has initiated a focus on the following items:

- Update the GeoExchange program to better represent the outcome of the engineering evaluation performed by Efficiency Services Group, LLC.
- Review the process evaluation of all residential energy efficiency programs and streamlining the method of rebate tracking.
- Participation in NCPA's Demand-side Management Database through Energy Orbit allows for the ability to comprehensively measure and quantify program goals.
- Conduct a study to verify the reported energy efficiency program savings and reductions in demand.
- Verify a sample of installations through a review of the application and receipt documentation.

Complimentary Programs

- Plumas-Sierra Solar Program: The Plumas-Sierra Solar Program (PSSP) is a program designed to encourage PSREC members to install high-quality solar PV systems on their homes and businesses and start producing clean, renewable energy.
- Net Metering Program: PSREC is also pleased to offer net-metering for members that install solar PV systems. In accordance with State Assembly Bill 920, all of PSREC's solar members are eligible to receive compensation for generating net surplus electricity.
- Meter Lending Program: Members can borrow our WattsUp® meter to plug in 120-volt appliances, helping them identify energy use of specific appliances. This program has helped several members understand just how much an appliance or space heater really uses and helps them make the choice of unplugging or reducing energy use.
- Lending Library and Resource Center: Provides energy efficiency and renewable energy resources to members through a book lending library and resource center in our office lobby.
- Low Income Winter Rate Assistance Program: Income-qualified members can apply for a discounted rate during the heating season. In conjunction, a home energy audit is offered to assist members with energy conservation. This program is steadily growing as members who are struggling in the weak economy are extremely appreciative of the assistance.
- Research, Development, and Demonstration: PSREC is researching the feasibility of installing a 100KW community solar project to offer solar energy to our members who currently cannot install solar on their homes or businesses due to cost, location or ownership status.

PlumasSierra			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	21	5,964	65,604			1,849	20,337		10	\$735	\$1,460	\$2,195	\$0.14
HVAC	Res Cooling	7	126	1,890	7	126	101	1,512		1	\$2,100	\$3,113	\$5,213	\$4.82
Appliances	Res Dishwashers	11	638	6,380			383	3,828		2	\$385	\$275	\$660	\$0.22
Consumer Electronics	Res Electronics													
HVAC	Res Heating	36	42,660	1,066,500							\$8,400		\$8,400	\$8,400.00
Lighting	Res Lighting	312	956	7,690		2	516	4,153		2	\$3,825	\$3,892	\$7,717	\$2.36
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration	55	21,921	137,030		3	15,345	95,921		52	\$3,625	\$3,712	\$7,337	\$0.09
HVAC	Res Shell	22,343	22,343	446,860			6,256	125,121		71	\$5,566	\$3,113	\$8,699	\$0.11
Water Heating	Res Water Heating	312	39,480	394,800		7	23,688	236,880		127	\$10,500		\$10,500	\$0.06
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling													
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting													
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration													
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive													
Other	Other													
SubTotal		23,097	134,088	2,126,754		11	48,137	487,752		265	\$35,156	\$15,566	\$50,722	\$0.14
T&D	T&D													
Total		23,097	134,088	2,126,754		11	48,137	487,752		265	\$35,156	\$15,566	\$50,722	
EE Program Portfolio	TRC Test PAC Test	0.83 0.89												

PORT OF OAKLAND

Port of Oakland At a Glance

- Year established: Prior to 1990
- Climate Zone(s): 3
- Number of retail customer connections and approximate number of retail customers served: 130-150
- Percent of retail sales by customer class – residential, commercial, industrial, agriculture: 100% Commercial.
- Budgeted amount for energy efficiency programs, amount actually expended and funding sources; specify if unused EE dollars are reallocated to other Public Benefits program: All Energy Efficiency Programs are funded by AB 1890 funds. Beginning balance of AB 1890 funds for this year (2014) is \$ 879,535. AB 1890 revenue for this year (2014) is \$ 211,916.
- Load growth (including negative): Annual energy sales increased by 2.873 gig watt-hours and the average peak demand increased by 1.516 mega watts.

Utility Overview

Port of Oakland is a very small community with a little or no – room for a major growth potential. The community is 100% commercial. At this time the business at the Port remains constant at about the same level as the last year and we are optimistic that the business will grow this year to achieve its maximum allowable growth.

Commercial Program Descriptions

- Energy Audits: The Port is currently offering Energy Audit program that will result in recommendations of five major energy saving retrofit/improvement projects that could be undertaken to effectively support load reduction and the more efficient use of energy in the area. The proposed energy efficiency projects will be prioritized by highest to lowest energy savings. Rebates will be provided for the energy efficiency projects completed based on the energy audit recommendations, and up to 100 percent of the total energy audit cost.
- Energy Saving Measures Exceeding Title 24 Standards: Port will provide a rebate for any new facility constructed within the Port by its electricity customers that exceed the title 24 standards in energy saving measures. Eligible facility must reduce energy usage by a minimum of 10% compared to the standard title 24 facility. This rebate will pay for a % of the cost difference between a standard and an upgraded title 24 equipment (such as HVAC units) and material.
- Energy Saving Equipment Retrofits/Improvements Rebates: The Port has implemented a program that provides generous rebates and solid technical support for the installation of new energy efficient equipment/improvements by our commercial customers. Under our program, the eligible projects must reduce energy usage by a minimum of 20 percent, to be eligible for a rebate of the equipment cost differential (up to a 90 percent rebate for energy saving of 90 percent or more).

- Lighting Retrofit: A program providing rebates for the installation of energy efficient lighting that reduces annual energy usage by at least 35 percent in commercial facilities. This rebate is based on a single flat incentive rate of \$0.05 per annual kilowatt-hours saved.

Complimentary Programs

- Energy Saving / Efficiency Research, Development, and Demonstration Programs: Port electricity customers that do research, development and demonstrate new energy saving/efficiency programs are entitled to a rebate up to 20% of the cost of a project based on availability of funds. To qualify for a rebate under this program all Energy Savings/Efficiency Research, Development and Demonstration Programs must be based on environmental friendly natural resources (or waste products).
- Photovoltaic (PV) Power Generating Systems In Accordance with Senate Bill 1 (SB1): Beginning January 1, 2008, this rebate will reimburse new solar energy generating facilities a one time flat rate of \$ 3.50 per watt (Alternating Current) of installed capacity. In the event the new solar facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess solar electric power from said facility at the same rate the Port sells power to said facility. In addition, the new solar energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility. This rebate is subjected to 7% annual reduction per SB1.
- Other Renewable (or Green) Energy Programs: Beginning January 1, 2008, this rebate will reimburse new clean wind energy generating facilities that generates over 7.5 kilowatts a onetime flat rate of \$ 1.50 per watt (alternating current) of installed capacity and if the facility generates less than 7.5 kilowatts then the rebate will be a onetime flat rate of \$ 2.50 per watt (alternating current) of installed capacity. In the event the new wind power facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess electric power from said facility at the same rate the Port sells electric power to said facility. In addition, the new wind power energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility. All other renewable generation that qualifies under this program are given a maximum rebate of 20% of the construction cost of the generating facility, based on the availability of funds.

RANCHO CUCAMONGA MUNICIPAL UTILITY

Rancho Cucamonga Municipal Utility (RCMU) At a Glance

- Year established: 2001
- Climate Zone: 10
- Number of retail customer connections: 888
- Percent of retail sales by customer class: 60% Commercial and Industrial, 40% Residential
- Budgeted amount for energy efficiency programs: \$525,000

Utility Overview

RCMU retail customers increased in 2014 with the addition of over 300 residential connections from a new development. The amount of rebates submitted in fiscal year 2014 was comparable to previous years but the quantity of equipment being replaced per rebate has significantly increased. RCMU is continuing to advertise the rebate programs and energy efficiency information with a quarterly newsletter and bill inserts. Free energy audits are currently utilized to educate customers on energy savings and potential upgrades on existing equipment. New developments in the planning and construction phases include two industrial buildings, a grocery/retail center, a hotel and a fire training facility.

Major Program Changes

As most of the commercial buildings within RCMU are now approaching the ten year mark, inquiries on rebates and programs has increased, including questions on LED, HVAC and outdoor lighting upgrades. In an effort to increase participation, the energy efficiency rebate program was updated to include new categories and offer a kW savings rebate for customer classes that receive demand charges on their bill.

Program Highlights

In 2014, lighting rebates continue to have a great impact amongst all of the rebate categories. RCMU had 7 lighting rebate applications and issued \$16,165 in rebates, which will save an estimated 257,715 kWh per year. Each rebate included some type of LED upgrade to the existing equipment. As LED costs continue to decrease and the benefits and reliability continue to be confirmed, more businesses are willing to invest in LEDs to save energy and money.

The Direct Savings program introduced in 2013 also had a significant impact in increasing energy efficiency measures. 45 energy audits were completed through the program, with 28 of those businesses taking advantage of the direct installation option totaling over 79,000 kWh saved annually. The program provided customers with upgrades while educating them on what they can do to maximize their energy savings.

Program Descriptions

- Energy Audits: RCMU offers free, customized energy audits including lighting assessment, HVAC assessment, equipment assessment and a review of energy usage. Specific cost-effective recommendations to improve energy efficiency and reduce energy use are provided.

- Direct Savings Program: To encourage and assist businesses to reduce their energy usage, RCMU will pay and install up to \$1,500 of recommended retrofit items that are determined from the energy audit. Any cost above the \$1,500 limit is paid by the business.
- Energy Efficiency Rebate Program: RCMU has adopted an "Express Solution" model for energy efficiency rebates. RCMU does not restrict customers to specific technologies or approved models of equipment; customers can install an energy efficient improvement within the approved categories with little restrictions. Customers receive a rebate for estimated kilowatt hour savings for the first year. RCMU uses the following categories and incentive rates:

Category	Annual kWh Savings Rebate	Annual kW Savings Rebate*
Lighting	\$0.05/kWh	\$100.00/kW
Interior LED	\$0.08/kWh	\$100.00/kW
Exterior LED	\$0.09/kWh	N/A
Delamping	\$0.05/kWh	\$100.00/kW
HVAC	\$0.09/kWh	N/A
Motors	\$0.09/kWh	N/A
Refrigeration	\$0.09/kWh	N/A

Complimentary Programs

- Renewable Energy Programs: In FY 2014, RCMU added one new solar customer into the service area and is estimated to save a total of 50,372 kWh per year. RCMU continued to offer a high rebate incentive of \$2.09 per watt installed for renewable energy generation systems with a peak AC output of less than 30 kW and \$0.07 per kilowatt hour produced for renewable energy generation systems with a peak AC output of 30 kW or more. By keeping the rebate incentive high, RCMU saw an increase in inquiries and applications to invest in renewable energy. These incentives are capped at 50% of total system installation cost. RCMU is also currently waiving all RCMU-related plan check and inspection fees.
- Low Income Program: In FY 2014, RCMU added a new Low Income program. The program is intended to assist customers with their bill and will be funded by the RCMU Public Benefit Fund. The household size and gross income requirements will be based off of the San Bernardino County Income Limits and Documentation system. Qualified residents will need to provide an application with supporting documentation annually to receive a credit on their bill each month.
- New Development Incentive: This incentive is for new development that is built to exceed a minimum of 15% above Title 24 Code. The incentive payment is based off of the final Title 24 report created by a Certified Energy Plans Examiner (CEPE) and verified by a third party certified Home Energy Rating System (HERS) Rater.

Rancho Cucamonga				Resource Savings Summary							Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling													
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting													
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration													
HVAC	Res Shell													
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking	4	2,392	11,960			2,392	11,960		8	\$840	\$92	\$932	\$0.09
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	2,394	326,615	5,225,842	62	30	326,615	5,225,842		3,095	\$42,365	\$31,271	\$73,637	\$0.02
Process	Non-Res Motors													
Refrigeration	Non-Res Pumps													
HVAC	Non-Res Refrigeration													
Process	Non-Res Shell													
Comprehensive	Non-Res Process													
Other	Non-Res Comprehensive	20	7,860	125,760	2	1	7,860	125,760		70	\$2,305	\$637	\$2,941	\$0.03
Subtotal		2,418	336,867	5,363,562	64	32	336,867	5,363,562		3,173	\$45,510	\$32,000	\$77,510	\$0.02
T&D														
Total		2,418	336,867	5,363,562	64	32	336,867	5,363,562		3,173	\$45,510	\$32,000	\$77,510	
EE Program Portfolio	TRC Test	19.71												
	PAC Test	8.14												

REDDING ELECTRIC UTILITY

Redding Electric Utility (REU) At a Glance

- Year established -1921
- Climate Zone -11
- Number of retail customer connections – 43,662
- Percent of retail sales by customer class – Residential 48%, Commercial 50%, Industrial 2%
- Energy Efficiency (EE) Budget - \$2.2 million. The EE programs are funded from REU revenues as follows: \$2.0 million Public Benefits charges, \$ 0.2 million from general revenues. Expended \$2.0 million, with remaining unspent funds carried over to the next budget year.
- Load Growth – Total sales for FY 2014 were 753 million kWhs, a 2.4 percent decrease compared to FY 2013. Forecasted average annual increase for the next five years is 0.03 percent.

Utility Overview

For the last few years, the Redding service area has experienced, as many other electric utilities have, a reduction in kWh sales compared to the level of electricity sales before the recent multi-year recession. Total sales for FY 2014 were 753 million kWhs, a 2.4 percent decrease compared to FY 2013. Lower year-over-year sales figures for 2014 is due to mild weather, low economic activity and impacts of EE programs. Forecasted average annual increase for the next five years is 0.03 percent. This is mainly a result of a near no growth outlook based on population expectations, effective EE programs and local economic conditions.

Since the inception of REU's Public Benefits Program and throughout the recent and continuing difficult economic times, its Public Benefits Program has been successful and well received in the Redding community. To date, around 70 percent (or more than two-thirds) of REU's Public Benefits Program expenditures have been directed towards energy efficiency improvements. Because Redding is a relatively small and somewhat isolated service territory, REU has been able to build strong relationships with local businesses, including trade allies and the development community, to increase the awareness of cost-effective energy efficiency opportunities in new construction and remodeling projects throughout the community. These ties have proven to be most valuable when there is a viable need to increase or decrease a certain program and also in evaluating the addition of new programs. All EE programs need adjusting from time to time as building standards and technologies change. REU has an effective community outreach effort through the Energy Services Division's (ESD) direct engagement with local energy product vendors which makes it possible to have a continuously evolving and adaptable EE program.

Major Program Changes

To continue working toward improving REU's operating efficiency and to further provide cost-effective efficiency improvements in our system, the Utility's Thermal Energy Storage (TES) program was expanded in FY 2014 to include new construction in addition to existing buildings within REU's service territory. This effort provides for better integration of TES into commercial building designs and therefore lowers the

installation cost which, in turn adds enhanced value to those TES installations. REU's TES program focuses on the 5 ton, direct expansion air-conditioning (DX-AC) market. This application of TES technology is provided with the addition of the Ice Bear® TES unit to qualified AC units. In June of 2012, Redding entered into a multi-year, multi-million dollar contract to provide several megawatts of peak load shifting capability by 2017. Prior to 2012, Redding had been installing the Ice Bear® technology for several years to validate the application of this technology to REU's customer base and unique (high peak demand, very low load factor) service territory requirements. With that considerable, in depth TES experience it was apparent an expansion of the program was warranted.

Program Highlight - Thermal Energy Storage (TES)

Background: As mentioned above, REU's operating efficiency is directly impacted by our summer air-conditioning driven peak system demand. The Utility's Thermal Energy Storage (TES) program was significantly expanded in FY 2013. REU's TES program focuses on the 5 ton, direct expansion air-conditioning (DX-AC) market. Redding's commercial customer base has a significant amount of these types of units operating in a variety of businesses throughout the service territory.

How the Technology Works: The Ice Bears® serve to reduce the applicable AC systems' peak demand on REU's electric system by diverting the vapor/gas refrigerant in the DX unit away from the compressor and into a coil that runs through the system's ice block during the peak period. By relying on the temperature differential in the ice to condense the refrigerant back to liquid state, rather than the mechanically-driven compressor, the compressor does not run during the peak period and the AC load is reduced by 95 percent for as much as six hours per day.

Further, because the TES compressor is used during off-peak hours to re-freeze the storage system's water and make the ice that will later be used to provide cooling, the Utility "shifts" the load from on-peak to off-peak hours, thereby allowing the Utility to generate electricity during the cooler nighttime hours when it is more economically and environmentally efficient to do so. Shifting load to the nighttime hours also allows the Utility to consider more wind power (RPS qualified), which is more plentiful at night.

With this nighttime operation, the compressor will typically run more efficiently than the same compressor running during the hottest hours of the day. Therefore, the customer will see a reduced amount of energy consumption (efficiency improvement) to provide a higher level of cooling comfort, and the Utility will see reduced operating costs as our load profile is flattened (operating efficiency/load factor improvement), a true win-win, cost-effective solution for all parties.

This continued focus on peak load reduction will be increasingly important for REU because more than half of our demand is driven by air-conditioner load. With the required use of the newer refrigerant R-410A in DX/AC units, the new AC units being installed in California will be at least 5 to 10 percent less efficient than older units that use R-22 when the temperatures exceed 105 to 115°F. Therefore, even though appliance standards require high SEER unit installation, these new units using R-410A will perform less efficiently at peak load times than older units with lower SEER ratings because the new refrigerant's performance

degrades substantially when ambient temperatures reach 105°F or more – a regular summertime occurrence in Redding.

Results: In FY 2014 REU installed 60 Ice Bear® TES systems, twice as many systems as in FY 2013. This brings the total systems in service to 167, providing nearly two megawatts of permanent load shift (PLS). These systems are dispatchable, low maintenance (energy storage material is water), and long-lived with at least a 20 year service life. Also, both in the E3 analysis and direct comparison to REU's power supply options, the Ice Bear® systems are cost effective.

Program Descriptions

- Appliances: Rebates for Dishwashers. Only makes and models on the current ENERGY STAR eligibility list qualify for a rebate.
- HVAC: Rebates for Heating, Ventilation, Air Conditioning, Duct Repair, HVAC Cleaning, Swamp Coolers, and Whole House Fans.
- Ground Source Heat Pumps: Rebates offered for geothermal/ground source heat pumps
- Pool Pump: Pool Pump Program is only for programmable variable speed drive pumps installed on existing or new in-ground pools.
- Refrigeration: Rebates for Large and Small Refrigerators. Only makes and models on the current ENERGY STAR eligibility list qualify for a rebate.
- HVAC, Residential Shell: Weatherization Program – Consists of Insulation, Window Treatments, Water Heater Wraps, and Radiant & Thermal Barrier.
- HVAC, Non-Residential Cooling: Rebates for Heating, Ventilation, Air Conditioning, Duct Repair, HVAC Cleaning, and Swamp Coolers. Commercial projects rebate levels are evaluated on a case by case basis.
- Lighting, Non Residential: Lighting retrofit program has a pre-approval requirement that evaluates existing light vs. proposed new lighting to see if the project is eligible and is used as part of the process to determine the level of the rebate.

EM&V

During the reporting period REU reviewed its previous EM&V efforts and is currently engaged in preparing an EM&V report on the Utility's HVAC Rebate Program during the first half of 2015 calendar year. REU is also planning another EM&V report in 2016. Previous Redding EM&V reports are available on NCPA's Website: <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>.

Sources of Energy Savings

REU, for the vast amount of its EE programs, uses the standard measures as constructed within the E3 reporting tool. For REU's two unique programs (TES and Home Performance) REU used the custom measure feature in E3 to model the energy and demand impacts of those programs.

Complimentary Programs

- Renewable Energy Programs:

REU's Solar Program has been a great success. Funds collected from REU customers under SB 1 have been fully subscribed through the past three years due to several large Performance Based Incentive (PBI) projects. REU continues to see significant interest and interconnection in solar PV activity despite the lack of available rebates from the Utility. REU anticipated a substantial amount of net generation applications once the Utility's rebate was reinstated. Funding (rebates) for new projects was made available on August 05, 2014. REU Released \$750,000.00 and expended those funds in less than 12 business hours. REU will have final report details in next year's filing for this activity. REU is anticipating another round of rebates in July 2015. REU's recent influx of solar interest and activity (without incentives/rebates) has surfaced some deficiency issues with some of REU's distribution system, that resulted in REU's Distribution System Assistant Director requiring REU to suspend photovoltaic installations on some circuits/feeders until the Utility completes an engineering penetration and system study on each circuit/feeder. Distributed generation penetrations (including solar PV) greater than 25% have the potential to have a significant impact REU's (and all utilities) ability to comply with Federal and State reliability requirements regarding both over voltage and under voltage issues as well as over frequency and under frequency cut out. Since the last filing REU has done some preliminary studies and subsequently increased the available PV penetration by 273%. This will allow over 29MW to be installed. Unfortunately there will still be limitation in certain areas. REU is working closely with local solar PV integrators/contractors on this issue as it continues to develop.

ESD staff, on a monthly basis, monitors the amount of funds collected and how they are disbursed (since program inception). This process enables REU staff to ensure compliance with SB 1 requirements and to make plans for an optimal program completion in 2016.

Almost all of REU's renewable resource development efforts are in the solar photovoltaic (PV) development area. PV development is currently a separate program in and of itself, as mandated by State Senate Bill 1's passage and implementation. SB 1 funding has allowed REU to redirect dollars previously devoted to renewable development to low income assistance.

- Low-Income Programs:

Low income assistance spending (through the CARES program and Lifeline Rate Discounts) continues to be the second largest area of our Public Benefits Program expenditures. During FY 2014, Lifeline support increased nearly \$ 200,000 to over \$1,100,000. This has been a most beneficial program to a significant portion of our customer base that has limited situational and/or financial means to participate in direct EE programs.

- Research, Development, and Demonstration:

In 2014, to support electric vehicles in REU's service territory, REU has held both internal and external committee meetings to work on determining suitable charging locations and procuring infrastructure to support this new and growing electric service. The external committee, Upstate

Plug-in Electric Vehicle Coordinating Council (Council) is charged with bringing vehicle charging stations infrastructure to the Siskiyou, Shasta and Tehama counties area. The Council's main near term goal is to install some of the first charging stations near main roadways running through the tri-county region. REU has had an increasing interest in services from customers who are buying electric vehicles. This new utility load may have impacts in several areas related to energy efficiency, both at the customer and utility supply and distribution levels. For example, whether electric vehicles are charged during the day or night may impact the cost and benefits of EE programs already in place. Redding will continue to work on this and other areas as to how electric vehicles will impact various utility operations. During calendar year 2015 Redding is planning on installing at least three charging stations with full public accessibility.

Reading			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
	Res Cooling HVAC	95,867	63,490	997,891		1	52,614	834,751		507	\$159,297	\$26,849	\$186,146	\$0.32
	Res Dishwashers	316	18,328	183,280			10,997	109,988		55	\$15,800	\$1,379	\$17,179	\$0.20
	Consumer Electronics													
	Res Heating HVAC													
	Res Lighting													
	Pool Pump	155	104,470	1,044,700		3	62,682	626,820		315	\$62,000	\$7,862	\$69,862	\$0.14
	Refrigeration	410	52,540	735,560			36,778	514,892		279	\$40,000	\$8,725	\$48,725	\$0.13
	HVAC	282,099	286,471	5,587,126		79	80,212	1,564,395		883	\$163,670	\$28,847	\$192,517	\$0.19
	Water Heating													
	Comprehensive													
	Process													
	Non-Res Cooking HVAC	73	18,598	353,966		432	18,058	345,871		896	\$1,121,997	\$128,076	\$1,250,073	\$0.41
	Non-Res Heating HVAC													
	Non-Res Lighting	1,430	568,068	8,521,013		162	568,068	8,521,013		4,722	\$29,758	\$140,723	\$170,482	\$0.03
	Process													
Refrigeration	Non-Res Pumps													
	Non-Res Refrigeration HVAC	428	158,286	1,932,366		12	101,255	1,184,555		625	\$1,999	\$16,672	\$18,671	\$0.02
	Non-Res Shell HVAC													
	Non-Res Process													
	Non-Res Comprehensive													
Other														
SubTotal		380,778	1,270,250	19,355,901		689	930,663	13,702,265		8,282	\$1,594,522	\$359,133	\$1,953,655	\$0.16
T&D														
Total		380,778	1,270,250	19,355,901		689	930,663	13,702,265		8,282	\$1,594,522	\$359,133	\$1,953,655	
EE Program Portfolio	TRC Test	1.64												

RIVERSIDE PUBLIC UTILITIES

Riverside Public Utilities (RPU) At a Glance

- Riverside Public Utilities (RPU) was established in 1895
- Percent of retail sales by customer class is approximately 90% residential and 10% commercial, industrial and agricultural.
- Approximately 108,000 electric and 65,000 water retail customers serving a total population of approximately 317,000 residents.
- Riverside is the 12th largest City in California
- Service territory is approximately 90 square miles
- Service Territory is Located entirely within Climate Zone 10
- Peak demand hit system high of 610 megawatts in September 15, 2014
- Annual energy use is approximately 2,200 gigawatt-hours
- Approximately \$12 million in Public Benefit Funds was budgeted for all programs in FY 13/14. Approximately \$3.5 million was expended on energy efficiency programs. Approximately \$3.5 million was expended in FY 13/14 on Low Income Assistance Programs, Research Demonstration and Development Projects and Renewable Energy Projects, (See below under Complimentary Public Benefits Activities).
- Load Growth/Decline for FY 13/14 was approximately -2.6%
- RPU employs just under 500 full-time employees

Utility Overview

RPU was again successful in FY 13/14 by exceeding the kWh savings goal of 1% of retail sales as adopted by the Board of Public Utilities. For FY 13/14, RPU assisted its customers in saving a total of over 20 million kWh. This is the fourth year in a row that RPU was able to exceed this aggressive 1% goal.

Riverside Public Utilities has also played a key role in revitalizing the local economy. The Utility has bolstered Riverside's economic development by stabilizing utility rates through the City Council adopted rate freeze. Originally adopted in 2010, this rate freeze has provided business customers with stable and predictable rates during this economic recovery period. The Utility also offers attractive economic development and business retention electric rates to new and existing customers. As a result of the rate freeze and economic development efforts RPU experienced an expanded customer base since the 2010 recession, but year over year a -2.6% decrease in load growth. In spite of a decrease in load growth the utility has seen an increase in retail sales of 1.5%. In addition, RPU's injection of over \$9 million of public benefit funds annually has had a positive impact on the local economy in terms of jobs and leveraging private investment.

Major Program Changes or Trends

RPU continues to enhance and expand its already extensive array of energy efficiency program offerings to its customers. The overall portfolio is examined quarterly for program requirements and incentive levels

are adjusted up or down as necessary by direction of the Utility General Manager. Although the local economy is recovering, overall participation in RPU energy efficiency rebate programs has remained relatively flat over the last four program years at approximately 20,000 rebates per year. Major changes or trends that impact kWh savings in FY 13/14 include:

- The regional economy has improved with unemployment within the City of Riverside falling to 8.5% by the end of FY 13/14. This unemployment rate is under 10% for the first time since 2008. Although much improved, these unemployment figures still remain higher than both the statewide and the national average.
- The County of Riverside successfully launched its Home Energy Renovation Opportunity (HERO) Program in 2012. This AB 811, Property Assessed Clean Energy (PACE) program continues to grow in popularity. HERO offers another important tool for RPU customers seeking a viable alternative to finance energy efficiency measures in their homes.
- There is a growing trend in the energy efficiency field toward the use of behavioral programs such as OPower. RPU has initiated an analysis of such programs for possible future funding and implementation.
- RPU created several important new programs in FY 13/14 such as the Key Account Energy Efficiency (KEEP) Program, The Commercial Food Service Energy Efficiency Program, Upstream Commercial HVAC Program and The Multi-Family and Mobile Home Direct Installation Program. Several of these programs are offered in cooperation and partnership with The Southern California Gas Company through a new Master Interutility Agreement arrangement. The majority of results in terms of kWh savings associated with these new programs will not be realized until subsequent program years.
- RPU has expanded its highly successful Small Business Direct Installation (SBDI) Program and the Keep Your Cool Program to include medium sized, Demand Rate commercial customers.

Program Highlight

RPU's Small Business Direct Installation (SBDI) Program continues to be one of the outstanding program highlights. Although commercial customers only represent 10% of the total RPU customer base, the combined load of all commercial customers represents approximately 66% of the total utility consumption. With commercial customers representing the majority of utility load, RPU has dedicated more programs and resources to assist the commercial customer segment in achieving energy efficiency goals. RPU's small business customers have often been reluctant to participate in traditional rebate programs due to lack of upfront capital, lack of time or technical ability to implement energy efficiency projects. In addition small businesses often do not own their building. RPU's Small Business Direct Installation Program was designed to address these primary customer concerns. The SBDI program is a comprehensive direct installation program combining measures such as lighting, HVAC tune-ups, LED exit and "open" signs, smart power strips and various weatherization measures. The program is now available throughout the service territory and offers small businesses up to \$2000 in free energy efficiency upgrades. Each project starts with an energy audit of the small businesses' facility to prioritize future measures that customers can

pay for through a co-payment to the Utility's contractor. RPU contractors are finding that the market potential is substantial and that there is no shortage of businesses that can realize significant savings from energy efficiency upgrades provided by this program. Customer feedback regarding this program has been very favorable with approximately 1300 customers served in FY 13/14. Combined with the Keep Your Cool Direct Installation Program these programs resulted in over 2.6 million kWh saved in this reporting year at a very cost effective average of \$.25-\$.40 cents per kWh saved.

Commercial Program Descriptions

- Air Conditioning Incentives – rebates for replacement or first time purchase of energy efficient AC units.
- Energy Star Appliances – rebates for purchase of Energy Star refrigerators, dishwashers, commercial clothes washers, solid door refrigerator/freezers, ceiling fans and televisions.
- Lighting Incentive – rebates for kWh savings on installation of more energy efficient lighting and controls.
- Energy Management Systems – rebates for the purchase and installation of energy management systems for monitoring and controlling facility energy load.
- New Construction and LEED construction Incentives – rebates for energy savings exceeding Title 24 standards for new construction projects pre-approved by Riverside Public Utilities.
- Pool and Spa Pumps Incentive – rebates for purchase of qualifying multi-flow or variable speed high-efficiency pumps and motors.
- Premium Motor Incentives – rebates for the purchase of premium high efficiency electric motors.
- Tree Power – rebates for purchase and planting of up to 5 qualifying shade trees per year.
- Weatherization – rebates for installation of insulation, window film and cool roofs.
- Thermal Energy Storage Incentive – feasibility study and incentives available for use of Thermal Energy Storage based on program guidelines.
- Performance Based Incentive – rebates for customers who can demonstrate a kWh savings based on custom energy-efficiency measures.
- Commercial Food Service Program – This program is specifically targeted to commercial food service customers such as restaurants, hospitality providers and institutional, schools and government customers. The program is offered in conjunction with Southern California Gas Company and provides customers with a comprehensive facility audit offering recommendations on specific energy efficiency measures, estimated return on investment and applicable utility incentives.
- Key Account Energy Efficiency Program (KEEP) – This program is targeted to RPU's largest Time of Use Customers. This segment includes the top 300 RPU customers in terms of consumption. KEEP is intended to provide these Key Account customers with comprehensive energy efficiency plan including a priority list of recommended energy efficiency measures along with an estimated return on investment and applicable utility incentives. RPU is also working with Southern California Gas Company on this program. Customers are also offered additional technical and contracting assistance to bring large energy efficiency projects from concept to completion.

- Custom Energy Technology Grants – Grants are awarded for research, development, and demonstration of energy efficiency projects that are unique to the business or manufacturing process.
- Upstream HVAC Rebate Program – This program offers a rebate incentive for commercial high efficiency HVAC equipment purchases that exceed Title 24. The incentive is provided upstream at the wholesale distribution channel level, thereby encouraging distributors to stock and sell more efficient HVAC equipment.

Residential Program Descriptions

- Energy Star Appliances – rebates for purchase of Energy Star refrigerators, dishwashers, clothes washers, room air conditioners, ceiling fans and televisions.
- Cool Cash – rebates for replacing Central Air Conditioners with a SEER rating of 15 above.
- Tree Power – rebates for purchasing and planting of up to 5 qualifying shade trees per year and 1 free qualifying shade tree coupon printed on the March back of the bill.
- Pool Saver – rebates for purchasing high efficiency, multi-flow or variable speed pool pump motor, and monthly billing credit for operating pool pumps during off-peak hours.
- Weatherization – rebates for installing attic insulation or wall insulation, standard rebates for duct replacement, duct testing/sealing, window film, solar and standard attic fans, whole house fans and cool roofs.
- Appliance Recycling – free recycling service for old inefficient refrigerators and freezers.
- Whole House Rebate Program – rebates for completing energy efficiency measures. Points are awarded for each type of measure and then multipliers are given at specific point intervals on a sliding scale to encourage implementation of multiple energy efficiency measures.

Residential Direct Installation Program Descriptions

- Multi-Family and Mobile home Direct Installation – This program offers multi-family and mobile home residents the direct installation of a specific list of measures including HVAC tune-ups, lighting efficiency upgrades, weatherization and smart power strips. The program also addresses energy efficiency in multi-family and mobile home park common areas.
- Energy Savings Assistance Program (ESAP) – This direct installation is targeted specifically to low income RPU customers. The program is offered in partnership and cooperation with The Southern California Gas Company. Measures include lighting efficiency upgrades, HVAC tune-ups, smart power strips and refrigerator recycling/replacement.

Commercial Direct Installation Program Descriptions

- Small Business Direct Installation (SBDI) Program – This program provides small and medium sized businesses with energy audits and direct installation of energy efficiency measures such as lighting upgrades and controls, HVAC tune-ups, exit and open/closed signs and weatherization measures.

- Keep Your Cool Program – This program is targeted to specific small businesses such as mini-marts, delis and convenience stores that have a significant amount of refrigerated food and beverages storage. The program offers the direct installation of energy efficiency measures such as air curtains, cooler gaskets, automatic door closures, LED case lighting retrofits and high efficiency motor upgrades.

EM&V

Riverside Public Utilities is committed to providing cost effective, on-going evaluation, measurement and verification efforts for its energy efficiency programs in support of AB2021. EM&V costs are included in the Marketing and Administrative cost budget.

In addition to periodic program audits, RPU consistently performs the following in support of EM&V activities:

- An onsite inspection rate of no less than 10 percent for all residential program participants, performed by RPU staff and contractors.
- A pre- and post-inspection of 100% of commercial rebate participants, including a review of historical energy usage and energy-saving calculations.
- All residential and commercial solar PV installations are field inspected and verified by city personnel for program compliance, system inter-connection standards and rated production output.
- Contracted with outside engineering firms such as ACCO Engineered Systems and ASWB Engineering to verify claimed energy savings on large, complex or technical commercial projects prior to issuing an incentive.
- Audits and installations performed by third-party contractors for RPU direct installation programs have high inspection rates that are performed by the consultant and RPU staff.
- Refrigerator recycling program administered by Appliance Recycling Centers of America (ARCA) assures full inspection when the contractor picks up old appliances.

Complimentary Programs

- Solar Rebate Program – RPU continues to promote residential and commercial participation in its solar rebate program to reduce peak load and offset customer electricity bills. In support of Senate Bill 1 (SB1) RPU has allocated a budget of \$2.5 million annually through December 31, 2016 for customer installed systems. During FY 13/14 there were 161 residential installations totaling 903 kW AC and 10 non-residential systems generating 804 kW AC of renewable solar energy.
- SHARE – This program credits up to \$150 toward electric deposit or bill payment assistance for qualified low-income applicants annually. In FY 13/14, RPU served over 5700 low income customers through the SHARE program for a total of \$860,000 in Public Benefit Funds credited to low income families for bill payment assistance.
- Research, Demonstration and Development (RD&D) – RPU continues to invest in RD&D programs through partnerships with local higher education institutions. Over \$130,000 of Public Benefit

Funds were spent on RD&D in FY 13/14. RPU has expended over \$1,000,000 in Public Benefit Funds over the last ten years to support energy research at local institutions of higher learning. RPU also participates in SCPPEA-related RD&D efforts and will continue to explore future research opportunities as they occur on a case by case basis.

- Demand Response Programs –RPU continues to manage a highly successful voluntary demand response program. This program, known as Power Partners, was developed in partnership with RPU's largest commercial customers. These important customers agreed to voluntarily shed or shift a combined total of 11 MW of electric load during the peak summer months from June-September if it is deemed necessary to call on this resource by RPU in cooperation with the CAISO.
- Green Power Premium – This program allows RPU customer to donate an additional 2 cents per kilowatt hour above their current kWh rate to assist in purchasing renewable energy resources.

Riverside				Resource Savings Summary							Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	1,108	68,696	824,352	285	150	58,382	700,699		417	\$83,100		\$83,100	\$0.16
HVAC	Res Cooling	15,791	3,331,468	98,433,620	745	776	2,342,706	69,076,581		44,566	\$432,360		\$432,360	\$0.01
Appliances	Res Dishwashers	616	18,911	208,023	52	52	15,129	166,419		99	\$30,800		\$30,800	\$0.24
Consumer Electronics	Res Electronics	1,096	133,406	516,324	116	116	115,990	446,660		254	\$107,081		\$107,081	\$0.27
HVAC	Res Heating													
Lighting	Res Lighting	20,719	1,828,582	9,195,420	1,588	218	1,371,542	6,897,615		3,912	\$47,753		\$47,753	\$0.01
Pool Pump	Res Pool Pump	149	47,829	478,290	8	8	33,002	330,020		197	\$29,800		\$29,800	\$0.11
Refrigeration	Res Refrigeration	3,175	1,384,769	8,628,911	190	190	896,851	5,762,382		3,252	\$296,945		\$296,945	\$0.06
HVAC	Res Shell	599	170,346	3,380,196	78	78	105,469	2,090,597		1,245	\$67,706		\$67,706	\$0.05
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	536	478,376	4,912,063			382,701	3,929,650		2,219	\$252,677		\$252,677	\$0.08
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	1,361	887,114	15,494,128	250	200	816,990	14,335,085		9,079	\$258,711		\$258,711	\$0.03
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	709	12,374,609	123,795,627	133	133	10,217,343	102,211,076		60,537	\$1,292,569		\$1,292,569	\$0.02
Process	Non-Res Motors	1	521	2,084			391	1,563		1	\$70		\$70	\$0.05
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	41	966,347	5,799,530	24	24	965,941	5,796,395		3,230	\$285,297		\$285,297	\$0.06
HVAC	Non-Res Shell	477	116,200	2,174,336	52	52	73,766	1,362,914		828	\$59,074		\$59,074	\$0.07
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	758	3,691,960	34,277,352	3	3	3,029,061	27,648,360		15,526	\$235,338		\$235,338	\$0.01
Other	Other	191,019	293,819	3,660,035			283,819	3,660,035		2,203	\$467,217		\$467,217	\$0.17
Subtotal		238,155	25,792,954	311,780,290	3,523	1,999	20,719,092	244,416,062		147,565	\$3,946,497		\$3,946,497	\$0.02
T&D														
Total		238,155	25,792,954	311,780,290	3,523	1,999	20,719,092	244,416,062		147,565	\$3,946,497		\$3,946,497	
EE Program Portfolio	TRC Test PAC Test	3.19 8.71												

ROSEVILLE ELECTRIC

Roseville Electric At a Glance

- Established in 1912 as a department of the City of Roseville.
- Climate Zone 11.
- 56,216 retail customers served.
- Percent of retail sales by customer class – residential 44%, commercial 42%, industrial 14%.
- \$4,324,682 budgeted for Public Benefits programs for FY 14. Collection on actual revenue was \$4,415,640 which is 2.85% of retail energy sales as mandated by SB 1037.
- Funds collected were applied to energy efficiency, customer solar electric, low income and demand response programs. \$1,400,308 was spent on energy efficiency, \$105,302 on demand response and \$490,655 on customer solar electric. The remainder of the funds collected was spent supporting existing programs or spent researching and/or developing future public benefit programs. Unused funds were carried forward into 2015 fiscal year.
- RE energy efficiency program portfolio TRC for FY 14 is 2.3.
- Energy efficiency savings have been increasingly more difficult to achieve following changes to Title 24 codes and standards. As a result, the target required for AB2021 was not met in 2013 or 2014.
- Even accounting for yearly increases in the total number of customers served, total gigawatt hours (GWH) sold is expected to remain flat for the next few years due to reduced customer per capita energy use, increase in customer solar electric, increasing California new construction Codes and Standards (Title 24) and the relatively slow speed of economic recovery. Commercial load is heavily weighed by retail stores and national retail chains.

Utility Overview

Roseville Electric and the City of Roseville is a prime economic driver in the south Placer County region. Roseville Electric is challenged with balancing a rate structure that encourages energy efficiency and investment in solar technology while meeting the demands of a very diverse customer base.

Roseville Electric continues to support customer willingness to embrace new energy efficiency technology through innovative programs such as LED lighting, new home construction and contractor managed energy audit programs while we evaluate opportunities through advanced metering. Roseville Electric also acknowledges the need to meet consumer desire for a broad range of energy efficiency measures, suitable for the full spectrum of customers. The “Portfolio” approach to the TRC cost effectiveness measurement allows Roseville Electric to satisfy this broad spectrum of customer demand.

Major Program Changes

Several major program changes occurred at Roseville Electric during FY 2014. These changes were all driven by regulatory, market and technology changes within the electric utility industry.

- a) Behavioral Programs: Roseville Electric fully embraced “behavioral based” energy efficiency programming with the introduction of *O Power Home Energy Reports* to half of the residential customers. This multi-year effort will support AB2012 energy savings goals and strengthen Roseville Electric’s relationship with its customers.
- b) LED Lighting: LED lighting technology reached the point of technical excellence to allow Roseville Electric to aggressively embark upon rebate programs for both interior and external LED lighting.
- c) Accelerating Degradation in Energy Efficiency Programs Due to Codes and Standards: The most significant impact to our programs in FY 2014 was Title 24. Changes to Title 24 and the lack of clarity about the changes affected commercial, residential and builder decisions regarding retrofit and new construction. The changes reduced the number of measures and savings utilities are able to rely on for energy efficiency savings to meet AB 2021 targets.
- d) Limitations on Staff Time: The ever increasing demands on staff time from customer utilized solar electric (PV) has reduced the overall time available for energy efficiency programs. Roseville Electric interconnected 514 PV systems in calendar 2014 and has 3.1% of its customers with PV, one of the highest in the continental United States. Each PV application and interconnection requires significant public benefits staff time to complete. This detracts from our ability to focus on energy efficiency program development and implementation.

Program Highlights

- LED Lighting (Commercial): RE introduced a variety of LED lighting options to Commercial customers in FY 14 resulting in net annual savings of 1,160,760 kWh, 24% of net reported savings for FY 14.
- Power: RE contracted and spent \$192,000 with O Power in FY 14 to launch a 3 year residential behavior program in Roseville to a survey population of 20,000 residents and a control group of 10,000. Annual energy savings from this program will be reported beginning in FY 15.
- Refrigerator Recycling: Roseville Electric partnered with JACO Environmental, an EPA approved Responsible Appliance Disposal (RAD) recycler to collect and recycle older refrigerators and freezers in Roseville. RE provides “free pick up” and a \$50 rebate to residents and business owners who participate. RAD recycled units are deconstructed with safe disposal of toxins and ozone depleting greenhouse gas emissions found in the refrigerants and foam insulation of the units.
- Online Applications: Residential customers are now able to apply online for pool pump, sunscreen, HVAC and whole house fan rebates.
- Rapid Audit: RE contracted with a vendor to provide outreach and energy audit services to the small and mid-size commercial customer base beginning in 2013 and extended to multifamily residents and common areas in 2014. This customer base is difficult to reach and influence. However, through this program over 847 businesses were audited in FY 14 resulting in lighting retrofits with verified annual savings of 209,460 kWh. The multifamily program resulted in 711 audits performed for apartment residents with the installation of lighting measures providing verified savings of 129,523 kWh.

- Custom Wafer Sort Reconfiguration: RE worked with a large industrial chip manufacturing company in our community to agree to a 5 year reduction of air conditioning needs in the wafer sort area. The processing area was significantly reduced in size and several air handlers were removed from service resulting in a reduction of 115 kW with estimated kWh savings of 1,010,568 kWh.

Program Descriptions

- Residential HVAC: encourages customers to install higher efficiency systems upon retrofit.
- Residential Shade Tree: rebate program designed to incent customers to plant shade trees to keep their home cool. There are 2 rebate levels and they are directly tied to the savings associated with each tree; trees selected from the SMUD tree calculator. Due to the ongoing drought we have suspended this program until conditions improve.
- Residential Pool Pump: rebate program designed to incent customers to upgrade from a single speed to a variable speed pool pump.
- Residential Holiday Lighting Exchange: program designed to incent customers to try new, efficient LED holiday lighting products. Customers must exchange a string of incandescent holiday lights to receive a string of LED lights.
- Residential Sunscreens: rebate program designed to incent customers to install permanent sunscreens on their windows to keep their home cool.
- Residential New Construction: program that incents two paths. Preferred homes must achieve 20% better cooling efficiency than code while the BEST (Blueprint for Energy and Solar Technology) Homes must achieve 15% total efficiency above code and include a Photovoltaic system.
- Multi Family Audit: a no cost audit to identify energy saving opportunities. This program is paperless and provides a communication channel with the customer.
- Multi Family Lighting: a direct install program that is no cost to the customer. Incandescent lamps are retrofit with low wattage CFLs.
- Commercial Lighting: offers business customers a wide variety of energy efficient interior lighting retrofit and control options for updating their facilities.
- Commercial HVAC: includes package and split system retrofits along with several measures to reduce heat gain in the facility, including shade trees, window film, and VFD and VSM retrofits to existing HVAC supply and return fans.
- Commercial Audit: a no cost audit to identify energy saving opportunities, small business customers specifically. This program is paperless and provides a communication channel with the customer.
- Commercial Audit Lighting: a direct install program that is no cost to the customer, small business customers specifically. Incandescent lamps are retrofit with low wattage CFLs and an LED "Open" sign to replace older, inefficient models.
- Commercial New Construction: a program that is based on current Title 24 requirements. The designed structure must exceed Title 24 specifications by at least 10 percent. The rebate is based on KW reduced in the design.

- Commercial Shade Trees: custom program based on the SMUD tree calculator. Two rebate levels based on tree selection. Due to the ongoing drought we have suspended this program until conditions improve.
- Commercial Custom: this customer driven rebate option targets projects that reduce peak loads and energy consumption, and offers unlimited technology energy efficiency opportunities for the large and key account customers.

EM&V and M&V

RE has a 5 year plan for M&V and EM&V of all public benefit programs. EM&V is performed annually on one or two programs. Selection of the programs to EM&V is prioritized by the dollars spent and savings claimed for the program. The budget for EM&V is based on the complexity of the program selected for review and can vary from \$20,000 up to \$60,000.

M&V is performed internally or by a third party contractor on an ongoing basis for all programs.

All EM&V reports are posted on the NCPA website: [www.Energy Efficiency EM&V Reports - NCPA Energy Efficiency EM&V Reports - NCPA](http://www.EnergyEfficiencyEM&VReports-NCPA.com). Recommendations resulting from EM&V and M&V reports are used by RE in the design and/or redesign of energy efficiency programs.

Five recent EM&Vs include:

- Shade Trees (2010)
- Large Commercial Lighting (2011)
- New Construction Homes (2012)
- HVAC Right Size (2013)
- Small Commercial and Multi Family Rapid Audit and Install (2014)

Sources of Energy Savings

RE relies on the savings in the E3 model provided by the TRM or DEER. If not available, the measure is entered to the E3 model as a custom measure. When a custom program is entered to the E3 model, the source of energy savings comes from a white paper, prior EM&V or a manual watt to watt calculation using customer provided hours and baselines. RE relies on customer hours for some industries if they are more realistic in actual application than the hours in the TRM.

LED Lighting: RE relies on TRM LED lighting measures if available in the E3 model otherwise RE relies on industry specs for watts and replacement data (incandescent or cfl) and calculates savings using the TRM hours of operation if customer specific data is not documented by the customer.

Residential HVAC: RE disagrees with the parametric modeled cooling hours currently in use for Climate Zone 11. The hours represented in the model do not appear to be representational of cooling hours in this climate zone and the current Residential HVAC program is based on the TRM kW multiplied by the 861

hours in the Energy Star HVAC calculator. The Right Size HVAC program savings were verified by Cadmus in an EM&V performed in 2013 and the savings for the custom program were adjusted based on recommendation from Cadmus.

New Home Development Agreements: RE is included in all new home development specific plans for new home builders in Roseville and is able to enforce the requirement that all new home builders install HVAC systems 2% higher than code. The resulting savings from these development agreements are claimed in our annual report as they are directly influenced by RE.

Complimentary Public Benefits Programs

- Renewable Energy Programs: RE rebated \$725,819 on residential and commercial solar systems in 2014 adding 514 new systems. This increased in installed solar to 1880 systems with a capacity of 2.00 MW. The installed systems generate approximately 10 MWH annually.
- Low-Income Programs: RE offers several rate assistance programs for qualified low income residential customers. Approximately 1600 residents benefit from this program. Customized energy efficiency retrofits rebated through partnership with the City of Roseville Housing and Redevelopment division. Scholarships provided through the Utility Exploration Center for Title 1 schools to offset the costs for field trips to the UEC.
- Research, Development, and Demonstration: RE participated in 4 RD&D programs in FY 14 including:
 - City of Roseville Utility Exploration Center: a 4000 sq. ft. facility with the mission to educate ratepayers and school children about water and energy conservation and a sustainable lifestyle. In support of this mission, RE contributes to the development and maintenance of exhibits through annual contributions to the center. In 2014 the Exploration Center hosted 34,114 visitors including 5,630 students. In FY 14 RE contributed \$221,621 for exhibits and school programs.
 - APPA DEED: DEED is dedicated to increasing energy efficiency, reducing costs, investigating new technologies and improving utility. In FY 14 RE contributed \$ 2,523 to the DEED program.
 - California Lighting and Technology Center: The CLTC is a collaborative effort between the California Energy Commission, the U.S. Department of Energy and the National Electrical Manufacturers Association to advance energy efficient lighting and day lighting technologies. The goals of the CLTC are accomplished through partnership with utilities, lighting manufacturers, end users, builders, designers, researchers and government agencies. It was established in 2003 at the University of California, Davis. In FY 14 RE contributed \$10,000 to the lighting center for ongoing R&D.
 - Electric Vehicles: RE continues to research and support the expansion of electric vehicle charging stations in Roseville. In FY 14 we spent \$10,625 to provide electricity and move the location of one charging station in Roseville. The 3 charging stations are strategically

located in the downtown parking center near the Vernon Street outdoor event plaza and in the Roseville Galleria, a regional shopping center in close proximity to highways 65 & 80.

Challenges/Opportunities

- Solar: The Solar Electric Power Association (SEPA) recently ranked Roseville Electric #1 in the nation (out of 63) for public power cumulative percentage of solar power penetration by watts per customers in the annual 2013 Utility Solar Market Snapshot research report. RE introduced Solar leasing in January 2014 and is investigating community solar and energy storage. RE added 514 new systems in 2014 and anticipates 2015 will continue at the same pace. The rapid pace of adoption presents challenges to RE as we continue to support renewable energy while desiring to maintain grid reliability.
- Residential HVAC: RE's Climate Zone 11 experiences temperature extremes from April to October and our customers rely heavily on air conditioning. RE believes the parametric modeling of hours for Climate Zone 11 is incorrect and is in the process of contracting a cooling hours study for 4 months to validate cooling hours specific to this climate zone. The results of the study will be published and used to design all future HVAC programs and measures.

Roseville			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg. EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
	Res Cooling HVAC	598	1,094,519	15,356,906		1,140	1,061,222	15,186,143		9,282	\$636,038	\$450,014	\$1,086,052	\$0.10
	Res Dishwashers													
	Res Electronics													
	Res Heating HVAC													
	Res Lighting	1,480	138,911	439,369		163	134,593	416,001		209	\$44,675	\$4,627	\$49,302	\$0.13
	Res Pool Pump	273	341,066	3,410,665		38	204,640	2,046,399		1,030	\$54,600	\$23,078	\$77,678	\$0.05
	Res Refrigeration		267,939	1,511,168		35	187,557	1,057,818		574	\$23,975	\$25,245	\$49,220	\$0.05
	Res Shell HVAC	11,462	11,462	114,620		3	3,209	32,094		18	\$11,462	\$5,159	\$16,621	\$0.65
	Res Water Heating													
Process	Res Comprehensive													
	Non-Res Cooking Process	395	1,161,889	7,322,651		155	1,139,191	6,982,179		4,252	\$109,930	\$206,455	\$316,384	\$0.05
	Non-Res Cooling HVAC													
	Non-Res Heating HVAC	7,037	2,112,492	18,388,153		434	1,900,509	16,477,464		9,132	\$320,200	\$264,982	\$585,181	\$0.04
	Non-Res Lighting Process													
	Non-Res Motors Process													
	Non-Res Pumps Process	1	4,552	54,624			2,731	32,774		17	\$800	\$443	\$1,243	\$0.05
	Non-Res Refrigeration HVAC	1	15,573	124,584		7	15,573	124,584		69	\$14,589	\$1,959	\$16,548	\$0.16
	Non-Res Shell Process	2	124,578	703,986		18	124,578	703,986		374	\$55,539	\$9,596	\$65,135	\$0.11
	Non-Res Comprehensive													
Other														
Subtotal		21,807	5,272,981	47,426,725		1,994	4,773,803	43,059,442		24,957	\$1,271,807	\$991,558	\$2,263,365	\$0.07
T&D														
Total		21,807	5,272,981	47,426,725		1,994	4,773,803	43,059,442		24,957	\$1,271,807	\$991,558	\$2,263,365	
EE Program Portfolio		2,30												
TRC Test		2,96												
PAC Test														
Excluding T&D														

SACRAMENTO MUNICIPAL UTILITY DISTRICT

Sacramento Municipal Utility District(SMUD) at a Glance⁸

- Year established: 1946
- Climate Zone: 12
- Total Customers (year-end): 610,185
- Percent of retail sales by customer class – 45% residential, 65% commercial/industrial/other
- SMUD spent \$40.6 million for residential and commercial energy-efficiency programs, compared to a budget of \$42.3 million.⁹ All expenditures are public-goods funded.
- KWH sales decreased by 3% from the previous year and net system peak demand increased 2% from the previous year.

Utility Overview

SMUD is planning changes to programs to respond to the following industry trends and changing customer expectations:

- The “internet of things” is expanding rapidly as numerous cable, internet and security companies are enrolling customers in home automation programs that include networked devices, smart thermostats and energy efficiency or distributed generation products; these offer opportunities for enhanced customer engagement, value-added services and back-end systems integration.
- Financing options are increasing for nearly all customer segments, providing pathways to distributed generation, battery storage, and energy efficiency and automation platforms.
- LEDs: The latest price trend data suggests that the price for LEDs (\$/Lumen output) will fall another 55% by 2017, at the same time that quality is improving.
- The Comprehensive Energy Efficiency Program for Existing Buildings authorized by AB 758 will ultimately generate new utility data reporting requirements, additional building assessment and rating tools and requirements, an increased emphasis on efficiency code compliance during retrofits, focus on building industry training programs, and potential requirements for utilities to finance building upgrades.
- As part of the Comprehensive Energy Efficiency Program (AB758), we can expect a greater emphasis on building benchmarking and other building rating tools to communicate building performance and identify opportunities for building improvements.
- Residential rates will begin to mimic commercial rates at SMUD, with a movement toward TOU rates. This will place a greater focus on measures that impact peak demand and load management strategies.
- More and more customers prefer to access information and communicate via mobile devices.

⁸ SMUD 2013 Annual Report, front inside cover and p. 21.

⁹ Includes market research, planning, M&V, and emerging technologies R&D.

- Consumers are becoming increasingly interconnected, fundamentally shifting channels of social interaction.
- Customers want clear and simple choices

Major Program Changes

The overall budget, energy and peak savings achieved in 2014 were relatively unchanged from 2013. But the following program changes allowed total savings for the portfolio to eclipse 2013 levels:

- The Residential Lighting program was able to deliver much greater same savings (66GWh) than past years and with a significant change to the product mix. The program went from a product mix of 98% CFLs and 2% LEDs in 2012 and a product mix of 83% CFLs and 17% LEDs in 2013 to a product mix of 61% CFLs and 39% LEDs in 2014. The program was able to accomplish this by lowering the incentives to both CFLs and LEDs.
- While the major adoption is expected in 2015, the new SMUD Smart home program was developed and rolled out in 2014. The SMUD Smart home replaces the previous SolarSmart residential new construction program and adds demand response thermostats, solar directional siting incentives, and facilitation of wiring for electric vehicles into the previous energy efficiency/solar program. The residential new construction building community has shown tremendous interest in this program.

Energy-Efficiency Program Overview

- SMUD has been continuously operating energy-conservation, load management, and energy-efficiency programs since 1976. Over that time period, SMUD's customers have saved over 2 TWh of first year energy savings.
- In 2007, the SMUD Board of Directors approved a significant expansion in annual savings goals for its energy-efficiency resources, from approximately 0.6% of annual sales to an annual average of approximately 1.5% over the following decade. These goals have now been extended through 2023. The expanded goals were part of the Board's vision to "empower our customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve our region." SMUD is continually redesigning its energy-efficiency portfolio to expand existing programs, plan and implement new programs, and develop and implement a broader marketing and engagement plan that will meet these expanded goals and the Board's vision.
- For 2014, SMUD spent \$40.6 million for residential and commercial energy-efficiency programs, compared to a budget of \$42.3 million.¹⁰ All expenditures are public-goods funded. These programs delivered 28.7 megawatts (MW) of peak-load reduction and 179.8 million kilowatt-hours (GWh) of annual energy savings, compared to annual goals of 24.6 MW and 172.0 GWh.

¹⁰ Includes market research, planning, M&V, and emerging technologies R&D.

- For 2015, residential and commercial energy-efficiency programs, SMUD has budgeted \$41 million in PG funds.¹¹ These programs are projected to deliver 25.5 MW of peak-load reduction and 175.4 GWh of annual energy savings.

Commercial/Industrial Retrofit Program Descriptions

Commercial/industrial energy efficiency retrofit programs for existing buildings and facilities are budgeted for \$17.4 million, with goals of 11.5 MW of peak-load reduction and 96.1 GWh in annual energy savings.

- Custom Energy Efficiency Program: Promotes the installation of energy-efficient equipment, controls, and processes at commercial and industrial customer facilities. Provides incentives to contractors and/or customers to promote the installation of energy efficient lighting HVAC, motors, and refrigeration equipment and controls. The program also provides incentives for retrocommissioning, process improvements, and data center storage projects that result in energy savings. The incentive is capped at \$150,000 per project.
- Express Energy Solutions: Provides rebates for high-efficiency equipment across a variety of end-uses: lighting, HVAC, refrigeration, food-service equipment, office-network PC power-management software, and more. Once a project is installed, the commercial, industrial and or municipal customer applies for their rebate on-line. Rebates are capped at \$100,000 per application.
- Complete Energy Solutions: Third party program using a single contractor to perform comprehensive energy audits of small and medium-sized businesses. Customer receives a customized report detailing recommended energy improvements, estimated savings, estimated cost and payback. Contractor then assists customer in hiring a SMUD Certified Trade Contractor to complete the project. Projects generally payback in less than two years. The average rebate typically covers 60% of the total installed project cost.
- Savings by Design: Provides incentives to builders and their design teams to design new commercial and industrial buildings 10-30 percent more energy efficient than required by Title 24 (or typical new construction in the case of Title 24-exempt buildings and processes). The incentive is capped at \$150,000.

Residential Program Descriptions

Residential energy-efficiency programs for existing homes are budgeted for \$17.4 million, with goals of 13 MW of peak-load reduction and 71.7 GWh in annual energy savings.

- Shade Trees: Provides free shade trees to SMUD customers. Implemented through the community-based non-profit Sacramento Tree Foundation (STF). STF foresters review tree selection and site locations with customers, who plant the trees.
- Equipment Efficiency: Provides rebates and/or SMUD financing for qualifying (Energy Star, Consortium for Energy Efficiency, and/or other high-efficiency) efficiency improvements to homes' building shells and equipment. Improvements include central air conditioners and heat

¹¹ Includes market research, planning, M&V, and emerging technologies R&D.

pumps, windows, attic and wall insulation, solar domestic water heaters, and heat pump water heaters.

- Whole-House Performance: Participating contractors use building-science principles and diagnostic equipment to evaluate the current performance of the whole house, and then recommend comprehensive improvements that will yield an optimal combination of savings and comfort for homeowners. Once the homeowner selects the improvements that fit their needs and budget, participating contractors will do the work to Building Performance Institute standards.
- Appliance Efficiency: Provides rebates for qualifying (Energy Star or Consortium for Energy Efficiency-listed) appliances and electronics: clothes washers, dishwashers, refrigerators, and room air-conditioners. Included in this program are two previously separate programs. Refrigerator/Freezer Recycling provides rebates for the free pick-up and environmental recycling of old refrigerators and freezers. Pool Efficiency provides educational information to customers on the benefits of installing high-efficiency, variable-speed pumps and motors, and encourages customers to operate pool equipment during off-peak hours. Pool Efficiency also focuses on educating the pool-contractor community on practices for retrofit and new-pool installations that maximize pumping efficiency and minimize energy use and peak demand.
- Retail Lighting: Promotes energy efficient residential lighting products by providing incentives for manufacturers and their retail partners to sell Energy Star lighting at a discount. Implemented through agreements with manufacturers and retailers that involve cost buy-downs, marketing, and/or advertising. SMUD has been steadily increasing the percentage of LED bulbs rebated through this program.
- Multi-Family (Apartment and Condominium) Retrofit: This program is designed to capture some of the significant energy-savings potential in existing apartments and condominiums and their common areas not addressed by current SMUD programs. The foundation of the program is developing business relationships among the key players affecting the multi-family (MF) market segment, for the sole purpose of maximizing the efficiency of MF energy use, and offering rebates and financing to help buy down the higher cost of efficiency improvements. The program targets, builds, and fosters relationships with property managers and owners of MF rental property, owners of condominiums, property-management associations, condo homeowners associations, vendors, and service providers.
- Smart Homes provide incentives and marketing support to builders to build homes that include PV, demand response thermostats, EV ready and have net electricity consumption that is lower than typical new homes.

Residential Information/Education Program Descriptions

Information and Education programs are budgeted for \$1.1 million, with goals of 1.0 MW of peak-load reduction and 7.6 GWh in annual energy savings.

- Home Electricity Reports: A scientifically designed program to measure the impact of sending electricity-usage reports to residential customers. The reports compare the customer's monthly

usage to that of the previous year and to about 100 neighbors in similar-size homes with the same heat energy source. The reports are customized to each house and provide energy tips to assist the customer in making behavior changes that reduce their energy use.

- Residential Advisory Service: Provides on-site energy audits of homes, on-line energy audits, and telephone assistance for customers, with recommendations to reduce their homes' energy use (and bills). Recommendations include practices and home-improvement projects that will increase the energy efficiency of their dwellings.

Demand-Reduction Program Descriptions

- Peak Corp (Residential Air Conditioner Load Management): Customers volunteer to allow SMUD to install a radio-controlled cycling device on their central air conditioners, and to send a radio signal that switches or cycles off their air conditioners during an electric-system emergency.
- Power Direct (Automated Demand Response Program): Enhances facilities' energy performance by seamlessly integrating automated response capabilities into energy management, lighting and HVAC systems. Automatically reduces electricity consumption on Conservation Days in times of high demand.
- Voluntary Emergency Load Curtailment: Discontinued 12/31/14 due to lower than expected realized performance and changes in the demand response resource portfolio.

EM&V

In concert with its commitment to significantly ramp up energy-efficiency activities over the next decade, SMUD has established a framework to develop yearly measurement and verification (M&V) action plans. SMUD is planning M&V activities for all of its major programs, scheduled at fixed intervals (2-4 years apart), with the intention of evaluating all programs on a continued cyclical basis through 2020. For methodological approaches needed to perform specific types of evaluations, SMUD will be guided by the CPUC's the "California Evaluation Framework" (June 2004), "California Energy Efficiency Evaluation Protocols, and the "California Public Utilities Commission's Load Impact Estimation for Demand Response: Protocols and Regulatory Guidance" and State and Local Energy Efficiency Action Network, 2012, "Energy Efficiency Program Impact Evaluation Guide" prepared by Steven R. Schiller, Schiller Consulting, Inc.

SMUD is planning to allocate approximately two percent of its total energy-efficiency budget towards impact- and persistence-focused M&V studies. These studies will be conducted primarily through the use of third-party contractors, with management and oversight by SMUD's Business Planning Department. SMUD has awarded or is in the process of awarding contracts for consultants to perform evaluations of the following programs in 2015:

Residential—

- Lighting (CFLs/LEDs) (continuation from 2014)
- Low Income Weatherization (continuation from 2014)

Commercial---

- Prescriptive Lighting / Express Energy solutions
- HVAC & Motor Distributor Incentive (tentative)

Complimentary Programs

- Renewable Energy Programs: SMUD offers incentives for net-energy-metered PV systems; voluntary green pricing programs including SolarShares, which supports expansion of distributed PV projects; commercial and residential REC purchase programs; and a Community Solar program aimed at enhancing customer knowledge regarding renewable energy including, sponsoring local high school and college events, nonprofit solar installs, student grants for renewable energy and K-12 energy curricula.
- Low-Income Programs: SMUD's Residential Assistance and Advisory group offers programs and services to help make the bills of our residential special needs customers more affordable. The Energy Advisory section of the group offers all residential customers customized information over the phone, through written and web based literature, group seminar presentations, and personalized in-home energy audits and customer education.

The programs under the Residential Assistance and Advisory group include: rate assistance (discounts), dwelling assistance (weatherization and efficiency services), bill assistance (actual payments for qualified customers), programs and services education assistance (community outreach), and residential advisory services (personalized information and services for all residential customers).

- Research, Development, and Demonstration: SMUD has a centralized research and development program that conducts public good research across the electricity enterprises from the supply side to demand side. With an annual budget of approximately \$7 million, research is conducted in eight research areas which include renewable energy, electric transportation, climate change, distributed generation, energy efficiency, demand response, storage and smart grid. These programs seek to track emerging technologies, demonstrate promising technologies and prepare SMUD and SMUD customers for adoption of these emerging technologies.

Sacramento			Resource Savings Summary										Cost Summary			
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual kWh Savings	Net Lifecycle kWh Savings	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost	Utility Mktg, EM&V, and Admin Cost	Total Utility Cost	Utility (\$/kWh)		
Appliances	Res Clothes Washers	574	68,113	1,021,702	319	319	47,679	715,191		402	\$87,813	\$258,979	\$346,792	\$ 0.34		
	Res Cooling	15,699	4,834,374	72,515,616	2,809	2,809	3,384,062	50,760,931		28,509	\$1,960,602	\$1,798,821	\$3,759,423	\$ 0.05		
	Res Dishwashers	418	25,181	377,710	17	17	17,626	264,397		148	\$21,419	\$25,118	\$46,537	\$ 0.12		
	Res Electronics	80,840	4,366,416	43,664,160	1,355	1,355	3,056,491	30,564,912		17,166	\$557,607	\$1,103,910	\$1,661,517	\$ 0.04		
	Res Heating															
	Res Lighting	1,905,830	55,000,000	466,500,000	4,890	4,890	38,500,000	319,550,000		179,469	\$7,597,933	\$1,996,745	\$9,594,679	\$ 0.02		
	Res Pool Pump	781	1,076,487	16,147,311	485	485	753,541	11,303,118		6,348	\$156,397	\$333,408	\$489,805	\$ 0.03		
	Res Refrigeration	11,535	3,511,639	15,393,982	704	704	2,458,147	10,775,787		6,052	\$704,953	\$1,326,704	\$2,031,657	\$ 0.13		
	Res Shell	43,659	179,368	3,587,368	29	29	125,558	2,511,158		1,410	\$6,385	\$1,496	\$7,880	\$ 0.00		
	Res Water Heating	40	208,421	4,168,421	11	11	146,895	2,917,895		1,639	\$46,496	\$60,893	\$107,389	\$ 0.03		
Comprehensive	Res Comprehensive(a)	2,621	10,000,000	57,761,457	3,370	3,370	7,000,000	40,433,020		22,708	\$1,306,019	\$1,258,302	\$2,564,321	\$ 0.04		
	Non-Res Cooking															
Process	Non-Res Cooling	86	10,000,000	150,000,000	966	966	9,000,000	135,000,000		58,971	\$641,648	\$1,044,398	\$1,686,046	\$ 0.01		
HVAC	Non-Res Heating															
	Non-Res Lighting	1,240	52,799,093	211,196,372	6,389	6,389	47,519,184	190,076,735		83,030	\$5,095,212	\$4,714,477	\$9,809,689	\$ 0.05		
Process	Non-Res Motors	2	44,000	-	4	4	39,600	0		0	\$6,114	\$2,084	\$8,198	\$ 0.19		
	Non-Res Pumps															
Refrigeration	Non-Res Refrigeration	63	6,997,732	69,977,324	1,071	1,071	6,297,959	62,979,592		27,511	\$286,570	\$586,352	\$872,922	\$ 0.01		
	Non-Res Shell															
Process	Non-Res Process	42	6,800,000	68,000,000	561	561	6,120,000	61,200,000		26,734	\$528,790	\$649,058	\$1,177,848	\$ 0.02		
	Non-Res Comprehensive(b)	310	19,459,175	170,124,290	2,490	2,490	17,513,257	153,111,861		66,883	\$2,776,074	\$4,100,223	\$6,876,297	\$ 0.04		
Other	Other(c)															
Subtotal			175,370,000	1,340,435,713	25,470	25,470	141,979,000	1,072,164,596		526,980	\$21,780,033	\$19,260,968	\$41,041,001	\$ 0.03		
T&D	T&D		-	-	0	0	0	0		0	\$0	\$0	\$0			
Total			175,370,000	1,340,435,713	25,470	25,470	141,979,000	1,072,164,596		526,980	\$21,780,033	\$19,260,968	\$41,041,001			
EE Program Portfolio	TRC Test	1.10														
EE Program Portfolio	PAC Test	1.89														

SAN FRANCISCO PUBLIC UTILITIES COMMISSION POWER ENTERPRISE

San Francisco Public Utilities Commission (SFPUC) Power Enterprise At a Glance

- Providing electricity to customers since 1925
- Located in Climate Zone 3
- Serving approximately 2,400 retail customer connections
- Customer classes: Approximately 40% of retail electricity is supplied to San Francisco municipal customers in the “General Fund” rate class, consisting primarily of nonresidential buildings, process loads, and streetlights. The remaining retail electricity is supplied to customers in the “Enterprise” rate class, which are primarily municipal nonresidential buildings, tenants on municipal property, multi-tenant residential buildings, and process loads.¹²
- FY 2013-14 total electricity sales to retail customers: 984,000 megawatt-hours (MWh); peak demand: 149 megawatts (MW); load growth is negligible
- In FY 2013-14, appropriated utility funds for energy efficiency totaled \$2.1 million and actual spending of utility funds (reporting all project costs in the year of completion) totaled \$2.0 million. Other public purpose programs include municipal renewable energy projects and the GoSolarSF solar incentive program.

Utility Overview

The SFPUC’s Hetch Hetchy Water and Power system generates an average of 1.6 million MWh of clean hydroelectric power each year. The Power Enterprise also receives energy from 19 municipal solar photovoltaic installations (approximately 7.9 MW) and 2 biogas cogeneration facilities (3.1 MW). The City has made a commitment to energy efficiency as its highest priority resource. City residents and businesses have demonstrated strong support for energy efficiency programs as part of a strategy to reduce greenhouse gas emissions, and promote a clean local environment.

SFPUC manages energy efficiency programs mainly targeting its municipal customers. Historically, most of its programs have been provided at no charge to municipal agencies. However, fee-for-service programs represent a growing portion of SFPUC utility energy efficiency offerings.

Major Program Changes

Utility funding of energy efficiency in FY 2013-14 remained at a level similar to FY 2012-13, yet was significantly lower than the previous ten-year average. The SFPUC expects lower utility funding levels to continue over the next ten years as the utility prioritizes reinvestment in its hydroelectric facilities at Hetch Hetchy, streetlight repairs and ownership consolidation, and new investment in infrastructure for new customers. The utility plans to partly offset these reductions with proceeds from a developer impact fee, and, beginning FY14-15, with cap and trade funds.

¹² A small portion of these sales are to customers in redevelopment areas and on Treasure Island.

This year's energy savings are primarily derived from completion of a small number of comprehensive HVAC retrofits, as well as the first direct-install lighting efficiency project implemented entirely on a fee-for-service basis. Projects also resulted in substantial natural gas savings from boiler retrofits and from a major hospital central plant upgrade. The utility's fee-for-service Commissioning and Design Review program has been very active and has continued to grow as part of the efficiency portfolio, though the program completed no projects in this category in this reporting period.

Program Highlights

Energy efficiency has been an essential component of the City's resource portfolio for more than a decade. In the current reporting period, FY 2013-14, completed energy efficiency projects that are estimated to save 2,268 MWh (gross savings) of electricity per year, at a utility cost of \$2.0 million.

Program level highlights for FY 2013-14 include:

- Direct-install style retrofits provided all electricity savings reported for this fiscal year including:
 - Comprehensive HVAC upgrades at a county jail, the main animal shelter, and the Human Services Agency headquarters building; and
 - A major lighting retrofit at San Francisco's Main Library as part of the Civic Center Sustainability District.
- A SFPUC-identified central plant retrofit resulted in the replacement of vital emergency generators at San Francisco General Hospital, and is expected to provide significant reductions in natural gas use and GHG emissions;
- Development work continued for a project to convert 18,000 streetlights to LED;
- SFPUC's annual report benchmarking the energy performance of San Francisco's municipal buildings grew to include 470 buildings representing almost 49 million square feet of building area.

Program Descriptions

The utility's energy efficiency programs are generally tailored to the particular customer's circumstances because most customers are large and have varied property characteristics. They include:

- Direct-Install Program: This program provides complete retrofit services to targeted municipal customers, usually at no cost to the customer. The program focuses on City agencies that are funded primarily through local tax receipts, fees, and federal/state-funded programs. These customers are considered hard-to-reach (due to limited access to capital and engineering, and to insufficient price signals). To accelerate retrofits and control costs for this program, Power Enterprise developed the first-in-the-nation "job-order contracts" for competitive-bid lighting retrofit and HVAC retrofit contractors. The program includes audits, project design, and project management, with a project-specific measurement and verification (M&V) analysis for most projects.

- Investment Grade Audits and Technical Assistance: Targeting revenue-generating “enterprise” departments, this program provides investment grade energy audits and technical assistance during design and construction of energy retrofits. In some cases, services include complete construction and project management, including this year’s Water Department facility lighting retrofit implemented entirely on a fee-for-service basis. Power Enterprise has offered project financing to some projects through inter-departmental loans.
- Civic Center Sustainability District: Through a partnership with the Clinton Global Initiative, this program demonstrates green, renewable and energy efficient technologies as a national model for sustainability in historic districts. For energy efficiency projects, the program provides free energy audits, design, construction management, construction services, and full funding to buildings in the City’s historic district.
- LED Street Light Conversion Project: The program aims to convert about 18,000 of the City’s high pressure sodium street lights to LED lights. The program will reduce energy use and maintenance costs, and improve pedestrian and vehicular safety. The program is coordinated with the installation of wireless controls. The project is expected to launch in 2015.
- Green Commissioning and Design Review Program: The utility provides commissioning and related green building design review services on a fee-for-service basis for municipal new construction and major renovations. For existing buildings, the program offers retro-commissioning services.
- Energy Benchmarking Program: San Francisco requires owners of non-residential buildings over 10,000 square feet to annually benchmark and disclose the energy performance of their buildings. In 2014, Power Enterprise released its second annual report benchmarking the energy performance of San Francisco’s municipal buildings, including 470 buildings representing nearly 49 million square feet of building area.

EM&V

Historically, the large majority of energy efficiency retrofit projects funded by Power Enterprise have included an individual M&V study following the International Performance Measurement and Verification Protocol (IPMVP). These projects have included an M&V plan with a sampling plan, a logging plan, an approach to data recovery and analysis, and a written report. This approach is currently under review; any changes will be described in the next reporting cycle. For reporting purposes, verified savings calculations, as they become available, are used to update estimated savings.

Complementary Programs

The SFPUC offers several related programs, among them:

- Renewable Energy Programs:
 - Municipal Renewable Program: Under this program the SFPUC directly installs, maintains and operates solar PV systems on municipal buildings throughout the City and County of San Francisco; and

- GoSolarSF: The program provides incentive payments to SFPUC customers and city residents and businesses installing rooftop solar projects. The program includes a component for low income residents, which complements a statewide program administered by Grid Alternatives, a nonprofit organization

SFPUC Power Enterprise						
Time Period: Fiscal Year 2013-2014						
SFPUC Power Enterprise	Resource Savings Summary [1][2]			Cost Summary [3]		
	Savings Summary (Completed Projects)			Utility Incentive & Direct Install (\$)	Utility Mktg, EM&V and Admin OH [4]	Total Utility Cost
Program	kW	kWh/yr	Lifecycle kWh			
Direct Install (General Fund)	71	1,406,387	21,095,805	\$ 1,338,373	\$ 147,113	\$ 1,485,486
Technical Assistance (Enterprise Depts)	86	250,000	3,750,000	\$ -	\$ 23,226	\$ 23,226
Civic Center Sustainability District	119	612,159	9,182,385	\$ 453,014	\$ 56,873	\$ 509,887
Commissioning and Design Review [3]	0	0	0	\$ -	\$ -	\$ -
LED Street Lights [3]	0	0	0	\$ -	\$ -	\$ -
Total	276	2,268,546	34,028,190	\$ 1,791,387	\$ 227,213	\$ 2,018,600
[1] Energy savings reported are "gross savings"						
[2] In addition to electricity savings, EE retrofits are expected to achieve significant natural gas savings.						
[3] Costs for completed projects are reported in the year of completion. Some programs have no projects completing construction in FY2013-14.						
[4] Annual Program Admin costs are apportioned based on percent of savings.						

CITY OF SHASTA LAKE

City of Shasta Lake (CSL) at a Glance

- Year established: 1993
- Climate Zone: 11
- Number of retail customers served: 4,494
- Percent of retail sales by customer class: 35% residential; 22% commercial 43% industrial
- Energy Efficiency Program Budget: \$235,500; Energy Efficiency Program Expenditures: \$176,346; funds may be reallocated to other PB programs depending upon program demands; \$35,000 is kept in Reserves.
- Load growth: 0% (static; weather influenced)

Utility Overview

The CSL feels a significant responsibility to its community/ratepayers to invest their Public Benefits funds in such a way as to impact both energy and financial savings for their customers, and a positive economic impact in CSL as well. CSL offers a comprehensive menu of rebates to all of our customers. However, because of the economic downturn that has affected the City for several years, the number of customers taking advantage of the rebate offers have been relatively low.

To compensate for this, CSL has offered direct install programs that provide energy efficiency measures to customers at no cost to them. In FY14, CSL offered a Web Enable Programmable Thermostat (WEPT) direct install program to our commercial customers. The Keep Your Cool program was also provided to our commercial customers, offering refrigeration upgrades to commercial customers and providing them with immediate energy savings and direct economic benefits to CSL. This is a very popular program, and the benefits have been helpful and appreciated by CSL citizens.

Two commercial customers participated in the Commercial Lighting program. CSL also provided direct install screw-in LED lamps to our commercial customers at no charge. A number of residential customers participated in the appliance, HVAC and weatherization rebate programs.

Major Program Changes

The direct install programs that install measures at no cost to the customer continue to deliver the majority of the savings in CSL's EE programs. This is an indicator of limited capital that CSL customers have to invest in EE upgrades. In FY14, the bulk of the savings came from the commercial sector, compared to 87% of the savings coming from the residential sector in FY12.

Program Highlight

The EE actual program expenditures were 25% under budget. The main reason for this is that there was a large commercial lighting project in the budget that was not completed that accounted for \$40,000 of the FY14 budget.

The WEPT program accounted for 42% of the total program energy savings in FY14. Commercial lighting accounted for 24.5%, and commercial refrigeration accounted for another 16.5% of the energy savings. The net annual kWh savings of 261,674 in FY14 exceeded the AB2021 goal by 13%, and represents an increase of 28% compared to FY13. The net kW reduction of 61 represents 90% of the FY14 AB2021 goal for demand reduction.

The direct install programs that install measures at no cost to the customer continue to deliver the majority of the savings in CSL's EE programs. This is an indicator of limited capital that CSL customers have to invest in EE upgrades.

Program Descriptions

CSL manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on peak load reduction and energy conservation. For residential customers, rebates are offered for the installation of various energy efficiency measures. For commercial customers, rebates are available for upgraded lighting, HVAC equipment and in cases where an energy analysis is performed, rebates can be offered for additional equipment that reduces energy use and/or demand.

- Residential Audit Program [Res Comprehensive]: On-site energy audits are provided by energy specialists. Energy efficiency measures are recommended and additional visits are completed upon request. Instant savings measures are also installed in customer homes (CFLs, showerheads, aerators)
- Residential Lighting Program [Res Lighting]: The City offers rebates to homeowners who install ENERGY STAR® qualified compact fluorescent lamps (CFLs), ceiling fans and LED holiday lights.
- Residential Cooling Program [Res Cooling]: The City offers rebates to homeowners who install high performance heat pumps, central air-conditioners, or evaporative coolers that exceed current state requirements.
- Residential Equipment Program [Res Clothes Washers; Res Cooling; Res Dishwashers; Res Pool Pump; Res Refrigeration]: The City offers rebates to homeowners who purchase new ENERGY STAR qualified products, including clothes washers, room air conditioners, dishwashers, pool pumps, refrigerators and freezers.
- Residential Weatherization Program [Res Cooling; Res Shell]: The City offers rebates to homeowners who invest in weatherizing their homes, including air/duct sealing, attic/wall/duct insulation, window treatments/replacement, roof radiant barriers and cool roofs.
- Residential Water Heater Rebate Program [Res Water Heating]: The City offers rebates to homeowners who purchase a new, energy efficient electric water heater.
- Commercial Audit Program [Non-Res Comprehensive]: On-site energy audits are provided by energy specialists. Energy efficiency measures are recommended and additional visits are completed in order to provide technical assistance for implementation of measures. Energy efficiency rebates are available for upgrades identified during these audits.

- Commercial Lighting Program [Non-Res Lighting]: The City offers rebates to business owners who invest in the installation of energy efficiency lighting upgrades. There is a prevalence of T-12 lighting throughout the city and most high bay lighting uses high intensity discharge fixtures instead of more efficiency fluorescent fixtures.
- Keep Your Cool Program [Non-Res Refrigeration]: The City offers energy efficiency refrigeration equipment upgrades to business owners at no cost
- Commercial Custom Program [Non-Res Comprehensive]: The City offers rebates to business owners based on site-specific consumption. Rebates are tailored to the individual business owner's needs based on the audit and the potential energy savings associated with the customer project.

EM&V

The City has budgeted \$5,000 in FY2015 for an evaluation of work performed during FY13. The City is currently exploring the opportunity of partnering with Gridley Municipal Utilities and City of Ukiah on this EM&V effort in order to gain economies of scale.

Sources of Energy Savings

Sources referenced varied by measure. Sources include Deer 2005/2008/2001, KEMA 2009 and IOU work papers, and provisionally deemed savings estimates from the NW Regional Technical Forum. For FY15, CSL has revised the savings estimates based on the TRM.

Complimentary Programs

- Renewable Energy: The City installed a 26kW solar array at our Corporate Yard facilities. ~ \$92,000
- Low-Income Programs: The City funds low-income programs Salvation Army "SHARES" (onetime payment assistance) and Lifeline Discount (income qualified monthly discount); FY14 budget: \$100,000
- Electric Vehicles: The City ordered an EV Arc Car Charging Station from Envision Solar in June 2014; still waiting on delivery. ~ \$52,000. The City also did 50% share on a Car Charging Station with Knauf Insulation. ~ \$3200

Shasta Lake			Resource Savings Summary								Cost Summary				
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	14	6,594	79,128	14	14	5,605	67,259		34	\$2,100	\$7,358	\$9,458	\$0.19	
	Res Cooling	72	10,818	186,553	12	12	8,634	148,875		91	\$22,547	\$10,860	\$33,407	\$0.33	
	Res Dishwashers	14	924	10,164	3	3	739	8,131		4	\$840	\$890	\$1,730	\$0.27	
	Res Electronics														
	Res Heating	70	5,079	29,555	2	2	4,188	23,187		12	\$650	\$3,291	\$3,941	\$0.20	
	Res Lighting	1	321	3,210			221	2,215		1	\$250	\$243	\$493	\$0.28	
	Res Pool Pump	45	7,834	109,043	1	1	5,876	81,782		44	\$6,510	\$12,121	\$18,631	\$0.31	
	Res Refrigeration	3,234	11,296	211,847	7	7	7,375	139,838		79	\$15,578	\$14,399	\$29,977	\$0.33	
	Res Shell	3	1,068	13,884			619	8,053		4	\$600	\$1,920	\$2,520	\$0.42	
	Res Water Heating	1	9,274	55,644	4	4	7,883	47,297		27		\$12,217	\$12,217	\$0.30	
Comprehensive	Res Comprehensive														
	Process														
	Non-Res Cooking														
	Non-Res Cooling														
	Non-Res Heating	433	79,839	741,559	12	12	63,919	594,827		330	\$15,069	\$2,207	\$17,276	\$0.04	
	Lighting														
	Process														
	Non-Res Motors														
	Non-Res Pumps														
	Refrigeration	1	53,778	484,002	6	6	45,174	406,562		214	\$6,769	\$1,980	\$8,749	\$0.03	
HVAC	Non-Res Shell														
	Non-Res Process														
	Non-Res Comprehensive														
Other	Comprehensive	24	139,302	1,532,322			111,442	1,225,858		646	\$24,000	\$3,826	\$27,826	\$0.03	
	Other	3,911	326,126	3,456,911	61	61	261,674	2,753,884		1,486	\$94,913	\$71,312	\$166,225	\$0.08	
Subtotal															
T&D															
Total		3,911	326,126	3,456,911	61	61	261,674	2,753,884		1,486	\$94,913	\$71,312	\$166,225		
EE Program Portfolio	TRC Test	1.28													
	PAC Test	1.76													

SILICON VALLEY POWER

Silicon Valley Power (SVP) At a Glance

- Established in 1896
- Climate Zone 4
- 53,273 retail customers; 84% are residential; 15% are commercial & industrial; 1% are municipal
- Retail Sales Breakdown: 7.5% residential, 3.1% commercial, 88.7% industrial, 0.7% municipal (Note that commercial and industrial customers are categorized by their rate code, and not type of business performed at the location.)
- The amount budgeted for energy efficiency programs in FY 13-14 was \$8,050,000. The total amount actually expended was \$3,514,799. All funding for energy efficiency programs comes from the Public Benefits Charge on customers' utility bills. Unexpended energy efficiency dollars are typically rolled over into the following fiscal year's energy efficiency programs. However, at the end of Fiscal Year 2013-2014, SVP had built up a larger than usual reserve and, at the time this report is written, it does not appear that customers will utilize all budgeted energy efficiency funds for Fiscal Year 2014-2015 either, so SVP will be reallocating a portion of the unexpended commercial energy efficiency program funds from previous years to fund the FY 2014-2015 PV rebates that were being funded through other utility budgets. This was also done in FY 2013-2014 with unexpended energy efficiency funds for FY 2012-2013
- 75.6% system load factor
- Load growth projected at 2% for Fiscal Year 2014-2015

Silicon Valley Power Overview

Over the past several years, Santa Clara has experienced the effects of the economic recession, along with the rest of the country. We have seen the number of customers participating in our Low Income Financial Rate Assistance Program more than double as customers have been laid off from work and the numbers have remained relatively stable as they have gone back to work in lower paying jobs. Businesses in Santa Clara have survived relatively well, and we have continued to see load growth during the recession due to the load that new data centers have been bringing online the last few years. However, most companies are working with leaner staff and tighter budgets than they did previously, so we are seeing fewer energy efficiency projects due to lack of time and funding. This trend remains in effect, even as the economy has been improving.

Silicon Valley Power is unique in its mix of customers. While 84% of the customers are residential, nearly 89% of the utility retail sales are to commercial and industrial customers. Approximately 50% of our electric load is attributable to our largest "Key" Customers. Historically, it is those customers, including the large data centers, who implement a few large projects each year that make up the majority of our energy savings for the year. In Fiscal Year 2013-2014, we saw fewer of these projects, which is partly due to lack of staff and budget, and partly due to the fact that these customers have been aggressively implementing energy efficiency measures for more than a decade and the opportunities for improvements are fewer and

have long payback periods. Some of the energy efficiency measures that are still being implemented include IT improvements, for which SVP does not have an incentive program. Therefore, while these savings are being achieved in our community, like the energy savings from codes and standards, they are not accounted for in this report.

Major Program Changes

For FY 2013-2014, we reduced the residential rebate amount from \$10 to \$5 per bulb for LEDs up to 1,000 lumens due to the decline in costs of LED bulbs. However, since there are very few LEDs on the market over 1,000 lumens, we kept a \$10 rebate for bulbs 1,000 lumens or greater in order to encourage manufacturers to make more of these bulbs, which have a higher cost due to the additional diodes. This is in line with the Consortium for Energy Efficiency recommendations for utility programs across the country.

We also adopted the California POU Technical Reference Manual (TRM) savings numbers for our programs for Fiscal Year 2013-2014, which reduced the amount of energy savings claimed for some of the deemed savings measures, especially in the residential programs. In addition, our Lighting Calculator for commercial lighting retrofits was adjusted to account for the new Title 24 Standards, which increased the baseline for most of our projects, reducing the energy savings claimed.

Program Highlight

While our residential programs do not significantly contribute to our overall energy savings due to the small portion of our load that our residents represent, our residential ENERGY STAR® LED Light Bulb Rebate once again had a significant impact for our customers. In terms of participation rates, it is by far, our most popular program. Every customer, whether they own or rent, can make a choice regarding the light bulbs that they use and can impact their utility bills with these energy savings. SVP customers have been especially interested in LED technology since this is the heart of innovation and many of our residents work for, or have family members who work for companies that manufacture light emitting diodes and this community is interested in embracing new technology. While many of our customers had already made the switch to CFLs, there were still some areas where CFLs were unsatisfactory (such as wet bathroom conditions, ceiling fans, etc.) and some customers have concerns over the small amount of mercury in the bulbs. LEDs provide a good alternative to incandescent bulbs in these areas and program participation exceeded SVP's expectations again this year. As more options for the technology became available in local stores and prices continued to drop, we saw an ever-increasing participation in the program.

Program Descriptions

Res Lighting

- LED Light Bulb Rebates: SVP offers a \$5 rebate per Energy Star LED bulb under 1,000 lumens, and a \$10 rebate per Energy Star LED bulb 1,000 lumens or greater. This differentiation is due to the fact that there are very few bulbs over 1,000 lumens on the market and they are more expensive. The higher rebate buys down this cost for the residential customers and encourages manufacturers to provide a larger variety of bulbs that meet the needs for a brighter light.

Res Refrigeration

- Residential Refrigerator Rebates: Rebates encourage residents to purchase and install ENERGY STAR® labeled refrigerators and recycle their old units.
- Refrigerator Recycling: Rebate for recycling old refrigerators.

Res Cooling

- Energy Star Ceiling Fan Rebates: Provides a rebate of \$35 per fan (up to three fans per residence) for the installation of Energy Star ceiling fans.

Res Water Heating

- Electric Heat Pump Water Heater: Provides a rebate of up to \$1,000 for replacing an existing electric water heater with an Energy Star Heat Pump Water Heater.

Non-Res Lighting

- Commercial Lighting Rebates: This program provides rebates for energy efficient lighting upgrades.

Non-Res Cooling

- Commercial HVAC Rebate program: This program provides a rebate on the purchase and installation of new, more efficient air conditioners, HVAC systems, or heat pumps.
- Controls Rebate Pilot Program: This is a performance-based incentive for controls systems under a pilot rebate program. The incentive requires demonstrated energy savings over a 5 year period and will make payments annually upon submission of a verification report.
- VFD Rebate: This program provides a rebate on qualifying variable frequency motor drives.

Non-Res Cooking & Non Res Refrigeration

- Food Service Equipment Rebate: This program provides a rebate for the purchase of qualifying energy-efficient commercial food service equipment. It includes a variety of equipment, including both cooking and refrigeration equipment.

Non-Res Process

- Data Center Efficiency Program*: The program is targeted to data centers with IT server loads greater than 350 kW or IT cooling loads greater than 100 tons. This program provides unique opportunities for energy-efficiency projects that may not otherwise fit into our standard rebate and customer assistance offerings.
- Uninterruptible Power Supply (UPS) Rebate: This program provides a rebate to customers who install Energy Star UPS equipment to protect enterprise servers, networking equipment, and large storage arrays.
- PC Power Management Rebate: This program provides a rebate on qualifying PC Power Management software that achieves a minimum energy savings of 125 kWh annually per PC.

- Plug Load Sensor Rebate: This program provides a rebate for smart power strips used in commercial facilities to reduce energy consumption from office equipment.

*Data center projects under these programs may include cooling measures, among others. However, since this is the essential cooling of servers and not for comfort of people, we consider these to be process loads.

Non-Res Comprehensive

- New Construction Rebate: This program provides an incentive to customers who exceed Title 24 by at least 10% on non-residential new construction projects.

Other programs that fall into multiple categories, depending on the energy efficiency measures implemented:

- Public Facilities' Energy Efficiency Program: SVP provides technical assistance and financial incentives for the expansion, remodel, and new construction of City of Santa Clara buildings. Included in this program are higher levels of rebates for qualifying equipment, energy management assistance, and a small budget for retro commissioning.
- City Facilities Energy Efficiency Loan Program: This program provides loans for approved energy efficiency measures implemented at City of Santa Clara facilities. Loans are paid back via the utility bill through the reduction in energy consumption.
- Customer Directed Rebate: This program provides a rebate for energy efficiency projects that do not qualify for our other rebate program offerings, but have demonstrable energy savings.
- Residential Low Income Direct Install Program: This program is targeted at residential customers on our Financial Rate Assistance Program who have nearly twice the energy consumption annually as our average residential customer. The program is implemented by a third party, with the primary goal being to reduce the customer's energy consumption through both energy efficiency measures (of a wide variety), as well as education on conservation/behavior measures. No energy savings is claimed for the energy conservation/behavior measures.

Other programs educational in nature that do not fall into a category for energy savings:

- Business Audits: Free energy efficiency audits to business customers.
- Residential In-Home Energy Audits and Education: Through this technical support program SVP staff provides on-site audit analysis, energy efficiency recommendations and distributes energy saving items ("lime lite" night lights, outlet gaskets and switch plate thermometers). The Solar Explorer and the SVP information booth participate in major city events, providing education on energy efficiency and solar electric generation systems.

LEED Rebate for Energy Efficient Building Design: If a building meets LEED criteria and exceeds Title 24 energy requirements by at least 10 percent, this program provides rebates of up to \$37,600.

EM&V

Silicon Valley Power's EM&V plan and reports for the past six years can be found at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>. For FY 2013-2014 programs, SVP has

opted to have its commercial lighting program evaluated by The Cadmus Group. This program has the largest participation of all commercial energy efficiency programs, and while lighting projects have been included in past EM&V report samples, the program as a whole has not yet been evaluated. The report is anticipated to be ready by mid-March 2015 and will be posted with the previous reports on the NCPA website. The EM&V budget averages \$75,000 per year, but actual spending varies, depending on the EM&V needs for the year.

Sources of Energy Savings

Silicon Valley Power uses the POU Technical Reference Manual (TRM) for its energy savings. This can be found at <http://cmua.org/energy-efficiency-technical-reference-manual>. The lighting calculator used for our commercial lighting rebates can also be found here. The exception to using the TRM is for custom projects, typically funded under our Customer Directed Rebate program, where no deemed values or savings calculators exist in the TRM. For those projects, the customer must submit an M&V plan to be approved by Silicon Valley Power, which may include the use of industry-accepted models or actual pre- and post-measurement data.

Complimentary Programs

- Renewable Energy Programs:
 - Santa Clara Green Power Program: Residents can purchase 100% renewable energy through this voluntary program. The cost for residents and small businesses is a penny and a half per kWh. Larger companies who do not wish to purchase 100% renewable energy may purchase in 1,000 kWh blocks. Block pricing can vary depending on the location of the resources (CA vs. Western U.S), the size of the purchase, and the duration of the purchase commitment.
 - Residential Solar Photovoltaic Rebate: Provides significant financial incentive to residential customers for installation of solar systems. Customers receiving the rebate are required to also complete an energy audit, as is the case with the statewide California Solar Initiative. The rebate started at \$4.50 per watt and under a declining scale similar to the California Solar Initiative program, and is currently at \$1.50 per watt, up to a maximum system size of 10 kW.
 - Business Solar Photovoltaic Rebate: Provides financial incentives for the installation of solar systems at business sites. Rebate structure is designed to decline over time as more PV is installed in SVP's service territory, similar to the California Solar Initiative program. Businesses can receive rebates up to a total of \$300,000 per customer for systems up to 100 kW. While the rebates started at \$3.00 per output watt, current rebate level have declined at the time of this report to \$0.90 per watt. Businesses installing systems between 100kW and 1 MW are eligible for a Performance Based Incentive. These incentives started at \$0.40 per kWh and are currently at a rebate level of \$0.12 per kWh at the time of this report. Businesses are required to complete an energy audit in order to receive a rebate, as is the case with the statewide California Solar Initiative.
 - Neighborhood Solar Program: SVP customers have the option to pay into a special fund to support the installation of solar electric systems at non-profit community buildings. The third installation is located at the Bill Wilson Center and was completed in the Fall of 2010. Four

additional installations were completed in 2014 at Hope Services, St. Justin's Parish, Our Lady of Peace Church, and the Muslim Community Association (MCA).

- Low-Income Programs: Our low income programs include a Rate Assistance Program, where qualified low-income customers receive a 25% discount on their electric bill (low-income program), as well as a Low Income Direct Install Program, which is described in the energy efficiency programs section of this report.
- Research, Development, and Demonstration:
 - Emerging Technologies Grant: This program encourages businesses to demonstrate new products and product applications not yet commercially viable in today's marketplace, install energy efficient technologies not generally known or widely accepted, yet show potential for successful market growth, successfully apply energy efficiency solutions in new ways, or introduce energy efficiency into industries or businesses that are resistant to adopting new technologies or practices.
 - APPA DEED Program: Silicon Valley Power is a paying member of the American Public Power Association (APPA) Demonstration of Energy and Efficient Design (DEED) and currently occupies a seat on the DEED Board. This program funds grants, internships and student scholarships to further R&D in the electric utility industry and support innovative applications of energy efficient or renewable technologies. In Fiscal Year 2013-2014, SVP was awarded a DEED grant for an intern to undertake a Tier II Advanced Power Strip (APS) Study, and a DEED grant that funded nearly 50% of a study on "The Potential Effects of Increasing Use of Solid State Lighting with Lighting Controls". The remainder of the study was funded through Public Benefits Funds under the R&D budget.
 - California Lighting Technology Center (CLTC): Silicon Valley Power provides financial support to the CLTC to further research and testing of emerging technologies in the area of lighting.
 - Super Efficient Dryer Initiative (SEDI): Silicon Valley Power provides financial support to SEDI to further research and testing of emerging technologies in clothes dryers, such as the Energy Star Emerging Technology Award-winning Clothes Dryers, which came on the market within the last two years, and the Heat Pump Clothes Dryer, which is not yet commercially available in the United States, but holds significant promise for energy savings.

Silicon Valley			Resource Savings Summary							Cost Summary					
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	11	1,507	16,577			467	5,139		3	\$1,100	\$1,766	\$2,866	\$0.72	
	Res Cooling	14	584	5,760	1	2	584	5,760		4	\$6,805	\$6,559	\$13,364	\$2.92	
	Res Dishwashers														
	Res Electronics	5	120	960			120	960							
	Res Heating														
	Res Lighting	1,621	17,472	231,500	4	1	11,179	137,108		69	\$17,740	\$59,683	\$77,423	\$0.77	
	Res Pool Pump														
	Res Refrigeration	372	175,682	1,007,160		23	122,984	705,012		382	\$14,670	\$355,785	\$370,455	\$0.62	
	Res Shell	4,160	12,320	167,144	3	5	6,667	110,610		62	\$6,872	\$68,170	\$75,042	\$1.00	
	Res Water Heating	2	3,008	30,080			1,805	18,048		10	\$2,000	\$7,756	\$9,756	\$0.68	
Process	Res Comprehensive														
	Non-Res Cooking	251	764,834	11,331,149	77	77	650,109	9,631,477		5,861	\$74,995	\$108,401	\$183,395	\$0.03	
	Non-Res Cooling														
	Non-Res Heating														
	Non-Res Lighting	14,290	3,946,154	51,300,008	513	513	3,354,231	43,605,007		24,165	\$738,718	\$498,324	\$1,237,042	\$0.04	
	Non-Res Motors														
	Non-Res Pumps														
	Non-Res Refrigeration	1	12,408	124,080			10,547	105,468		56	\$1,861	\$577	\$2,438	\$0.03	
	Non-Res Shell														
	Non-Res Process	715	9,546,181	163,008,370	1,125	1,125	8,115,954	138,557,115		73,684	\$751,392	\$790,821	\$1,542,213	\$0.02	
Other	Non-Res Comprehensive														
	Other														
	SubTotal	21,442	14,482,280	227,222,788	1,723	1,745	12,274,647	192,881,703		104,296	\$1,616,548	\$1,898,251	\$3,514,799	\$0.03	
	T&D														
	Total	21,442	14,482,280	227,222,789	1,723	1,745	12,274,647	192,881,703		104,296	\$1,616,548	\$1,898,251	\$3,514,799		
EE Program Portfolio	TRC Test	1.84													

TRINITY PUBLIC UTILITY DISTRICT

Trinity Public Utility District (TPUD) At a Glance

- Created in 1982 as a result of the Trinity River Division Act of 1955, in which Congress provided mitigation for the economic devastation to the local economy resulting from the Act.
- The Congressional mitigation provides the Trinity River Public Utility District (TPUD) enough low cost and clean hydroelectric power to meet its entire load for the next several decades, but forbids the TPUD from selling any of the energy it does not need to meet load.
- Serves small economically depressed area in northern California consisting of approximately 7,500 meters in mountainous terrain covering an area the size of Delaware.
- TPUD is comprised of nine small substations serving 560 miles of distribution line.
- TPUD has a peak coincident demand of approximately 24 megawatts, which may occur in winter or summer.
- More than 60 percent of TPUD's load is residential and only two customers have a peak demand of more than 150 kilowatts.

Program Highlights

Since FY 2000 through FY 2014 TPUD public benefits expenditures on energy efficiency total approximately \$516,000 and have resulted in kilowatt-hour energy savings equivalent of more than 274,000 kilowatt-hours.

Program Descriptions

- Weatherization Program: Provides incentives for installation of cost-effective weatherization measures including insulation and energy efficient windows in electrically heated homes for all new buildings and major remodels, about 30 per year.
- High Efficiency Heat Pump Rebate Program: Provides incentives to replace wood stoves, propane furnaces/heaters, and kerosene heating systems with high efficiency electric heat pumps (TPUD's service territory has no natural gas availability).
- High Efficiency Electric Water Heater Rebate Program: Provides incentives to replace propane water heaters with high efficiency electric water heaters.

TRUCKEE DONNER PUBLIC UTILITY DISTRICT

Truckee Donner Public Utility District at a Glance (TDPUD) (2014 Calendar Year)

- Established in 1927
- Climate Zone(s): 16 (winter, weekend, and holiday peaking electric utility)
- 13,349 retail customer connections (88 percent residential)
- Percent of retail sales by customer class – residential (53%) and commercial (47%)
- Budgeted amount for energy efficiency programs (\$921,268), amount actually expended (\$830,070, >90%) and funding sources (PB + Rates). TDPUD moves money within energy efficiency programs and across PB programs to respond to customer needs. TDPUD's low-income program energy savings and costs are included in the above numbers since it includes an energy efficiency component. Energy savings and all associated costs from water conservation programs are also included.
- Load growth: TDPUD is projecting a 0.7% average growth rate per year, for the next 10 years

Utility Overview

Truckee Donner Public Utility District serves electricity and water to the greater Truckee area comprised of approximately 44 square miles in eastern Nevada County and approximately 1.5 square miles in adjacent Placer County. TDPUD is governed by a locally elected Board of Directors consisting of 5 members with staggered 4-year terms and operates on a calendar year budget. TDPUD is a transmission-dependent utility within NV Energy's control area and secures electric resources primarily through the Utah Associated Municipal Power System (UAMPS). TDPUD has been successful in the past in transitioning to renewable energy sources, keeping rates stable, and investing in accessible, cost-effective, energy efficiency programs.

In 2014, TDPUD continued to invest in public benefit programs spending over 4.7% of retail sales including 3.8% of retail sales spent directly on energy efficiency programs. TDPUD's energy efficiency results included a first year E3 'Gross' energy savings of 1.7% of retail sales, first year E3 'Net' energy savings of 1.2% of retail sales, and TRC of 2.72. TDPUD continues to deliver significant, cost-effective results aided by a customer base that embraces energy efficiency and conservation along with innovative program designs. A large portion of current savings come from residential lighting (CFL's and LED's) and other lighting programs. Maintaining these saving levels is becoming increasingly difficult due, in part, to saturation but mostly due to the dramatic reductions in gross savings due to the application of codes & standards to energy efficiency retrofits. This is particularly true with screw-in residential lighting (EPA standards) and small business/commercial lighting retrofits (EPA standards & Title 24).

TDPUD treats energy efficiency as an electric resource ('first loading order') and is therefore motivated by actual savings. However, the E3 model does not consider actual savings and the E3 'Gross' savings are based on codes & standard baselines (not what was actually replaced). Thus, the savings and associated cost-effectiveness from E3 understate the true value of the energy efficiency resource. For example, gross

unit kW savings for standard residential lights dropped from approximately .055 to .042 because baseline is now 43W vs. 60W. So our 2014 million CFL gross savings would have been approximately 1,291,800 kWh if we used 60W as baseline, but is only 1,018,389 kWh. Preliminary survey results indicated most customers are replacing 60W incandescent, not the new 43 W halogen or CFLs.

When taking the E3 Total Utility Costs divided by the E3 Gross Lifecycle Energy Savings, TDPUD delivered energy efficiency programs for a cost of \$0.037/kWh which is significantly less than TDPUD's power purchase costs and a small fraction of the customer's rate. Again, we believe this overstates the true cost of the energy efficiency resource. The cost when considering E3 Net Lifecycle Energy Savings rises to \$0.053/kWh which we believe further overstates the cost of this resource.

TDPUD's focus on actual savings and on treating energy efficiency as an electric resource is consistent with how our electric utility does resource planning and is consistent with the energy efficiency targets required under AB2021 which are also based on actual savings. Although TDPUD is supportive of the energy saving potential from codes and standards, we strongly disagree with mixing paper savings from codes & standards (which off-set future load) with actual energy efficiency project savings (which are real savings, today). Furthermore, application of codes & standards as the baseline for energy savings are severely hurting our ability to do true energy efficiency projects with our residential and small business/commercial customers.

Major Program Changes

The E3 'Gross' and 'Net' energy efficiency results that the TDPUD is able to claim in this report are diverging further and further away from the actual result. This reduction is driven by using new codes & standards as the baseline for energy savings for retrofits when older technologies remain widely available. Furthermore, the costs and complexity of Title 24 are a major burden for small business/commercial lighting projects which constitutes the vast majority of TDPUD's customer base. This is causing our customers to either forgo projects, spread them out over multiple years to avoid the Title 24 thresholds, or do the project without pulling permits (and utility incentives). Simply put, the complexity and costs of Title 24 adversely impact customer's decision to do retrofits and this in turn affects the success of our utility program.

TDPUD's energy efficiency results in the past had a strong commercial lighting component but this year the results are dramatically lower as evidenced by the fact that our commercial lighting rebates dropped from more than \$183,606 in 2013 to \$6,211 in 2014. The fact is that we still have a significant amount of older lighting technology in our community (T12's, incandescent, etc.) which could be targeted for cost-effective retrofits (and which the customer can still easily buy replacement bulbs despite the changes in codes & standards) but the inability to claim the actual savings makes these projects appear to not be cost-effective.

TDPUD continues to invest in Staff and tools to make the delivery and tracking of our energy efficiency programs easy for the customer and more efficient for the utility. This includes a cloud-based program management tool with on-line rebate applications that was implemented with 6 other Northern California Power Agency (NCPA) members, improved website, social medial, and a contractor directory. TDPUD has

also increased our customer service resources to more effectively serve customer demand and dramatically increased our communication and outreach efforts to move past the early adopters and penetrate all of our customer segments.

TDPUD continues to invest in our most successful programs and to seek out new, cost-effective program opportunities. TDPUD is seeing strong demand for our residential LED lighting rebate, HE Clothes Washer rebate, appliance rebates which were modified by lowering the incentive for EnergyStar appliance and offering increasing incentives for CEE Tiers 2 & 3, and Residential Energy Surveys. Customer acceptance of LED lighting technology has increased dramatically with our residential LED rebate growing from 667 bulbs in 2013 to 1,759 bulbs in 2014.

The multi-year drought in California is of great concern to TDPUD's community and is creating economic hardship for those dependent on water/snow and the associated tourism industries. Focus on water, however, does open up the opportunity to engage the community on the benefits of conservation and efficiency.

The funding for the energy efficiency programs did decrease from the previous year but spending remains very robust (3.8% of retail sales directly on energy efficiency programs). However, the negative effect of codes & standards on our commercial lighting program led to an underspending of the budget as compared to previous years (i.e. a lost opportunity).

Program Highlight

TDPUD's energy efficiency results included a first year E3 'Gross' energy savings of 1.7% of retail sales, first year E3 'Net' energy savings of 1.2% of retail sales, and TRC of 2.72. TDPUD delivered E3 'Gross' energy efficiency savings for a cost of \$0.037/kWh (E3 'Net' cost of \$0.053/kWh) which is significantly less than TDPUD's power purchase costs and a small fraction of the customer's rate. As stated above, we believe these figures overstate the true cost of the energy efficiency resource. The portfolio performance is excellent.

TDPUD's Residential Energy Survey's remain a very popular program with customers. The 'visual survey' comes complete with over 20 energy and water saving measures that are delivered at the end of the survey for free. This program allows customers to implement the 'low hanging fruit' immediately and the educational component empowers customers to pursue more complicated energy efficiency opportunities.

Residential lighting remains a critical program area (TDPUD is 88% residential with a large number of vacation homes). TDPUD continues to effectively deliver residential lighting through our Residential Energy Survey's, low-income program, at numerous events throughout the community, and at our office. Every light bulb delivered to our customer is done face-to-face and the customer must ask for the light bulbs. As stated previously, customer acceptance of LED lighting has increased dramatically.

TDPUD's LED Holiday Light Exchange remains very popular with ~5% of our customers visiting the conservation department in less than 1-month. Not only is the program cost-effective and very well received by our customers, but TDPUD takes the face-to-face opportunity to educate customers about other programs and to distribute free residential lighting.

TDPUD's commercial lighting programs, as stated previously, are the one major low-light and a missed opportunity to enable cost-effective projects.

Program Descriptions

- Residential Green Partner Lighting Program (Res Lighting): Encourages customers to replace incandescent and halogen light bulbs with energy efficient lighting by distributing, in person and for free, 7-types of Compact Fluorescents (CFL's) to customers who visit the TDPUD Conservation Department or at a local event. CFL give-a-ways include a 12-pack of 60-watt equivalent spiral CFLs and up to 12 mix-n-match specialty CFLs.
- Residential Lighting Rebate (Res Lighting): Encourages customers to replace incandescent and halogen light bulbs with energy efficient lighting by providing incentives for Compact Fluorescent (\$2 per CFL) and Light Emitting Diode (\$5 per LED) screw-in or plug in lamps.
- Residential Energy Survey – RES (Res Lighting): Provides free residential energy surveys and energy and water-saving measures including the installation of up to 24 compact fluorescent light bulbs (CFL) and 2 low-flow shower heads at the time of survey. Customers are also informed about TDPUD conservation programs that they may benefit from and provided with associated literature.
- Residential Appliance Rebate (Res Dishwashers): Provides increasing incentives to customers to purchase more energy efficient appliances (clothes washers, dishwashers, and refrigerators) as identified by Energy Star and the Consortium for Energy Efficiency (CEE). Rebates range from \$75 to \$125.
- Refrigerator Recycle (Res Refrigeration): Promotes the recycling of older, working refrigerators and freezers by providing customers with free pick-up and a \$30 rebate.
- LED Holiday Light Exchange (Res Lighting): Exchanges old incandescent holiday light strands with new, efficient Light Emitting Diode (LED) holiday strands for free. This one-for-one exchange (up to 66 feet of light strands) starts on the Wednesday before Thanksgiving and runs while supplies last.
- Energy Saving Program – ESP, Income-Qualified (Res Lighting): Provides a one-time bill credit and a free residential energy survey to income qualified customers. Customers are qualified by an intermediary agency and are eligible for a one-time credit equal to their highest energy charge in the past 12-months (not to exceed \$200) upon completion of the required Residential Energy Survey (RES).
- Watt Meter Loan (Not evaluated): Provides a free loan of a watt meter to help customers answer the question 'How much energy does that 110 VAC device use?'. Includes information about plug-loads and how to manage their energy use.

- High Efficiency Electric Water Heater Rebate (Res Water Heating): Provides an incentive of \$2/gallon for new, qualifying electric water heaters that meet Energy Factor and other requirements. Maximum rebate \$150.
- Residential Building Efficiency Rebates (Res Shell): Provides an incentive of up to \$75 each for building envelope and/or duct air leakage tests and up to \$250 (50% of project cost) each for building envelope or duct leakage mitigation.
- Thermally Efficient Windows Rebate (Res Shell): Provides an incentive of \$5 per square foot of window to replace qualifying single-pane windows. Primary heating source must be a permanent electric space heating system.
- Water-Efficient Toilet Rebate (Non-Res Process): Encourages customers to replace high-water use toilets with low water use toilets (1.28 and 1.6 GPF) by providing increasing incentives for more efficient toilets. Rebates range from \$25 to \$100.
- Water-Efficient Toilet Exchange (Non-Res Process): Encourages customers to replace high-water use toilets with low 1.28 GPF water use toilets by offering a free toilet exchange or the option to apply a credit towards the purchase of any toilet carried by the exchange vendor that meets the program rules. Toilet exchange is conducted during regular business hours at a local toilet vendor.
- Customer Leak Repair Rebate (Non-Res Process): Provides a \$100 incentive to help customers locate and repair a water leak on their property. Requires the use of a licensed contractor for the repairs.
- HE Clothes Washer Rebate (Non-Res Process): Provides a \$50 incentive to customers who purchase a qualifying high water efficiency clothes washer. This is in addition to any applicable energy rebate.
- Residential Green Partners Water Program (Non-Res Process): Distributes, in person and for free, a variety of water saving measures to customers. Give-a-ways range from low-flow shower heads to sink aerators to hose spray nozzles.
- Patricia S. Sutton Conservation Garden (Not Evaluated): Promotes water-efficient landscaping by demonstrating, at the TDPUD's headquarters, native and drought tolerant plants, hardscaping/mulching techniques, and efficient irrigation. Plant lists, design, and materials used in the project are all available via a web-based resource at www.tdpud.org.
- Conservation Garden Party and Water-Wise Gardening Lecture Series (Not Evaluated): Encourages water-efficient gardening via lectures, access to local resources, and demonstrations.
- Neighborhood Resource Mobilization (Res Lighting): Delivers, through collaboration between a dozen local agencies, conservation programs directly to customers in a neighborhood block-party format.
- School Conservation Education (Res Lighting): Promotes energy and water conservation through an innovative series of programs designed to both educate students and deliver, for free, energy and water savings measures.
- Contractor Directory (Not Evaluated): Provides a list of screened contractors for TDPUD customers who require the support of a licensed contractor to access TDPUD conservation

programs. Contractor directory is managed by a partnership with the Electric and Gas Industries Association (EGIA).

- Business Green Partners Lighting Program (Non-Res Lighting): Provides energy efficient screw-in compact fluorescent (CFL) and light emitting diode (LED) bulbs, free of charge, to replace existing incandescent and halogen bulbs. TDPUD conservation specialist visits business to evaluate lighting needs and provide solutions.
- Commercial Lighting Rebate (Non-Res Lighting): Provides incentives to commercial customers for replacing inefficient lighting equipment with high efficiency lighting. Customers may receive a rebate equal to 1/3 of project cost (up to \$10,000) for replacing old linear fluorescent fixtures with reduced wattage T8 fluorescent or LED fixtures. Other lighting retrofits may qualify for a rebate equivalent to projected first year energy saving.
- Commercial Refrigeration (Non-Res Refrigeration): Provides energy-efficient refrigeration controls, motors, case lighting, and infiltration barriers. Customers receive a comprehensive refrigeration energy audit and proposal for energy efficient refrigeration measures from TDPUD's installation contractor. Once the proposal is accepted the measures are installed at no charge.
- Commercial Custom Rebate (Non-Res Process): Provides incentives to commercial electric customers for replacing inefficient plant equipment with high efficiency equipment. Customers may receive a rebate equal to the projected first year energy savings.
- Green Building (Not Evaluated): Promotes green building standards and techniques through collaboration with and support of local agencies and non-profits.
- Business Green Partners Water Program (Not Evaluated): Distributes to business and commercial customers free water saving measures including pre-rinse spray valves, faucet aerators and shower heads. Custom water-saving projects are evaluated for cost-effectiveness, peak reduction, and opportunities to demonstrate new technologies.

EM&V

TDPUD operates on a calendar-year for financials and we strive to deliver our completed E3 model and EM&V reports by the March 15th deadline for this report. This is a very short time-frame (2 ½ months) but the alternative of presenting EM&V results more than a year after program completion would not allow for timely feedback and program improvements. It should be noted that, given this timeframe, TDPUD does occasionally make minor adjustments to the E3 model presented in this report and the final results in the EM&V report. TDPUD has been conducting EM&V on an annual basis since 2008 and plans to continue to do so. The budget for EM&V is ~\$30,000 per year which is ~3% of program spending.

TDPUD used a variety of sources for energy savings estimates including, but not limited to, California Municipal Utilities Association TRM, Pennsylvania TRM, Regional Technical Forum UES, DEER, and utility work papers. Program performance based on these energy savings estimates was determined by independent third party measurement and verification for all programs in the portfolio.

TDPUD EM&V reports can be found at (<http://www.tdpud.org/departments/conservation/em-v-and-reporting>).

Complimentary Programs

- Renewable Energy Programs: TDPUD has a successful SB1 Solar Rebate program for our customers. TDPUD also achieved an estimated 52% Renewable Portfolio Standard (RPS) in 2014 using the methodology defined by the California Energy Commission. TDPUD was able to transition our energy resource portfolio from primarily fossil fuel based in 2008 to a diversified mix that includes wind, solar, landfill gas, and small hydro while maintaining stable and competitive rates.
- Low-Income Programs: The TDPUD's income-qualified program, Energy Saving Program (ESP), was also described in the Program Descriptions as the participation requires that customers also implement energy efficiency measures. ESP provides a one-time bill credit and a free residential energy survey to income qualified customers. Customers are qualified by an intermediary agency and are eligible for a one-time credit equal to their highest energy charge in the past 12-months (not to exceed \$200) upon completion of the required Residential Energy Survey (RES). TDPUD's income-qualified program achieves a solid return on investment for both the customer and utility.
- Research, Development, and Demonstration: It is not practical for a small utility like TDPUD to run direct RD&D programs. However, through the Northern California Power Agency, TDPUD does participate in the American Public Power Associations DEED R&D program and TDPUD Staff does investigate new energy and water conservation products and programs. TDPUD is also exploring public access charging stations for plug-in electric vehicles.
- Electric Vehicles: TDPUD is testing a Plug-In Electric Vehicle (PEV) in our fleet and currently have one public access PEV charging station (Clipper Creek). TDPUD has partnered with the Tahoe Regional Planning Agency (TRPA) on a ZEV Planning Grant application and are exploring upcoming CEC Infrastructure Grants and other funding sources for PEV public access charging.
- Energy Storage: TDPUD has not identified any cost-effective energy storage projects for our customers or for a utility our size.

Truckee Donner			Resource Savings Summary							Cost Summary				
Program Sector (Used In CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers													
	Res Cooling													
	Res Dishwashers	1	82,247	1,069,211		2	2	62,508	812,600	29,897	409	\$50,575	\$16,710	\$67,285
	Consumer Electronics													
	Res Electronics													
	Res Heating													
	Lighting	8	1,609,727	15,532,785	65	65	1,085,976	10,452,993	67,939	5,260	\$168,759	\$277,396	\$446,155	\$0.06
	Pool Pump													
	Res Pool Pump	1	159,642	798,210	17	17	110,951	554,756		301	\$14,439	\$4,771	\$19,210	\$0.04
	Refrigeration	2	2,612	47,664	6	6	2,109	38,604	1,419	22	\$3,937	\$1,301	\$5,238	\$0.20
	HVAC													
	Res Shell	1	194	2,522			153	1,992		1	\$132	\$44	\$176	\$0.12
	Water Heating													
	Res Comprehensive													
	Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling													
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	3	190,928	2,243,710	31	31	142,678	1,761,346		988	\$37,543	\$19,073	\$56,616	\$0.04
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	1	113,551	567,755	6	6	76,079	380,396		201	\$33,022	\$6,175	\$39,197	\$0.12
HVAC	Non-Res Shell													
Process	Non-Res Process	6	250,819	2,205,106	38	38	206,998	1,766,574		939	\$96,570	\$99,624	\$196,194	\$0.14
Comprehensive	Non-Res Comprehensive													
Other	Other													
Subtotal		23	2,409,720	22,466,963	165	165	1,687,453	15,769,261	99,255	8,120	\$404,977	\$425,093	\$830,070	\$0.07
T&D	T&D													
Total		23	2,409,720	22,466,963	165	165	1,687,453	15,769,261	99,255	8,120	\$404,977	\$425,093	\$830,070	
EE Program Portfolio	TRC Test	2.72												
	PAC Test	2.72												

TURLOCK IRRIGATION DISTRICT

Turlock Irrigation District (TID) At a Glance

- 100,982 customers
- 72% are residential
- Peak demand 509.9 MW (2014 Summer Peak)
- 2014 energy use: 2,016 gigawatt-hours

Utility Overview

Established in 1887, the Turlock Irrigation District (TID) was the first publicly owned irrigation district in the state and is one of only four in California today that also provides electric retail energy directly to homes, farms and businesses. Organized under the Wright Act, the District operates under the provisions of the California Water Code as a special district. TID is also an independent balancing area and is governed by a five member board of Directors.

Since 1923, TID has been providing safe, affordable and reliable electricity to a growing retail customer base that now numbers in the excess of 100,000 residential, farm, commercial, industrial and municipal accounts in an electric service area that encompasses 662 square-miles in portions of Stanislaus, Merced, Tuolumne and Mariposa counties.

TID provides Irrigation water to more than 5,800 growers in a 307 square-mile service area that incorporates 149,500 acres of Central Valley farmland. The District has been delivering irrigation water to growers since completing its gravity-fed water conveyance system of canals and laterals in 1900.

Program Highlights

The TID Board of Directors adopted an aggressive 10-year plan to promote energy conservation by assisting customers with efficiency projects. For 2014, the goal was to conserve 9,570 megawatt-hours of electricity.

TID continues to help customers achieve energy savings through the implementation and promotion of a variety of programs that provide rebate opportunities for all rate classes to encourage customers to conserve energy. A significant portion of the energy efficiency measures were implemented by industrial and commercial customers. TID provides a variety of options for businesses that are looking to make changes in their existing systems by making upgrades or retrofitting their existing facility. Rebates are available that address areas such as lighting, compressed air systems, refrigeration systems, motors, gaskets, chillers and many other systems components.

Commercial, Industrial and Agricultural Program Descriptions

- Meter Manager: TID offers an on-line energy management tool for business customers so they can monitor their energy usage and utilize that information to more efficiently manage their energy

consumption simply by logging into a secure web site.

- Energy Audits: TID offers free on-site energy audits to commercial, industrial and agricultural customers who have concerns, questions or an interest in implementing measures to manage their energy usage and reduce consumption.
- Commercial, Industrial, Agricultural Energy Efficiency Rebates: TID offers rebates along with comprehensive technical support for all commercial, industrial and agricultural customers to promote the purchase and installation of commercial equipment and systems that support and enhance load reduction.
- Commercial Rebate Programs: TID offers customers rebates for purchasing and installing:
 - Commercial Motors
 - Commercial Refrigeration
 - Network PC Management Software
 - Commercial Lighting

Residential Program Descriptions

- Home Energy Analysis: TID supplies our residential customers, a Home Energy Analysis (HEA) Report each month. The HEA will provide the customer with information regarding their monthly usage compared to similar homes or compared to their prior year(s) usage. In addition, a web portal will give our customers access to customize their home energy use and access to helpful energy saving tips.
- Residential Energy Audits: TID provides free in-home energy audits to customers who would like to learn how to reduce their energy use.
- Residential Rebate Programs: TID offers customers rebates for purchasing and installing:
 - Energy Star Refrigerator
 - Energy Star Room AC
 - Energy Star Clothes Washer
 - Whole House Fan
 - Shade Screens
 - Radiant Barrier
 - Solar Attic Fan
- Shade Tree Rebate: TID provides rebates for up to 3 trees per year that are planted to provide shade.
- Refrigerator Recycling: TID provides a rebate to customers to dispose of an old refrigerator or freezer and TID's contracted recycler will pick up and recycle the unit for free.
- New Construction Rebate: TID offers a rebate to home builders for exceeding Title 24 energy standards.

Complimentary Programs

- Low Income Programs:
 - TID CARES Program: An energy assistance program for qualified customers to receive a

discount on their monthly energy bills. The CARES program reduces the monthly customer charge of \$11 to \$2, a savings \$9, and provides a 15% discount on the first 800 kWh energy charges.

- Medical Rate Assistance: The District provides a 50% discount on the first 500-kWh energy charges for customers who use additional energy due to life-support equipment or a medical condition.
- Weatherization: TID has contracted with organizations within our community to provide weatherization services for families who meet the income qualification guidelines. The program enables families to reduce their energy bills by making their homes more energy efficient.
- Window Replacement: TID has a program to provide replacement of inefficient windows for families who meet the income qualification guidelines. The program allows customers to purchase windows for a discounted amount and requests them to install them on their own. Assistance is available for those are unable to install.

- Renewable Energy:

- Tuolumne Wind Project: TID invested in a 136.6 megawatt wind facility in 200
- Rooftop Solar: TID offers solar rebates for residential customers that are interested.
- Solar: In 2009, TID installed a 70.7 kW array of photovoltaic panels atop the newly renovated parking structure.
- Small Hydroelectric: TID was the first in California to construct small-scale hydroelectric power plants using its own canal system and those of neighboring irrigation districts that were not in the retail electric business. Combined the eight plants constructed, beginning in the mid 1970's provide a total of 20 megawatts of electric power. TID also owns and operates a 5 megawatt hydroelectric power plant at La Grange Dam on the Tuolumne River.
- Geothermal: In 1984, TID acquired an interest in a geothermal power plant in the Geysers Steam Field located in California's Lake County. The project has a capacity of generating 6.8 megawatts.

- Research, Development, Demonstration Programs:

While TID did not perform any research and development projects in 2014, TID is continually looking for opportunities to develop new methods for improving energy efficiency and renewable opportunities.

Turlock ID			Resource Savings Summary							Cost Summary				
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)
Appliances	Res Clothes Washers	524	19,388	213,268			6,010	66,113		33	\$18,340	\$300	\$18,640	\$0.36
	Res Cooling HVAC	111	19,726	543,564	4	5	15,781	434,851		268	\$3,020	\$4,676	\$7,696	\$0.03
	Appliances													
	Res Dishwashers													
	Consumer Electronics													
	Res Heating HVAC													
	Lighting	224	8,742	43,710	1	1	4,371	21,855		11	\$180	\$99	\$279	\$0.01
	Pool Pump													
	Res Refrigeration	526	144,536	1,174,615		10	101,175	822,230		446	\$18,410	\$15,454	\$33,864	\$0.05
	HVAC	81,165	4,615,122	5,439,598		6	3,667,203	3,898,056		2,199	\$243,094	\$26,325	\$269,419	\$0.07
	Res Water Heating													
	Comprehensive													
	Process													
	Non-Res Cooking HVAC													
	Non-Res Heating HVAC	17	943,844	15,101,504		196	755,075	12,081,203		6,695	\$55,914	\$81,547	\$137,461	\$0.02
Process	Non-Res Lighting													
	Non-Res Motors													
	Non-Res Pumps													
	Refrigeration HVAC	3	1,035,042	15,236,588		94	828,034	12,189,270		6,426	\$33,659	\$70,500	\$104,159	\$0.01
	Non-Res Shell													
	Non-Res Process	10	895,630	9,794,864		72	716,504	7,835,891		4,167	\$44,782	\$45,793	\$90,575	\$0.02
Comprehensive														
Other														
SubTotal		82,580	7,682,029	47,547,710	5	384	6,094,153	37,349,471		20,246	\$417,400	\$244,693	\$662,092	\$0.02
T&D	T&D													
Total		82,580	7,682,029	47,547,710	5	384	6,094,153	37,349,471		20,246	\$417,400	\$244,693	\$662,092	
EE Program Portfolio	TRC Test	2.51												

City of Ukiah At a Glance

- Year established: 1987
- Climate Zone: 2
- Number of retail customers served: 7,805
- Retail sales by customer class: 35% residential; 61% commercial; 1% industrial; 3% other
- Energy efficiency program budget: \$220,000; energy efficiency program expenditures: \$212,655; unused energy efficiency funds roll over into the next fiscal year for energy efficiency programs
- Load growth: 0%

Utility Overview

The City of Ukiah (the City) remains committed to helping their customers manage their energy use through energy education and a comprehensive menu of energy efficiency incentives. The City's customer base does not respond well to a "standard" energy efficiency incentive program. The main reason for this is most customers do not have the discretionary income to fund energy efficiency projects. The City works to overcome this barrier by offering generous incentives to customers in order to persuade them to participate. However, even with generous incentives, participation in the commercial lighting program was still down in FY2015. Residential and commercial customers enthusiastically participate when the cost of their energy efficiency projects are covered in full by the City's incentive programs. The City includes seasonal energy saving tips with their customer's energy bills in order to increase awareness and promote energy education.

Major Program Changes

Acquired kWh savings were almost the same as those reported in FY13. Since the majority of savings in FY13 came from the commercial sector, the City shifted focus to the residential sector in FY14. The City offered a direct install program to residential customers that removed incandescent bulb and replaced them with CFLs. Showerheads and aerators were also installed for customers with electric water heat. The program served all of the lower-income customers receiving assistance through the City's PB bill assistance programs.

In the commercial sector, several customers installed high efficiency air conditioners, two upgraded their refrigeration equipment and one custom project upgraded a large irrigation pump and variable speed drive at the City golf course. Six customers upgraded their lighting.

The City continued our energy education activity through quarterly bill inserts offering energy saving tips and promoting the City's EE programs.

Program Highlights

The Residential Direct Install Program contributed 72% of the kWh savings in FY14. Overall savings from the non-residential sector was down significantly from FY2013, primarily due to a decrease in participation

in the commercial lighting program. However, commercial lighting upgrades still accounted for the second largest contributor to savings in FY14. In FY15, the City increased the commercial lighting rebates to try to encourage more participation in the program. The City also referenced the recently released Technical Resource Manual to greatly expanded the number of deemed measures and rebates available to our commercial customers.

The City's AB 2021 Energy Reduction Target for FY2014 was 450,000 kWh; the 437,438 kWh's acquired represent 97% of the FY14 energy savings goal. The City's AB 2021 Demand Reduction Target for FY2013 was 105 kW; this target was exceeded with a FY14 total demand reduction of 320 kW.

The City adopted targets of 450,000 kWh and 105 kW for FY2015 and FY16..

Program Descriptions

The City of Ukiah manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on peak load reduction and energy conservation. For residential customers, rebates are offered for the installation of various energy efficiency measures. For commercial customers, rebates are available for upgraded lighting, HVAC equipment and in cases where an analysis is performed rebates can be offered for additional equipment that reduces energy use and/or demand.

- Residential Audit Program [Res Comprehensive]: On-site energy audits are provided by energy specialists. Energy efficiency measures are recommended and additional visits are completed upon request.
- Residential Lighting Program [Res Lighting]: The City offers rebates to homeowners who install ENERGY STAR® qualified compact fluorescent lamps (CFLs), ceiling fans and LED holiday lights.
- Residential Cooling Program [Res Cooling]: The City offers rebates to homeowners who install high performance heat pumps, central air-conditioners, or evaporative coolers that exceed current state requirements. The City also offers a rebate for regular maintenance of cooling equipment (tune-ups every 3 years).
- Residential Equipment Program [Res Clothes Washers; Res Cooling; Res Dishwashers; Res Pool Pump; Res Refrigeration]: The City offers rebates to homeowners who purchase new ENERGY STAR qualified products, including clothes washers, room air conditioners, dishwashers, pool pumps, refrigerators and freezers. The City also offers a financial incentive for the recycling and decommissioning of secondary refrigerators and freezers.
- Residential Weatherization Program [Res Cooling; Res Shell]: The City offers rebates to homeowners who invest in weatherizing their homes, including air/duct sealing, attic/wall/duct insulation and window treatments/replacement.
- Residential Water Heater Rebate Program [Res Water Heating]: The City offers rebates to homeowners who purchase a new, energy efficient electric water heater.
- Residential Low-Income Direct Install Program [Res Comprehensive; Res Lighting; Res Water Heating]: Audits are performed on residential homes for low-income customers; ENERGY STAR CFLs and low-flow showerheads are installed at no cost to the homeowner.

- Commercial Audit Program [Non-Res Comprehensive]: On-site energy audits are provided by energy specialists. Energy efficiency measures are recommended and additional visits are completed in order to provide technical assistance for implementation of measures. Energy efficiency rebates are available for upgrades identified during these audits.
- Commercial Lighting Program [Non-Res Lighting]: The City offers rebates to business owners who invest in the installation of energy efficiency lighting upgrades. There is a prevalence of T-12 lighting throughout the city and most high bay lighting uses high intensity discharge fixtures instead of more efficiency fluorescent fixtures.
- Keep Your Cool Program [Non-Res Refrigeration]: As funding allows from year to year, the City offers energy efficiency refrigeration equipment upgrades to business owners at no cost
- Commercial Custom Program [Non-Res Comprehensive]: The City offers rebates to business owners based on site-specific consumption. Rebates are tailored to the individual business owner's needs based on the audit and the potential energy savings associated with the customer project.

EM&V

The City plans to do a comprehensive evaluation of work performed over the last 3 years during FY2015. The City is currently exploring the opportunity of partnering with Gridley Municipal Utilities and Shasta Lake Utilities on this EM&V effort in order to gain economies of scale.

Complimentary Programs

- Renewable Energy Programs: The City funds a solar PV buy down program; FY14 budget: \$150,000.

Ukiah		Resource Savings Summary							Cost Summary						
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers	5	2,565	30,780	6	6	2,180	26,163		13	\$375	\$1,171	\$1,546	\$0.08	
	Res Cooling HVAC	29	3,125	54,010	6	6	2,495	43,124		26	\$4,630	\$2,512	\$7,142	\$0.24	
	Res Dishwashers	6	396	4,356	1	1	317	3,485		2	\$360	\$156	\$516	\$0.19	
	Consumer Electronics														
	Res Heating HVAC														
	Res Lighting	78	380,822	1,682,498	265	265	316,247	1,397,260		703	\$74,707	\$2,789	\$77,495	\$0.06	
	Res Pool Pump														
	Refrigeration	25	24,903	224,763	3	3	16,039	147,469		80	\$4,175	\$8,948	\$13,123	\$0.11	
	HVAC	56	18,094	361,079	15	15	12,128	241,928		137	\$23,969	\$13,389	\$37,358	\$0.24	
	Water Heating	1	356	4,628			206	2,684		1	\$100	\$294	\$394	\$0.20	
Comprehensive Process	Res Comprehensive	7	2,667	8,001			2,134	6,401		4					
	Non-Res Cooking HVAC	6	696	12,528	1	1	543	9,772		6	\$1,500	\$1,052	\$2,552	\$0.39	
	Non-Res Heating HVAC														
	Non-Res Lighting	1	63,254	714,391	12	12	53,766	607,232		337	\$11,357	\$10,765	\$22,122	\$0.05	
	Process														
	Non-Res Motors														
	Non-Res Pumps														
	Refrigeration	2	2,402	9,608			2,042	8,167		4	\$400	\$124	\$524	\$0.07	
	HVAC														
	Non-Res Shell														
Comprehensive Process	Non-Res Process														
	Non-Res Comprehensive														
	Other	1	36,677	488,171	11	11	29,342	390,537		206	\$30,750	\$5,844	\$36,594	\$0.13	
Subtotal		217	535,956	3,594,813	320	320	437,438	2,884,221		1,518	\$152,322	\$47,042	\$199,365	\$0.08	
T&D															
Total			217	535,956	3,594,813	320	320	437,438	2,884,221		1,518	\$152,322	\$47,042	\$199,365	
EE Program Portfolio	TRC Test	0.97													
	PAC Test	1.32													

CITY OF VERNON LIGHT & POWER

- *City of Vernon Light & Power At a Glance*
- Established in 1905
- Climate Zone 8
- During the fiscal year ending 2013/14, the electric system served approximately 1,899 customers, supplied approximately 1,134 Megawatt hours, and had a peak demand of 194 megawatts.
- The City of Vernon began serving electric customers in 1933 and is comprised primarily of industrial and commercial customers. With less than 1% population of residential customers served in Vernon, the other 93% is comprised of commercial & industrial customers. The other 7% consist of Municipal facilities.
- The City of Vernon budgeted ½ million dollars to fund their energy efficiency programs, which \$400,000 was actually spend. 2 million dollars was allocated to fund the new RPS pass-through for renewable energy and over a million was help fund the City of Vernon wind project.
- The forecasted future load growth in the City of Vernon is to see a 1 % jump but that depends on a lot of variables but a realistic goal is to maintain our current load with minimum setbacks.

Utility Overview

- To provide a host of programs that will enable business customers to conserve energy and utilize energy efficiently.
- To inform Vernon electric utility customers of the Public Benefit Programs and the associated benefits of participating in these programs.
- To monitor and evaluate the effectiveness of the programs.
- Meet or exceed energy efficient goals.

Major Program Changes

The City of Vernon has not made any a major changes in their programs but the 2013/14 fiscal year has pointed to the business community that energy saving can be achieved by looking into great detail to the operation process side of the their respectable businesses. The City of Vernon business community continues to explore smart efficient ways to be efficient. By focusing on more projects like compressors, heat conversion, and refrigeration controls the City of Vernon energy savings goals can be met.

Program Highlight

During the 2013/14 fiscal year, one of the City of Vernon top cold storage facility underwent an LED retrofit project which resulted in significant energy savings for this facility. And since this company has facilities all over the nation, plans to implement nationwide are in the works. Another project that was quite successful and is a leader in the food packaging disposables industry was the use of PET resin and thermoforming process for molding plastic containers. This process improved the drying process converting 4 dryers from electric to natural gas. This modification resulted big energy savings from each dryer. This

same company also replaced one of their Atlas Copco 200 HP compressors with a variable speed compressor (VFD) which resulted in half a million kilowatt hours saved.

Another energy efficient project that was very effective was the implementation of refrigeration controls of a high profile customer in the City of Vernon. By installing a customized control system, this particular customer was able reduce 28.4% reduction in their runtime of the compressor system.

Program Descriptions

- Customer Incentive Program: Fund the exploration and implementation of energy efficient technologies and equipment, such as lighting technologies, variable speed drives, air compressors, motors, refrigeration, and air conditioning. Provide cash incentives to businesses that install energy efficient technologies.
- Customer-Directed Program: Fund customized projects demonstrating energy and cost savings and/or commercial market potential in the area of energy efficiency. Customers must fund at least 25 percent of total project cost. Projects are only eligible if they do not qualify for any of the other programs.
- Energy Education & Demonstration Workshops: Provide customers with an array of information resources to encourage energy efficiency measures through energy efficiency workshops and other forms of customer outreach.
- Energy Audit Program: Provide on-site audits for commercial/industrial businesses. A comprehensive audit includes an analysis of energy usage and costs, identification of energy conservation measures, and recommended actions.
- Time of Use Rate Programs: All customers loads exceeding 100 kilowatts demand are eligible to receive time-of-use rate; enabling them to reduce their energy cost through time management of their energy usage.

EM&V

The City of Vernon continues to have numerous projects this past fiscal year which require an in depth analysis of the energy, measurement & verification of their projects to prove the validity of the energy savings. Since we have the distinctiveness of being a small commercial/industrial city, we can provide smart and efficient reports to our customers proving their worth.

Complimentary Programs

- Renewable Energy Programs
 - *City of Vernon Renewable Portfolio Standard (RPS) Pass-Through*: Procurement of renewable energy is one of the programs eligible for funding from public benefits charges. On June 19, 2012 City Council approved resolution No., 2012-97 authorizing the allocation of \$2 million per year of the funds derived from the public benefits charge to offset the renewable power cost pass-through to customers.

The 'Renewable Portfolio Standard (RPS) Pass-Through' is a tariff mechanism designed to recover the cost of complying with California environmental laws governing the use of renewable energy supplies by power generating facilities statewide. It consists of two costs components: incremental renewable power cost and net greenhouse gas cost. The incremental renewable power cost reflects the cost of renewable energy and fuels reduced by the cost of conventional power in the base rates and credits for AB 1890 funds authorized to offset the cost of pass-through to customers.

- *Solar Incentive Program:* The City of Vernon had three major solar projects go online this past fiscal year, one was a 474 KW AC, 357 KW AC and a 943KW AC systems. These projects combined for over 1774 KW in solar. The City of Vernon looks forward for more solar in Vernon.
- Research, Development, and Demonstration:
The City of Vernon Tehachapi wind energy on-going project located in Kern County, California is moving forward but the City is still collecting data, reviewing/addressing environmental issues, and discussing permitting with federal and local agencies. This particular project is a huge undertaking in scope which requires the City's due diligences to make this venture successful. This project is ongoing which requires a lot patience's for this size of project.
- Vernon Demand Reduction Program
Interruptible service provides: Can reduce 12.65 MW within 30 minutes in case of emergencies.

Vernon		Resource Savings Summary							Cost Summary						
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)	Utility (\$/kWh)	
Appliances	Res Clothes Washers														
	Res Cooling														
	Appliances	Res Dishwashers													
		Res Electronics													
	Consumer Electronics	Res Heating													
		Res Lighting													
	HVAC	Res Pool Pump													
		Res Refrigeration													
	HVAC	Res Shell													
		Res Water Heating													
	Comprehensive	Res Comprehensive													
		Non-Res Cooking													
	HVAC	Non-Res Cooling													
		Non-Res Heating													
	Process	Non-Res Lighting	2,119	1,526,074	12,208,593	114	114	1,220,859	9,766,874		5,785	\$106,497	\$21,560	\$128,057	\$0.02
		Non-Res Motors	15	1,151,745	17,276,175		157	691,047	10,365,705		5,777	\$86,375	\$18,888	\$105,263	\$0.01
	Refrigeration	Non-Res Pumps													
		Non-Res Refrigeration	1	277,221	4,158,315	32	32	166,333	2,494,989		1,391	\$20,792	\$4,546	\$25,338	\$0.01
	HVAC	Non-Res Shell													
		Non-Res Process	4	260,020	3,900,300		31	221,017	3,315,255		1,848	\$19,502	\$6,041	\$25,542	\$0.01
Comprehensive Other	Non-Res Comprehensive Other														
Subtotal		2,139	3,215,060	37,543,383	147	334	2,299,256	25,942,823		14,800	\$233,165	\$51,035	\$284,200	\$0.01	
T&D															
Total		2,139	3,215,060	37,543,383	147	334	2,299,256	25,942,823		14,800	\$233,165	\$51,035	\$284,200		
EE Program Portfolio	TRC Test	7.78													
	PAC Test	9.83													

VICTORVILLE MUNICIPAL UTILITY SERVICES

Victorville Municipal Utility Services (VMUS) At a Glance

- The City of Victorville established VMUS in 2001 to provide safe, reliable and cost-effective service to retail customers that were building new facilities located in the designated service territory.
- VMUS began serving commercial and industrial customers in 2003 that reside in climate zone 14.
- VMUS receives wholesale power through its 33 kV and 12 kV switchgear equipment.
- VMUS serves approximately 54 non-residential meters.
- Peak demand for the utility was 13.8 megawatts (1.2% less than last year) and annual energy sales were 75,400 megawatt-hours (2.1% more than last year).

Utility Overview

Customers are served through 12,000-volt underground facilities with larger gauge ASCR conductors to improve system reliability and reduce system losses. VMUS evaluates circuit load performance to optimize performance and reduce system losses. VMUS purchases and installs efficient transformers to reduce system losses. All customers' facilities are eleven years old or less, occupying buildings that meet Title 24 requirements. This results in lower energy efficiency potential. The system load factor is 65.2%.

Program Highlights

Time-of-use rates and access to the client web portal provides customers with the information to assess the cost of their energy usage pattern and demand requirements. VMUS serves municipal facilities that can be interrupted as scheduled.

Program Descriptions

- Resource Planning: Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency improvements.
- Energy Audits: On-site energy audit and recommendation designed to improve energy operating efficiency and reduce load requirements.
- Photovoltaic Incentive Program: Provides financial incentives not to exceed 50% of the total installed cost of a new solar energy system of \$2.80 per watt or reimburse customers \$0.10 per kWh over the next sixty (60) months for electricity produced by the installed solar energy system.
- Lighting Incentives: Provides incentives to improve energy efficiency for a variety of lighting applications, based on rate of \$0.064/kWh for one year of energy savings but shall not exceed 50 percent of the cost of the lighting product/equipment.
- Construction Incentives: Reimbursement for the cost of equipment in construction projects that exceed state-mandated codes, federal-mandated codes, industry-accepted performance standards, or other baseline energy performance standards by more than 10 percent. The program payment is based on 25 percent of the cost difference between standard and upgraded equipment and/or materials, or \$50,000, whichever is less.

- Energy Demand Reduction: Payment for the installation of energy efficient equipment/technology that permanently reduces peak demand and exceeds state-mandated codes, federal-mandated codes, industry-accepted performance standards or other baseline energy performance standards, based on rate of \$100/kW for each on-peak kW that has been reduced, but shall not exceed 50 percent of the associated equipment/technology.
- Custom Energy Efficiency Incentives: Offers financial incentives for cost-effective energy-savings opportunities, not served by existing offerings, (including HVAC, motors, pumps, refrigeration, process and other) that reduces annual energy usage by at least 20 percent, based on rate of \$0.064/kWh or \$0.525/therm for one year of energy savings, but shall not exceed 50 percent of the cost of associated equipment/materials.
- Utility-Side Projects/Activities: Direct funding for projects/activities on the utility-side of the meter that promote a benefit customers in terms of improved safety, system integrity, energy efficiency, conservation, or research and development.

Evaluation, Measurement and Verification

- Measure and evaluate the impact of energy efficiency programs.
- The budget for energy efficiency and solar rebate programs was \$258,171 for the period July 1, 2013 – June 30, 2014. No energy audits were completed nor were any energy efficiency incentive payments disbursed for the period July 1, 2013 – June 30, 2014.

APPENDIX B: 10-YEAR ENERGY SAVINGS TARGETS

The table below contains the 10-year energy savings targets for POUs in California, as required by §9505(b) of the Public Utilities Code. The targets were developed using the Energy Efficiency Resource Assessment Model (EERAM), developed by Navigant. For more information on utility-specific models, please see Appendices C & D in the 2013 version of this report, which can be downloaded at:

<http://cmua.org/wpcmua/wp-content/uploads/2013/03/FINALv3-SB-1037-AB-2021-Report-Appendices.pdf>

All POUs – Annual Targets (MWh), 2014-2023

Utility	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	10-Year Total	% of Sales Forecast
Alameda	1,154	1,100	1,158	1,247	1,061	1,081	1,108	1,196	1,346	1,617	12,068	0.32%
Anaheim	24,026	24,425	24,228	25,742	24,585	24,842	25,254	25,480	25,567	25,204	249,353	1.01%
Azusa	2,570	2,585	2,568	2,573	2,342	2,438	2,411	2,567	2,386	2,316	24,756	0.95%
Banning	472	546	532	591	573	621	715	730	802	852	6,434	0.35%
Biggs	35	39	42	46	47	49	51	52	52	51	464	0.27%
Burbank	9,947	10,739	11,124	11,281	10,852	11,677	12,111	13,037	12,977	12,829	116,574	0.89%
Colton	966	1,273	1,614	1,759	1,911	2,137	2,435	2,610	3,804	3,712	22,221	0.64%
Corona	313	316	326	334	325	359	374	361	374	385	3,467	0.43%
Glendale	11,782	11,671	11,151	11,607	11,486	11,371	12,120	12,830	13,214	13,548	120,780	1.07%
Gridley	170	170	170	170	170	170	170	170	170	170	1,700	0.51%
Healdsburg	260	266	293	336	348	382	429	441	598	535	3,888	0.44%
Imperial	14,508	14,986	15,563	16,656	16,014	17,001	18,073	19,091	19,419	19,240	170,551	0.49%
LADWP	278,000	310,000	442,000	515,000	541,000	520,000	471,000	240,000	161,000	118,000	3,596,000	1.37%
Lassen	249	266	268	290	305	313	338	333	347	364	3,073	0.21%
Lodi	2,735	2,904	3,155	3,492	3,359	3,543	3,617	3,737	4,311	5,081	35,934	0.79%
Lompoc	168	186	203	229	195	212	232	246	258	268	2,197	0.16%
Merced	1,581	1,486	1,179	1,392	1,140	1,040	1,099	1,148	1,386	1,274	12,725	0.27%
Modesto	15,950	17,104	18,196	18,986	18,254	18,974	19,233	19,162	18,770	17,862	182,491	0.67%
Moreno Valley	286	276	269	277	251	272	284	303	304	309	2,831	0.17%
Needles	72	90	107	128	139	159	177	195	215	229	1,511	0.18%
Palo Alto	6,078	6,257	6,248	6,245	6,248	6,260	6,809	6,846	7,412	7,452	65,855	0.63%
Pasadena	12,750	12,750	12,750	12,750	12,750	12,750	12,750	12,750	12,750	12,750	127,500	1.00%
Pittsburg Power	140	134	122	123	128	124	122	120	125	122	1,260	0.65%
Plumas-Sierra	126	128	144	146	133	128	178	150	233	198	1,564	0.10%
Port of Oakland	91	97	101	104	103	106	108	111	108	105	1,034	0.15%
Rancho Cucamonga	441	449	470	509	550	598	600	656	634	711	5,618	0.51%
Redding	3,045	3,224	3,318	3,458	3,207	3,384	3,581	3,857	4,207	4,349	35,630	0.44%
Riverside	18,399	19,099	18,870	19,756	19,317	20,287	23,368	24,469	25,889	25,865	215,317	1.00%
Roseville	7,713	7,768	8,037	8,007	7,499	7,790	7,260	7,697	8,094	8,479	78,344	0.64%
SF PUC	4,353	4,353	4,857	4,857	4,857	2,970	2,536	2,806	2,806	2,806	37,201	0.35%
Shasta Lake	230	524	299	239	261	243	256	269	361	368	3,049	0.16%
Silicon Valley	24,076	24,387	23,079	22,848	22,407	21,274	20,961	20,174	18,923	18,282	216,411	0.66%
SMUD	172,000	175,000	178,000	180,000	182,000	184,000	186,000	187,000	189,000	191,000	1,824,000	1.52%
Trinity	68	86	103	122	118	143	161	180	203	219	1,403	0.14%
Truckee Donner	1,367	1,521	1,558	1,552	1,080	1,134	1,103	1,121	1,198	1,204	12,838	0.79%
Turlock	9,570	10,081	13,232	11,996	13,674	12,666	13,698	15,601	16,159	17,372	134,049	0.61%
Ukiah	450	450	448	428	364	404	395	391	414	423	4,167	0.32%
Vernon	6,417	6,631	6,609	6,664	6,592	6,561	6,454	6,377	7,060	7,065	66,430	0.51%
Victorville	102	124	146	172	202	231	260	291	341	370	2,239	0.31%
CALIFORNIA	632,660	673,491	812,537	892,111	915,847	897,694	857,831	634,555	563,217	522,986	7,402,928	1.08%

**TID's fiscal year is the calendar year and adopted goals for 2013-2022.