

# City of Palo Alto Utilities

# Demand Side Management Programs

# Energy Efficiency, Water Conservation, and Customer-side Renewable Generation

## For Fiscal Year 2014
## April 2015

CITY OF PALO ALTO UTILITIES
Inspired by a brighter tomorrow.

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# EXECUTIVE SUMMARY

The City of Palo Alto Utilities (CPAU) is pleased to issue the annual report of Demand Side Management (DSM) programs for Fiscal Year (FY) 2014. 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. CPAU accomplishes these goals by delivering the wide range of customer programs and services described in this report.

This annual report provides updates on:

- Electric and natural gas energy efficiency (EE) program achievements and expenditures
- Water conservation program achievements and expenditures
- Locally-sited solar photovoltaic and solar water heating system program achievements and expenditures
- Customer outreach initiatives
- Research and development-related initiatives
- Future plans

**DSM GOALS and ACHIEVEMENTS**

CPAU offers incentives and education programs for customers to encourage energy and water efficiency and customer-owned renewable generation. Table ES.1 summarizes the FY 2014 goals and achievements. As shown, the achievements for electricity and gas EE exceeded goals while the water efficiency goal was not achieved in FY 2014. The solar photovoltaic (PV) program is on track to meeting its goal, but the solar water heating achievements are far short of the goal.

**Table ES.1: Goals versus Achievements**

| Resource | FY 2014 Savings Goals (% of load) | FY 2014 Savings Achieved (% of load) | FY 2014 Savings Achieved |
|---|---|---|---|
| Electricity | 0.60% | 0.86% | 8,218 MWh |
| Gas | 0.50% | 1.20% | 337,079 therms |
| Water | 0.91% | 0.64% | 32,324 CCF |
| **Customer-side Renewable** | **Program Goal** | **FY 2014 Achievement** | **Cumulative Achievement** |
| Solar Electric (PV)* | 6,500 kW, by 2017 | 1,600 kW | 5,000 kW since 2008 |
| Solar Water Heating | 30 systems/year | 2 systems | 44 systems since 2008 |

* Goal over a 10-year period 2008-2017

**DSM PROGRAM EXPENDITURES**

Table ES.2 summarizes the total DSM program expenditures over the last three years.

**Table ES.2: Electric, Gas, Water DSM Program Expenditures**

| | FY 2012 | FY 2013 | FY 2014 |
|---|---|---|---|
| Electric DSM programs | $3.9 million | $3.2 million | $3.2 million |
| Gas DSM programs | $0.6 million | $0.7 million | $0.7 million |
| Water DSM programs | $0.4 million | $0.4 million | $0.4 million |
| PV Partners | $1.0 million | $1.0 million | $1.3 million |
| Solar Water Heating Program | $ 44,000 | $ 62,000 | $ 67,000 |
| TOTAL PROGRM EXPENSES | $5.9 million | $5.4 million | $5.7 million |

**ENERGY AND WATER EFFICIENCY AS A RESOURCE**

CPAU is committed to identifying and achieving all cost-effective energy and water efficiency measures (i.e. those that are less expensive than supply-side resources). Given the adoption of the electric Carbon Neutral Plan starting in 2013, electric EE no longer contributes to the community's greenhouse gas (GHG) emissions reduction. However, many electric EE measures still remain a cheaper resource than carbon-neutral electric supplies. Table ES.3 summarizes the cost of efficiency over the last three years compared to the projected cost of supply resources. As shown in Table ES.3, the cost of implementing efficiency from a utility perspective remains less expensive than supply-side resources, though the cost of implementation tends to increase over time.

**Table ES.3: Actual Efficiency Costs versus Projected Supply Costs**

| | | FY 2012 Efficiency | FY 2013 Efficiency | FY 2014 Efficiency | 3-yr average Efficiency | Future Supply |
|---|---|---|---|---|---|---|
| Water | $/CCF | $ 1.53 | $2.97 | $3.12 | $2.54 | $ 4.51 |
| Gas | $/therm | $ 0.56 | $0.40 | $0.43 | $0.46 | $ 0.69 |
| Electric | $/kWh | $0.037 | $0.061 | $0.043 | $0.047 | $ 0.09 |

**HIGHLIGHTS OF THE PAST YEAR**

A few of the key achievements during FY 2014 are highlighted below:

- The Home Water Reports program was launched during FY 2014; this program is similar to the Home Energy Reports program whereby residential customers receive quarterly reports that compare a home's water usage to that of similar homes within Palo Alto. The first set of Home Water Reports was delivered in November 2013. A control group of approximately 3,000 residential accounts has been established to benchmark results of the program. To date, customer response to this program has been very positive.
- On Earth Day 2014, the Palo Alto City Council adopted the Local Solar Plan, a comprehensive roadmap to accelerate local solar PV adoption with the overarching goal of achieving 4 percent of the City's total energy needs from local solar PV by 2023, up from the current 1 percent of energy supplied from local PV systems.
- CPAU's Business New Construction program offers design assistance and rebates to commercial customers to exceed California's building standards (Title 24) when planning their facility expansion

or new development. In FY 2014, six new construction projects were completed, resulting in annual savings of over 700,000 kWh and 40,000 therms.

- CPAU partnered with local elementary school students to install the Aurora Tree – a three story-high tree shaped sculpture located in front of City Hall with 40,000 LED lights. The 'planting' of this tree in November 2013 coincided with the launch of a well-received LED lightbulb program whereby residents received coupons to purchase LED lightbulbs at 50% off market price.
- CPAU implemented the third-year of a Demand Response (DR) Pilot program for large commercial customers. Through this program, CPAU offers monetary incentives to key account customers to reduce their electric usage when called upon by CPAU during high load periods in the summer. During summer 2014, seven customers participated, attributing to a total load reduction of 725 kW.
- During 2014, CPAU ranked 3rd in the E Source's Gap and Priority Benchmark award in the small and midsize utilities category. The award was based on survey results from more than 1,000 large business customers served by 25 North American utilities. CPAU's large business customers were particularly pleased with their account representatives' effective communication skills and customer service.
- CPAU's Residential New Construction Program offers financial incentives to residents to exceed both the State and local building energy standards when constructing a new home. During FY 2014, CPAU processed 69 applications and paid out close to $160,000 in rebates. Some of the applications were denied as they did not meet the program criteria of exceeding Title 24 standards by 20%. The program resulted in annual energy savings of over 28,000 kWh and 10,000 therms. As of July 1, 2014, CPAU suspended the program when California's new Title 24 Building Energy Standards took effect. However, projects permitted prior to that date are still eligible for the new construction rebate once the construction is completed. CPAU is currently collaborating with the City's Development Services Department to update the City's Green Building Ordinance and will recommence the program upon Council approval.
- The City continues to implement the LED Street Lighting Conversion Master Plan. During FY 2014, CPAU converted 2,290 High Pressure Sodium streetlight fixtures to LED fixtures, resulting in annual savings of over 600,000 kWh. To date, 5,545 of the City's 6,600 streetlights have been converted to LED streetlights. The City's historic lamps are unable to be retrofitted with LED fixtures at this time.
- Since the City's electric supply portfolio is 100% carbon-neutral, the City Council terminated the voluntary residential PaloAlto**Green** 100% renewable energy program for electric in June 2014. The PaloAlto**Green** electric program is still available for commercial customers desiring to gain recognition or maintain certifications for programs they participate in. In April 2014, City Council approved the PaloAlto**Green** Gas program to provide an opportunity for participants to reduce or eliminate greenhouse gas emissions related to their natural gas usage. During FY 2014, Staff issued an RFP for the marketing, administration and verification of carbon offsets for the new PaloAlto**Green** Gas program. In June 2014, Just Energy was selected as the vendor to administer the program.

- In April 2014, the City announced its intent to compete for the Georgetown University Energy Prize, a national competition that aims to challenge communities across the U.S. to dramatically rethink their energy use. The competition stretches over a two year period between January 2015 and December 2016, with a $5 million prize to be awarded to the winner of the competition.
- Third-party EE programs account for a significant portion of CPAU's reported energy savings. Most of these 3rd party EE program contracts are typically awarded on a 3-year term. CPAU issued a Request for Proposal (RFP) for third-party EE Programs in June 2014 to solicit EE implementation and management services from vendors to administer and implement innovative and cost-effective energy efficiency programs targeting residential and/or commercial customers. The selected programs will be recommended for City Council approval in Spring 2015.
- During FY 2014, CPAU installed advanced electric, gas and water meters at over 200 residential customers' home as part of the CustomerConnect pilot program. Participating customers have access to the CustomerConnect Portal, a web-based platform which displays hourly interval data for gas, water and electric consumption. As part of this pilot program, CPAU's is testing a Time-of-Use (TOU) electricity rate. The eventual goal is to complete the advanced meter installation at 300 homes.

**PLANS FOR THE FUTURE**

CPAU will launch the PaloAlto**Green Gas** program in January 2015. The program's goal for 2020 is to achieve program subscription of 20% of natural gas customers, representing around 10% of gas load and 16,000 metric tons of GHG emissions reduction.

CPAU has received grant funding from the Santa Clara Valley Water District to pursue two water conservation pilot programs targeting commercial customers. The first pilot program will be a Real-Time Water Use Monitoring system for small and medium-sized business customers to actively monitor their consumption and take immediate action to control their water usage. The second pilot program is the delivery of Business Water Reports to encourage water conservation among small and medium-sized businesses. The programs will be selected through an RFP process with an expected program start date in Q3 FY 2015.

In August 2014, the City Manager signed a Letter of Engagement to enable Palo Alto's participation in the Peninsula-area solar PV group-buy program. The program is led by Foster City and joined by other Bay Area cities. Vote Solar, the program administrator, will facilitate the selection of one or more vendors for residential solar installations through a competitive selection process. Residents in participating cities will have a three-month period to sign up and contract with the selected solar vendor(s). The registration period is projected to run between April and June 2015.

During FY 2015, CPAU plans to begin offering energy benchmarking services to its commercial customers to comply with the Commercial Building Energy Use Disclosure mandated by AB 1103 (2007). The City's goal is to establish all commercial businesses within ENERGY STAR Portfolio Manager, an online tool that allows

building owners/managers to track their buildings' energy and water consumption and compare their buildings' performance against a yearly baseline, national medians, or similar buildings in their portfolio.

# 1 ELECTRIC EFFICIENCY PROGRAMS

## 1.1 Electric Efficiency Savings versus Goals

City Council approved CPAU's first Ten-Year Energy Efficiency Portfolio Plan in April 2007, which included annual electric and gas efficiency targets between 2008 and 2017, with a 10-year cumulative savings target of 3.5% of the forecasted energy use. As mandated by California law, the electric efficiency targets were updated in 2010, with the ten-year cumulative savings goal doubling to 7.2% between 2011 and 2020. Since then, increasingly stringent statewide building codes and appliance standards have resulted in substantial energy savings (e.g. as of January 1, 2013, incandescent bulbs between 40W to 100W can no longer be sold). However, these "codes and standards" energy savings, can't be counted toward meeting CPAU's EE program goals. An updated set of Ten-Year Electric Efficiency Goals, adopted by City Council in December 2012, revised the ten-year cumulative electric efficiency savings to 4.8% between 2014 and 2023.

CPAU's electric efficiency savings goals and achievements as a percentage of the City's energy usage are shown in Table 1 below. The increasing electric savings in the past few years is attributed to the expansion of CPAU's electric efficiency program portfolio through third-party administered programs. In FY 2014, CPAU achieved electric savings of 0.86% of load through its customer efficiency programs. These savings exclude electric savings from the LED streetlight conversion project, which reduced energy usage by another 0.06%, or 604 MWh. Cumulative EE savings since 2006 are about 5.7% of the FY 2014 electric usage.

**Table 1: Electric Savings versus Goals**

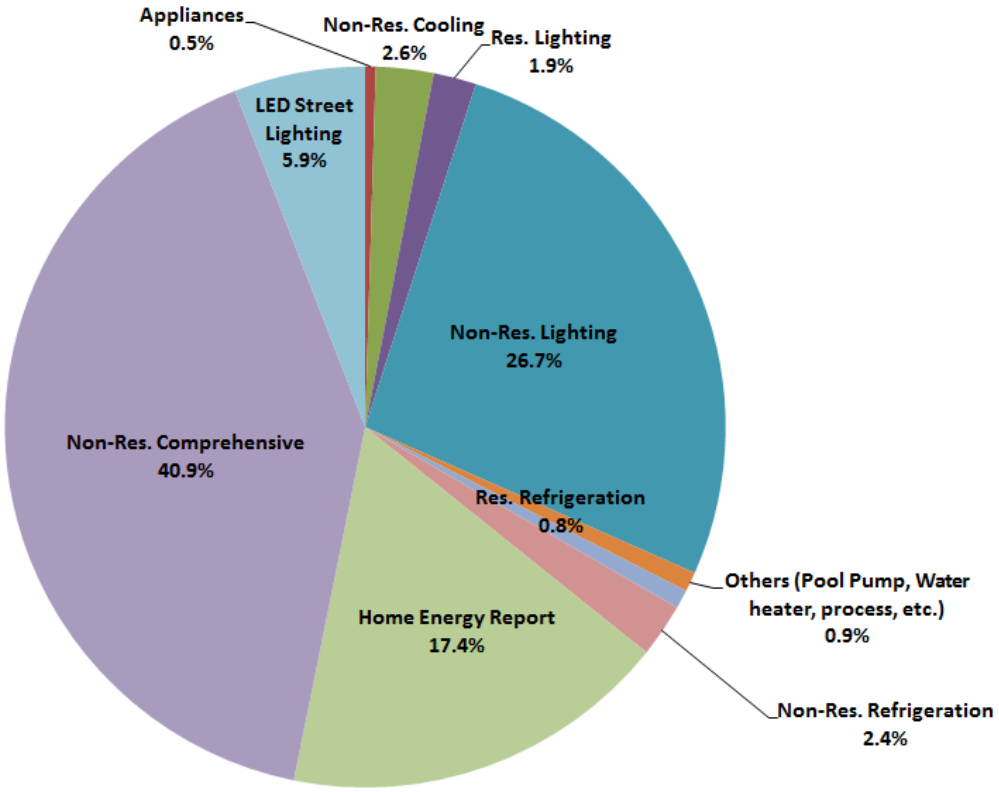
| Year | Annual Savings Goal (% of load) | Savings Achieved (% of load) | Savings Achieved (MWh) |
|---|---|---|---|
| FY 2008 | 0.25% | 0.44% | 4,399 |
| FY 2009 | 0.28% | 0.47% | 4,668 |
| FY 2010 | 0.31% | 0.53% | 5,270 |
| FY 2011 | 0.60% | 0.58% | 5,497 |
| FY 2012 | 0.65% | 1.31% | 12,302 |
| FY 2013 | 0.70% | 0.85% | 8,074 |
| FY 2014 | 0.60% | 0.86% | 8,218 |
| FY 2015 | 0.60% | *In progress* | *In progress* |

## 1.2 FY 2014 Electric Efficiency Savings by End Use and Customer Segment

Non-residential customers account for 80% of CPAU's electric sales, so it is no surprise that business efficiency program savings represent also about 80% of CPAU's total electric efficiency savings, as shown in Figure 1. Non-residential comprehensive energy savings covers a variety of EE measures including variable speed pumps on fans, chiller upgrades, Air Handler Unit (AHU) optimization, and other system fine-tuning such as updating HVAC system schedule and temperature setbacks. The energy savings estimation methodology for the Home Energy Report program is updated, resulting in a slightly higher average per

household savings. In FY 2014, the Home Energy Report program accounted for 17% of the total electric EE savings. Figure 1 shows the breakdown of electric savings in FY 2014 by end use.

**Figure 1: Composition of Electric Efficiency Savings in FY 2014 by End Use (Total saving of 8,218 MWh, 0.86% of annual load)**




## 1.3 FY 2014 Electric Efficiency Program Expenditures

The largest fraction of expenditures in the electric efficiency budget is for third-party administered contracts and rebates. Other expenses include in-house salaries, marketing, and customer education. Funding for electric efficiency programs came primarily from the mandated Public Benefit (PB) Charge, which is set at 2.85% of the customer retail rate. The majority of the PB funds is spent on efficiency programs; however, some also goes to renewable energy projects, research and development projects and low income efficiency programs. Supplemental funding for efficiency programs comes from supply funds. The bottom of Table 2 below shows the funding split between PB charges and supply funds for FY 2014. Table 2 also shows the split of electric efficiency program expenditures by customer rebates, third-party contract administration, and other expenses, which include in-house staffing, marketing and communication expenses. State law requires evaluation, measurement and verification (EM&V) of the reported electric efficiency savings by an independent consultant. The EM&V contract cost is included in Table 2.

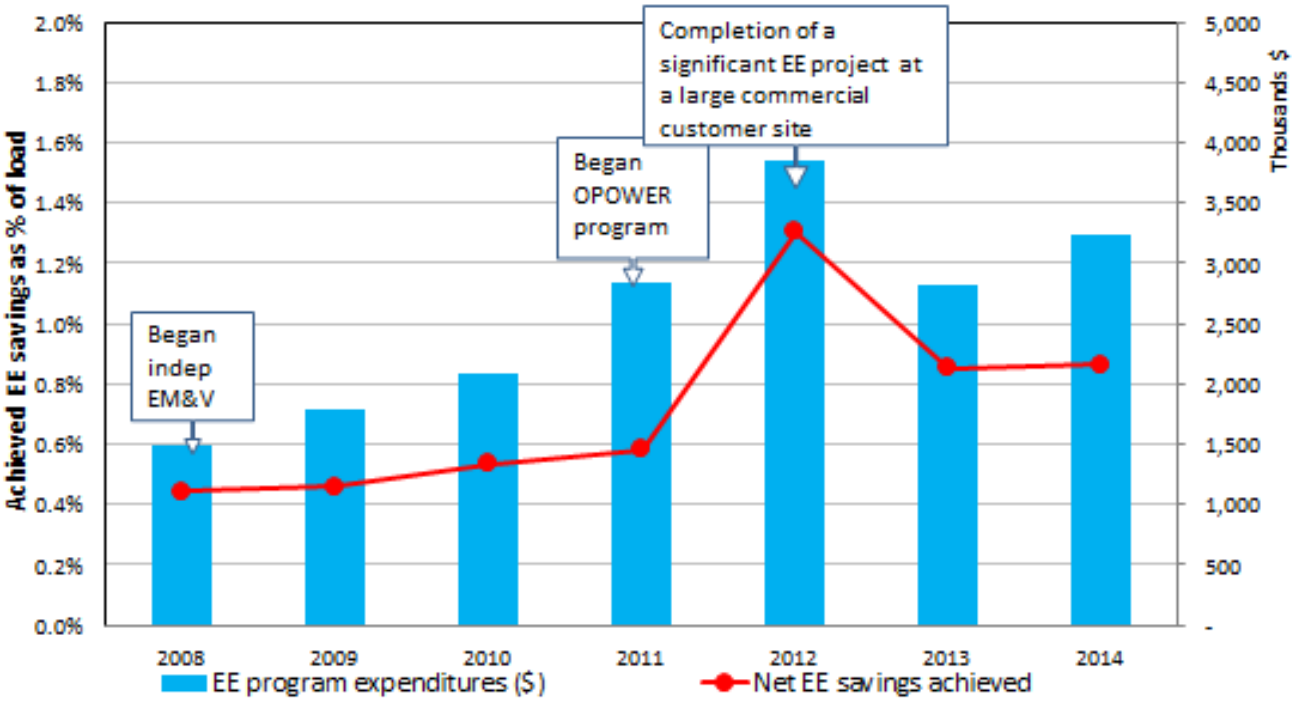
**Table 2: FY 2014 Electric Efficiency Program Expenditures**

| Customer Class | Program Name | Customer Rebates | Contract Costs | Other Expenses | Annual Cost |
|---|---|---|---|---|---|
| **Programs delivered by CPAU staff** | | | | | |
| Residential | Smart Energy Rebates | $26,000 | | $55,000 | $81,000 |
| Residential | New Construction | $78,000 | | $40,000 | $118,000 |
| Residential | Lighting Programs | $8,000 | | $20,000 | $28,000 |
| Business | Com. (CAP) Rebates | $415,000 | | $100,000 | $515,000 |
| Business | Schools Grant | | $37,000 | $10,000 | $47,000 |
| All | EM&V, Marketing & Other | | $177,000 | $380,000 | $557,000 |
| **Programs delivered by third-party administrators** | | | | | |
| Residential | Green@Home | | $60,000 | $5,000 | $65,000 |
| Residential | Refrigerator Recycling+ | $10,000 | $3,000 | $5,000 | $18,000 |
| Residential | Low Income (REAP)+ | $36,000 | $9,000 | $30,000 | $75,000 |
| Residential | Home Energy Reports | | $59,000 | $50,000 | $109,000 |
| Business | Enovity Large Business | $17,000 | $123,000 | $90,000 | $230,000 |
| Business | Hospitality+ | $169,000 | $151,000 | $20,000 | $340,000 |
| Business | Keep Your Cool+ | $49,000 | $13,000 | $15,000 | $77,000 |
| Business | Willdan Labs | $48,000 | $310,000 | $40,000 | $398,000 |
| Business | Zero Interest Loan Program | | $8,000 | $10,000 | $18,000 |
| Business | Right Lights Plus | $243,000 | $101,000 | $40,000 | $384,000 |
| Business | New Construction | $22,000 | $80,000 | $40,000 | $142,000 |
| | ***TOTAL*** | **$1,121,000** | **$1,130,000** | **$950,000** | **$3,201,000** |
| **Sources of Funds** | | | | | |
| | **Public Benefit Charge** | | | | **$2,602,000** |
| | **Supply funds** | | | | **$599,000** |

+ These are "direct-install" programs, whereby the program administrator installs efficient equipment at the customer site at no cost to low income residents or with small co-pays from small business customers. Direct install programs typically target hard-to-reach customers. For direct install programs, payments to the third-party vendor are assumed to be 80% direct customer rebate and 20% contract administration.

Figure 2 compares the historical annual electric efficiency savings and annual electric efficiency program expenditures.

**Figure 2: FY 2008 to FY 2014 Electric Efficiency Savings and Expenditures**



# 2 GAS EFFICIENCY PROGRAMS

## 2.1 Gas Efficiency Savings versus Goals

In parallel with the development of ten-year electric goals, the City Council adopted CPAU's first set of gas efficiency targets in 2007 to reduce gas consumption by 3.5% between 2008 and 2017. In 2010, Council increased the gas efficiency targets to reduce use by 5.5% between 2011 and 2020. Similar to the electric side, the potential for gas efficiency savings has been reduced due to recent changes to California's appliance standards and building codes. The Ten-Year Gas Efficiency Goals were last updated in December 2012, with a cumulative gas efficiency target to reduce gas use by 2.85% between 2014 and 2023.

CPAU's gas efficiency savings goals and achievements as a percentage of sales are shown in Table 3 below. CPAU has continued to expand its gas efficiency program portfolio in the past several years, with the majority of gas savings delivered through third-party administered programs. Gas efficiency savings in FY 2014 were more than double the annual savings goal. Cumulative gas efficiency savings since 2006 is about 2.8% of the FY 2014 gas usage.

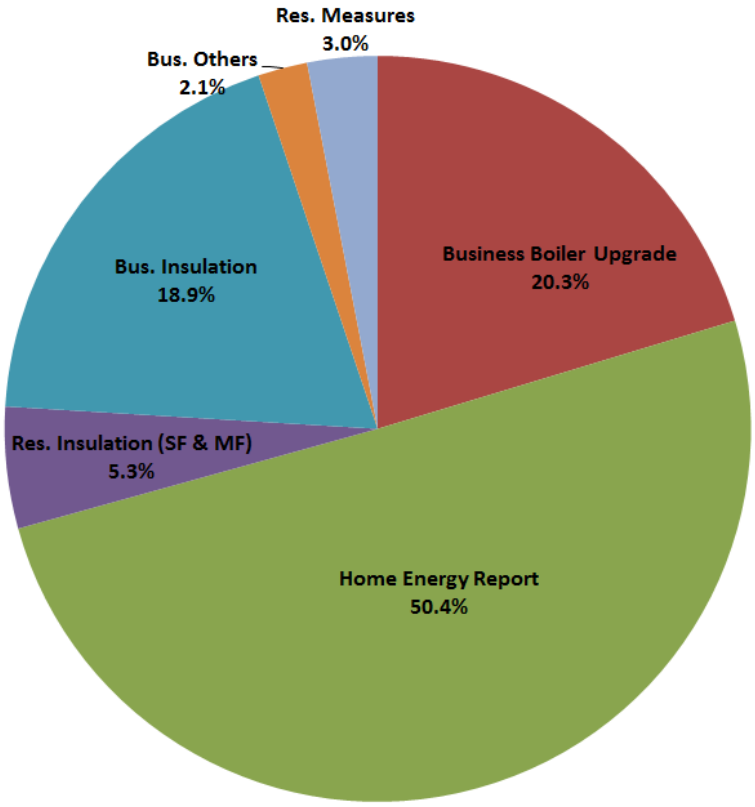
**Table 3: Gas Savings versus Goals**

| Year | Annual Savings Goal (% of load) | Savings Achieved (% of load) | Savings Achieved (therms) |
|---|---|---|---|
| FY 2008 | 0.25% | 0.11% | 35,057 |
| FY 2009 | 0.28% | 0.29% | 146,028 |
| FY 2010 | 0.32% | 0.35% | 107,993 |
| FY 2011 | 0.40% | 0.55% | 164,640 |
| FY 2012 | 0.45% | 0.74% | 220,883 |
| FY 2013 | 0.50% | 1.13% | 327,077 |
| FY 2014 | 0.50% | 1.20% | 337,079 |
| FY 2015 | 0.50% | *In progress* | *In progress* |

## 2.2 FY 2014 Gas Efficiency Savings by End Use and Customer Segment

Non-residential customers account for 55% of the CPAU's gas sales, and in FY 2014, gas efficiency savings in the non-residential segment represent about 41% of CPAU's total gas savings. The energy savings estimation methodology for the Home Energy Report program is updated, resulting in a slightly higher average per household savings. In FY 2014, the Home Energy Report program accounted for 50% of the total gas savings. Figure 3 shows the breakdown of gas savings in FY 2014 by end use.

**Figure 3: Composition of Natural Gas Efficiency Savings in FY 2014 by End Use (Total saving of 337,079 therms, 1.2% of annual load)**



## 2.3 FY 2014 Gas Efficiency Program Expenditures

The largest fraction of expenditures in the FY 2014 gas efficiency budget is for third-party administered contracts and rebates. Gas efficiency programs are primarily funded from the Gas Public Benefit charge, which is set at about 1% of the gas utility's revenue. Additional funding can be provided from supply funds if needed. As reflected in Table 4 below, gas efficiency programs in FY 2014 were funded only from PB charges. Table 4 also shows the split of gas efficiency program expenditures by customer rebates, third-party contract administration, and other expenses, which include in-house staffing, marketing and communication expense. Although not required by state law, CPAU conducts EM&V of its gas efficiency savings through an independent consultant. The EM&V contract cost is included in Table 4.

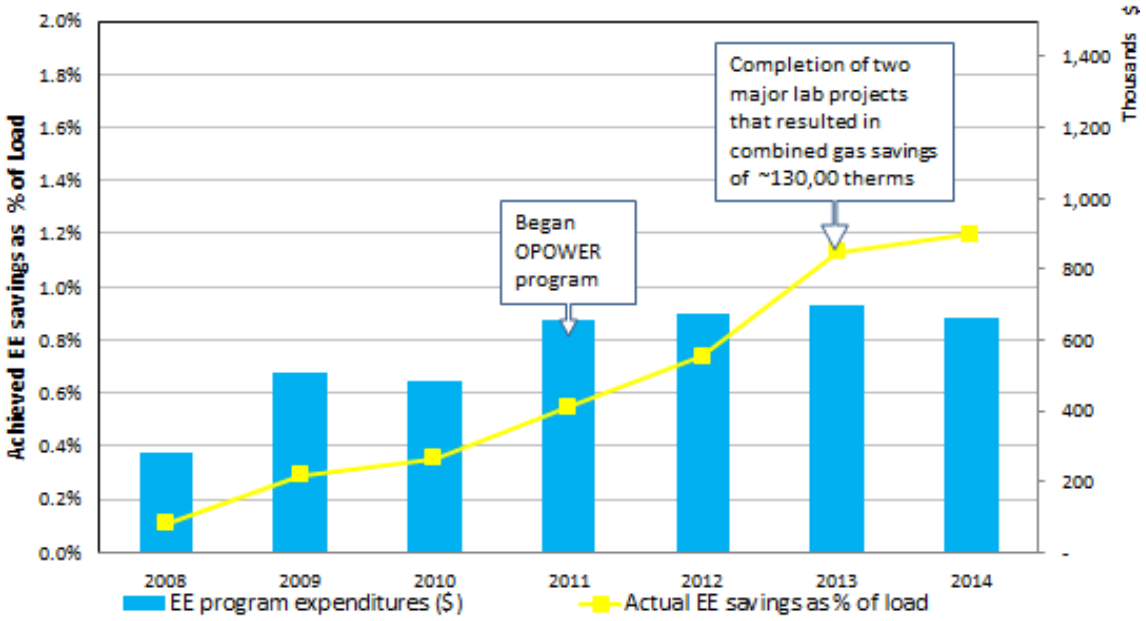
**Table 4: FY 2014 Gas Efficiency Program Expenditures**

| Customer Class | Program Name | Customer Rebates | Contract Costs | Other Expenses | Annual Cost |
|---|---|---|---|---|---|
| **Programs delivered by CPAU staff** | | | | | |
| Residential | Smart Energy Rebates | $37,000 | $0 | $20,000 | $87,000 |
| Residential | New Construction | $78,000 | $0 | $15,000 | $103,000 |
| Business | Com. Rebates (CAP) | $40,000 | | $10,000 | $50,000 |
| All | EM&V, Marketing & Other | | $21,000 | $30,000 | $81,000 |
| **Programs delivered by third-party administrators** | | | | | |
| Residential | Low Income (REAP)+ | $97,000 | $24,000 | $20,000 | $146,000 |
| Residential | Home Energy Report* | $0 | $59,000 | $15,000 | $109,000 |
| Business | Enovity Large Bus | $25,000 | $65,000 | $10,000 | $100,000 |
| Business | Hospitality+ | $68,000 | | $0 | $78,000 |
| Business | Willdan Labs | $3,000 | $0 | $10,000 | $13,000 |
| Business | Right Lights Plus | | | $0 | $10,000 |
| Business | New Construction | $2,000 | | $10,000 | $12,000 |
| | | | | | |
| | ***TOTAL*** | **$350,000** | **$169,000** | **$140,000** | **$659,000** |
| **Sources of Funds** | | | | | |
| | **Public Benefit Charge** | | | | **$659,000** |
| | **Supply funds** | | | | **$0** |

\+ These are "direct-install" programs, whereby the program administrator installs efficient equipment at the customer site at no cost or with a small co-pay from the customer.

Figure 4 compares the historical annual gas efficiency savings and annual gas DSM expenditures. Gas efficiency savings have been increasing steadily in the past six years as CPAU continues to expand its gas efficiency portfolio through third-party program administrators.

**Figure 4: FY 2008 to FY 2014 Gas Efficiency Savings and Expenditures**



# 3 WATER EFFICIENCY PROGRAMS

## 3.1 Water Efficiency Savings versus Goals

The 2010 Urban Water Management Plan includes a per capita water use reduction goal of 20% by 2020 from a historical benchmark period (average use between years 1995 and 2004). CPAU's water savings goals and achievements as a percentage of sales are shown in Table 5 below. Note that water savings in FY 2014 have increased by 22% compared to FY 2013 due to the introduction of the Home Water Reports program and increased program marketing.

**Table 5: Water Savings versus Goals**

| Year | Annual Savings Goal (% of load) | Savings Achieved (% of load) | Savings Achieved (CCF) |
|---|---|---|---|
| FY 2008 | 0.34% | 0.72% | 39,323 |
| FY 2009 | 0.34% | 0.98% | 52,983 |
| FY 2010 | 0.34% | 1.35% | 68,948 |
| FY 2011 | 0.90% | 0.47% | 23,409 |
| FY 2012 | 0.91% | 1.09% | 55,067 |
| FY 2013 | 0.91% | 0.53% | 26,513 |
| FY 2014 | 0.91% | 0.64% | 32,325 |
| FY 2015 | 0.91% | *In progress* | *In progress* |

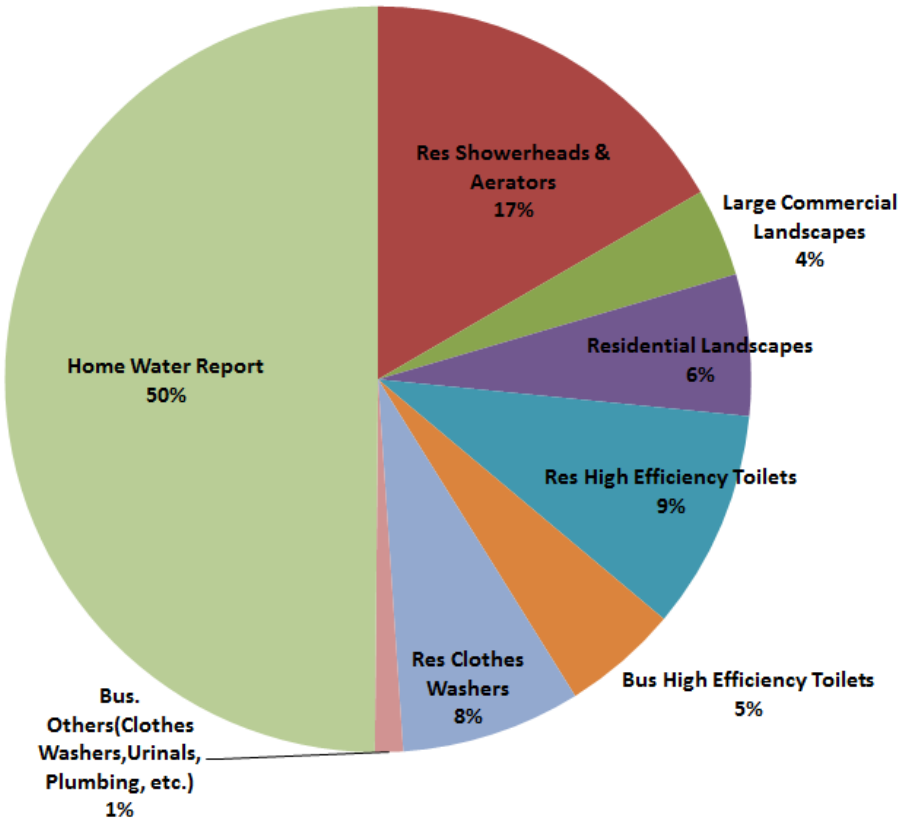
## 3.2 FY 2014 Water Efficiency Savings by End Use and Customer Segment

During FY 2014, residential savings represented almost 90% of total water savings, with the majority of these savings attributed to the new Home Water Reports and the Water-Wise House Call Program. Plumbing upgrades such as the installation of faucet aerators, low-flow showerheads and high efficiency toilets also contributed to these savings. The Business water rebates offered to customers include water efficient landscape conversion, irrigation hardware replacement, weather-based irrigation controllers and clothes washers. Similar rebates were also offered on the residential side.

In response to California's severe drought conditions, Palo Alto joined the Santa Clara Valley Water District (SCVWD) in April 2014 to double the rebate available for converting turf grass to low water using landscape through the end of 2014. Figure 5 shows the breakdown of water savings achieved in FY 2014 by end use.

Note that savings that customers achieve due to behavioral changes or changing appliances and not seeking a rebate that may be prompted by CPAU's drought awareness messaging are not accounted for in these achievements.

**Figure 5: Composition of Water Efficiency Savings in FY 2014 by End Use (Total saving of 32,325 CCF, 0.64% of annual load)**



### 3.3 FY 2014 Water Efficiency Program Expenditures

CPAU partners with the SCVWD to provide free water audits to residential customers, indoor water surveys to large commercial customers, landscape survey, as well as rebates for landscape conversion, irrigation hardware, clothes washers, high efficiency toilets and urinals. The payment to SCVWD includes customer rebates as well as various program expenditures. CPAU also offers rebates to customers for high efficiency clothes washers. Other expenses include in-house staffing, marketing and communication expenses. Table 6 shows program expenditures by customer rebates, third-party contract administration and other expenses, which include in-house staffing, marketing and communication expense.

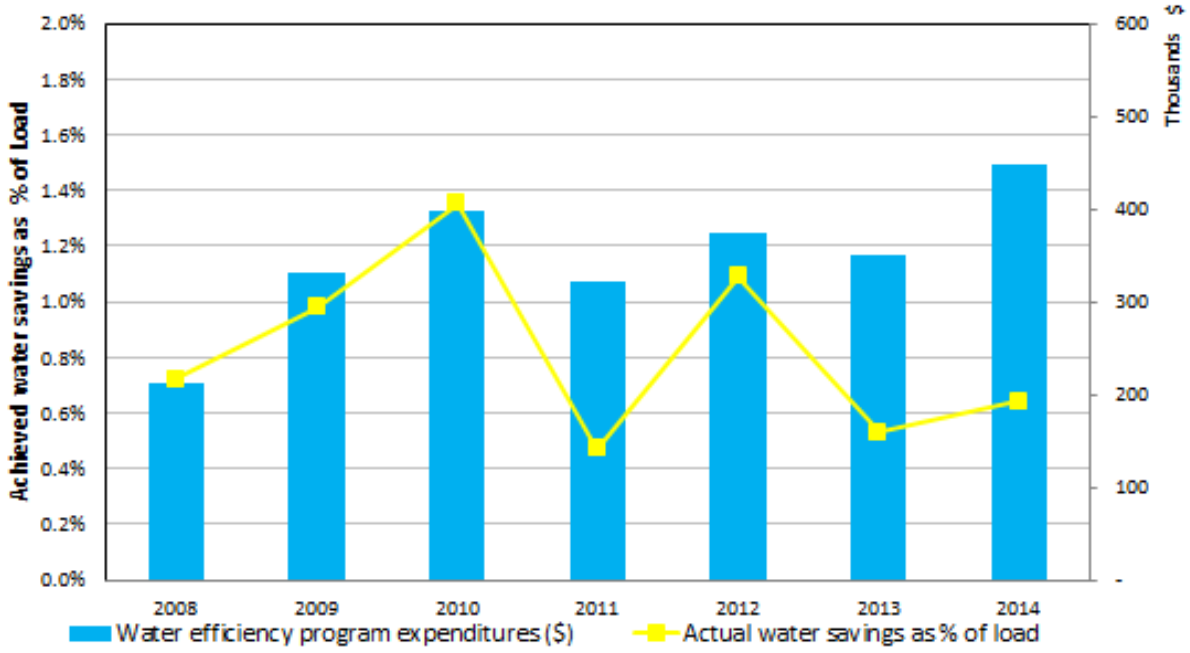
**Table 6: FY 2014 Water Efficiency Program Expenditures**

| Customer Class | Program Name | Customer Rebates | Contract Costs | Other Expenses | Annual Cost |
|---|---|---|---|---|---|
| **Programs delivered by CPAU staff** | | | | | |
| Residential | Washing Machines | - | - | $5,000 | $5,000 |
| Business | Indoor Audits | - | - | $20,000 | $20,000 |
| All | Marketing & Other | - | - | $160,000 | $120,000 |
| **Programs delivered by Santa Clara Valley Water District** | | | | | |
| Residential | High Efficiency Toilets+ | - | $18,000 | $5,000 | $23,000 |
| Residential | Landscape Rebates | - | $28,000 | $25,000 | $53,000 |
| Residential | Water Wise House Calls | - | $24,000 | $10,000 | $34,000 |
| Res + Bus | Irrigation Hardware Upgrade | - | $9,000 | $10,000 | $19,000 |
| Business | High Efficiency Toilets+ | - | $14,000 | $5,000 | $19,000 |
| Business | Washing Machines | - | $800 | $0 | $800 |
| Business | Landscape Rebates | - | $15,000 | $15,000 | $30,000 |
| **Programs delivered by WaterSmart** | | | | | |
| Residential | Home Water Reports | - | $42,000 | $40,000 | $82,000 |
| | | | | | |
| | ***TOTAL*** | ***$0*** | ***$150,800*** | ***$295,000*** | ***$445,800*** |

\+ These are direct install programs, whereby the program administrator installs efficient equipment at the customer site at no cost to, or with a small co-pay from, the customer.

Figure 6 compares the historical annual water efficiency savings and annual water efficiency program expenditures.

**Figure 6: FY 2008 to FY 2014 Water Efficiency Savings and Expenditures**



# 4 CUSTOMER-SIDE RENEWABLE GENERATION

## 4.1 PV System Installation Achievements versus Goals

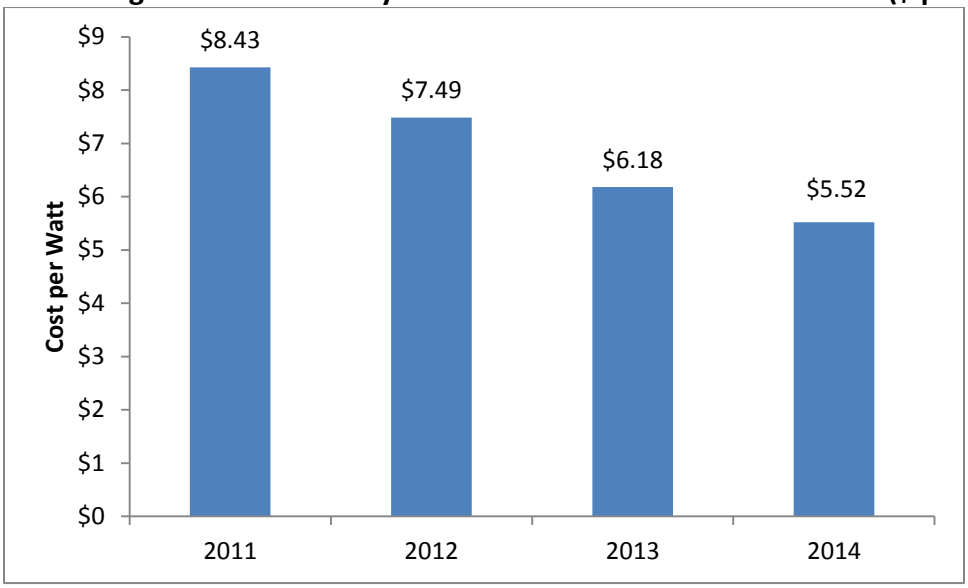
CPAU offers customer incentive programs for local solar photovoltaic (PV) and solar water heating (SWH) system installations. These customer-side generation systems are not included in CPAU's Renewable Portfolio Standard (RPS) supply requirements. Table 7 shows the number of PV systems installed and the capacity in kilowatts (KWs) from FY 2008 through FY 2014.

**Table 7: Customer-Side Photovoltaic (PV) Systems Program Achievements**

| Year | PV Systems Installed | | Achieved PV Installations in kW | |
|---|---|---|---|---|
| | Res | Non-Res | Res | Non-Res |
| FY 2008 | 112 | 6 | 326 | 217 |
| FY 2009 | 43 | 9 | 152 | 1,037 |
| FY 2010 | 52 | 2 | 205 | 15 |
| FY 2011 | 44 | 3 | 187 | 298 |
| FY 2012 | 48 | 4 | 186 | 248 |
| FY 2013 | 47 | 4 | 203 | 54 |
| FY 2014 | 104 | 7 | 498 | 1,357 |

As shown in Figure 7, the cost per installed watt for PV systems before incentives has been declining steadily. Through December 2016, there is a federal tax credit of 30% for the installation of both residential and commercial PV systems. Unless Congress acts to extend it, beginning January 2017 this tax credit will drop to zero for residential systems and 10% for commercial systems. CPAU offers incentives for PV system installations through the PV Partners Program. The PV Partners program has a goal of installing 6.5 MW of PV by 2017. As of June 30, 2014, local solar installations through the PV Partners Program totaled about 5.6 MW, generating about 1% of the City's annual energy needs.

**Figure 7: Average Residential PV system installed cost before incentives ($ per Watt)**




### 4.2 Solar Water Heating System Installation Achievements versus Goals

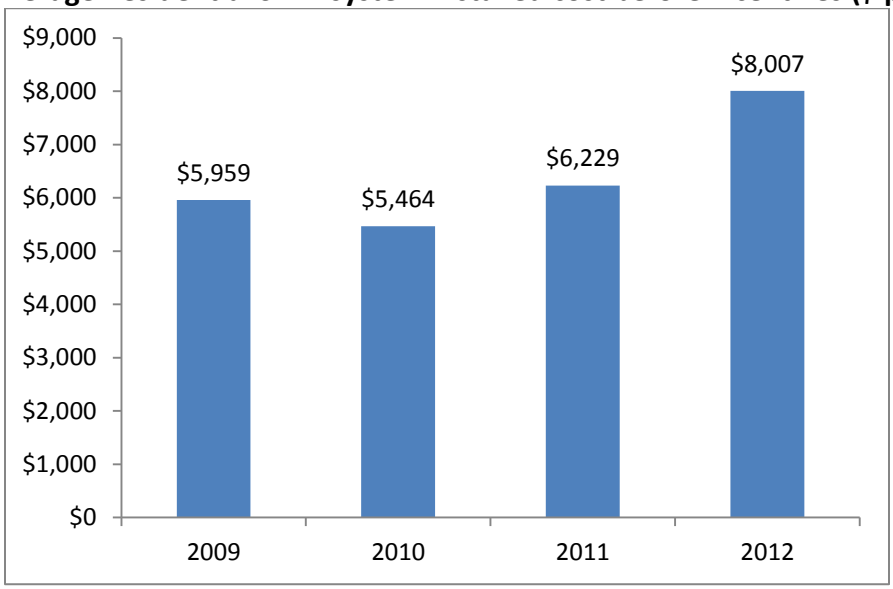
As shown in Table 8, the number of SWH systems installed has been consistently below target, especially during FY 2013 when the retail gas rate decreased 20% from the previous year, which reduced the cost-effectiveness of SWH systems. Unlike PV systems, the cost for SWH systems has not decreased over time. This is partly because there are fewer SWH system installers than PV installers.

**Table 8: Customer-Side Solar Water Heating Systems Program Achievements versus Goals**

| Year | SWH Systems Goal | SWH Systems Installed |
|---|---|---|
| FY 2009 | 30 | 7 |
| FY 2010 | 30 | 17 |
| FY 2011 | 30 | 10 |
| FY 2012 | 30 | 1 |
| FY 2013 | 30 | 1 |
| FY 2014 | 30 | 11 |
| Total | | **43** |

Figure 8 shows that the average cost before incentives for residential SWH systems increased between 2009 and 2012. The system average cost is primarily a function of system size and type; the small sample size does not provide a reliable cost trend for residential SWH systems.

**Figure 8: Average Residential SWH system installed cost before incentives ($ per system)**




* No residential SWH systems were installed during FY 2013 & 2014

### 4.3 FY 2014 Customer Renewable Program Expenditures

The PV Partners program is administered by CPAU staff, whereas the SWH program is administered by the California Center for Sustainable Energy (CCSE). CPAU contracts with third-party vendors to conduct PV system inspections. CPAU also contracts with a third-party vendor to maintain an online PV rebate application system. Table 9 lists the customer renewable program expenses by customer rebates, contract administration, and other expenses, which include in-house staffing, marketing and communication expenses.

**Table 9: FY 2014 Customer Renewable Program Expenditures**

| Program Name | Customer Rebates | Contract Costs | Other Expenses | Annual Cost |
|---|---|---|---|---|
| PV Partners (Res) | $390,000 | $22,000 | $60,000 | $472,000 |
| PV Partners (Bus) | $693,000 | $22,000 | $60,000 | $775,000 |
| Solar Water Heating (Res) | | $18,000 | $5,000 | $22,500 |
| Solar Water Heating (Bus) | $22,000 | $18,000 | $5,000 | $45,000 |
| Marketing & Other | | | $60,000 | $60,000 |
| **Total** | **$1,105,000** | **$80,000** | **$220,000** | **$1,307,000** |
| **Program Name** | **REC Purchase Costs** | **Contract Costs** | **Other Expenses** | **Annual Cost** |
| PaloAlto**Green** | $251,000 | $20,000 | $70,000 | $341,000 |
| Marketing & Other | | | $35,000 | $35,000 |
| **Total** | **$251,000** | **$20,000** | **$105,000** | **$376,000** |
| | | | | |
| ***TOTAL*** | **$1,356,000** | **$100,000** | **$325,000** | **$1,683,000** |

### 4.4 PaloAltoGreen Program Update

The PaloAlto**Green** (PAG) program was launched on Earth Day in 2003 to give customers the option to voluntarily reduce GHG emissions associated with their electricity use. Participants paid an additional 1.5 cents per kWh to cover the purchase of Renewable Energy Certificates (RECs) so that their electric use would be supplied with 100% renewable energy. In June 2014, City Council terminated the PAG program for residential customers since the electric supply is 100% carbon neutral and customers no longer need the program to eliminate the GHG emissions associated with their electricity use. PAG is still available for commercial customers who wish to be recognized under the U.S. EPA Green Power Leadership program or to earn Leadership in Energy and Environmental Design (LEED) Green Power credits.

In April 2014, City Council approved the establishment of the voluntary PaloAlto**Green** Gas program. The PAG Gas provides the opportunity for residential and commercial customers to reduce or eliminate the impact of GHG emissions associated with their gas usage, through the purchase of certified environmental offsets.

# 5 CUSTOMER OUTREACH & COMMUNICATIONS

Utility Marketing Services and Utilities Communications develop a range of marketing outreach pieces and implement campaigns to promote the gas, electric, and water efficiency programs and services offered to all CPAU customers. Promotional methods include community outreach events, print ads in local publications, utility bill inserts, messaging on the bills and envelopes, website pages, email blasts, videos for the web and local cable television channels, Home Energy Reports, Home Water Reports and the use of social media (Twitter/Facebook/NextDoor/Videos). While print materials and website pages still feature prominently, CPAU is turning its outreach emphasis to direct mail, newspaper inserts, social media, online videos and cable TV. Regular email newsletters are delivered to residents and businesses, as well as targeted emails and outreach for specific groups, such as neighborhood and youth organizations. Educational materials and brochures are regularly developed and updated to distribute at outreach events, in new customer welcome packets and for the general public at City facilities such as the Development Services Center, libraries and community centers. CPAU provides fun, yet practical promotional items such as keychains, night lights, sponges, shower timers, light bulbs, pens, magnets and sunglasses, to the public to spread awareness about resource efficiency and renewable energy.

CPAU continued its 2012 campaign focusing on using the personal voice of employees describing their work and commitment to Palo Alto and its customers. In the DSM area, the campaign focused on water conservation, energy efficiency initiatives for residents, renewable programs and services for low income residents. Employee images were used on bill inserts, bill envelope graphics, print advertisements and the web. Another major marketing campaign capitalized upon the famous British World War II poster saying, “Keep Calm and Carry On.” This began in 2013 and continued through FY 2014. Messages included residential electric and gas efficiency rebates (Keep Calm and Rebate On), solar energy (Keep Calm and Put Solar On), low income efficiency programs (Keep Calm and REAP On), lighting programs (Keep Calm and Shine On), targeted housing-type services (Keep Calm and Eichler On), water conservation (Keep Calm and Save Water) and business rebate programs (Keep Calm and Profit On.) Examples of these marketing pieces are shown on the following three pages.

CPAU staff networks with business customers at special facilities meetings, attends neighborhood safety and emergency preparedness fairs and offers presentations to school and community groups. CPAU staffed more than 21 events during FY 2014, held two Facility Manager meetings with its largest business account customers and visited the Key Account facilities at least once per quarter. Regular workshops and training are held for all customer classes on water and energy topics. During the fiscal year, CPAU conducted 13 tours of the EcoHome, a scale model of an environmentally friendly home that was built with sustainable materials and water-wise landscaping. In April 2014, CPAU organized the second annual 5 kilometer fun run and walk (“Great Race to Save Water”) in partnership with regional water agencies and community-based non-profits to raise awareness about water resources and water conservation. The topic was particularly salient due to increasing drought conditions.

# Keep Calm Campaign





Celebrate Public Power Week October 5-11!
EMPOWERING THE COMMUNITY
FOR OVER A HUNDRED YEARS
FALL SEASON MEANS COOLER WEATHER
COOLER WEATHER
MEANS MORE GAS
AND ELECTRICITY
Visit us online for a free energy assessment of your home or let our trained surveyors evaluate your business. CPAU provides energy efficiency services, rebates and programs.
Sign up for My Utilities online account.
Stay tuned for the launch of our new PaloAltoGreen Gas renewable program.
We are available 24/7 to help locate, turn off and on your utility meters. Know when to turn off a gas meter in an emergency. Never turn it back on yourself! Call Utilities Dispatch at (650) 329-2579 at any time.
Remodeling Your Home?
THE CITY OF PALO ALTO HAS RESIDENTIAL EFFICIENCY PROGRAMS AND REBATES FOR YOU!
REPLACE YOUR OLD EQUIPMENT AND LET THE CITY OF PALO ALTO UTILITIES PAY YOU.
ENERGY EFFICIENCY REBATES FOR YOUR BUSINESS
THE CITY OF PALO ALTO HAS
ENERGY ASSISTANCE
SOLUTIONS FOR CUSTOMERS ON LIMITED BUDGETS
SEE YOUR BUSINESS IN A NEW LIGHT!
1 FREE ENERGY SURVEY (addresses lighting retrofits, lighting controls, vending machine controls, HVAC, pool pumps, and energy management systems).
2 GET INSTANT REBATES based on recommendations.
3 START SAVING! call us today to cut your energy costs by up to 50%.
4 ACT NOW to get CPAU lighting and control rebates while funds are still available.
Our goals are to help you reduce your uti
VE ENERGY AND MONEY
nomic times can use our programs and costs. If you're overwhelmed by your ilities (CPAU) can help.
ssistance Program (REAP)
d-income residents. Our Energy Specialist
YOUR COMMUNITY OWNED UTILITIES OFFER THE BENEFITS OF:
Faster, more personal service
Competitive rates
Superior infrastructure
Support for our nationally-recognized community libraries, police and fire services, parks, recreation programs...and more!
The City of Palo Alto will be kicking off Public Power Week in front of City Hall at 250 Hamilton Street on October 6 from 12 to 2 pm.
Join us for giveaways, information, and more!
Visit us at www.cityofpaloalto.org/utilities or call (650) 329-2161
Keeble & Shuchat Photography
"Today, a year since my project was completed, I see a substantial decrease in my energy consumption per month as originally estimated by the RightLights Plus rep. To my surprise, I realized that the lighting appears brighter in my store even though we cut the number of lamps by half (50%). The installers did a great job working around our schedule and not interrupting business. I welcome other business owners to come by the store to take a look at the lighting or to ask me about the project."
—TERRY SHUCHAT, OWNER
T M Cabinets
"The RightLights Plus Program made th process very smooth; from the initial audit, through the installation, and the with the rebate payment. The quality of work was excellent. This project improved the lighting quality in my shop while saving on my energy bills. One of the best things was that the Ca of Palo Alto rebate's was paid directly t the contractor, and therefore, my projec co-pay was minimal.
I would highly recommend the RightLights Plus program to any business."
—TIM MCCOY, OWNER
www.cityofpaloalto.org/commercialprograms
KEEP CALM AND SHINE ON
CITYOFPALOALTO.ORG/LIGHTING

# Demand Side Management Program Achievements in Fiscal Year 2014

CITY OF PALO ALTO UTILITIES
Inspired by a brighter tomorrow.







# 6 PARTNERSHIPS

## 6.1 School Education

CPAU provides a grant to the Palo Alto Unified School District (PAUSD) of $50,000 each year for the design, implementation, and continuation of a comprehensive environmental education program from Public Benefits funds. During FY 2014, this CPAU grant supported activities such as canoeing in the San Francisco Bay to teach students about its water ecosystem, funding a student-developed energy dashboard at Gunn High School, water efficiency presentations by the Tuolumne River Trust and building wind generators. The younger students particularly enjoyed learning about energy efficiency from a TheatreWorks instructor and supplying renewable power to a model city that they designed themselves.

CPAU staff regularly attends the monthly Sustainable Schools committee meetings. Additionally, CPAU staff gives educational presentations to classes on energy efficiency, renewable energy, and safety.

During FY 2014, PAUSD joined the City of Palo Alto in its bid to compete for the Georgetown University Energy Prize.

# 7 RESEARCH, DEVELOPMENT AND INNOVATION

## 7.1 Demand Response Pilot Program

The Demand Response (DR) Pilot Program is designed to help participating large commercial customers reduce their electricity use on days when demand is high, which helps reduce Palo Alto's annual peak electricity demand. Through the program, CPAU offers monetary incentives to participating customers who are able to reduce their electrical usage when called upon by CPAU during high load periods in the summer months (between May 1st and October 15th.) The DR Pilot Program's incentive payments share the savings between the utility and program participants. The DR Pilot Program began in 2011 and will continue through 2015. The program is coordinated in partnership 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.

Most of CPAU's commercial customers have limited flexibility to curtail their electric usage, but potential avenues for usage reduction include limiting non-critical lighting and pre-cooling buildings early in the day. During the summer of 2014, seven customers participated in one DR event; together these participants committed demand reductions of 725 kW and saved nearly 5,600 kWh.

## 7.2 Program for Emerging Technologies

The CPAU Program for Emerging Technologies (www.cityofpaloalto.org/UTLInnovation) provides the opportunity for local businesses to submit proposals to CPAU for review and potential pilot testing. The goal is to find and nurture creative products and services that will manage and better use electricity, gas, water, and fiber optic services. From its inception in June 2012 through July 2014, the Program for Emerging Technologies received 30 applications. Several pilots are currently underway, including the testing of a solar street light technology installed along El Camino Real between Park Avenue and Embarcadero Road. Pilots are evaluated based on the technology's ease of deployment, cost-effectiveness and user feedback. Results of the evaluation will help determine whether these technologies will be included in future customer incentive programs.

## 7.3 Pilot Project for Building Energy Management System in Small/Medium Commercial Buildings

Staff has been coordinating with the Omaha Public Power District to implement an energy efficiency/demand response pilot program which has been funded by a grant through the American Public Power Association's Demonstration of Energy Efficiency Developments (DEED) Program. The purpose of the pilot program is to gain hands-on experience and validate the cost, ease of installation and usability while assessing the energy efficiency savings and demand response functionalities of a Viconics building energy management system for small to medium-sized commercial buildings. The building energy management system allows building owners to monitor and control building heating, ventilation and air conditioning (HVAC) equipment through a web-based application. Installation of the Viconics components was completed at three downtown commercial buildings during summer 2014; however, one of the buildings has since dropped out of the pilot. Pilot results from multiple public utilities participating in this DEED project

will be compared to better estimate the energy savings potential from such building energy management system targeting small to medium-sized commercial buildings.

### 7.4 CustomerConnect Advanced Meter and Time of Use Rate Pilots

The CustomerConnect Pilot Program is designed 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 objectives of the pilot are to:

- Gauge residential customer interest in and experience and satisfaction with using advanced meters and associated engagement tools;
- Quantify the change in residential customer energy and water use through efficiency and conservation measures as a result of the customer engagement tools;
- Evaluate the impact of the programs on utility costs and revenues;
- Quantify residential customer bill impacts; and
- Gain insight into the costs and benefits of implementing full-scale advanced meter-based residential customer services.

In FY 2014, CPAU successfully installed advanced electric, gas and water meters at over 200 residential customers' home. The pilot will ultimately accommodate 300 residential customers. These customers have access to the CustomerConnect Portal, a web-based platform which displays hourly interval data for gas, water and electric consumption. As part of this pilot program, a Time-of-Use (TOU) pilot electricity rate is also being tested; the TOU rates are designed to encourage residential customers, particularly those with electric vehicles (EVs), to shift electric usage to less expensive night hours. The CustomerConnect pilot program will continue through December 2016 at which time a full evaluation will be conducted.

# 8 FUTURE PLANS

## 8.1 Water Grants and Water Pilots

CPAU received grant funding from the SCVWD to pursue two water conservation pilot programs targeting commercial customers. The first pilot program will be a Real-Time Water Use Monitoring system for small and medium-sized business customers to actively monitor their consumption and take immediate action to control their water usage. The second pilot program is the delivery of Business Water Reports to encourage water conservation among small and medium-sized businesses. The programs have been selected through an RFP process with an expected program start date in the third quarter of FY 2015.

## 8.2 2015 Update to the Urban Water Management Plan

CPAU is required to update its Urban Water Management Plan (UWMP) every five years under the California Urban Water Management Planning Act. The UWMP describes the City's water system, supply sources, and demand-side (water efficiency) measures. The UMWP must include a plan for compliance with the Senate Bill x7-7 (2009) that mandates a statewide per capita water use reduction of 20% by the year 2020. The 2010 UWMP was approved by Council in June 2011. The 2015 UWMP is due to the State by June 30, 2016.

## 8.3 ENERGY STAR Portfolio Manager Automatic Upload

CPAU is collaborating with the City's Development Center to launch a commercial energy benchmarking pilot program during FY 2015. Through this pilot, CPAU commercial customers will be able to automatically download Utilities billing history and fill out the necessary information to obtain their EPA Portfolio Manager rating. The pilot program will include additional functionality that will assist commercial customers in complying with the requirements of AB1103 (2007), the Commercial Building Energy Use Disclosure Program. The City's goal is to establish all commercial businesses within ENERGY STAR Portfolio Manager, an online tool that allows building owners/managers to track their buildings' energy and water consumption and compare their building's performance against a yearly baseline, national medians, or similar buildings in their portfolio.

## 8.4 Capturing Additional Energy Savings through the new Palo Alto Green Building Ordinance

The City's prior Green Building Ordinance requires that new construction projects exceed California's building energy efficiency standards ("2008 Title 24 Standards") by 15%, i.e. the building's energy consumption is 15% less than standard design. The California Energy Commission updates these standards on an approximate three-year cycle; the most recent set of standards, the 2013 Title 24 Standards, went into effect on July 1, 2014. The new 2013 Title 24 standards are 20% more stringent for residential buildings and 30% more stringent for non-residential buildings, and therefore surpassed the energy efficiency requirements in the City's then Green Building Ordinance. CPAU is working closely with the City's Development Services staff and the Green Building Advisory Group to update the City's Green Building

Ordinance (GBO). Once the new GBO is adopted, CPAU will continue to coordinate with Development Services staff to report the energy savings achieved through the Green Building Ordinance.

### 8.5 Local Solar Plan

In April 2014, Council approved the Local Solar Plan with a goal to increase the installation of local solar PV systems to provide 4 percent of the City's total energy needs by 2023. The plan identifies a set of strategies and initiatives to promote solar in a cost-effective and sustainable manner by accelerating solar adoption in Palo Alto. Specifically, the plan includes the development of: (a) a Community Solar Share program that targets customers who do not have good solar access or cannot support solar at their own premise due to size or home/business ownership status, (b) a Community Solar Donation program that targets customers who want to contribute toward solar for the benefit of a community-based organization, such as local schools, and (c) a Solar Group Discount program designed to drive down the cost of local solar ownership by leveraging the purchasing power of the community. Staff is working to develop the new programs in the Local Solar Plan, but the timelines for implementation depend upon negotiations with vendors who will administer the programs. Supporting strategies also incorporated in the Local Solar Plan include developing community education and demonstration projects, reducing internal system and institutional barriers which increase PV system's "soft" costs and therefore may impede adoption, and supporting innovative solar technologies through CPAU's Program for Emerging Technologies.

### 8.6 Smart Grid Pilots and Next Steps

Smart grid related pilot programs will continue through FY 2016. Staff plans to develop recommendations on next steps on smart grid implementation by the end of 2016. One such smart grid pilot is Conservation Voltage Regulation (CVR). Based on the voltage sensing technology of the advanced electric meters in the 300 homes participating in the CustomerConnect pilot, staff is exploring the feasibility of how to optimally operate the distribution feeders by lowering service voltage to save energy. A system is being evaluated to monitor the voltages at the end of electrical feeder lines until the end of 2016, which will help develop implementation and operating strategies to harness the conservation potential of CVR.

### 8.7 Georgetown University Energy Prize

In April 2014, the City announced its intent to compete for the Georgetown University Energy Prize. The Georgetown University Energy Prize is a two-year energy saving competition amongst communities with a population between 5,000 and 250,000 residents for a chance to win a $5 million prize. Selected semifinalists will compete to reduce their electric and natural gas consumption in the residential, multi-family, municipal, and schools sectors for two years (January 2015 through December 2016) compared to the baseline years of 2013-2014. Judging will be based on reductions in energy use, innovation of approach, quality of community outreach, sustainability and replicability. More information about Palo Alto's entry can be found at www.cityofpaloalto.org/Georgetown

In FY 2015, CPAU will engage in several new campaigns and programs and will continue to promote energy efficiency, water conservation and renewable energy generation through a variety of marketing and media channels.

### 8.8 Drought Awareness and Water Conservation Campaigns

Continued drought conditions beyond FY 2014 mean that a great deal of outreach will focus on water use efficiency, particularly in areas where customer water use tends to be the highest, such as in landscape irrigation. Marketing materials will promote the landscape turf grass conversion and irrigation hardware rebates while reminding customers to protect the health of trees, which represent a long-term investment in the City's urban canopy.

# APPENDIX A: PROGRAM DESCRIPTION

The programs offered by CPAU are designed to assist all customer groups to achieve savings on electricity, natural gas and water in cost-effective manners. Programs are designed to achieve results through a wide variety of both common and more innovative, harder to reach technologies.

## RESIDENTIAL CUSTOMERS

### Educational Programs and Workshops

A variety of educational programs and workshops are held throughout the year. Typically, residential workshops on water and energy programs occur in the spring near Earth Day and in the "Summer Workshop Series." In addition, customers receive timely emailed newsletters on a variety of efficiency matters.

### Home Energy Reports

CPAU provides City residents with individualized reports comparing their home energy use with neighbors in similarly sized homes with the assistance of the contractor OPOWER. Approximately 20,000 residents receive the Home Energy Report by mail once every quarter. A web portal also offers tips and suggestions on reducing electric and natural gas usage. www.cityofpaloalto.org/HomeEnergyReports

### Home Water Report

Launched in the November 2013, single family residents began receiving Home Water Reports with the assistance of contractor WaterSmart. This program is similar to the Home Energy Report but focuses on a home's water usage and how a customer's usage compares to neighbors with similar lot sizes and family demographics. A control group of approximately 3,000 residential accounts has been established to benchmark results of the program and to date, approximately 13,000 homes receive a water report by mail, quarterly.

### Refrigerator Recycling Program

Palo Alto offers a $35 rebate to residents who recycle old, operational refrigerators with our partner JACO Environmental which offers free pick-up and proper recycling services.

### Green@Home

Through a volunteer-driven program with Acterra, CPAU offered free in-home energy audits, personalized efficiency tips and direct installation of CFLs, faucet aerators and home energy monitors (for higher consumption customers). CPAU has serviced over 615 homes since the program started in 2008.

### Residential Energy Assistance Program (REAP)

The City provides weatherization and equipment replacement services to low-income residents, at no cost. The program provides LED lighting, heating system upgrades as well insulation for walls and roofs and weather-stripping for doors and windows. www.cityofpaloalto.org/LowIncome

**Smart Energy Program**

This program is a comprehensive energy efficiency incentive program for residential customers. The City gives rebates to residents who install energy efficient appliances and equipment in their homes or on their property. Among these are home heating and cooling systems (HVAC), insulation, water heaters, pool pumps and power strips. Additionally, the City sponsors various time-sensitive programs such as encouraging consumers to install Light Emitting Diode (LED) bulbs by offering coupons enabling residents to purchase LED bulbs at 50% less than market price. www.cityofpaloalto.org/SmartEnergy

**Water Programs**

Through a partnership with the SCVWD, Palo Alto provides residents with programs to improve their water use efficiency. These programs include free indoor and outdoor home water audits, free conservation devices, and rebates for toilets, clothes washers, landscape conversions, irrigation hardware upgrades and weather-based irrigation controllers. CPAU offers free workshops on water efficient landscaping and indoor water use efficiency throughout the year. Staff frequently presents to school, neighborhood and community groups about Palo Alto's water resources and best practices for water efficiency.
www.cityofpaloalto.org/Water

**Residential New Construction Rebate Program**

CPAU offers a financial incentive to encourage residents to exceed minimum building efficiency codes when constructing a new home. Rebates are available for exceeding Title 24 energy efficiency standards by at least 20%. FY 2014 was the last year CPAU offered this program due to the stringent changes made to California's Title 24 Energy Code starting July 1, 2014. During FY 2014, CPAU experienced a major increase in the number of applications and paid over $150,000 in rebates. The program resulted in energy savings of 28,196kwh and 10,238 therms. Due to the slow timeline of construction projects, for all projects permitted in FY 2014, CPAU will continue to pay New Construction rebates over the next 24 months as projects reach completion.

**BUSINESS CUSTOMERS**

**Commercial Advantage Program**

Business customers are offered rebates for many types of equipment, including lighting upgrades, wall and ceiling mounted motion sensors, boilers, pipe insulation, variable frequency drives, computer power management software, night covers for refrigerated display cases, anti-sweat heater controls for coolers/freezers, auto-closers for cooler doors, window film, and custom electric and natural gas saving projects. www.cityofpaloalto.org/CommercialAdvantage

**Commercial and Industrial Energy Efficiency Program**

Large businesses can get assistance with building commissioning services from the third-party contractor Enovity. This assistance includes reviewing lighting and heating/cooling systems and their operating specifications. Customers can then obtain rebates for replacing chillers, controls, linear fluorescent lighting, occupancy sensors, boilers and insulation. www.cityofpaloalto.org/CIEEIP

**Commercial and Industrial Water Efficiency Program**
CPAU partners with the SCVWD to provide non-residential customers with free landscape irrigation audits, direct installation of high-efficiency toilets and urinals. Rebates are available for clothes washers, facility process improvements, landscape conversions, irrigation hardware upgrades and weather-based irrigation controllers. CPAU staff also provides free indoor water use surveys and efficiency opportunity evaluation. www.cityofpaloalto.org/water

**Keep Your Cool**
Commercial kitchens can receive a free, no-obligation, inspection of commercial refrigerators and coolers to evaluate their efficiency. Generous cash incentives are available to make efficiency upgrades affordable for a variety of motors, lighting and process equipment. www.cityofpaloalto.org/CommercialPrograms

**Hospitality Program**
Rebates and assistance are offered to hotels through the third-party administrator Synergy on a variety of efficiency measure installation, including lighting, HVAC tune-ups, exit signs and combination occupancy sensors and system operating controls for lighting, air conditioning and plug loads that reduce power use when rooms are unoccupied. www.cityofpaloalto.org/CommercialPrograms

**Laboratory (Lab) Efficiency**
This program, implemented by third-party administrator Willdan Energy Solutions, targets research facilities and labs to provide assistance with reviewing systems and their operating specifications for potential savings opportunities, as well as implementing the recommended retrofits.
www.cityofpaloalto.org/CommercialPrograms

**New Construction Assistance**
Architects and businesses are trained in how to achieve efficiency savings in Palo Alto. Businesses going through the permitting process get assistance from the contractor BASE Energy with making upgrades to their systems and obtaining rebates for energy savings. www.cityofpaloalto.org/CommercialPrograms

**Palo Alto Clean Local Energy Accessible Now (CLEAN) Program**
Palo Alto CLEAN is a feed-in tariff program for local solar installations to sell solar generated electricity directly to CPAU at a fixed price for a 20-year contract term.
http://www.cityofpaloalto.org/gov/depts/utl/business/sustainability/clean.asp

**Right Lights+ Program**
Through this program provided by the third-party administrator, Ecology Action, small businesses receive extra assistance in implementing efficient equipment. Small business customers can request onsite audits and efficiency rebates on a variety of lighting, sensors and commercial kitchen upgrades, in addition to door gaskets, LED exit signs, vending machine controls, strip curtains for coolers and freezers, as well as customized projects. www.rightlights.org

**Commercial Zero Interest Loan Program**
This program provided businesses with no-interest loans to install electric energy efficient equipment. Loans can be up to 5 years in length and for between $5,000 and $50,000. The program was offered in partnership with QUEST, but beginning September 1, 2013, the program was handled by CPAU staff. This program was active between FY 2011 and FY 2014, and expired in June 2014. The program processed a total of eight loans and $175,000, with four outstanding loans remaining.

**ALL CUSTOMERS**

**Green Building Program**
The Green Building Program places requirements on getting a building permit issued based on a project's scope of work. The program mandates that all new construction achieve 15% energy savings beyond that required by the State's energy code, and provides financial incentives to achieve additional savings for projects that exceed those minimum requirements.

The program requires all *non-residential* renovation costing more than $100,000 to obtain an ENERGY STAR® Portfolio Manager Rating from the U.S. Environmental Protection Agency (EPA), allowing an owner or property manager to track future energy and water consumption of the building project. The applicant inputs utility data and receives an energy score on a scale of 1 to 100, relative to similar buildings nationwide.

The program requires all *residential* renovations with a cost of more than $100,000 to obtain a California Whole-House Home Energy Rating (HERS II) developed by the California Energy Commission. This rating provides on-site evaluation of the energy performance of the home and offers analysis of the cost-effectiveness of potential energy efficiency improvement projects. Both residential and commercial utilities customers who exceed Green Building Program requirements when going through the permit process for new construction are eligible to receive incentive payments. The Planning and Utilities Departments coordinate the customer application and payment processes. www.cityofpaloalto.org/GreenBuilding

Note: New California Title 24 energy efficient building standards went into effect, July 2014. Due to changes in the standards, the residential CPAU Green Building Program rebates will no longer be cost-effective and, in conjunction with the Development Services Department, the program will shift to an architect/ developer/builder "best practices" building education focus. The commercial Green Building Program will also focus on education while maintain rebates for construction exceeding current building energy efficiency standards by five percent.

**PaloAltoGreen**
This highly successful program enabled residents and businesses that were willing to pay a small premium for 100% renewable energy. In June 2014, Council terminated PaloAlto**Green** for residential customers since the City's electric supplies are 100% carbon neutral. Commercial customers can still participate in this program by enrolling in the PaloAlto**Green** 100% option or by purchasing blocks in 1,000 kWh increments. http://www.cityofpaloalto.org/pagbiz

**PV Partners**

This program provides rebates to businesses and residents who install solar photovoltaic (PV) systems and then "net meter" their usage. www.cityofpaloalto.org/PVPartners

**Solar Water Heating**

CPAU contracts with the California Center for Sustainable Energy to offer incentives to businesses and residents installing solar water heating for domestic use. Solar water heating systems for pools, spas, or space heat are not eligible. www.cityofpaloalto.org/SWH

# APPENDIX B: FY 2013 Achievements by DSM Program

Table B.1 and Table B.2 summarize the FY 2014 achievements for CPAU's incentive programs.

**Table B.1: FY 2013 Achievements by Efficiency Program**

| Program | No. of applications | Electric savings (gross) kWh/yr | % | Gas savings Therms/yr | % | Water savings CCF/yr | % |
|---|---|---|---|---|---|---|---|
| RES- Smart Energy | 789 | 116,573 | 1.1% | 11,590 | 3.5% | - | - |
| RES- REAP (low income) | 104 | 176,471 | 1.7% | 6,163 | 1.8% | - | - |
| RES- SCVWD Water programs | 718 | - | - | | | 12,951 | 40% |
| RES- Home Energy Report | - | 1,789,926 | 17.4% | 169,788 | 50.8% | - | - |
| RES- Home Water Report | - | - | - | - | - | 16,117 | 50% |
| RES- New Construction | 69 | 28,169 | 0.3% | 10,238 | 3.1% | - | - |
| RES- Refrigerator Recycling | 109 | 67,144 | 0.7% | - | - | | |
| COM- Business New Construction | 6 | 704,170 | 6.8% | 40,947 | 12.2% | - | - |
| COM- Commercial Advantage | 36 | 3,492,731 | 34% | 3,767 | 1.1 | - | - |
| COM- Right Lights+ | 51 | 2,280,162 | 22.2% | - | - | - | - |
| COM- Enovity Large Business | 5 | 170,098 | 1.7% | 24,920 | 7.5% | - | - |
| COM- Willdan Labs Efficiency | 2 | 477,777 | 4.6% | 2,918 | 0.9% | - | - |
| COM- Keep Your Cool | 3 | 240,296 | 2.3% | | | - | - |
| COM- Hospitality Program | 49 | 121,943 | 1.2% | 63,600 | 19% | - | - |
| COM- SCVWD Water Program | 92 | 386 | - | 375 | 0.1% | 3,257 | 10% |
| GEN- T&D Upgrades | - | 604,028 | 5.9% | - | - | - | |
| Efficiency total | | 10,269,883 | 100% | 337,079 | 100% | 32,325 | 100% |

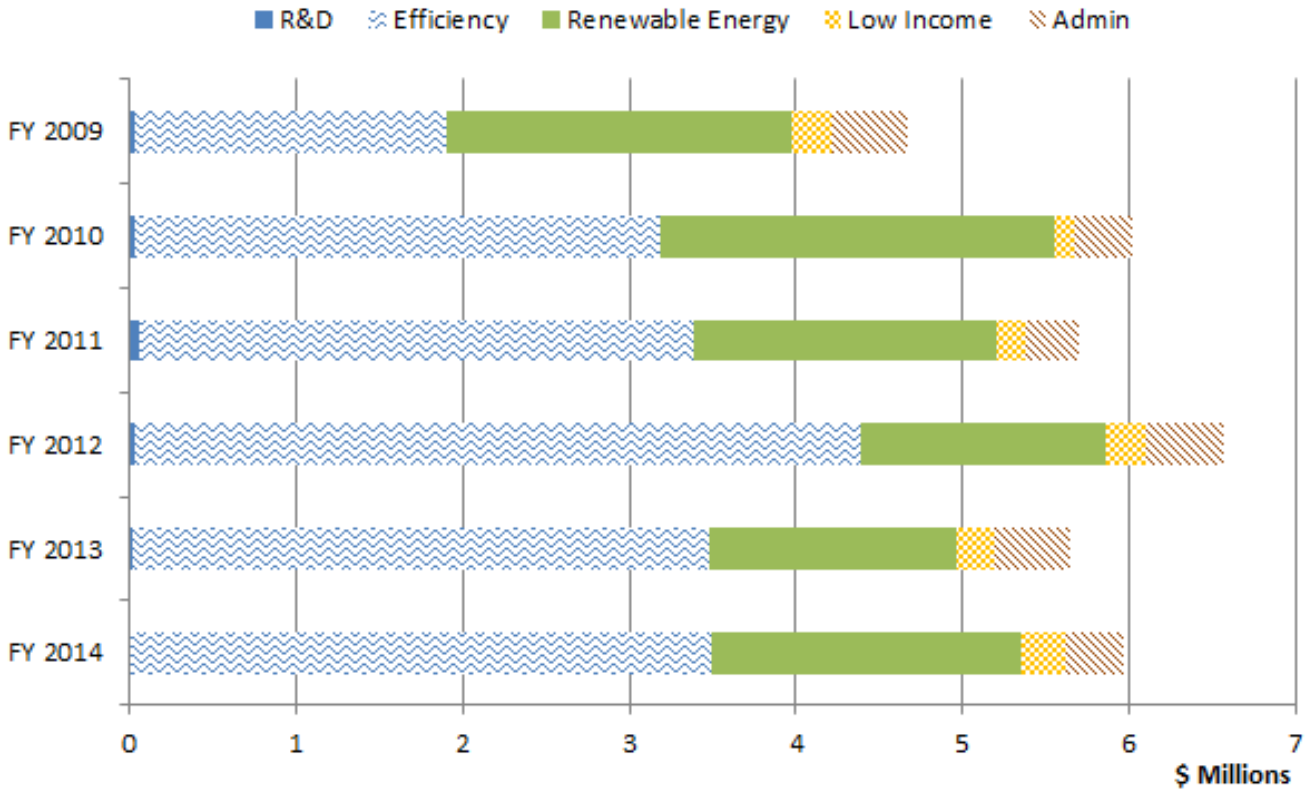
**Table B.2: FY 2014 Achievements by Customer Renewable Program**

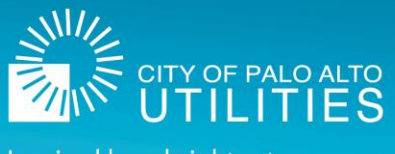
| Program | Installations | kW | kWh/yr | % | Therms/yr | % |
|---|---|---|---|---|---|---|
| RES- PV Partners | 104 | 498 | 846,600 | 27% | - | - |
| COM- PV Partners | 7 | 1,357 | 2,306,900 | 73% | - | - |
| Single Family- Solar Water Heating | 0 | - | - | - | - | - |
| Multi-Family - Solar Water Heating | 1 | - | - | - | 2,776 | 100% |
| Efficiency total | 48 | 1,855 | 3,153,500 | 100% | 1,567 | 100% |

# APPENDIX C: HISTORICAL DSM PROGRAM EXPENDITURES

The chart shows expenditures by type of DSM program (efficiency, low-income research, renewable, etc.) from FY 2009 through FY 2014.

**Figure C.1 DSM Expenditures for Electricity, Gas, and Water by Year and by Function**






# APPENDIX D: FY 2014 SMART ENERGY RESIDENTIAL PROGRAM RESULTS

| Measures | Number of Measures Installed | Total Rebate | kWh/yr Saved (gross) | Therms/yr Saved |
|---|---|---|---|---|
| Air Source Heat Pump | 3 | $600 | 2,223 | 0 |
| Attic Insulation R-30 | 14 | $2,100 | 1,912 | 1780 |
| Attic Insulation R-38 | 11 | $2,200 | 1,582 | 1464 |
| Boiler | 2 | $400 | 0 | 400 |
| Central Air Conditioner | 1 | $300 | 122 | 0 |
| Clothes Washer – CEE Tier 3 | 288 | $ 35,775 | 48,384 | 2,736 |
| Electric Heat Pump Water Heater | 1 | $200 | 2,683 | 0 |
| Flat Roof Insulation – R-19 | 4 | $600 | 320 | 356 |
| Gas Furnace | 29 | $5,800 | 0 | 1,276 |
| Gas Tankless Water Heater (0.82 EF or greater | 3 | $500 | 0 | 141 |
| Gas Tankless Water Heater (0.90 EF or greater) | 1 | $200 | 0 | 141 |
| LED Light Bulb Switch 40 WE | 186 | $1,023 | 3,534 | 0 |
| LED Light Bulb Switch 60WE | 1201 | $7,806 | 33,628 | 0 |
| Refrigerator | 97 | $7,250 | 13,025 | 0 |
| Smart Power Strip | 3 | $30 | 72 | 0 |
| Solar Attic Fan | 3 | $75 | 255 | 0 |
| Variable Speed Pool Pump | 9 | $1,600 | 6,703 | 0 |
| Wall Insulation | 21 | $4,200 | 2,130 | 2,896 |
| Water Heater-Gas (EF≥0.9) | 2 | $400 | 0 | 152 |
| Water Heater-Gas Tier 1 | | $320 | 0 | 92 |
| Water Heater-Gas Tier 2 | 3 | $450 | 0 | 156 |
| **Total** | | **$71,829** | **116,573** | **11,590** |

# APPENDIX E: FY 2014 LOW INCOME RESIDENTIAL ASSISTANCE PROGRAM (REAP) RESULTS

| Measures | Number of Measures Installed | Dollars Spent | kWh/yr Saved (gross) | Therms/yr Saved |
|---|---|---|---|---|
| Attic Access Install | 1,171 | $1,159 | 0 | 0 |
| Attic Access Weather-stripping | 22 lin. ft. | $378 | 42 | 22 |
| Attic Insulation | 7123 sq. ft. | $26,588 | 3,049 | 3,352 |
| Caulking SFR Windows etc. | 35 lin. ft. | $2,077 | 66 | 35 |
| CFL Replacement | 480 | $4,800 | 24,000 | 0 |
| CFL Vanity | 17 | $1,097 | 0 | 0 |
| Door Replacement | 1 | $100 | 3 | 4 |
| Door Weather-stripping | 122 | $7,576 | 366 | 488 |
| Duct Test & Seal | 16 | $10,350 | 2,000 | 384 |
| Education | 60 | $4,500 | 0 | 0 |
| Faucet Aerator | 83 | $490 | 0 | 311 |
| Furnace Tune-up | 4 | $519 | 256 | 0 |
| Furnace Replacement | 13 | $51,955 | 0 | 1,365 |
| Hardwire Interior Light | 173 | $11,554 | 19,376 | 0 |
| Hardwire Porch Light | 50 | $3,228 | 10,900 | 0 |
| Hourly Rate Add. Work | 82 | $5,972 | 0 | 0 |
| Low Flow Showerhead | 53 | $1,821 | 0 | 376 |
| NGAT Testing | 27 | $2,295 | 0 | 0 |
| Occupancy Sensor | 6 | $234 | 864 | 0 |
| Outlet Gasket | 483 | $956 | 48 | 48 |
| Programmable Thermostat | 6 | $440 | 0 | 456 |
| R40 18W CFL | 107 | $1,366 | 4,162 | 0 |
| Refrigerator Recycling | 10 | $825 | 6,611 | 0 |
| Refrigerator Replacement | 13 | $9,969 | 1,685 | 0 |
| Repair Furnace, Water Htr, Fridge | 4 | $2,739 | 120 | 48 |
| Repair Minor Wall | 21 | $2,044 | 0 | 0 |
| T8 De-lamp Conversion | 199 | $9,413 | 109,808 | 0 |
| Torchiere Replacement | 12 | $1,140 | 2,376 | 0 |
| Water Heater Blanket | 11 | $454 | 0 | 605 |
| Water Heater Replacement | 1 | $1,800 | 0 | 52 |
| REAP Multifamily Insulation | 1 | $45,601 | 1,794 | 920 |
| **TOTALS** | **N/A** | **$213,440** | **187,526** | **8,466** |

# APPENDIX F: ELECTRIC DSM REPORT TO CEC

The information below will be included with a California Municipal Utilities Association (CMUA) report to the California Energy Commission (CEC). The report, required by state law, shows the success of CPAU's efficiency programs in reducing *electric* consumption; this report does not include natural gas or water programs. Efficiency programs are the highest priority resource used by the electric utility. The programs are also required to be cost-effective, which (by State definitions) means that the programs must achieve a Total Resource Cost (TRC) score of at least 1.0. Table F.1 shows an overall TRC of 1.54. Note that these savings do not capture the gas and water savings that the EE programs also produced (e.g. saved hot water from replacement of clothes washers and dishwashers).

**Table F.1: CEC Required Submission on Electric Energy Efficiency Results**

| Palo Alto | | Resource Savings Summary | | | | | | | Cost Summary | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Program Sector (Used in CEC Report) | Category | Units Installed | Net Demand Savings (kW) | Net Peak kW Savings | Gross Annual kWh 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 ($) |
| Appliances | Res Clothes Washers | 288 | | | 48,384 | 38,707 | 464,486 | | $7,154 | $3,009 | $10,163 |
| HVAC | Res Cooling | 55 | | | 28,546 | 28,459 | 567,135 | | $109,539 | $8,911 | $118,450 |
| Appliances | Res Dishwashers | | | | | | | | | | |
| Consumer Electronic | Res Electronics | | | | | | | | | | |
| HVAC | Res Heating | 3 | | | 2,223 | 1,556 | 15,561 | | $600 | $120 | $720 |
| Lighting | Res Lighting | 2,258 | 37 | 36 | 197,059 | 156,297 | 1,605,999 | | $37,744 | $29,622 | $67,366 |
| Pool Pump | Res Pool Pump | 9 | | | 6,703 | 4,692 | 46,921 | | $1,600 | $362 | $1,962 |
| Refrigeration | Res Refrigeration | 222 | 13 | 13 | 86,177 | 68,236 | 436,391 | | $17,941 | $16,817 | $34,758 |
| HVAC | Res Shell | 1,705 | 13 | 13 | 16,539 | 12,087 | 188,632 | | $34,580 | $6,328 | $40,908 |
| Water Heating | Res Water Heating | 1 | | | 2,683 | 2,281 | 27,367 | | $200 | $136 | $336 |
| Comprehensive | Res Comprehensive | 25,864 | | | 1,789,969 | 1,789,960 | 1,790,194 | | $172 | $62,787 | $62,959 |
| Process | Non-Res Cooking | | | | | | | | | | |
| HVAC | Non-Res Cooling | 85 | 11 | 11 | 124,395 | 102,741 | 1,594,800 | | $23,273 | $61,545 | $84,818 |
| HVAC | Non-Res Heating | | | | | | | | | | |
| Lighting | Non-Res Lighting | 803 | 455 | 453 | 2,737,962 | 2,165,885 | 31,344,822 | | $268,123 | $466,199 | $734,321 |
| Process | Non-Res Motors | | | | | | | | | | |
| Process | Non-Res Pumps | 1 | | | 52,100 | 44,285 | 487,135 | | $6,513 | $10,875 | $17,387 |
| Refrigeration | Non-Res Refrigeration | 703 | 6 | 6 | 246,584 | 197,080 | 2,721,915 | | $50,319 | $19,644 | $69,963 |
| HVAC | Non-Res Shell | 319 | 67 | 67 | 121,943 | 85,360 | 1,707,202 | | $69,818 | $28,769 | $98,587 |
| Process | Non Res Process | 4 | | | 386 | 178 | 2,132 | | $800 | $15 | $815 |
| Water Heating | Non-Res Water Heating | | | | | | | | | | |
| Comprehensive | Non Res Comprehensive | 3,955,674 | | | 4,204,202 | 3,520,257 | 32,954,051 | | $416,316 | $712,342 | $1,128,658 |
| Other | Other | | | | | | | | | | |
| SubTotal | | 3,987,994 | 603 | 599 | 9,665,856 | 8,218,060 | 75,954,743 | | $1,044,691 | $1,427,481 | $2,472,173 |
| T&D | T&D | 1,806 | 147 | 147 | 604,028 | 604,028 | 12,080,568 | | | $71,520 | $71,520 |
| Total | | 3,989,800 | 750 | 746 | 10,269,885 | 8,822,088 | 88,035,311 | | $1,044,691 | $1,499,001 | $2,543,693 |

| EE Program Portfolio TRC Test | **1.54** |
|---|---|

*Excluding T&D*

# APPENDIX G: EXAMPLES OF CUSTOMER OUTREACH EVENTS

## Go Solar

# Water Conservation

# Greenlight Fashion and Film Festival – Earth Day 2014



# APPENDIX H: CITY AND STATE MANDATES AND PLANS THAT IMPACT DSM PROGRAM GOALS AND IMPLEMENTATION

## CITY MANDATES

| Title | Description |
|---|---|
| Staff Report 4608 | Local Solar Plan (April 2014) |
| Staff Report 3706 | Program for Emerging Technology (April 2013) |
| Staff Report 3550 | Carbon Neutral Plan for Electric Supply (March 2013) |
| Staff Report 3358 | Update of Ten-Year Energy Efficiency Goals for 2014 to 2023 (December 2012) |
| Staff Report 2710 | LEAP, the Long-term Electric Acquisition Plan (April 2012) |
| Staff Report 2552 | GULP, the Gas Utility Long-term Plan (April 2012) |
| Staff Report 1688 | 2010 Urban Water Management Plan (June 2011) |
| Staff Report 1538 | Approval of new and expanded efficiency programs for FY 2011-13 (May 2011) |
| CMR 211:07 | Climate Protection Plan (2007) |

## STATE MANDATES

**SB 73 (2013)** The California Clean Energy Jobs Act, an initiative approved by the voters as Proposition 39 at the November 2012 statewide general election, establishes a Job Creation Fund with an annual budget of $550M to create clean energy jobs, including funding energy efficiency projects and renewable energy installations in public schools, universities, and other public facilities. The Job Creation Fund will be funded for four years, beginning in the 2013-2014 fiscal year.

**AB 758 (2009)** Requires the California Energy Commission, in collaboration with the California Public Utilities Commission and stakeholders, to develop a comprehensive program to achieve greater energy savings in the state's existing buildings.

**SBx7-7 (2009)** The Water Conservation Bill of 2009 requires water suppliers to reduce the statewide average per capita daily water consumption by 20% by December 31, 2020. To monitor the progress toward achieving the 20% by 2020 target, the bill also requires urban retail water providers to reduce per capita water consumption 10% by the year 2015.

**AB 1103 (2007)** Requires electric and gas utilities maintain records of the energy consumption data of all nonresidential buildings to which they provide service and that by January 1, 2009, upon authorization of a nonresidential building owner or operator, an electric or gas utility shall upload all of the energy consumption data for the specified building to the EPA Energy Star Portfolio Manager in a manner that preserves the confidentiality of the customer. This statute further requires a nonresidential building owner or operator disclose Energy Star Portfolio Manager benchmarking data and ratings, for the most recent 12-month

period, to a prospective buyer, lessee, or lender. Enforcement of the latter requirement began on January 1, 2014.

**AB 1470 (2007)** Solar Water Heating and Efficiency Act of 2007. Requires the governing body of each publicly owned utility providing gas service to retail end-use gas customers, to adopt, implement, and finance a solar water heating system incentive program.

**SB 1 (2006)** The California State Legislature enacted SB 1 to encourage the installation of 3,000 megawatts (MW) of photovoltaic (PV) solar energy by the year 2017. SB 1 requires all publicly owned utilities to adopt, finance and implement a solar initiative program for the purpose of investing in and encourage the increased installation of residential and commercial solar energy systems. CPAU's share of the state goal is 6.5 MW. In 2007, CPAU increased the PV Partners program funding to meet SB1 requirements

**AB 2021 (2006)** Requires the CEC on or before November 1, 2007, and every 3 years thereafter, in consultation with the commission and local publicly owned electric utilities, to develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish statewide annual targets for energy efficiency savings and demand reduction over 10 years.

**AB 1881 (2006)** Requires cities and counties to implement a Water Efficient Landscape Ordinance which is "at least as effective as" the Department of Water Resources (DWR) Model Ordinance in reducing landscape water use. Requirements include enforcing water budgets, planting and irrigation system specifications to meet efficiency criteria.

**SB 1037 (2005)** Requires each local publicly owned electric utility, in procuring energy, to first acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible. Also requires each local publicly owned electric utility to report annually to its customers and to the (CEC) its investment on energy efficiency and demand reduction programs.

**AB 1890 (1996)** Requires electric utilities to fund low-income ratepayer assistance programs, public purpose programs for public goods research, development and demonstration, demand-side management and renewable electric generation technologies

**AB 797 (1983)** The Urban Water Management Planning Act (AB 797) requires all California urban water retailers supplying more than 3,000 acre feet per year or providing water to more than 3,000 customers to develop an Urban Water Management Plan (UWMP). The plan is required to be updated every five years and submitted to the Department of Water Resources before December 31 on years ending in 5 and 0.