

## DOCKETED

<b>Docket Number:</b>	15-IEPR-03
<b>Project Title:</b>	Electricity and Natural Gas Demand Forecast
<b>TN #:</b>	204828-4
<b>Document Title:</b>	Silicon Valley Power's Status Report 2015
<b>Description:</b>	N/A
<b>Filer:</b>	Patty Paul
<b>Organization:</b>	Silicon Valley Power
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	6/2/2015 8:45:36 AM
<b>Docketed Date:</b>	6/1/2015

Meeting Date: 5-12-15

# AGENDA REPORT

City of Santa Clara, California

Agenda Item # 6A-10



**Date:** April 28, 2015  
**To:** City Manager for Council Action  
**From:** John C. Roukema, Director of Electric Utility  
**Subject:** Approval of Results for the Silicon Valley Power Public Benefit Program through Fiscal Year 2013-2014

## **EXECUTIVE SUMMARY:**

The City of Santa Clara and its municipal electric utility, Silicon Valley Power (SVP), are required by state law to provide an annual report on energy efficiency investments, programs, expenditures, cost-effectiveness, and results to customers and to the California Energy Commission (CEC), as well as an annual report to the CEC on efficiency investment funding, cost-effectiveness methodologies, and an independent evaluation of our Public Benefit programs. This report complies with Section 6 of Senate Bill 1037, which requires each publicly-owned utility to:

“Report annually to its customers and to the State Energy Resources Conservation and Development Commission, its investment in energy efficiency and demand reduction programs. A report shall contain a description of programs, expenditures, and expected and actual energy savings results.”

Per the additional requirements of AB 2021 which requires an annual report to customers and the CEC on energy efficiency investments, programs, expenditures, cost-effectiveness, and results and the requirements of SB1 regarding solar program reporting, enclosed is the report to Council and customers on the actual success of programs toward meeting energy efficiency and solar electric goals.

In FY 10-11, SVP saw a significant increase in program involvement by data centers and exceeded its energy efficiency target for FY 10-11 due to these projects. This has left fewer data centers in need of implementing significant energy efficiency measures over the past three years. In addition, large projects such as these can take customers multiple years to budget, plan and implement, thereby resulting in “lumpy” energy savings for utilities. While the number of customers participating in SVP’s energy efficiency programs has not declined significantly, the energy savings from the individual energy efficiency measures is not as large over the past three years, resulting in Silicon Valley Power falling short of its energy efficiency goals for FY 13-14 (the FY 13-14 goal was 24,076,000 kWh savings, actual savings achieved for the period was 12,274,647 kWh). Staff is continuing to place emphasis on implementing energy efficiency measures with customers and has implemented several direct install energy efficiency programs at little or no cost to customers to increase participation among small and mid-size business customers. In addition, staff is working with industry groups to determine appropriate emerging technologies for future program development. While the annual goal was not met in FY 13-14, it is a part of a larger ten-year goal and SVP is currently still on track to meet the overall ten-year goal.

## **ADVANTAGES AND DISADVANTAGES OF ISSUE:**

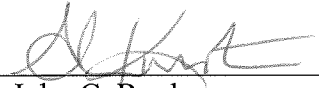
This report provides useful program information on the effectiveness of Public Benefit programs in Santa Clara. Failure to provide this information in an annual report would be a violation of state law.

**ECONOMIC/FISCAL IMPACT:**


Submitting this annual report on the Public Benefit Programs has no fiscal impact.

**RECOMMENDATION:**

That Council approve the results for the Silicon Valley Power Public Benefit Program on its investment in energy efficiency and demand reduction programs through Fiscal Year 2013-2014, and authorize the reporting of this information to customers and others.

  
\_\_\_\_\_  
John C. Roukema  
Director of Electric Utility

APPROVED:

  
\_\_\_\_\_  
Julio J. Fuentes  
City Manager

***Documents Related to this Report:***

- 1) ***City of Santa Clara/Silicon Valley Power Public Benefit Program Energy Efficiency and Renewable Results for Fiscal year 2013-2014***

# **City of Santa Clara Silicon Valley Power Public Benefit Program**

## **Energy Efficiency and Renewable Results for Fiscal Year 2013-2014**



*Giving You the Power  
to Change the World*

March 2015

## **PUBLIC BENEFIT PROGRAMS**

### **PURPOSE 1**

<b>INTRODUCTION TO THE REPORT</b>	<b>1</b>
Energy Efficiency, Renewable Energy, and other PBC Programs	1
<b>GOALS OF THE PUBLIC BENEFIT PROGRAMS</b>	<b>1</b>
Qualitative Goals and Objectives of the Public Benefit Program	1
Quantitative Energy Efficiency Goals & Objectives of the Public Benefit Programs	2
Solar Electric Systems Installed in Santa Clara	3
Overall Spending by Category for SVP Public Benefit Programs	4
Spending on Programs for FY 13/14	4
<b>DETAILED PROGRAM INFORMATION</b>	<b>5</b>
SVP Energy Saved: Actual	8
Actual Savings FYI 13/14	8
SVP Program Specific Measurement & Verification Methodologies	9
<b>BACKGROUND OF THE PUBLIC BENEFIT PROGRAMS</b>	<b>10</b>
<b>PUBLIC BENEFIT PROGRAM ADMINISTRATION</b>	<b>12</b>
<b>MEASUREMENT AND VERIFICATION OF PUBLIC BENEFITS PROGRAMS</b>	<b>12</b>

# **City of Santa Clara**

## **Silicon Valley Power**

### **Public Benefit Program**

#### **Results for Fiscal Year 2013-2014**

#### **Purpose**

This is an annual and historical reporting of energy savings from the efficiency programs, solar electric installations, and other Public Benefit (PBC) Programs implemented by the City of Santa Clara's municipal electric utility, Silicon Valley Power (SVP). This report has been developed every year since the inception of Assembly Bill 1890 (AB1890) and the Public Benefit Programs. In addition, the report summarizes achievements toward reaching energy efficiency goals, as required by AB 2021 and SB 1037, and solar electric installations, as required by SB 1. It includes the following items:

- Goals and Objectives
- Energy Savings Goals and Achievements from Energy Efficiency Programs
- Solar Installations
- PBC Revenues and Expenditures
- Demand Response Goals and Achievements
- Detailed Program Descriptions

#### **Introduction to the Report**

##### **Energy Efficiency, Renewable Energy, and Other PBC Programs**

California Assembly Bill 2021, signed into law in September 2006, expanded upon several of the energy efficiency policies adopted since 1996 and continuing with the passage of Senate Bill 1037 in 2005. This report complies with the requirements of AB 2021, SB 1 and SB 1037 to report to the Council and customers on the effectiveness of energy efficiency and solar electric programs toward meeting goals.

On behalf of its members, the Northern California Power Agency (NCPA) contracted with Summit Blue Consulting LLC to update appropriate energy efficiency goals. Summit Blue developed a process to identify all technically possible energy efficiency measures and results in the City for the next 10 years, all cost-effective measures, and all feasible measures. The City Council adopted these feasible measures and energy efficiency results as City goals on March 09, 2010. In 2012, NCPA contracted with Navigant Consulting, Inc. to update these goals, as required, and on November 27, 2012, the City Council adopted the updated goals.

#### **Goals of the Public Benefit Programs**

As adopted by City Council, the goals of the PBC programs are as follows:

##### **Qualitative Goals & Objectives of the Public Benefit Programs**

1. Implement cost-effective energy efficiency programs to lower energy use. The cost to implement energy efficiency programs should be lower than the capital cost to build new

generation and benefits of the total programs should exceed costs under the Total Resource Cost (TRC) test under the methodology reviewed and approved by the Northern California Power Agency (NCPA) Public Benefits Committee, of which Silicon Valley Power's PBC program manager is a member.

2. Provide the PBC programs in a manner that creates value to the community and meets all applicable legal requirements.
3. Assist Divisions and City Departments in achieving optimal energy efficiency at City facilities by paying a portion of costs to reduce energy use through rebates and assist in implementing new energy related technologies for the benefit of the City and community.
4. Implement programs to support renewable power generation that increase resource diversity and minimize adverse environmental impacts from electric generation and operation of the electric system.
5. Support emerging technologies to speed up market acceptance, allowing energy efficiency services and products to compete in the open market.
6. Assist low-income residents in helping them to pay their electric bills and in installing energy efficient appliances and other measures.
7. Determine the best energy programs to offer Santa Clara customers by collecting input from community organizations, businesses and other City departments.

#### **Quantitative Energy Efficiency Goals & Objectives of the Public Benefit Programs**

<b>First Year Megawatt Hour Reductions</b>		<b>By Class</b>	
<b>Year</b>	<b>Total Utility</b>	<b>Residential</b>	<b>Commercial &amp; Industrial</b>
<b>Historical Net</b>			
2007-2008	24,509	1,237	23,272
2008-2009	39,627	1,031	38,596
2009-2010	30,593	857	29,736
2010-2011	24,576	292	24,284
2011-2012	19,225	110	19,115
2012-2013	13,058	306	12,752
2013-2014	12,275	143	12,132
<b>Budget Target</b>			
2014-2015 Expected	24,387	430	23,957
2014-2015 Budgeted	24,387	430	23,957

### **Solar Electric Systems Installed in Santa Clara**

Under SB1, Santa Clara is required to install 30 MW of solar electric systems by 2017. Total installations are shown below.

<b>Systems</b>	<b>FY</b>	<b># Net*</b>	<b>kW</b>
Residential	1999-2000	1	1.73
	2000-2001	9	29.5
	2001-2002	2	8.94
	2002-2003	1	4.01
	2005-2006	7	21.15
	2006-2007	3	12.11
	2007-2008	6	19.5
	2008-2009	16	56.88
	2009-2010	56	205.11
	2010-2011	38	142
	2011-2012	49	185
	2012-2013	54	174
	2013-2014	39	159
Commercial	2000-2001	1	1.61
	2005-2006	1	30
	2006-2007	2	100.4
	2007-2008	2	134.97
	2008-2009	2	58.42
	2009-2010	8	1089.49
	2010-2011	3	985
	2011-2012	9	2136
	2012-2013	8	4184
	2013-2014	5	198
Habitat	2003-2004	3	6.9
	2008-2009	6	15
NSP	2003-2004	1	4.9
	2006-2007	1	7.9
	2010-2011	1	11.5
	2013-2014	3	48
Totals		337	10031.02

\* 3 residential systems have moved out of Santa Clara  
SB1



### **Overall Spending by Category for SVP Public Benefit Programs**

Santa Clara has expended about \$90.1 million for public benefit programs through June 2014 (excluding funds from other utility funding sources) and has budgeted approximately \$9.3 million in fiscal year 2014 to 2015, for a total cumulative commitment of approximately \$103 million in the past seventeen years.

Low-income customers have received almost 1% of PBC funds since July 1, 1997. However, the Rate Assistance Program discount is paid for through a reduction in electric revenue for these customers. PBC funds cover the cost of marketing and administering the program. The most heavily pursued programs fund energy efficiency measures, and the measures have used about 80% of expenditures. In the area of renewable energy, SVP has supported solar photovoltaic systems and geothermal incremental capital increases since July 1, 1997. These renewable programs were about 10% of the total program expenditures. Additional utility funds for renewable projects are provided outside the Public Benefits Programs due to the high demand for photovoltaic systems in the past four years. Finally, new technology programs, primarily the hybrid bus program (*The Breathe Easy Express*), took about 7% of the total program expenditures.

### **Spending on programs for FY 13/14**

<b>Revenue</b>	\$8,766,389.61
<b>Expenditures</b>	\$5,444,215.21
<b>Residential</b>	
Low Income Energy Efficiency Programs	\$28,258.90
Fans	\$4,845.25
Refrigerator	\$44,978.08
Attic Insulation	\$1,401.92
Electric Heat Pump Water Heater	\$2,000.00
Residential Lighting	\$26,361.69
Clothes Dryer	\$4,375.00
General (salaries, energy audits, marketing, website, etc)	\$386,458.25
<b>Commercial</b>	
General (salaries, energy audits, marketing, website, etc)	\$480,635.46
Small Business Program	\$251,798.76
Lighting	\$1,048,277.44
C&I Audits	\$1,510.86
HVAC & Motors	\$43,432.15
Washing Machine	\$400.00
Customer Directed Rebate	\$1,156,419.85
Commercial IT	\$40,500.00

<b>Renewable</b>	
Residential PV	\$56,236.32
Commercial PV	\$1,671,940.89
Green Power Program	\$30,195.61
Neighborhood Solar Program	\$17,793.95
<b>Low Income</b>	
Rate Assistance Program (excludes discount on utility bill)	\$45,390.60
<b>R&amp;D</b>	
R&D	\$21,935.27
<b>Measurement &amp; Verification and Regulatory Compliance</b>	
Third Party EM&V	\$14,800.00
Project M&V	\$70,280.93
Regulatory Compliance	\$8,701.59
City Energy Efficiency Loan Program Repayment	(\$14,713.56)
<b>Total Expenditures*:</b>	<b>\$5,444,215.21</b>

\*Does not include other utility funds spent on PV rebates and low income rate discount

## Detailed Program Information

Santa Clara's municipal electric utility (dba Silicon Valley Power) is an enterprise of the City of Santa Clara, and was established in 1896. On a not-for-profit basis, Silicon Valley Power owns power generation facilities, has investments in joint ventures that produce electric power, and trades power on the open market. These efforts are directed toward ensuring its retail customers—the citizens, organizations and business of the City of Santa Clara—a highly reliable source of electric power at low, stable rates.

At the end of 2014, the utility had 23,273 meters with a peak demand of 482.4 megawatts. 84% of these customers were residential, but only 8.1% of power sales were to residents. Over 88% of sales went to 1,735 industrial customers (as defined by rate schedule).

Santa Clara customers enjoyed over 1.5 times the amount of renewable energy in their mix during 2013 than those receiving the state's average power mixture during 2012. SVP's 2013 power mix consisted of 24.2% percent eligible renewable resources, compared to 15.4 % statewide and, when large hydroelectric resources are included, SVP's power mix consisted of 41.9% carbon free, as compared to 23.7% for the statewide mix.

SVP's Public Benefit Programs are separated into residential and business programs, with the majority of funding toward the business sector. This is due to the fact that the programs are required by City Council policy to be spent in the customer class from which the funding is received.

This results in program funding less than 10% from the residential class. Total PBC funds are about \$8.7 million per year. Residential programs include rate assistance for low-income customers, energy efficiency rebates (refrigerators, ceiling fans, electric hot water heat pumps, electric clothes dryers, and lighting), solar electric rebates, energy audits, and programs for schools and libraries. Business programs include energy audits, installation management for small companies, rebates for a wide variety of equipment (lighting, air conditioning systems, chillers, programmable thermostats, washing machines, variable frequency drives, new construction, photovoltaic systems and customized installations), and design and construction assistance. Over 345.9 million kilowatt hours in first year savings (gross, not net) alone have been achieved since 1998.

Due to the fact that the vast majority of SVP's energy efficiency programs come from its large commercial and industrial customers, the greatest percentage of savings from programs that are calculated based on actual metered pre- and post-savings. These large, unique projects also result in "lumpy" savings levels, depending on the projects being completed at customer sites and their implementation budgets. PBC funds that were collected but not spent are collected in a special fund for spending on programs in future years.

In an analysis of programs for fiscal year 2013-2014, the total programs were found to be cost effective. The total resource cost test found that the program package had a benefit cost ratio of 1.84. Programs are developed in consultation with customer groups, especially the largest customers. The City Council approves the programs, as well as goals and objectives. An annual report is made to the City Council on the previous year's fiscal data. Once the City Council has approved the report, it is placed on the utility's website for any interested customers. The goals and objectives of the programs, as well as specific financial and energy saving data are listed in detail in the following pages.

## Program Summaries

### **All Programs for FY 2013 to 2014**

#### **Current Commercial Customer Programs:**

- **Business Audits:** Free energy efficiency audits to business customers.
- **Rebates:** A comprehensive portfolio of energy efficiency rebates (for purchase and installation of energy efficient lighting, air conditioners, motion sensors, programmable thermostats, new construction, and customized energy-efficiency installations).
- **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.
- **Business Energy Information:** Management information on energy usage through 15-minute interval meters, Itron's 'EEM Suite' software, training, and other sources.
- **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.
- **Energy Innovation Program:** 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.

- LEED Rebate for Energy Efficient Building Design: If your building meets LEED criteria and exceeds Title 24 energy requirements by at least 10 percent, you can get a rebate of up to \$37,600.
- 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 that started at \$3.00 per output watt up to a total of \$300,000 per customer for systems up to 100 kW. (Current rebate level at the time of this report is \$0.90 per watt.) Businesses installing systems between 100kW and 1 MW are eligible for a Performance Based Incentive starting at \$0.40 per kWh. Current rebate level at the time of this report is \$0.12 per kWh.) Businesses are required to complete an energy audit in order to receive a rebate, as is the case with the statewide California Solar Initiative.

### **Current Residential Customer Programs:**

- 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 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.
- Residential Appliance Rebates: Rebates encourage residents to purchase and install ENERGY STAR® labeled refrigerators.
- 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.
- 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.
- 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.
- 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).
- Rate Assistance Program: Qualified low-income customers receive a discount on their electric bill (low-income program).
- Refrigerator Recycling: Rebate for recycling old refrigerators.
- 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.

### **Current Community Programs:**

- 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.

# **SVP Energy Saved: Actual**

## **Actual Savings FY 13-14**

Resource Savings Summary					Cost of Efficiency	
	Net Demand Savings (kW)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Utility (\$/kWh)	Total Resource (\$/kWh)
Res Clothes Washers			467	5,139	0.72	0.78
Res Cooling	1	2	584	5,760	2.92	2.47
Res Dishwashers						
Res Electronics			120	960	1.02	0.75
Res Heating						
Res Lighting	4	1	11,179	137,108	0.77	0.88
Res Pool Pump						
Res Refrigeration		23	122,984	705,012	0.62	0.63
Res Shell	3	5	6,667	110,610	1.00	1.01
Res Water Heating			1,805	18,048	0.68	0.68
Res Comprehensive						
Non-Res Cooking						
Non-Res Cooling	77	77	650,109	9,631,477	0.03	0.19
Non-Res Heating						
Non-Res Lighting	513	513	3,354,231	43,605,007	0.04	0.05
Non-Res Motors						
Non-Res Pumps						
Non-Res Refrigeration			10,547	105,468	0.03	0.09
Non-Res Shell						
Non-Res Process	1,125	1,125	8,115,954	138,557,115	0.02	0.07
Non-Res Comprehensive						
T&D						
Other						
<b>Total</b>	<b>1,723</b>	<b>1,745</b>	<b>12,274,647</b>	<b>192,881,703</b>	<b>.03</b>	<b>.08</b>

TRC is Total Resource Cost Test where a score greater than 1 equals benefits are greater than costs for the entire utility system.

TRC for FY 13-14 Programs is 1.84

## **SVP Program Specific Measurement & Verification Methodologies**

<b>Program</b>	<b>Planned or Actual</b>	<b>M&amp;V Methodology</b>	<b>Explanation</b>
<b><i>RESIDENTIAL PROGRAMS at Silicon Valley Power</i></b>			
ENERGY STAR® Refrigerator Rebate	Both	CMUA Savings Estimation Technical Reference Manual	Unit replacements are tracked by customer name, address, appliance, and date
Recycle Refrigerators	Both	CMUA Savings Estimation Technical Reference Manual	Energy savings for replacing a working refrigerator are greater than for comparisons between a new appliance and an ENERGY STAR qualified one.
Rate Assistance Program	Both	N/A	No direct savings calculated.
ENERGY STAR® Ceiling Fan Rebate	Both	CMUA Savings Estimation Technical Reference Manual	Unit installations are tracked by customer name, address, appliance, and date
ENERGY STAR Electric Heat Pump Water Heater Rebate	Both	CMUA Savings Estimation Technical Reference Manual	Unit replacements are tracked by customer name, address, equipment , & date; 100% of installations are verified.
LED Light Bulb Rebate	Both	CMUA Savings Estimation Technical Reference Manual	Unit replacements are tracked by customer name, address, equipment , & date.
Residential Home Energy Audit	Both	N/A	No direct savings calculated
Residential Hot-Line	Both	N/A	No direct savings calculated.
Residential EE Training	Both	N/A	No direct savings calculated.

<b><i>BUSINESS PROGRAMS at Silicon Valley Power</i></b>			
Small Business Efficiency Services Program	Both	Savings tracked by rebate	No direct savings calculated.
On-site Energy Audits	Both	Savings tracked by rebate	No direct savings calculated.
Custom Energy Audits	Both	Savings tracked by rebate	No direct savings calculated.
Prescriptive Rebates	Both	CMUA Savings Estimation Technical Reference Manual	Unit replacements are tracked by equipment type, customer name, address, and date. For methods not included in KEMA, M&V procedures have been developed.

Program	Planned or Actual	M&V Methodology	Explanation
Washing Machine Rebate	Both	CMUA Savings Estimation Technical Reference Manual	Fund a rebate for commercial washing machine replacement through the Santa Clara Valley Water District.
Customer Directed Rebates	Both	Customized	Unit replacements are tracked by equipment type, customer name, address, and date. M&V procedures have been developed.
New Construction Rebates	Both	Customized	Unit replacements are tracked by equipment type, customer name, address, and date. For methods not included in KEMA, M&V procedures have been developed.
Energy Design Assistance	Both	N/A	No direct savings calculated.
Bright Start Initiative	Both	N/A	No direct savings calculated.
Training, Website, and Promotion	Both	N/A	No direct savings calculated.
Public Facility Energy Efficiency Assistance Program	Both	CMUA Savings Estimation Technical Reference Manual	Tracked based on actual rebate.
Energy Innovator Grant	Both	Customized	Unit replacements are tracked by equipment type, customer name, address, and date. M&V procedures have been developed.

<b>RENEWABLE PROGRAMS at Silicon Valley Power</b>			
Solar PV Buydowns (residential & business)	Both	KEMA, adjusted for actual size and cost	All systems are checked and must pass inspection. Interconnection agreements are approved.
Neighborhood Solar Program	Both	KEMA, adjusted for actual size and cost	All systems are checked and must pass inspection. Interconnection agreements are approved.
Habitat for Humanity PV Systems	Both	KEMA, adjusted for actual size and cost	All systems are checked and must pass inspection. Interconnection agreements are approved.
City PV Project	Both	KEMA, adjusted for actual size and cost	All systems are checked and must pass inspection. Interconnection agreements are approved.
NCPA Geothermal Recharge	Not included in PBC budget, but expenditures are allowed to be included in total percent spent	N/A	The majority of the costs for this project is not included in the PBC budget, but is included as renewable expenses in the normal utility operations budget.

## Background of the Public Benefit Programs

The California electric restructuring legislation signed into law on September 23, 1996, AB 1890, requires that investor owned utilities (IOUs) and POU establish a non-bypassable usage-based charge to fund investments in energy-related PBC programs. AB 995, signed into law September 30, 2000, extended funding for PBC programs to January 1, 2012 for Investor Owned Utilities. No sunset date was set for Public Power Utilities.

AB1890 and AB995 mandated that each POU must collect and spend a percentage of annual revenues on PBC programs. Specifically, "each local publicly owned electric utility shall establish a non-bypassable, usage based charge on local distribution service of not less than the lowest expenditure level of the three largest electrical corporations in California on a percent of revenue

basis, calculated from each utility's total revenue requirement for the year ended December 31, 1994, and each utility's total annual public benefit programs expenditures." CMUA has determined this amount to be a floor of 2.85% of annual revenues. These funds are to support programs that provide:

- (1) Cost-effective demand-side management services to promote energy-efficiency and energy conservation;
- (2) New investment in renewable energy resources and technologies consistent with existing statutes and regulations, which promote those resources and technologies;
- (3) Research, development and demonstration programs for the public interest to advance science or technology which is not adequately provided by competitive and regulated markets;
- (4) Services provided for low-income electricity customers, including but not limited to, targeted energy efficiency service and rate discounts;

AB995 extended the mandate with for low-income programs. SB 1037 further required the POU's to report on their energy efficiency program effectiveness to the CEC and to customers. This report meets the requirements of that legislation.

On September 29, 2005, Governor Schwarzenegger signed Senate Bill 1037 into law, establishing several important policies on energy efficiency. Among the provisions of the law is a statewide commitment to cost-effective and feasible energy efficiency, with the expectation that all utilities consider energy efficiency before investing in any other resources to meet growing demand.

This report complies with Section 6 of Senate Bill 1037, which requires each publicly-owned utility to:

"Report annually to its customers and to the State Energy Resources Conservation and Development Commission, its investment in energy efficiency and demand reduction programs. A report shall contain a description of programs, expenditures, and expected and actual energy savings results."

Also, the Governor signed AB 2021 on September 29, 2006, which requires local publicly owned electric utilities (POUs), on or before June 1, 2007, and every 3 years afterwards, to identify all potentially achievable cost-effective electricity efficiency savings and to set annual targets for energy efficiency savings and demand reduction over 10 years. The bill also requires POU's to report those targets to the California Energy Commission (CEC) within 60 days of adoption. POU's must make an annual report to customers and the CEC on energy efficiency investments, programs, expenditures, cost-effectiveness, and results, as well as an annual report to the CEC on efficiency investment funding, cost-effectiveness methodologies, and an independent evaluation of programs. The CEC is to include a summary of the utility-reported information and a comparison of each utility's energy efficiency targets and actual results in its integrated energy policy report (IEPR). The bill requires the CEC, if it finds that improvements can be made by a POU in setting or meeting targets, to provide recommendations to the local POU, the Legislature, and the Governor on those enhancements.

Thirty-nine POU's have submitted coordinated data in compliance with the legislation.

The California Municipal Utilities Association (CMUA), in partnership with the Northern California Power Agency (NCPA) and the Southern California Public Power Authority (SCPPA) began a collaborative effort in October 2005 and invested approximately \$150,000 to develop an Excel-based evaluation tool that can be used to measure energy efficiency program effectiveness and to report program savings in a consistent and comprehensive manner. The tool was completed August 2006 and is the key driver for the results in this report.



## **Public Benefit Program Administration**

Designing and implementing PBC Programs is a major effort. SVP staff has applied significant resources—both staff and funding—to the creation and deployment of meaningful Programs.

SVP is required to, at a minimum, do the following in the Public Benefit Program:

- Identify potential Public Benefit Programs
- Assess the potential costs, benefits and resource ramifications of Program implementation
- Assess customers' willingness to participate in the program
- Verify that Public Benefit Programs qualify under AB 1890 guidelines
- Balance individual program expenditures against overall utility PBC Program goals
- Develop budgetary justifications for program expenditures
- Market the program to target customer segments
- Administer programs and track expenditures
- Monitor customer acceptance and satisfaction
- Modify programs as necessary for participation and funding

## **Measurement and Verification of Public Benefits Programs**

In 2005 legislation requiring the reporting of program involvement and effectiveness by publicly owned utilities (POU) to the California Energy Commission (CEC) was passed (SB 1037). SVP staff worked with other POUs, NCPA staff, and the Southern California Public Power Agency (SCPPA) to develop unified reporting methodologies and formats.

NCPA first contracted with KEMA Inc. to develop measure information for all POU energy efficiency projects. Using existing resources as much as possible, KEMA created summaries for all of the measures on a list of NCPA utility energy efficiency projects. To keep costs down, existing reports were leveraged and summarized in a simplified manner more usable for NCPA and SCPPA members than the complex reporting mechanisms used by the investor owned utilities (IOU's). The primary resources were the statewide Database for Energy Efficient Resources (DEER) and PG&E's work papers. In addition to these sources, KEMA used several other resources to assist with the project. NCPA utilities also worked to upgrade the residential air conditioning information from what was in DEER based on engineering analyses and actual installations at utilities in California.

DEER is a CEC and California Public Utilities Commission (CPUC) sponsored database with support and input from the IOUs and other interested stakeholders. The DEER database includes detailed information on many energy efficiency measures. The results include the gross impacts, incremental cost, and the equipment's useful life. The results include engineering calculations, building simulations, measurement studies and surveys, econometric regressions, or a combination of approaches. The objectives and focus of the DEER data is to serve as a centralized source of information for planning and forecasting issues for the energy efficiency programs that are provided to customers across the state. DEER has been designated by the CPUC as its source for deemed and impact costs for program planning.

The PG&E work papers are the documents that PG&E has prepared to document all of its measure savings calculations related to its energy efficiency programs. The work papers are a huge set of details that PG&E uses to defend energy savings assumptions. The papers are filed on a regular basis with the CPUC. The KEMA report uses the 2005 version of the PG&E work papers. The work papers typically include measures not in the DEER database or new to their programs.

The KEMA report provides prescriptive savings for most of the measures. Some measures are considered custom, and savings are calculated individually for each unique project. When a

particular utility has used a custom savings approach, its staff has carefully and thoroughly documented that savings analysis methodology.

Once the KEMA report was completed, NCPA contracted with Energy & Environment Economics (E3) to develop a cost-effectiveness model for the member utilities to use. This model is adapted and simplified from a similar one developed by E3 for the IOU's in their program cost-effectiveness analysis. This summary report was sent to CEC staff to meet the reporting requirements of SB1037.

Over time, the KEMA deemed savings data became outdated and where updates to the data were done, the methodology was not transparent. In FY 12-13, SVP hired Energy & Resource Solutions to create a Technical Reference Manual (TRM) to provide deemed savings values for energy efficiency measures used in SVP's programs. This report was completed in early 2013 and the information was used to develop programs for FY 13-14. In addition, the data was uploaded into the E3 calculator for reporting on the FY 13-14 programs. NCPA member utilities, as well as some of the CMUA and SCPPA member utilities found value in SVP's TRM and decided to expand upon it to create a state-wide Publicly-Owned Utility (POU) TRM. The statewide TRM incorporated the data in SVP's TRM and replaced it in mid-2014. The TRM can be found at <http://cmua.org/energy-efficiency-technical-reference-manual>.

AB 2021 requires each utility in California to utilize a third party for Evaluation, Measurement & Verification (EM&V) of its energy efficiency programs. NCPA issued an RFP for these services for its members and identified two qualified organizations. SVP elected to contract with Summit Blue Consulting for EM&V of its energy efficiency programs and a sampling of project implementations. The first evaluation report was complete in March 2009 for the FY 2007/2008 program year and the second in March 2010 for the FY 2008/2009 programs. The third evaluation report was completed in March 2011 for FY 2009/2010 programs and was prepared by Navigant Consulting, who acquired Summit Blue. Evaluation for the FY 2010/2011 programs was conducted by The Cadmus Group, Inc. and the report was completed in January 2012 and Cadmus completed evaluation of the FY 2011/2012 programs in March 2013. Based on the results of the FY 2011/2012 report, SVP made some significant changes to several of its programs, including a lighting calculator used for all commercial lighting retrofits in order to capture the true energy savings, and a performance incentive paid out over multiple years for the Data Center Efficiency Program rebate. For FY 2012/2013, SVP contracted with Cadmus to look at its former Retrocommissioning pilot program to determine the persistence of the energy savings. In the current year, SVP contracted with Cadmus to evaluate its Lighting Rebate Program, as this was the first year that the program operated utilizing the new tool. Several recommendations for program process improvement were made and will be implemented in the FY 2015/2016 program year.

The reports are available for public viewing on NCPA's website at <http://www.ncpa.com/current-issues/energy-efficiency-reports.html>.