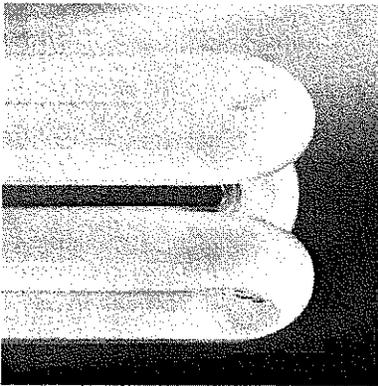




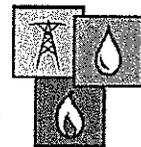
# Energy Efficiency in California's Public Power Sector

## A Status Report

DECEMBER 2006



CALIFORNIA  
MUNICIPAL  
UTILITIES  
ASSOCIATION



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CMUA would like to thank our entire group of utility directors, general managers, elected officials, as well as our partner joint power agencies, NCPA and SCPPA, for dedicating resources and financial support for this effort. Finally, we would also like to thank the staff of the California Energy Commission (CEC), as well as CEC Chairman Jackalyne Pfannenstiel, and Commissioner John Geesman for working so closely to shape a report that will serve as a benchmark for future collaborations between state agencies and publicly-owned utilities.

## Executive Summary

California Senate Bill 1037 (Kehoe), signed into law in September 2005, established several important policies regarding energy efficiency. Among the many 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.

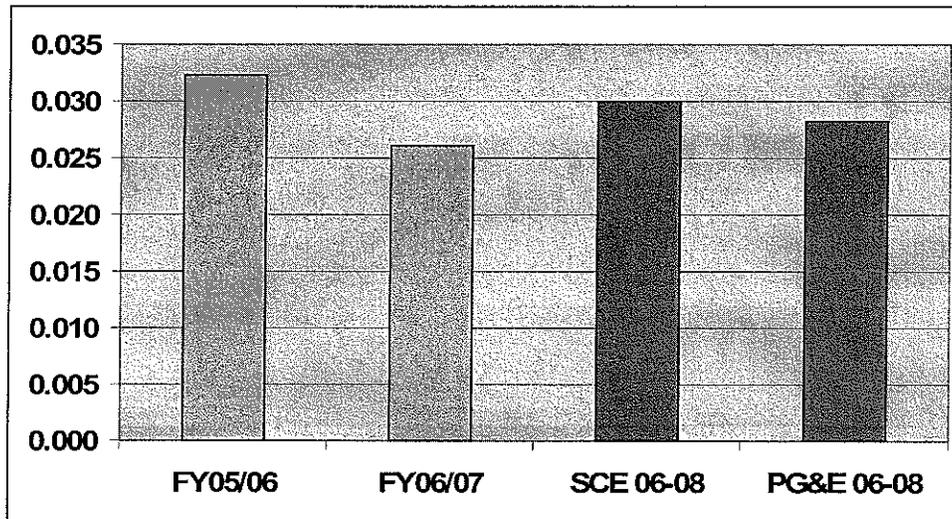
This report, *Energy Efficiency in California's Public Power Sector: A Status Report* complies with Section 6 of the statute, requiring each publicly-owned utility (POU) to "report annually to its customers and to the State Energy Resources Conservation and Development Commission, its investment in energy efficiency and demand reduction programs." Thirty-nine POUs are submitting energy efficiency data in compliance with the provisions of the legislation, including 26 that have previously not been required to formally file energy efficiency program information with the California Energy Commission (CEC).

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 to develop an evaluation tool to measure energy efficiency program effectiveness and report program savings in a consistent and comprehensive manner. The principal findings and conclusions of this analysis are as follows:

- POUs have a long-standing commitment to energy efficiency, an extension of fundamental principles dedicated to social and environmental responsibility, ensuring reliability, and keeping rates low for the communities that are served.
- During Fiscal Year 05/06, POUs spent \$54 million on energy efficiency programs, reducing peak demand by 53 megawatts, and in excess of 169 million kilowatt-hours on an annual basis. POU energy efficiency expenditures for FY06/07 are expected to increase to \$77 million during FY06/07, reducing demand by 69 megawatts during the summer peak, and 338 million kilowatt-hours over the course of the year.
- The levelized cost for POUs to deliver all energy efficiency programs in the aggregate is projected to fall from \$0.032 per lifecycle kilowatt-hour in FY05/06 to \$0.026 per lifecycle kilowatt-hour in FY06/07. Residential and non-residential lighting programs, residential cooling programs, and non-residential process programs are generally the most cost effective programs offered by POUs.
- For many of the smaller utilities, the cost to deliver energy savings can vary dramatically from year-to-year, depending on the customer base of the individual utility, the climate zone in which the utility resides, and the physical size of the service territory.
- POU programs compare well to programs being offered by the investor-owned utilities. Contrasting estimates of program cost-effectiveness, public power programs are expected to be even more cost effective in FY06/07 than what is estimated to be the case for the

IOUs in 2006-08. This conclusion is in stark contradiction to *statements* made one year ago by various interest groups suggesting that POUs are lagging way behind their IOU counterparts.

**Figure ES-1**  
**Comparison of POU and IOU**  
**Levelized Program Costs (\$/Kwh)**



Sources: SCE - Application for Approval of 2006-08 Energy Efficiency Program Plans, filed June 1, 2005. PG&E - 2006-08 Energy Efficiency Program Portfolio, Volume 1, Prepared Testimony Table 3-2, pg. 3-44.

The signing of AB2021 into law requires energy efficiency targets to be established by each POU in California, and some minor enhancements to the data that will be reported in subsequent reports in compliance with SB1037. CMUA, NCPA, and SCPPA are reviewing various approaches for accomplishing these requirements, and are working closely with the CEC to ensure that the agency has a complete set of data from the public power community as it moves forward with its 2007 Integrated Energy Policy Report analysis.

CMUA, NCPA, and SCPPA look forward to a continued dialogue on energy efficiency issues, and our collective desire to balance statewide energy policy direction with the needs and diverse interests of local communities.

## I. Introduction

On September 29, 2005, Governor Schwarzenegger signed Senate Bill 1037 (Kehoe) into law, establishing several important policies regarding energy efficiency. Among the many 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.”

Thirty-nine publicly-owned utilities (POUs) are submitting data in compliance with the provisions of the legislation. Such an action is unprecedented in California, as Title 20 of the California Code of Regulations has traditionally only required utilities with peak energy demand of at least 200 megawatts to regularly report energy data to the California Energy Commission (CEC) as part of the CEC’s Integrated Energy Policy Report (IEPR) process. Senate Bill 1037 eliminates the 200 megawatt threshold in the area of energy efficiency, which results in 26 POUs submitting energy efficiency data to the CEC for the first time.

The California Municipal Utilities Association (CMUA), in partnership with the Northern California Power Agency (NCPA) and the Southern California Public Power Authority (SCPPA), recognized the wide range of utility sizes, staffing, and a lack of familiarity with CEC processes. The three organizations began a collaborative effort in October 2005 and invested approximately \$150,000 to develop an Excel-based evaluation tool that can be used with limited utility staff to measure energy efficiency program effectiveness and for all utilities to report program savings in a consistent and comprehensive manner. The tool was completed last August and serves as the key driver for the results contained in this analysis.

The following report contains five additional sections. Section II provides a public power perspective regarding energy efficiency. As will be discussed in the section, POU commitment to energy efficiency is critical to its resource planning efforts, not only in assisting customers with incentives to reduce customer load, but also from improving the operational efficiency of public power supply-side infrastructure. Section III addresses the collaborative process used by CMUA, NCPA, and SCPPA to develop the evaluation tool, as well as a general description of the model’s capabilities and assumptions. Section IV provides the results of the energy efficiency assessment, with a range of discussion at some level of POU aggregation. Individual program data and summaries are contained in a comprehensive Appendix. Section V touches on the extent of demand reduction programs within the public power community. The last section offers principal conclusions, but also offers some insights about the direction of future reports. It

will also consider approaches for accommodating new reporting requirements adopted via the passage of Assembly Bill 2021 (Levine) in September 2006.

## II. Overview of Energy Efficiency: A Public Power Perspective

POUs long-standing commitment to energy efficiency is an extension of fundamental principles dedicated to social and environmental responsibility, ensuring reliability, and keeping rates low for the communities we serve. Energy efficiency is of the utmost importance to municipal utilities. Energy efficiency is a critical element of the resource planning process, generation, transmission, distribution, and demand. Public power commitments to energy efficiency are guided by four important concepts:

- **Social and Environmental Responsibility.** POUs place a high priority on energy efficiency, investments in renewable power supplies, low-income programs, and economic development. Local elected officials govern and regulate public power to ensure direct accountability on these important issues to customers.
- **Operational Energy Efficiency.** Public power has important energy efficiency programs that optimize power generation, transmission, and ensure more optimal operation of the grid.
- **Demand-side Energy Efficiency.** This is a major focus of POUs. It includes, but is not limited to: appliances, air-conditioners, building codes and standards, education, electricity management, and weatherization, all coordinated with customer-specific programs.
- **Cost-effective Energy Efficiency.** Cost-effective energy efficiency lowers the cost of providing electricity to our communities. POU customers are “shareholders” and benefits related to energy efficiency are realized by **all** customer-owners.

### Public Power’s Commitment to Customer-Side Energy Efficiency

Public power commitments to energy efficiency programs are extensive and comprehensive. More than \$77 million in energy efficiency programs are budgeted for the current fiscal year. POUs expect these programs to reduce peak demand by 69 megawatts and nearly 326 million kilowatt-hours of energy consumption on an annual basis. A more detailed discussion of these results will be addressed in Section IV of this report.

Residential programs focus on energy audits, Energy Star® appliance rebates and replacements, lighting improvements, attic insulation, as well as incentives to install highly-efficient heating, ventilation and air conditioning (HVAC). Commercial and industrial programs target lighting, HVAC, and manufacturing/food processing equipment. POUs also partner with schools and public institutions to educate residents and implement a variety of beneficial programs.

Municipal utilities maximize the success of energy efficiency programs and services because of their unique relationships with customers and their ability to specifically tailor programs to meet the needs of their communities. POU's are responsive to local concerns, allowing them to maximize the value of all energy efficiency programs.

Municipal utilities are diverse, and that diversity is reflected in differing programs tailored to the needs of local constituents, taking into consideration the climate zones and other factors. Common to all however, is the desire to spend energy efficiency dollars wisely and utilize the benefits of local decision-making to create programs that are effective, innovative and forward-thinking.

CMUA, the American Public Power Association (APPA), and other agencies have formally recognized some of the most effective and innovative energy efficiency programs offered by the public power community. Each spring, CMUA presents as many as six Community Service/Resource Efficiency Awards to a mixture of smaller and larger water, gas, and electric utilities. The following are examples of award-winning POU energy efficiency programs.

#### Alameda Power & Telecom

- **Efficient Schools Program** - Alameda won a CMUA award in 2005 for its program focused on improving energy efficiency throughout the Alameda Unified School District. Since the program's inception, Alameda is helping the school district complete energy efficiency retrofits to facilities by reviewing proposals, performing pre-and post-installation inspections, and providing rebates to the schools in excess of \$130,000. The retrofits thus far have focused on lighting and HVAC measures, saving the school district more than \$236,000 per year, and reducing Alameda's annual electric demand more than one megawatt.

#### City of Glendale

- **Smart Home Peak Hogs** - Glendale's 2006 CMUA award-winning program reduces peak demand while providing bill relief for primarily low-income customers by encouraging the replacement of energy inefficient HVAC units in apartments. Since July 2003, this program has replaced 1,297 tons of energy inefficient Peak Hogs in Glendale apartments at a total investment of \$804,969. Cumulative annual demand and energy savings for these replacements are estimated at 366 kilowatts and 808 megawatt-hours.
- **Smart Business Energy Saving Upgrades** - Glendale's 2005 CMUA award-winning program provides small business customers with comprehensive no-cost energy surveys, customized written reports, energy education, directly installs as much as \$1,000 worth of cost-effective energy conservation measures. Over 1,800 energy audits and over 1,360 retrofits have been completed since July 2001 at a total investment of \$2,705,571. Cumulative annual demand and energy savings from the installed measures are expected reach 687 kilowatts and 3,251 megawatt-hours.

## LADWP

- **Chiller Efficiency Program** - LADWP was awarded a National Best Practice award in 2004 for its simple, menu-driven approach to providing incentives for replacing older electric chillers with new, high-efficiency units to provide for space conditioning for larger buildings. Qualifying chillers are eligible to receive cash rebates, enhanced in 2006 to pay up to the full incremental cost for the most efficient units. The program has reduced 50 megawatts of peak electrical demand since 2001, and played an especially important role in mitigating the need for electricity during the California energy crisis of 2001.
- **The Trees for a Green LA (TFGLA) Program** - LADWP's CMUA award-winning tree planting program has been offered to LADWP customers since 2002. Approximately 70,000 trees have been distributed and planted during that period of time. The shade from these trees successfully mitigates the urban heat island effect while dramatically reducing the demand for air conditioning. At maturation, it is estimated that these trees will help to save more than 5,000,000 kilowatt-hours annually. TFGLA offers trees to residential and non-residential customers and also builds awareness by participating in community and school beautification projects. This invaluable program firmly supports the *Million Trees LA* program as a means of greening Los Angeles and replenishing its urban forest.

## Pasadena Water and Power (PWP)

- **Residential Energy Star® Program** - PWP earned the CMUA 2002 Community Service Resource Efficiency Award for its popular Energy Star® Efficient Appliance Program. The Energy Star® rebates are available to residential electric customers on refrigerators, ceiling fans and light fixtures. Rebates are also available for Energy Star® qualifying room air conditioners, doors and windows.

## Redding Electric Utility

- **Running with the Bulbs** - REU earned CMUA accolades in 2001 for its compact fluorescent lamp (CFL) giveaway. Funded through a CEC Senate Bill 5X Grant, REU, in partnership with local area high school students, delivered nearly 35,000 CFLs to REU customers on a cool spring morning. The CFLs, 23-watt spiral lamps, were intended to replace 60-100 watt incandescent light bulbs throughout REU's service territory.

## SMUD

- **Residential Energy Star® Lighting Program** - SMUD received a CMUA award in 2006 for a program promoting energy-efficient lighting products through participating Sacramento retailers. Products must qualify for, and carry the label of, the federal Energy Star® program. SMUD partners with lighting-product manufacturers and retailers to encourage participation in the program-manufacturing, delivering, stocking, displaying, and marketing Energy Star® CFLs according to an agreed-upon schedule.

- **Pool Efficiency Program** – SMUD received another award from CMUA in 2006 for a program designed to help customers use their pool/spa filtration equipment more efficiently. In essence, the program encourages customers to operate the equipment during off-peak hours, and to purchase the most efficient pool pump and motor when replacing equipment.

#### Silicon Valley Power

- **OPUS(SM) or Optimal Power Use Service Program** - a 2001 APPA award recipient from which provides owner agency services to assist small businesses in implementing energy efficiency projects. Utility staff and contractor work closely with the owner through all steps of the review process, beginning with the initial energy audit, ending with the actual installation of new equipment (typically lighting). The goal of the OPUS Program is to assist SVP small commercial customers in reducing their business costs and saving energy by implementing cost-effective, energy efficient projects. This program effectively uses the contact made at the energy audit to steer small and medium commercial customers through energy efficiency installs and rebates.

Innovation and effective programs do not always result in public accolades. As such, this report provides a few additional examples of forward-thinking and effective programs found in the public power community.

#### Burbank Water and Power (BWP)

Since 1998, BWP has offered cash rebates to Burbank residents purchasing high-efficiency appliances. Energy Star® appliances offer significant and durable energy savings. For the better part of a decade, BWP has been consistently reminding customers of the cost and environmental value of purchasing Energy Star® equipment and rewarding them for that behavior.

During the past fiscal year, over 2,200 Burbank residents took advantage of BWP's "Home Rewards" program, receiving \$404,000 in financial support for their wise energy decisions. BWP is very proud of this program for the following achievements:

- 1-in-20 households received a rebate from BWP last fiscal year
- Peak energy demand was reduced by 201 kilowatts
- Annual energy savings of 359,000 kilowatt-hours, enough to fully power over 700 Burbank homes for a year
- Lifetime energy savings of nearly 6 million kilowatt-hours.

#### Lodi Electric Utility

- **Lodi HVAC System Performance Test** - Lodi utilizes state-of-the-art computer diagnostics equipment to analyze a home's heating/air conditioning system and the home's air duct system. The program goes far beyond the old duct leakage testing, by evaluating the air flow, air return and air balance of the home's air delivery system. The

testing in this program is designed to ensure that the air ducts (delivery system) are properly engineered, designed and installed.

#### Pasadena Water and Power (PWP)

- **High Performance Building Program and Leadership in Energy and Environmental Design (LEED) Certification Demonstration Program** - Green buildings average 30 percent energy savings (compared to conventional buildings using Title 24 standard or equivalent) and average 40 percent water savings. Water savings have an energy component and also contribute to PWP's conservation goals. One of the buildings recently completed under the new Pasadena Green Building Practices ordinance is the Northwest Innovation Center. Built in the 1960s, the 29,000-square-foot light industrial building was completely overhauled and transformed into an energy and water efficient facility using green building practices. The building is 37 percent more energy efficient than Title 24, lowering demand by 100 kilowatts and saving 760,361 kilowatt-hours annually. Energy efficiency measures incorporated in the building include extra insulation to the building envelope, high-efficiency air conditioning systems, Energy Star® roof, day lighting, and high-efficient lighting fixtures. The building also features a 32,000 watt solar electric system. The building has applied for LEED (Leadership in Energy and Environmental Design) Gold certification by the United States Green Building Council. PWP provided a rebate under the High-Performance Building Program and will provide another rebate for certification under the LEED Certification Demonstration Program.
- **Energy Partnering Program** - This program pays the equivalent of the first year's energy savings as a result of an energy efficiency project or 25 percent of project cost, whichever is less. Energy efficiency measures are selected by commercial and business customers, while measurement and valuation (M&V) services are provided by the utility after projects are complete. This has been an extremely popular program with larger customers and has provided the most value to the utility for reducing peak load. The 13 customers who installed lighting, HVAC, motors, cool roofs and energy management system (EMS) retrofits in FY05/06 are expected to reduce peak load by 1.3 megawatts, saving over 4,000 megawatt-hours in one year. Program savings from the 192 customers who participated in the Energy Partnering Program from FY99/00 - FY05/06 total a 6.8 megawatt reduction and 35,000 megawatt-hour energy savings.
- **Residential Green Power Customer Incentive Bonus** - Residential customers who contribute towards PWP's Green Power Program earn an additional cash rebate when they purchase eligible energy efficient products. Bonus incentives average 15 percent of the normal PWP product incentive. Green Power Bonus incentives help offset the voluntary contributions these customers make for supporting green power, as well as encourage energy efficiency and load reduction. Non-Green Power Program residential customers also earn higher rebates if they purchase eligible products from local Pasadena retailers and contractors.

## Redding Electric Utility

- **Earth Advantage Program** - In July 2005, REU's Earth Advantage Program was featured in the *NWPPA Bulletin*, a Northwest Public Power Association (NWPPA) magazine distributed to members. NWPPA was most interested in the innovative use of REU's Public Benefits Program funds to encourage green building in Redding. The Earth Advantage Program recognizes residential home builders that achieve higher standards for indoor air quality, environmental and resource responsibility and those homes built 20 percent more energy efficient than Title 24 building standards.

## Public Power's Commitment to Operational Energy Efficiency

Efficiency gains related to generation and transmission services serve an important role in reducing the cost of electricity to consumers, ensuring reliable operation of the statewide grid, and helping to significantly reduce the use of fossil fuels for power generation. Municipal utilities continually conduct energy efficiency audits of generation and transmission facilities. Here are some examples:

### Efficiency Enhancements at the Geysers Geothermal Facility

NCPA operates two of the 21 generating plants in the Geysers, located in Sonoma and Lake County, providing 120 megawatts at its peak. NCPA is committed to improving the performance and stopping the decline in the generating capacity at these Geysers. In 2005, NCPA completed a second horizontal injection well that enhanced the underground distribution of water and increase the amount of injection-derived steam. **These efforts will increase generating capacity by five megawatts, about four percent of current generation capacity at the facilities.**

In 2006, NCPA deepened one its horizontal injection wells, overhauled one of its main turbine generators, replaced three old air compressors, and is in the process of cleaning out two steam production wells. **Work conducted during the past year will result in an additional 2.5 megawatts of power, reduced the amount of energy used to operate the facilities and increased the reliability of the system.**

### Collierville Hydroelectric Efficiency Enhancements

NCPA has two hydroelectric units at Collierville Powerhouse, located in Calaveras County. There have been numerous efficiency enhancements over the past 15 years. NCPA continues its commitment to energy efficiency and is pursuing additional energy efficiency modifications. During the past year, NCPA has begun operating the units at a higher level, replaced the Unit #1 runner with a reconditioned spare, with additional plans to improve operational efficiency by replacing the runners at some point during the next two years. **NCPA estimates those modifications will result in increased output of six megawatts, representing an efficiency improvement of 1.8 percent.**

#### Energy Conservation Activities at Lodi Natural Gas Generating Facility

NCPA has one steam-injected combustion turbine (STIG) located in the City of Lodi. At the STIG facility there was a comprehensive energy audit to find ways to improve efficiency. This review indicated that a replacement of the air compressors would reduce energy use. Last year, NCPA replaced a 75-horsepower air compressor with a more advanced 25-horsepower compressor that includes an integrated air dryer -- reducing fuel consumption at the facility by nearly \$60,000 per year. Additionally, NCPA members will avoid the generation of 15,000 kilowatt-hours per month by implementing recommendations regarding lighting changes.

In summary, public power has been dedicated to energy efficiency at the utility level and for its customers for years. It is a critical element of our resource planning process.

### **III. SB1037: Public Power Roles and Responsibilities**

Over the past year, POU staffs throughout California have taken efforts to develop a unified reporting methodology and format that would best respond to the requirements contained in SB1037. Key to this effort has been the development of an Energy Efficiency (EE) Reporting Tool.

The EE Reporting Tool enables California's POU's to efficiently report the expenditures and energy savings related to their energy efficiency programs in a consistent manner that is comparable with the results reported by California's three investor-owned utilities (IOUs). Because California's municipal utilities vary widely in terms of their size and the development of their EE programs, the EE Reporting Tool is designed to accommodate a range of experience and staffing levels. This section describes the inputs and methodology used in the EE Reporting Tool.

#### **Background**

The genesis of the tool actually began before the passage of SB1037. As early as May 2005, NCPA members and its Public Benefits Committee sought to develop a consistent approach for reporting energy efficiency program information to the Western Area Power Administration (Western) as part of an annual Integrated Resource Planning report. Western requires the report to be filed annually each March.

NCPA first contracted with KEMA Incorporated (KEMA) in May 2005, to develop and measure information for all POU energy efficiency projects in support of this ongoing effort. Using existing resources as much as possible, KEMA created summaries for all of the measures on a list of NCPA utility energy efficiency projects.

With the passage of SB1037, NCPA, SCPPA, and CMUA investigated approaches to expand the efforts begun by KEMA to allow all POU's in California to report on their respective energy efficiency programs. NCPA contracted with Energy & Environmental Economics (E3) to develop a cost-effectiveness model for the member utilities to use. This model was adapted and simplified from a similar one developed by E3 for the IOUs in their program cost-effectiveness

analysis. Results from the model are the principal tool for the data contained in this report. KEMA was retained for a second time in December 2005 and then again in June 2006 to standardize a series of cost and savings estimates for specific end-use measures across all climate zones across California. These estimates serve as a key input to the various costs and savings contained in the E3 tool.

Existing reports were leveraged and summarized in a simplified manner more usable for NCPA and SCPA members than the complex reporting mechanisms used by the IOUs. The primary resources were the statewide Database for Energy Efficient Resources (DEER) and Pacific Gas and Electric Company's (PG&E) workpapers. 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, such as the demand and energy savings, incremental cost of measures, and the efficient equipment's useful life. The data in DEER is based upon 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 cost source for energy efficiency program planning.<sup>1</sup>

The PG&E workpapers are the documents that PG&E has prepared to keep a record of all measure savings calculations related to its energy efficiency programs. The workpapers are a huge set of details that PG&E uses to defend its energy savings assumptions, and are filed on a regular basis with the CPUC. The KEMA report uses the 2005 version of the PG&E workpapers. The workpapers typically include measures not in the DEER database or new to the utility's programs.<sup>2</sup>

The KEMA report provides prescriptive savings for most of the measures. Some measures are considered custom, and those 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.

## Energy Efficiency Tools and Reporting Requirements

The EE Reporting Tool is an Excel Spreadsheet developed by E3<sup>3</sup>. It contains a database of energy efficiency measures developed by KEMA. Utilities select the measures that best

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<sup>1</sup> The DEER Database can be found at <http://eega.cpuc.ca.gov/deer/>.

<sup>2</sup> PG&E's workpapers are included in an Appendix to the KEMA report.

<sup>3</sup> E3 was the lead contractor in developing the "E3 Calculator" for reporting to the CPUC on PG&E, SCE, SoCal Gas, and SDG&E energy efficiency programs.

represent the programs they have implemented and enter the relevant data. E3 designed the EE Reporting Tool to minimize the data input required by the utilities. Relying on default values and assumptions contained in the EE Reporting Tool, utilities may enter as little as the number of units installed, the incentive provided to the customer and overhead costs to report meaningful results. Alternatively, utilities may modify or enter their own assumptions and create customized measures that better reflect their programs or service territory. The EE Reporting Tool then provides summary tables by program category that report the units installed, achieved savings, program costs, and cost effectiveness.

## Default Energy Efficiency Measures

The EE Reporting Tool contains a condensed list of approximately 5,000 energy efficiency measures developed by KEMA. This condensed list is a summary of existing databases such as California's DEER database and the IOU Energy Efficiency Workpapers, which provide an extensive database of measures with detailed information. For many municipal utilities with limited staff or expertise, these databases are overly complex and difficult to utilize effectively. KEMA summarized information from these and other sources, using representative scenarios and average values to develop a smaller list of measures accessible to a wider range of utilities.

Each measure includes the following fields:

**Table 1: Measure Data Field Descriptions**

Field	Description
Measure	Measure Name
Climate Zone	California Title 24 Climate Zones 1-16
Gross Cost (\$/Unit)	Measure installation cost
Measure Cost Type	Whether cost is Full or Incremental
Savings Units	Units in which savings are expressed (i.e., per fixture, 1,000 sq. ft., tons cooling)
Cost Units	Units in which costs are expressed
Demand Savings (kW)	Average demand savings per savings unit
Coincident Peak Savings (kW)	Coincident peak demand savings per savings unit
Annual kWh Savings (kWh)	Annual energy savings per savings unit
Measure Life	Useful life of installed measure
Net to Gross Ratio	Ratio to translate savings to savings attributed to program. (Default is 0.8)
Category	Measure category (i.e. residential cooling)
Sub-Category	Measure sub-category (i.e. attic fans)
CPUC Sector	Sector used for CPUC and CEC reporting (i.e. HVAC)
CPUC Detailed End Use	Detailed end use used for CPUC and CEC reporting (i.e. space cooling)
Building Type	Measure building type (i.e. single family)
Unit Volume Multiplier	Ratio of cost units per savings units
Source	Source of data (i.e. DEER, IOU Workpapers)

The measure database contains three general categories of measures: natural replacement, early replacement and alternative air conditioning measures.

**Natural replacement** assumes that the customer is replacing a fixture that has failed or burned out. The associated energy savings are calculated as difference in the energy required by an efficient fixture vs. a standard fixture that meets minimum building code requirements (often referred to as “above code” energy savings). The measure cost is the incremental cost of an energy efficient fixture over and above that of a standard fixture that meets the minimum code.

**Early replacement** recognizes that the customer is replacing a functional existing fixture with a new efficient one due to an incentive program. Energy savings calculated above baseline energy use for the existing fixture (often referred to as “above vintage baseline” energy savings). Vintage baseline energy use is generally higher than minimum building code requirements. In addition, the measure cost is the full, rather than incremental, cost of the new fixture. This assumes that the customer’s existing fixture is still working and that, absent the utility’s program, the customer would not be replacing it with a new one. Thus, generally speaking, the early replacement measures have both higher costs and higher savings than the natural replacement measures.

**Alternative Air Conditioning** measures were included as an alternative to the measures provided by DEER. Several utilities felt the DEER measures upon which the KEMA measures are based under-represented energy savings from air conditioning measures for their service territories. Therefore, an alternative set of measures was developed using calculations based on Energy Efficiency Ratios (EER) and estimated hours of operations for each climate zone.

### **Energy and Demand Savings**

Each measure includes data on three types of impacts: demand savings, coincident peak demand savings and annual energy savings.

- **Demand Savings** - represents the difference in the instantaneous energy use of the efficient and standard fixture, in kilowatts.
- **Coincident Peak Demand Savings** - those demand savings that occur, in most cases, coincident with California’s statewide peak, also in kilowatts. For appliances with an even level of use throughout the day (refrigerators, clothes washers), the coincident peak savings are equal to the demand savings. Appliances that are either used less often during peak hours (lighting) have coincident peak savings that are less than the demand savings.
- **Annual Energy Savings** - the total savings for one year, in kilowatt-hours.

### **Non-default Energy Efficiency Measures**

Although fairly comprehensive, the approximately 5,000 measures in the summarized list of measures do not always reflect all of a utility’s programs. Therefore, the EE Reporting Tool

allows the utility analyst to enter additional measures that do not match the defaults. In these cases, all of the inputs described in the previous two sections can be customized. As mentioned earlier, when a particular utility has used a custom savings approach, its staff has carefully and thoroughly documented that savings analysis methodology.

### **Utility Program Data**

Utilities select from the list of measures included in the EE Reporting Tool and enter the appropriate data for their energy efficiency programs. The program inputs include:

- **Number of Installations** - the number of installations for each measure.
- **Utility Incentive Costs** - costs paid by the utility to the customer (i.e. clothes washer rebates). Incentive costs offset the cost incurred by the customer to implement the measure (Gross Cost).
- **Utility Direct Install Costs** - costs paid by the utility that are over and above the gross cost of the measure contained in the database (i.e. costs paid to a sub-contractor for direct installation or removal of old equipment).
- **Net-To-Gross Ratio** - converts the gross savings calculated using the measure data to net energy savings, which is attributed to the program and reported by the utility. The net-to-gross ratio is used to account for free-ridership and equipment that is removed or not installed by the customer. The model applies a default net-to-gross ratio of 0.8 that may be modified by the user.
- **Overhead Costs** - In addition to costs entered for each measure, utilities may enter overhead costs, including marketing, administrative, evaluation, verification and measurement (EM&V) costs. The utilities may allocate overhead costs to each program type, or allow the EE Reporting Tool to allocate total overhead costs based on lifecycle savings.

### **Load Shapes**

Each measure is assigned a load shape, allocating savings to each of six Time-of-Use (TOU) periods. Default load shapes based on PG&E, Southern California Edison (SCE) and San Diego Gas and Electric Company (SDG&E) filings in the CPUC's avoided cost proceeding (R.04-04-025) are included in the EE Reporting Tool. As an example, the Summer On-Peak allocation of annual energy savings is 40 percent for air conditioning measures. Most appliances, such as refrigerators and clothes washers, have a relatively flat load shape, with only 12 percent or so of the annual energy savings occurring in the Summer On-Peak period. Each utility also has the option to define customized load shapes and TOU periods in lieu of those provided by default.

### **Avoided Costs**

The spreadsheet contains CPUC adopted avoided costs developed by E3 for each IOU (updated in 2006, CPUC Decision 06-06-063) forecasted out to 2030. The avoided costs represent the value to each utility of the energy saved due to implementing energy efficiency measures. The avoided costs included in the EE Reporting Tool include the generation and environmental

components, but not the transmission and distribution components for each IOU. Again, utilities have the option of entering their own avoided costs rather than use those provided by default.

**Benefit-Cost Tests**

Although they are not included in the summary reports provided here, the EE Reporting Tool performs a number of calculations to assist utilities in evaluating program effectiveness. Lifecycle avoided costs are determined by applying the energy savings in each TOU period, as allocated by the load shapes, to the corresponding avoided costs and calculating the net present value savings over the life of each measure. Each utility also has the option to enter average retail rates by customer class, which allows the EE Reporting Tool to also calculate lifecycle bill reductions for each measure. Finally, four standard energy efficiency program cost tests are also performed in accordance with the California Standard Practice Manual: the Program Administrator Cost Test, Total Resource Cost Test, Participant Cost Test, and Ratepayer Impact Measure.

**Summary Report**

The EE Reporting Tool provides summary reports by program category. The summary table reports the number of installations, the net annual energy savings and the utility program costs. The EE Reporting Tool also fills out the CEC Energy Efficiency Program Forms 3.1a and 3.2 required for utilities larger than 200 megawatts. The summary report presents results by program category (see Table 2).

**Table 2: Program Categories**

Non-Res Cooking	Res Cooling
Non-Res Cooling	Res Clothes Washers
Non-Res Heating	Res Heating
Non-Res Lighting	Res Dishwashers
Non-Res Motors	Res Electronics
Non-Res Pumps	Res Lighting
Non-Res Refrigeration	Res Pool Pump
Non-Res Shell	Res Refrigeration
Other	Res Shell
	Res Solar
	Res Water Heating

The results included in the summary reports are:

**Units Installed:** Total number of fixtures or appliances installed.

**Net Demand Savings:** The total demand savings (kilowatts) attributed to the program. (Units Installed \* Demand Savings \* Net-to-Gross Ratio).

**Net Coincident Peak Demand Savings:** The total coincident peak demand savings (kilowatts) attributed to the program. (Units Installed \* Coincident Peak Demand Savings \* Net-to-Gross Ratio).

**Net Annual Energy Savings:** The annual energy savings (kilowatt-hours) attributed to the program. (Units Installed \* Annual Energy Savings \* Net-to-Gross Ratio).

**Net Lifecycle Energy Savings:** The annual energy savings (kilowatt-hours) attributed to the program. (Units Installed \* Annual Energy Savings \* Measure Life \* Net-to-Gross Ratio).

**Utility Incentive Costs:** Total incentive costs paid by the utility to participating customers. (Units Installed \* Utility Incentive Costs).

**Utility Direct Install Costs:** Total direct install costs paid by the utility to participating customers. (Units Installed \* Utility Direct Install Costs).

**Utility Overhead Costs:** Total marketing, administrative and EM&V costs allocated to each program type (either by the user or by the EE Reporting Tool, based on net lifecycle savings).

**Total Utility Costs:** Total incentive, direct install and overhead costs for each program type.

## Balancing Consistent Utility Application of the EE Reporting Tool and the Diversity of Assumptions

While the intent of the EE Reporting Tool is to ensure a consistent review of programs across the entire range of POUs, there is still some discretion afforded to each utility in terms of how the model is applied. Changes to certain assumptions may improve or decrease the effectiveness of certain programs that are included in the analysis.

For example, consider the use of measures that are considered “natural replacement” and “early replacement,” as described above. The application of one measure compared to another for a given appliance can have a significant impact on the amount of lifecycle kilowatt-hour savings that are applicable to a particular efficiency measure. Importantly, either measure does not impact peak load estimates, an important component to policymakers concerned about how much energy is reduced when resources are most utilized throughout the state.

Regarding net-to-gross ratios, some utilities have chosen to make some adjustments to their individual data sets. As discussed previously, the EE Reporting Tool includes a default value of 0.8 for each measure in the model, meaning that any potential energy efficiency measure only achieves 80 percent of what it is capable of realizing. In this analysis, a handful of the 39 utilities participating in this analysis assume that 100 percent of the savings is realized, thereby applying a value of 1.0 in the model. In these instances, the utility’s conclusions are based on individual customer relationships and as such the utility is often able to verify installation and measure the actual savings once the units are installed.

Other variations on assumptions within the utility analyses include but are not limited to the following:

- Solar Projects - The EE Reporting Tool includes a component for utilities to include the energy savings to the system from the installation of residential solar projects into the analysis.
- Application of Administrative Costs - Due to accounting variations at each utility, some differences are applied in how administrative costs are reported. Due to the small size of most POU's and the low staffing levels, in many cases, one employee administers and delivers service in a variety of program areas. Some utilities charge all administrative costs of public benefit programs to one area and may divide costs to programs on a percentage basis. Other utilities allocate a percentage of individual employee time and expense to different programs, as they occur. Some utilities allocate program delivery costs (such as energy auditors or educational flyers) to individual program areas.

## IV. Energy Efficiency Program Results

This section is intended to provide an aggregated discussion about current and future energy efficiency programs and savings that apply to California's public power utilities. The discussion stops short in most cases of utility specifics, and defers a more detailed overview of specific utility program descriptions, expenditures, as well as expected and actual energy savings to Appendix A of this report.

Table 3 summarizes POU energy efficiency program savings and cost information for fiscal years 2005 (FY05/06) and 2006 (FY06/07)<sup>4</sup>. During FY05/06, POU's spent approximately \$54 million on energy efficiency programs, reducing peak demand more than 50 megawatts and in excess of 165 million kilowatt-hours on an annual basis. POU energy efficiency expenditures for FY06/07 are expected to increase 41 percent to over \$77 million, resulting in 69 megawatts of savings during the summer peak and 338 million kilowatt-hours during the entire year.

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<sup>4</sup> Please note that Imperial Irrigation District, Merced Irrigation District, Modesto Irrigation District, Plumas-Sierra Rural Electric Cooperative, Sacramento Municipal Utility District, Turlock Irrigation District, and Truckee Donner Public Utility District all operate on a fiscal year that extends on a calendar year basis. As such, each utility's data for FY05/06 is actually calendar year 2005, and data for FY06/07 is actually for calendar year 2006. CMUA, NCPA, SCPPA, and Energy Commission staff recognize this data nuance.

**Table 3**  
**POU Program Information Summary**

<b>Year</b>	<b>Net Peak KW Savings</b>	<b>Net Annual Kwh Savings</b>	<b>Net Lifecycle Mwh savings</b>	<b>Net Demand Savings (KW)</b>	<b>Total Utility Cost (\$)</b>
FY05/06	52,552	169,302,601	2,249,214	63,987	\$54,412,728
FY06/07	68,898	326,077,007	3,788,265	178,877	\$77,028,227

As expected, the vast majority of the program impacts reflect public power's two largest utilities: the Los Angeles Department of Water and Power (LADWP) and the Sacramento Municipal Utility District (SMUD). Approximately 63 percent of peak savings and 60 percent of annual savings can be attributed to these two utilities in the most recent year. With aggressive program enhancements expected at LADWP, the share of savings applicable to the two utilities increases to roughly three-fourths of the total for FY06/07.

Table 4 takes a second look at public power's efficiency programs, removing LADWP and SMUD from the total. During FY05/06, the remaining utilities spent over \$21 million on energy efficiency programs, reducing load by 19.3 megawatts at the peak and over 67 million kilowatt-hours during the year. These same utilities are expected to increase program expenditures by over 18 percent to \$26 million, resulting in 18 million kilowatt-hours in additional savings above and beyond the levels reached last year. These utilities are expected to reduce peak load by more than 21 megawatts.

**Table 4**  
**POU Program Information Summary**  
**(Without LADWP and SMUD)**

<b>Year</b>	<b>Net Peak KW Savings</b>	<b>Net Annual Kwh Savings</b>	<b>Net Lifecycle Mwh savings</b>	<b>Net Demand Savings (KW)</b>	<b>Total Utility Cost (\$)</b>
2005-06	19,292	67,766,218	953,628	26,024	\$21,921,485
2006-07	21,638	85,905,676	1,1782,269	29,964	\$26,008,868

Looking at it another way, 12 utilities provide 94 percent of the net peak savings and net annual kilowatt-hour savings for the group as a whole. Table 5 provides the data for FY05/06 for the 12 utilities. Data for FY06/07 shows a similar influence, but is not repeated here.

**Table 5**  
**Utilities Most Heavily Influencing Energy Efficiency and Demand Savings**  
**(Using FY05/06 Data)**

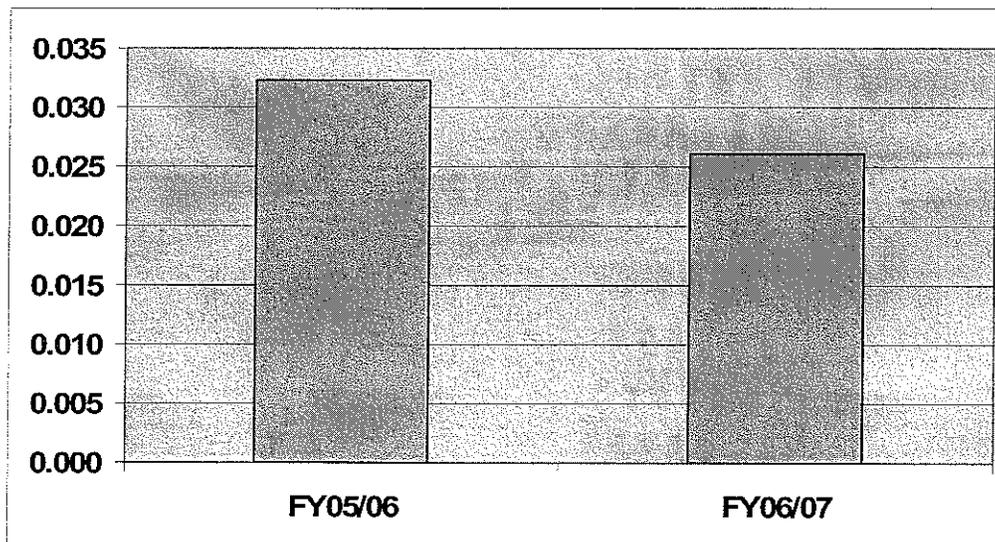
Utility	Net Peak KW Savings	Net Annual Kwh Savings	Net Demand Savings (KW)
Riverside	717	3,117,466	693
Modesto	1,327	3,222,034	1,601
Redding	1,728	3,964,502	2,050
Pasadena	1,379	4,501,422	1,623
Roseville	1,977	4,569,417	2,234
SVP	751	4,687,070	984
Burbank	992	5,574,127	1,057
TID	3,149	6,882,551	3,463
Glendale	1,500	8,463,099	2,282
Anaheim	3,047	12,765,922	3,502
LADWP	11,712	16,560,942	16,414
SMUD	21,544	84,963,287	21,544
<b>Subtotal</b>	49,823	159,271,839	57,447
<b>All Others</b>	2,725	10,018,607	6,536
<b>Total</b>	51,547	169,290,447	63,982

### Measuring Program Cost-Effectiveness

Energy efficiency experts apply several methods for calculating program cost effectiveness. For the California IOUs, the avoided cost of generation is used as the general criterion for this evaluation. For the public power community, this approach becomes much more complex, given that there are 39 different sets of applicable avoided costs. In that case, this report relies on an evaluation of program cost effectiveness which compares total energy efficiency investments to kilowatt-hour savings expected over the life of the measure.

As Figure 1 indicates, the levelized cost to deliver all energy efficiency programs for CMUA members in the aggregate is projected to fall from \$0.032 per lifecycle kilowatt-hour in FY05/06 to \$0.026 per lifecycle kilowatt-hour in FY06/07. This is the case for most utilities; however, there are some very small utilities in the state with very limited numbers of customers and programs, where delivery is very "lumpy" based on actual customer needs. These utilities do not have enough customers to be able to reach a certain percentage per year and keep cost and efficiency savings on a fairly even trend line. Their costs to deliver energy savings vary dramatically from year-to-year.

**Figure 1**  
**Levelized POU Program Costs (\$/Kwh)**



There are several POUs that are challenged to keep costs and efficiency savings on a fairly even trend line, including:

- Vernon and SVP, which have a large industrial base and a very small residential base, where projects tend to happen in large clusters.
- City of Biggs, which has only one industrial customer.
- Port of Oakland and the City of Industry, which have only a handful of customers.
- Lassen MUD, Plumas-Sierra, Trinity PUD, and Truckee Donner PUD, which serve small populations and have higher than normal distribution line miles per customer.
- Alameda and Lompoc, which serve little HVAC load and have a winter peak.

A second look at aggregate measure of cost effectiveness by the nine largest energy efficiency categories provides some additional insight about public power programs. Relying on a review of Table 6, consider the following conclusions about program cost effectiveness:

- Residential and non-residential lighting programs, residential cooling programs, and non-residential process programs are more cost effective than the average.
- Although they are less cost effective than the average, residential pool pump programs save significant peak kilowatts.
- Residential cooling and shell programs are less cost effective than the average because the high initial first costs of the programs require significant incentives.
- Programs in the “Other” category tend to be less cost effective than average on a first look, because this category includes such programs as energy audits, education, and programs with high initial first costs. While energy audits may not appear to be cost

effective at first glance, it is important to keep in mind that for most utilities, the energy audit is the customer's entry into the energy efficiency program at the utility. A resident or business will get accurate information on all the rebates available, financial paybacks from the replacement, and other assistance. This assistance and information helps many customers break the hurdles associated with investment in energy efficiency and actually implement the replacements or upgrades.

**Table 6**  
**Top Net Peak and Life Cycle Energy Savings by Program Category**  
**FY05/06**

<b>Program Category</b>	<b>Net Peak KW Savings</b>	<b>Lifecycle Energy Savings (Gwh)</b>	<b>Total Utility Cost (\$)</b>	<b>Levelized Utility Program Cost (\$/Kwh)</b>
Non Residential Lighting	10,889	678	\$11,763,351	\$0.0227
Other	10,613	169	\$ 9,019,927	\$0.0646
Residential Cooling	10,673	364	\$13,427,408	\$0.0614
Residential Lighting	6,362	398	\$ 4,536,798	\$0.0139
Non Residential Cooling	5,055	283	\$ 5,169,858	\$0.0266
Residential Shell	3,992	80	\$ 3,427,484	\$0.0598
Misc. Non Residential	1,805	50	\$ 703,818	\$0.0193
Residential Refrigeration	1,391	160	\$ 3,196,099	\$0.0293
Residential Pool Pump	907	16	\$ 618,304	\$0.0501
<b>Total</b>	<b>52,552</b>	<b>2,249</b>	<b>\$54,412,728</b>	<b>\$0.0322</b>

Table 7 provides similar information for the FY06/07 reporting year. Several points are evident from comparing Tables 6 and 7:

- The cost effectiveness of programs has improved over the previous year.
- There are more programs targeting the non residential sectors compared to the previous year.
- Despite these improvements, residential programs, other than lighting, continue to be less cost effective than the average.

**Table 7**  
**Top Net Peak and Life Cycle Energy Savings by Program Category**  
**Fiscal Year 06/07**

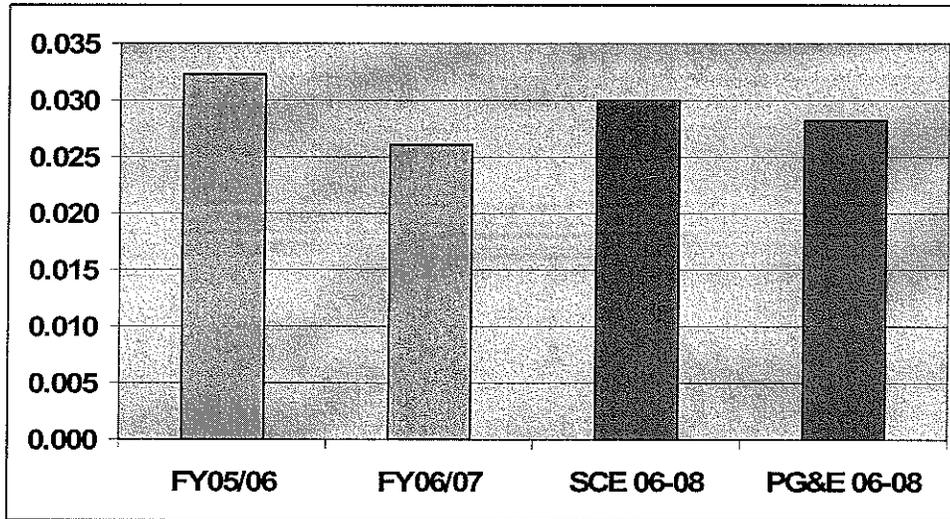
<b>Program Category</b>	<b>Net Peak KW Savings</b>	<b>Lifecycle Energy Savings (Gwh)</b>	<b>Total Utility Cost (\$)</b>	<b>Levelized Utility Program Cost (\$/Kwh)</b>
Residential Lighting	21,673	1,132	\$13,744,191	\$0.0146
Non Residential Lighting	13,285	807	\$15,157,105	\$0.0242
Residential Cooling	8,984	333	\$11,276,499	\$0.0562
Other	7,332	608	\$11,799,078	\$0.0250
Non Residential Cooling	6,994	358	\$ 8,180,951	\$0.0335
Residential Refrigeration	3,356	275	\$ 8,450,547	\$0.0402
Residential Shell	3,242	65	\$ 2,285,995	\$0.0477
Misc. Non Residential	1,595	71	\$ 1,334,483	\$0.0259
Res Pool Pump	738	10	\$ 376,619	\$0.0475
<b>Total</b>	<b>68,898</b>	<b>3,788</b>	<b>\$77,028,077</b>	<b>\$0.0261</b>

### Comparison of Public Power and Investor-Owned Utility Efficiency Programs

This section presents a high level comparison of the size of the POU energy efficiency programs with the size of the CPUC energy efficiency program administered by the California IOUs. Overall, the relative size of the aggregated POU energy efficiency programs is smaller than that of the IOUs, particularly after the increase in IOU program size beginning in 2006. However, aggregating all of the programs together and comparing based on size obscures the local decision-making and resource planning that each individual utility does to best meet the needs of its local community.

Figure 2 provides a superior measure of comparison, an evaluation of POU and IOU program cost effectiveness. Comparing the results from Figure 1 and contrasting them to results expected from PG&E and SCE programs for 2006-08, public power programs fare quite well. During FY06/07, public power programs are expected to be even more cost effective than what is estimated to be the case for the IOUs in 2006-08. This conclusion is in stark contradiction to statements made one year ago by various interest groups suggesting that POUs are lagging way behind their IOU counterparts. This is not the case here.

**Figure 2  
Comparison of POU and IOU  
Levelized Program Costs (\$/Kwh)**



Sources: SCE - Application for Approval of 2006-08 Energy Efficiency Program Plans, filed June 1, 2005. PG&E - 2006-08 Energy Efficiency Program Portfolio, Volume 1, Prepared Testimony Table 3-2, pg. 3-44.

Additional insight suggesting that this conclusion is on the mark was provided during a September 2006 Energy Action Plan meeting, in which the CPUC's Energy Division Director stated that the IOUs were not realizing the efficiency savings they had anticipated and that it might be worth revisiting the targets the CPUC established for the IOUs. Regular efficiency program updates available from PG&E and SCE on their respective websites continue to confirm that IOU savings targets are not being met. While California IOUs now have CPUC-mandated targets for expenditures and savings, they have not spent that money nor accomplished those savings. In fact, recent CEC reports indicate that in no year has any IOU ever spent its budgeted amount. The report further states that, in all years since 2000, the IOUs have never spent all of their budgeted energy efficiency funds; spending as little as 64 percent.<sup>5</sup> No such concern is evident in the public power community.

Every POU makes its own decision on how best to balance expenditures on energy efficiency, renewable energy, and other resources with the needs, desires, and characteristics of its local community. Some utilities choose to emphasize energy efficiency in their resource plans, others focus on renewable energy, and others choose programs that best serve their customers. This process results in high-quality, energy efficiency programs that are tailored to the needs of the local community, but not necessarily large programs. As evidenced by the report's conclusions,

<sup>5</sup> See CEC, *Funding and Energy Savings from Investor-owned Utility Energy Efficiency Programs in California for Program Years 2000-2004*, Publication CEC-400-2005-042-REV2, August 2005.

“large” programs are not necessarily “good” programs, or appropriate for a particular utility’s mix of available energy resources, local interest, and community characteristics.

As with any estimate or forecast of energy efficiency savings, there is some level of uncertainty around the results. The major drivers of uncertainty that could impact the results reported in this report include estimates in the assumption of net-to-gross ratio, adoption rates, and measure impacts. The primary sources of uncertainty in the reported energy efficiency program results are described below.

#### Net-to-Gross Ratio

The CPUC Energy Efficiency Policy Manual recommends specific net-to-gross ratios for several types of measures, with a default ratio of 0.8 for those types of measure not listed. All measures in the EE Reporting Tool have a default net-to-gross ratio of 0.8. The tool was designed to allow the user to modify the net to gross ratio. Increased EM&V efforts and program design on the part of the POU are expected to provide improved net-to-gross ratios for different types of measures, which may be used to improve future analysis.

#### Adoption Rate

Each utility made assumptions regarding customer adoption of new and existing energy efficiency programs to estimate the number of installations for 2006. Adoption rates are one of the hardest factors to predict, particularly for new programs, and can significantly impact the program’s ultimate results.

#### Measure Impact

Many of the assumptions relating to measure impact including hours of use, the type and vintage of devices being replaced, and baseline energy consumption have some measure of uncertainty. In addition, as explained above, KEMA made several simplifying assumptions in developing a condensed list of standard measures for use by a wide range of public utilities. This introduces additional uncertainty over and above that already embedded in the measure databases KEMA relied upon in developing simplified measures for this tool.

### Summary of Results by Public Power Utility

Tables 8 and 9 summarize the results of this analysis, shown by individual utility. The diversity of public power utilities is evidenced by the wide disparity of savings, largely a reflection of utility size. As an example, this analysis shows that only two municipalities (LADWP and SMUD) have peak savings that exceed five megawatts. Another seven utilities (Anaheim, Glendale, Modesto, Pasadena, Redding, Roseville, and Turlock) have peak savings that fall between one and five megawatts. In contrast, 21 of public power’s smaller utilities had peak savings well below 100 kilowatts.

In reviewing the tables, it is again important to recognize the wide range of accounting variations utilized by each utility, which results in some differences if one compares utility marketing,

EM&V, and administrative costs. As mentioned earlier, with many utilities having individuals administering and delivering services across a variety of program areas, costs are accounted for in different ways. As a result, certain conclusions about the level of administrative costs in relation to total program energy efficiency expenditures may be somewhat misleading.

**Table 8**  
**POU Energy Efficiency Program Savings**  
**FY05/06**

	Resource Savings Summary				Cost Summary			
	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Alameda	48	279,141	2,768,867	98	\$ 58,260	\$ -	\$ 39,185	\$ 97,445
Anaheim	3,047	12,765,922	178,014,260	3,502	953,220	-	195,069	\$ 1,148,289
Azusa	425	1,897,328	23,410,542	430	397,943	-	105,236	503,180
Banning	22	95,699	1,782,083	23	34,962	-	79,838	114,800
Biggs	11	34,767	311,867	19	5,899	9,125	3,600	18,624
Burbank	992	5,574,127	70,153,566	1,057	1,382,983	13,459	470,551	1,866,994
Colton	173	943,313	8,661,780	652	296,033	-	-	296,033
Corona	4	12,839	112,010	5	42,240	-	8,000	50,240
Glendale	1,500	8,463,099	102,794,384	2,282	2,675,710	-	227,450	2,903,160
Gridley	10	9,654	165,284	7	9,927	-	33,945	43,872
Healdsburg	1	4,704	141,120	1	8,001	-	-	8,001
Hercules	0	46	464	0	150	-	-	150
IID *	1,026	2,092,625	25,124,216	836	861,279	-	-	861,279
Industry	-	-	-	-	-	-	-	-
Island Energy	-	-	-	-	-	-	-	-
Lassen	28	77,466	914,419	28	69,481	-	-	69,481
Lodi	384	889,238	8,967,138	387	225,187	27,940	221,776	474,903
Lompoc	70	138,058	2,155,892	70	37,968	5,767	320	44,075
LADWP	11,712	16,560,942	190,536,856	16,414	3,957,313	832,455	6,118,132	10,907,900
Merced *	22	141,991	1,819,516	37	261,015	-	40,000	301,015
Modesto *	1,327	3,222,034	33,977,609	1,601	613,390	67,400	1,257,392	1,938,182
Moreno Valley	71	244,665	3,200,428	75	60,555	-	4,615	65,170
Needles	13	17,776	319,968	12	22,000	-	-	22,000
Palo Alto	158	1,876,727	16,727,428	3,368	371,031	30,596	433,000	834,627
Pasadena	1,379	4,501,422	77,542,684	1,623	1,099,787	-	158,455	1,258,241
Pumas-Sierra *	12	90,128	1,487,157	224	84,411	3,400	204,000	291,811
Port of Oakland	98	879,170	14,066,720	98	43,959	-	-	43,959
Rancho Cucamonga	93	133,955	401,866	93	20,093	-	-	20,093
Redding	1,728	3,964,502	64,240,773	2,050	1,435,485	-	182,585	1,618,070
Riverside	717	3,117,466	87,442,475	693	677,903	2,464	132,044	812,411
Roseville	1,977	4,569,417	74,057,333	2,234	1,056,722	113,813	653,761	1,824,296
Shasta Lake	24	37,064	551,649	17	20,527	-	45,080	65,607
Silicon Valley Power	751	4,687,070	49,433,156	984	510,780	1,003,069	957,616	2,471,464
SMUD *	21,544	84,963,287	1,104,928,081	21,544	10,426,448	-	11,205,201	21,631,649
TID *	3,149	6,882,551	101,478,850	3,463	1,319,773	-	224,705	1,544,478
Trinity PUD	-	22,107	442,144	-	57,640	-	-	57,640
Truckee Donner *	7	46,865	374,454	28	17,450	21,000	51,900	90,350
Ukiah	18	21,511	400,331	23	86,615	-	17,216	103,831
Vernon	12	43,922	307,454	12	9,410	-	-	9,410
<b>Summary</b>	<b>62,552</b>	<b>169,302,601</b>	<b>2,249,214,827</b>	<b>63,987</b>	<b>\$ 29,211,568</b>	<b>\$ 2,130,488</b>	<b>\$ 23,070,672</b>	<b>\$ 54,412,728</b>

Note: Utilities with an asterisk next to name have fiscal years that are on a calendar year basis (1/1 to 12/31)

**Table 9**  
**POU Energy Efficiency Program Savings**  
**FY06/07**

	Resource Savings Summary				Cost Summary			
	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg. EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Alameda	102	610,764	7,125,017	167	\$ 69,832	\$ -	\$ 48,398	\$ 118,230
Anaheim	3,312	13,849,264	193,196,343	3,783	1,078,325	-	195,069	1,273,394
Azusa	425	1,897,328	23,410,542	430	397,943	-	105,236	503,180
Banning	82	253,462	5,151,361	83	107,400	-	79,838	187,238
Biggs	8	131,260	1,675,630	8	43,100	1,200	6,809	51,109
Burbank	1,112	5,778,121	80,525,026	1,177	1,691,628	13,459	485,000	2,190,087
Colton	696	3,715,660	37,832,940	2,053	620,250	-	-	620,250
Corona	7	37,729	336,426	6	47,775	-	8,000	55,775
Glendale	1,500	8,463,099	102,794,384	2,282	2,675,710	-	227,450	2,903,160
Gridley	41	80,329	1,144,449	60	68,644	-	34,000	102,644
Healdsburg	31	113,892	1,471,205	65	85,500	-	45,000	130,500
Hercules	0	150	2,234	0	225	-	-	225
IID *	954	2,065,474	24,161,290	763	884,538	-	88,454	972,992
Industry	-	-	-	-	-	-	-	-
Island Energy	-	-	-	-	-	-	-	-
Lassen	80	307,050	4,277,680	481	188,615	-	124,150	312,765
Lodi	252	1,316,302	12,190,693	303	285,016	20,000	213,806	518,822
Lompoc	81	163,705	2,472,469	82	40,800	6,155	320	47,275
LADWP	27,109	153,074,867	1,625,558,769	129,183	17,011,193	2,802,625	9,607,000	29,420,818
Merced *	61	282,614	3,184,105	78	131,830	-	40,000	171,830
Modesto *	995	3,457,664	37,385,093	1,203	362,215	85,750	1,260,000	1,707,965
Moreno Valley	17	44,165	593,575	18	10,930	-	3,807	14,737
Needles	26	44,176	1,111,968	24	49,500	-	-	49,500
Palo Alto	228	2,129,416	20,582,728	3,440	440,213	30,596	330,000	800,809
Pasadena	2,010	5,244,214	99,246,251	2,228	1,038,652	-	163,455	1,202,107
Plumas-Sierra	12	171,167	1,550,600	219	107,688	14,000	217,000	338,688
Port of Oakland	-	10,507	31,522	-	150,000	-	-	150,000
Rancho Cucamonga	-	101,888	305,664	-	-	120,000	-	120,000
Redding	2,095	7,208,744	105,456,179	2,530	1,349,975	-	190,000	1,539,975
Riverside	795	3,059,978	85,260,676	785	758,359	1,825	319,091	1,079,275
Roseville	2,758	6,523,647	90,268,656	2,821	1,769,400	101,188	890,412	2,761,000
Shasta Lake	25	63,998	790,618	52	32,400	-	45,080	77,480
Silicon Valley Power	1,697	12,242,574	130,866,950	2,513	1,293,354	1,321,160	1,150,000	3,764,515
SMUD *	20,151	87,096,464	990,437,524	19,731	10,340,514	-	11,258,027	21,598,541
TID *	2,077	6,121,775	93,985,668	2,077	1,450,000	-	455,161	1,905,161
Trinity PUD	-	13,517	270,336	-	33,803	-	-	33,803
Truckee Donner *	7	46,865	374,454	28	17,450	21,000	51,900	90,350
Ukiah	53	122,358	1,606,379	104	\$ 139,422	\$ -	\$ 45,000	\$ 184,422
Vernon	101	232,821	1,629,747	101	\$ 79,533	\$ -	\$ -	\$ 79,533

Summary 68,898 326,077,007 3,788,265,149 178,877 \$ 44,851,731 \$ 4,538,959 \$ 27,687,463 \$ 77,078,152

Note: Utilities with an asterisk next to name have fiscal years that are on a calendar year basis (1/1 to 12/31)

## V. Demand Reduction Program Results

Since the California energy crisis, California has spent considerable effort toward the development of demand reduction programs. By definition, demand reduction programs seek to reduce load during critical peak time periods, often the hottest handful of hours during the course of a year. In this regard, customers are asked to participate in some level of load shedding or load shifting plan that allows grid operators to retain reliability and possibly prevent rolling blackouts in key areas of congestion.

Much of the attention toward demand reduction programs have focused on California's IOUs. With the recent adoption of the California Independent System Operator (CAISO) market redesign proposal and the confirmation of Federal Energy Regulatory Commission Commissioner Wellinghoff, demand response is getting a much closer look at the national level. For POU's, the use of demand response programs remains closely tied to the size of the utility. In general, large utilities have such programs while smaller utilities do not. At present, 12 POU's have some form of demand response program with one about to implement new programs and two others considering but not yet committed to future program development.

**Table 10**  
**POUs with Demand Reduction Programs**

Anaheim Public Utilities
Azusa Light & Water
Gridley Municipal Utility
Los Angeles Department of Water & Power
City of Lompoc
Modesto Irrigation District
City of Palo Alto Utilities
Port of Oakland
Plumas-Sierra
Riverside Public Utilities
Sacramento Municipal Utility District
Silicon Valley Power

With system reliability not a significant issue for most POU's, it should not be surprising that many of the traditional demand reduction programs are not being utilized with the various service territories. That being said, POU programs target large commercial and industrial users who can either reduce a significant portion of their loads or serve the loads from another source such as a backup generator during critical peak demand periods. The programs take into account the weather sensitivity of peak loads, load shedding strategies, and economic incentives to shed load or shift the serving of it to another source during peak periods.

The following represents a snapshot of some of the load shedding programs being offered by the POU's. Note that this information is not intended to be an exhaustive list of programs available. A complete set of demand reduction program information is included in the collective set of utility descriptions provided in Appendix A.

Anaheim

Anaheim has five programs. One is the Voluntary Load Reduction Program where businesses are notified and given time to prepare their loads for curtailment. The customers then properly shut down processes and cycle equipment off. Customers are notified via pager, phone or e-mail to facility or operations managers.

The Load Curtailment Exemption Program is offered to customers who can curtail load by 15 percent either at a single location or by aggregating their total electrical load (minimum 1 megawatt). Customers are required to comply with load reduction within 10 minutes of notification. Participating customers are exempt from rotating outages in exchange for a 15 percent load curtailment for the entire duration of every Stage 3 rotating outage event.

The Fuel Cost Reimbursement Program applies to customers with large backup generators. Participating customers transfer their facility loads from utility to generator power for up to 4 hour blocks during a Stage 3 emergency. The generators comply with the limits set by the South Coast Air Quality Management District, which allows backup generators to run during Stage 2 and 3 emergencies.

The "10 in Time" Program encourages commercial customers to voluntarily reduce energy usage by at least 10 percent or more, when contacted via an e-mail during an ISO Stage 3 emergency. Participating customers receive a one-time credit of \$25 for every 100 kilowatt-hours of demand reduction contributed during a Stage 3 event from June 1 through September 30.

The City Load Reduction Program involves city facilities that have installed or modified emergency back-up generation systems. These loads are called upon as the City's first line of defense during a Stage 3 alert to reduce load.

#### LADWP

LADWP offers three programs. The Small Business Rate Intervention Program provides on-site energy surveys to small business customers with an emphasis in helping them reduce demand through operational changes and suggesting lighting/HVAC retrofits with a goal of reducing demand below 30 kilowatts.

The Rate Structure for Customer Generation (CG) enables customers to avoid all energy charges and a portion of the demand charge. The rate provides electric bill savings of typically 5-18 cents per kilowatt-hour for energy generated by customer's generator. The amount of savings is dependent primarily on whether the generator is base-loaded or used for peak shaving.

The Customer Generation Rebate Program offers a cash rebate to a buyer of a qualifying Distributed Generation system. The system must be a fuel cell or renewable technology (other than PV) permanently installed on the premise and must meet all national, state and local standards, including an interconnection agreement.

#### Palo Alto

Palo Alto is conducting a demonstration program called the Advanced Metering Program. In the program, the utility provides participating electric customers with 15-minute interval data in either a Real Time format or on a Day-Plus-One load profiling format. This demonstration program provides customers with the necessary technical information to manage the overall

consumption of electricity for their facility, as well as stage their actions to respond to utility requests for load curtailment.<sup>6</sup>

### SMUD

SMUD offers three programs. It has a voluntary Peak Corp Program where participants allow SMUD to install a cycling device and send a radio signal to switch-off (or cycle) participant's central air conditioners. Cycling can occur periodically between June 1 and September 30.

The Demand Bid Program pays participants to reduce at least 75 kilowatts of non-critical load for blocks of at least two hours, 2 pm to 6 pm, weekdays, June through September. Customers receive a bill credit for load reductions below a calculated baseline based on their previous 10 business days' hourly average loads. Customers are compensated for curtailment performance meeting their load reduction bid. For performance less than their bid, the credit is reduced. Customers have access to a Web-based management system provided by SMUD for daily monitoring on non-curtailment days, and near-real time monitoring on curtailment days.

The Voluntary Emergency Curtailment Program calls on participants to reduce their electrical use by a pre-determined amount. There is no obligation and no penalty if the business is unable to respond to SMUD's request to reduce usage.

### Silicon Valley Power

SVP offers one program. With a high load factor, SVP offers a voluntary load shedding program called the "Power Reduction Pool." Using a voluntary arrangement, customers participating in the program reduce their load by at least one megawatt during system emergencies.<sup>7</sup>

## **VI. Conclusions and Next Steps**

CMUA is pleased to provide this report to the CEC, the first complete assessment of public power energy efficiency programs in California. From the analysis, it is clear that public power utilities are firmly committed to energy efficiency, consistent with state energy policy that places energy efficiency at the top of the state's Loading Order. In FY05/06, public power's \$52 million investment in energy efficiency reduced peak load by more than 50 megawatts and 167 million kilowatts. Consistent with the increased statewide commitment to energy efficiency, public power investment for this year increased significantly, reducing peak demand by another 73 megawatts and shaving 340 million kilowatt-hours over the course of the year.

As local entities, public power utilities and districts think about their citizens and services in an integrated manner that best serves the needs of their customers and communities. Energy

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<sup>6</sup> Lodi, SVP, Redding all have similar metering technologies available for customers to manage their overall consumption.

<sup>7</sup> The communication network in the Power Reduction Pool program is tested at least once per year.

efficiency is a critical element of the resource planning process, and its use applies to generation, transmission, and distribution services, as well as programs focused directly on customers.

### Next Steps

CMUA anticipates that this report will be incorporated into the 2007 Integrated Energy Policy Report process, as the CEC undertakes its energy supply/demand assessment during the coming months. Beyond the current assessment, however, there are several factors that will impact the timing and look of future energy efficiency reports.

- To be consistent with Section 1311 of the CEC's proposed data collection regulations, CMUA and its public power partners will request that the next submittal of this report be made in March 2008 rather than December 2007.<sup>8</sup> The March filing date synchronizes well with the CEC's analytical work it conducts as part of its Integrated Energy Policy Report process and reduces the amount of reports that are actually filed. Initial responses from CEC staff and Commissioners have been positive, and this shift would actually improve the timing for filings the CEC needs to complete its demand assessment.
- The signing of AB2021 into law requires energy efficiency targets to be established by each POU in California and some minor enhancements to the data that will be reported in subsequent reports in compliance with SB1037. CMUA, NCPA, and SCPA are reviewing various approaches for accomplishing these requirements, and are working closely with the CEC to ensure that the agency has a complete set of data from the public power community as it moves forward with its 2007 Integrated Energy Policy Report analysis.
- POUs are actively evaluating the best ways to comply with the need for an independent evaluation of POU energy efficiency programs. As a first order, the data contained in the EE Reporting Tool, as described in Section III of this report, suggests that much of the energy savings reported by each utility relies on standardized data for the assessment. While many of the larger POU retain EM&V services to evaluate their programs, the smaller utilities often do not have the resources or the funding to do such work.
- One approach being undertaken by NCPA for its members is a Request for Qualifications from contractors who provide EM&V services for utility energy efficiency and demand reduction programs. The POUs intend to use the EM&V services to not only help determine the target, but also to continually provide advances in the state of the art of EM&V, because it is not a mature industry. The POUs plan to document EM&V programs that result in improvements in energy efficiency and demand reduction programs in one or more of five major areas: 1) increased certainty, reliability, and level of savings; 2) reduced transaction costs; 3) reduced financing costs; 4) improved methods of demonstrating emission reduction

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<sup>8</sup> For additional information about the CEC's data collection regulations, please visit the CEC's website at the following location: [http://www.energy.ca.gov/data\\_collection/index.html](http://www.energy.ca.gov/data_collection/index.html).

and delivering enhanced environmental quality; and 5) improved methods for negotiating contractual terms to ensure that an energy efficiency project achieves or exceeds its goals.<sup>9</sup>

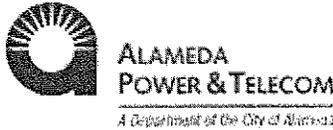
CMUA, NCPA, and SCPPA look forward to a continued dialogue on energy efficiency issues, and its desire to balance statewide energy policy direction with the needs and diverse interests of local communities.

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<sup>9</sup> NCPA's solicitation can be found at: <http://www.ncpa.com/current-issues/16.html>.

## **Appendix A: Description of Utility Programs**

## ALAMEDA POWER & TELECOM (ALAMEDA P&T)



- Established in 1887, the oldest municipal electric utility in the west
- Of approximately 33,000 customers, 85 percent are residential units that do not have air conditioning
- Peak demand: 68 megawatts, occurs in the early evening in the winter
- Alameda P&T load does not have large demand spikes like those experienced by most of California's electric utilities
- Annual energy use is 390 gigawatt-hours
- 131 employees

### **Alameda Energy Efficiency Program Highlights**

From FY1999 through FY2006, required public benefits expenditures totaled \$9,047,230; however, actual expenditures were \$12,428,727. Alameda P&T's high investments in renewable energy resources explain why expenditures of \$3,381,497 in excess of the public benefits requirements have been made.

### **Overview of Alameda P&T's Energy Efficiency Programs**

Since 1991, Alameda P&T has spent \$1.9 million in energy efficiency rebates, resulting in more than a 10 percent peak demand reduction and a 5 percent energy reduction. The savings are based upon engineering estimates and measurements that have been field-verified.

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

- Commercial Retrofit Program: Retrofit existing buildings with high efficiency lights and air conditioning equipment.
- Commercial Loan Program: Low interest loans for the installation of efficient equipment.
- Key Account Grant Program: Grants provided for energy saving projects such as building design and building commissioning.
- Free Energy Audits

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

- EnergyStar® Refrigerator Program: Rebates offered for the purchase of an EnergyStar® refrigerator and the recycling of the old unit.

- Weatherization Cash Grant Program: Installation of cost-effective weatherization measures in electrically heated homes.
- Meter Lending Program: Meters used to measure the cost to operate any 120-volt appliances.
- Compact Fluorescent Program: Coupons for the purchase of compact fluorescent light bulbs.
- Free Energy Audits
- Low-Income Program: Alameda P&T provides free energy audits, installs compact fluorescents, replaces inefficient refrigerators at no cost, and replaces halogen torchieres with compact fluorescent torchieres. After the energy audit and the efficiency measures have been completed, program participants receive a 25 percent electric bill discount.

**Public Facilities:**

Energy efficient lighting retrofits have been completed for all City facilities; and all traffic lights have been retrofitted with LEDs. The energy cost savings since the lighting retrofits started in 1993 is almost \$1,000,000.

**City Schools:**

Alameda P&T rebates of \$126,000 since program inception have helped support the retrofit of the 18 public schools with energy efficient lighting and heating/cooling equipment. The resulting energy cost savings is more than \$2 million since the 1994 retrofit.

**Proposed Alameda P&T Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain existing programs at current levels
- Ensure that all new electric load is efficient
- Evaluate the appropriateness of any new energy efficiency technologies
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures
- Measure and evaluate the impact of energy efficiency programs

**Low Income:**

- Maintain existing programs at current levels
- Ensure that all qualified customers are enrolled in the low-income program
- Conduct an evaluation of the low-income programs

**Alameda P&T Investment in Renewables:**

Alameda P&T will be continuing efforts to make its power supplies more efficient. When the available steam and water in the geothermal reservoir was declining in 1994, measures were implemented to increase the efficiency and output of the geothermal resources including:

- Treated wastewater from surrounding areas was piped into the geysers extending the life of this resource by more than 10 years.
- The steam turbines were rebladed to accommodate lower pressure steam.

- The new near-horizontal injection well resulted in an increase of steam and the capacity for injected water.

**Proposed Alameda P&T Renewable Investment Program: (for 2006-2007)**

- Continue the geyser effluent pipeline project and expand the near-horizontal injection well project at a total cost of close to \$1 million.
- Continue to evaluate landfill gas projects and other renewable power supplies in close proximity to Alameda P&T.

**Alameda P&T Demand Reduction Programs:**

Alameda P&T does not have a summer peak demand reduction program because peak demand occurs in the winter. There is no residential air conditioning and very limited industrial load to provide opportunities for demand reduction.

# ALAMEDA POWER & TELECOM SUMMARY DATA



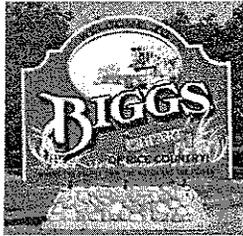
**ALAMEDA  
POWER & TELECOM**  
*A Department of the City of Alameda*

**Time Period for Reporting Data: Fiscal Year ending 6/30/2006**

Alameda - 0506 (V14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW	Net Annual kWh	Net Lifecycle kWh	Net Demand	Utility Incentives Cost (\$)	Utility Direct	Utility Mktg.	Total Utility Cost (\$)
		Savings	Savings	savings	Savings (kW)		Install Cost (\$)	EM&V, and Admin Cost (\$)	
Process	Non-Res Cooking	1	26,309	78,926	1	\$ 5,394		\$ 1,031	\$ 6,425
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	0	1,344	13,440	0	\$ 189		\$ 412	\$ 601
Lighting	Non-Res Lighting	30	113,722	1,232,626	37	\$ 4,854		\$ 3,092	\$ 7,946
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration	0	2,185	34,953	0	\$ 705		\$ 618	\$ 1,323
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting	6	37,150	334,346	43	\$ 5,296		\$ 6,419	\$ 11,715
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	3	21,744	391,392	3	\$ 25,698		\$ 16,573	\$ 42,271
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	6	76,688	683,184	12	\$ 16,124		\$ 11,040	\$ 27,164
<b>Total</b>		<b>48</b>	<b>279,141</b>	<b>2,768,867</b>	<b>98</b>	<b>\$ 58,260</b>		<b>\$ 39,185</b>	<b>\$ 97,445</b>

Alameda - 0607 (V14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW	Net Annual kWh	Net Lifecycle kWh	Net Demand	Utility Incentives Cost (\$)	Utility Direct	Utility Mktg.	Total Utility Cost (\$)
		Savings	Savings	savings	Savings (kW)		Install Cost (\$)	EM&V, and Admin Cost (\$)	
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	0	2,880	28,800	0	\$ 405		\$ 824	\$ 1,229
Lighting	Non-Res Lighting	82	351,606	3,868,390	103	\$ 14,019		\$ 6,184	\$ 20,203
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration	0	2,185	34,953	0	\$ 705		\$ 618	\$ 1,323
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting	6	34,464	310,176	44	\$ 4,760		\$ 6,419	\$ 11,179
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	4	24,835	447,034	4	\$ 29,378		\$ 22,871	\$ 52,249
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	10	194,794	2,435,664	15	\$ 20,565		\$ 11,482	\$ 32,047
<b>Total</b>		<b>102</b>	<b>610,764</b>	<b>7,125,017</b>	<b>167</b>	<b>\$ 69,832</b>		<b>\$ 48,398</b>	<b>\$ 118,230</b>

## **CITY OF BIGGS**



- Established in 1903
- 600 customers are residential
- The City of Biggs projects a growth rate of 10 percent over the next 3 years
- Peak demand – in July 2006 was 4.2 megawatts
- Annual energy use: 16.4 gigawatt-hours, but is projected to be 18.7 gigawatt-hours for 2006.
- City of Biggs employs 10 people

### **Biggs Energy Efficiency Program Highlights**

The City of Biggs implemented residential energy efficiency programs in 1997 and revised all of the programs in 2005. The energy efficiency programs being implemented for 2006-2007 have been expanded and will include commercial audits and educational programs.

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

- Residential Energy Audits: The City of Biggs offers free, customized home energy audits, including blower door tests, weatherization evaluations, and a review of energy usage. Specific recommendations to improve energy efficiency and reduce energy use are provided.
- Fluorescent Light Program: Customers who sign up for home energy audits or weatherization audits are provided with free fluorescent light bulbs, installed by a technician.
- Residential Energy Rebate Program: The City of Biggs manages a comprehensive residential energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and comprehensive technical support are available to residential customers to promote the installation of attic/roof insulation, dual pane windows, shade screens, higher-efficiency water heaters, programmable thermostats and the purchase of energy efficient clothes washers, clothes dryers and refrigerators.

#### **Proposed Biggs Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain Existing Programs at current levels.

**Modifications to Existing Programs:**

- Residential Energy Rebate Program: The residential rebate program has been changes to add rebates for solar and electric attic fans. The rebates for programmable thermostats have been eliminated.

**New Energy Efficiency Programs****Commercial Customer Programs: (2006-2007)**

- Commercial Energy Audits: The City of Biggs offers free, customized commercial energy audits, including lighting assessment, HVAC assessment, equipment assessment and a review of energy usage. Specific recommendations to improve energy efficiency and reduce energy use are provided.
- Commercial Energy Rebate Program: The City of Biggs offers customized energy efficiency incentive programs to commercial customers, focusing on peak load reduction and energy savings. Generous rebates and comprehensive technical support are available to commercial customers to promote the installation of energy efficient lighting, HVAC, equipment and controls.

**New School Programs:**

- Investment Grade Audit Program: The City of Biggs offers free Investment Grade Audits for all school district buildings as a way to support the district in acquiring grant funding for energy efficiency retrofits.
- Education Services: The City of Biggs supports the existing “3-12 Solar Schoolhouse Program” by funding teacher participation in the “Summer Institute for Educators” and by supplying Solar Schoolhouse Educational Tools for classroom use.

**Biggs Demand Reduction Programs:**

Biggs currently does not have any demand reduction programs in place.

# CITY OF BIGGS

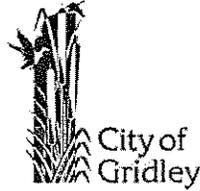


**Time Period for Reporting Data: Fiscal Year ending 6/30/2006.**

Biggs - 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	1	2,922	46,746	1		\$ 825	\$ 540	\$ 1,365
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	0	229	2,288	0	\$ 75		\$ 26	\$ 101
Appliances	Res Dishwashers	0	173	2,246	0	\$ 225		\$ 26	\$ 251
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	0	(113)	1,650	(1)	\$ 1,149		\$ 19	\$ 1,168
HVAC	Res Heating								
HVAC	Res Shell	8	6,137	95,774	8	\$ 3,699	\$ 5,075	\$ 1,106	\$ 9,880
Lighting	Res Lighting	1	6,708	60,372	9		\$ 3,225	\$ 697	\$ 3,922
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	1	3,110	55,987	1	\$ 750		\$ 646	\$ 1,396
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other		15,602	46,805				\$ 540	\$ 540
<b>Total</b>		<b>11</b>	<b>34,767</b>	<b>311,867</b>	<b>19</b>	<b>\$ 5,899</b>	<b>\$ 9,125</b>	<b>\$ 3,600</b>	<b>\$ 18,624</b>

Biggs - 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling		40,000	720,000		\$ 10,000		\$ 2,926	\$ 12,926
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting		64,800	712,800		\$ 16,200		\$ 2,896	\$ 19,096
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	0	512	5,120	0	\$ 150		\$ 21	\$ 171
Appliances	Res Dishwashers	0	149	1,934	0	\$ 150		\$ 8	\$ 158
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	3	2,459	42,169	3	\$ 2,400		\$ 171	\$ 2,571
HVAC	Res Heating								
HVAC	Res Shell	4	4,148	82,175	4	\$ 5,800	\$ 1,200	\$ 334	\$ 7,334
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	1	3,590	64,627	1	\$ 2,400		\$ 263	\$ 2,663
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other		15,602	46,805		\$ 6,000		\$ 190	\$ 6,190
<b>Total</b>		<b>8</b>	<b>131,260</b>	<b>1,675,630</b>	<b>8</b>	<b>\$ 43,100</b>	<b>\$ 1,200</b>	<b>\$ 6,809</b>	<b>\$ 51,109</b>

## **GRIDLEY MUNICIPAL UTILITY (GMU)**



- The City's electric utility was established in 1910
- 2,650 customers, 83 percent are residential
- The City of Gridley projects a growth rate of 5 percent for the next 5-10 years
- Peak demand – 10.6 megawatts; usually annual peaks are in July or August (10.6 megawatts reached on July 25, 2006)
- Annual energy use: 35 gigawatt-hours

### **GMU Energy Efficiency Program Highlights**

In response to the passage of AB 1890, GMU initiated a variety of new energy efficiency programs in 2000. Having a high percentage of residential customers, the program offerings have been tailored to residential customers and have included a refrigerator buy-back program, a compact florescent light giveaway, a residential weatherization program, and an appliance rebate program. Recent program revisions have deleted some programs and added others.

#### **Current Commercial Customers Programs:**

- Energy Audits: On-site energy audits by GMU energy specialists are available to commercial customers. Energy efficiency measures are recommended based on each audit and the GMU personnel follow up with additional visits to answer questions and make additional recommendations.
- Custom Energy Efficiency Incentive Program: GMU financial incentives for commercial customers are based on individual audits and audit recommendations and are tailored to the individual customer needs based on the audit and the potential energy savings.
- Lighting retrofit: A commercial lighting retrofit program is offered due to the prevalence of T-12 lighting in businesses throughout the City.

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

- Energy Efficiency Hotline: A toll free line with GMU personnel is available for our customers to answer questions and provide information on energy efficiency related matters.
- Energy Audits: On-site energy audits by GMU energy specialists are available to residential customers. Energy efficiency measures are recommended based on each audit and the GMU personnel follow up with additional visits to answer questions and make additional recommendations.
- Appliance Rebates: GMU provides rebates for the purchase of EnergyStar® appliances

- Weatherization Incentives: GMU provides financial incentives for homeowners who invest in weatherization measures.
- Rate and Energy Assistance Programs: GMU offers rate assistance for both customers with a medical necessity and low-income senior citizens.

**Community Programs:**

- Municipal Facilities: The City initiated a complete replacement of refrigerators at city facilities at the same time that it offered a residential refrigerator “buy-back” program. The refrigerators replaced older inefficient units at local districts as well. Estimated reductions of 5 kilowatts and 20 megawatt-hours annually were realized.
- Solar Aerator Installation: The City installed Solar Bee© aerators at its sewer plant and has reduced both peak demand and overall usage. Demand was reduced by an estimated 31 kilowatts and usage was reduced by about 117 megawatt-hours per year.
- Photovoltaic Demonstration Projects: GMU has initiated 2 PV demonstration project (2-3 kilowatts each) to be sited in Gridley. These PV projects will be evaluated for their feasibility; be used to demonstrate to the community how PV projects work; and be used to familiarize staff, crew and key decision makers with PV technology. In conjunction with these projects, GMU is developing a program that meets the guidelines of the recently enacted SB 1 legislation.
- Ultra-High Efficiency Cooling Projects: GMU is funding demonstration projects on community facilities to test new cooling technologies and assess their viability for additional applications in Gridley.

**Education Program:**

- Energy Curriculum: GMU provides 5<sup>th</sup> Grade teachers with an energy/water efficiency curriculum for use in their classrooms.

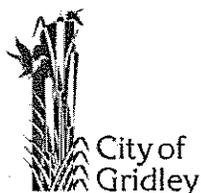
**Proposed GMU Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain existing programs at current levels
- Ensure that all new electric load is efficient
- Evaluate the appropriateness of any new energy efficiency technologies
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures
- Measure and evaluate the impact of energy efficiency programs

**GMU Demand Reduction Programs:**

The City of Gridley’s water and sewer utilities can activate backup generators at wells and sewer lift stations throughout the City resulting in up to a 15 percent reduction of overall demand. In addition, the City has called upon the local hospital to utilize their backup generator for additional demand reduction capacity. Finally, in extreme circumstances, the City has called upon its single largest customer to shut down. Their load of approximately 750 kilowatts can be as much as 15 percent of average city loads.

# GRIDLEY MUNICIPAL UTILITY (GMU)



**Time Period for Reporting Data: Calendar year ending 12/31/06.**

Gridley - 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	0	229	2,288	0	\$ 75	\$ 470	\$	545
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics					\$ 4,235	\$ 19,888	\$	24,123
HVAC	Res Cooling	7	5,503	96,839	3	\$ 5,417	\$ 11,249	\$	16,666
HVAC	Res Heating								
HVAC	Res Shell	3	3,252	54,773	3	\$ 25	\$ 220	\$	245
Lighting	Res Lighting	0	98	1,074	0				
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	0	573	10,310	0	\$ 175	\$ 2,117	\$	2,292
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>10</b>	<b>9,654</b>	<b>165,284</b>	<b>7</b>	<b>\$ 9,927</b>	<b>\$ 33,945</b>	<b>\$</b>	<b>43,872</b>

Gridley - 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	21	26,928	520,920	20	\$ 36,750	\$ 15,476	\$	52,226
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	1	1,572	23,580	1	\$ 2,000	\$ 701	\$	2,701
Lighting	Non-Res Lighting	4	20,760	228,360	4	\$ 15,000	\$ 6,784	\$	21,784
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	1	1,373	13,728	1	\$ 450	\$ 408	\$	858
Appliances	Res Dishwashers	0	346	4,493	0	\$ 150	\$ 133	\$	283
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	5	5,305	91,582	6	\$ 6,180	\$ 2,721	\$	8,901
HVAC	Res Heating								
HVAC	Res Shell	6	7,130	105,633	6	\$ 6,664	\$ 3,138	\$	9,802
Lighting	Res Lighting	3	16,480	148,320	22	\$ 1,200	\$ 4,406	\$	5,606
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	0	435	7,834	0	\$ 250	\$ 233	\$	483
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>41</b>	<b>80,329</b>	<b>1,144,449</b>	<b>60</b>	<b>\$ 68,644</b>	<b>\$ 34,000</b>	<b>\$</b>	<b>102,644</b>

## CITY OF HEALDSBURG



- 5,461 customers, 4,400 are residential
- The City of Healdsburg projects a growth rate of 1.5 percent over the next 3 years
- Peak demand – 19.9 megawatts; (*July 2004*)
- Annual energy use: 71,351 megawatt-hours
- Power content: Geothermal 50 percent, small hydro 1 percent, large hydro 29 percent, other renewable 1 percent, and nonrenewable 19 percent

### **City of Healdsburg Energy Efficiency Program Highlights**

The City of Healdsburg started implementing efficiency programs in 1997. For FY05/06, these programs resulted in peak demand savings of 1 kilowatt, net demand savings of 1 kilowatt and cumulative energy savings of 4,704 kilowatt-hours.

Healdsburg has recently undergone an extensive redesign/upgrade of their energy efficiency and anticipates doing the same with their renewable energy (PV) program. Programs offered in the past that will continue forward include the following:

- **“Time-of-Use Rates” Program:** The City of Healdsburg has implemented a “time-use-rate” program for both our residential and commercial customers, enabling them to reduce their energy costs through the time management of their energy usage.
- **Residential “Energy Efficiency Outreach:** The City of Healdsburg has implemented an energy outreach program for our Hispanic residential customers offering comprehensive energy efficiency information to improve energy efficiency and reduce energy use.
- **Customer-Centered Programs:** The City of Healdsburg now offers a comprehensive energy efficiency incentive program for residential and commercial customers focusing on peak load reduction and energy conservation. Generous rebates are offered for the installation of various energy efficiency weatherization measures including, but not limited to, awnings, shade screens, compact fluorescent lamps, insulation, and double paned windows, as well as the purchase of higher-efficiency HVAC systems, electric clothes washers & dryers, refrigerators, freezers, dishwashers, and ceiling fans.

**Proposed Healdsburg Energy Efficiency Programs and Services: (for 2006-2007)**

- Redesign/upgrade existing programs and increase budget levels.
- Ensure that all new electric loads are efficient.
- Evaluate the appropriateness of any new energy technologies.
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures.
- Measure and evaluate the impact of energy efficiency programs.

**Healdsburg Demand Reduction Programs:**

The City of Healdsburg has implemented a comprehensive energy efficiency program for both City facilities and the Healdsburg Hospital focusing on peak load reduction, resulting in substantial energy savings. In addition, new programs now being implemented will include consideration and evaluation of their impact on demand reduction.

# CITY OF HEALDSBURG



**Time Period for Reporting Data: Fiscal year ending 6/30/06.**

Healdsburg - 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW	Net Annual kWh	Net Lifecycle kWh	Net Demand	Utility Incentives Cost (\$)	Utility Direct	Utility Mktg.	Total Utility Cost (\$)
		Savings	Savings	savings	Savings (kW)		Install Cost (\$)	EM&V, and Admin Cost (\$)	
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration								
Other	Res Solar	1	4,704	141,120	1	\$ 8,001			\$ 8,001
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>1</b>	<b>4,704</b>	<b>141,120</b>	<b>1</b>	<b>\$ 8,001</b>			<b>\$ 8,001</b>

Healdsburg - 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW	Net Annual kWh	Net Lifecycle kWh	Net Demand	Utility Incentives Cost (\$)	Utility Direct	Utility Mktg.	Total Utility Cost (\$)
		Savings	Savings	savings	Savings (kW)		Install Cost (\$)	EM&V, and Admin Cost (\$)	
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	11	67,880	746,680	15	\$ 38,750		\$ 22,839	\$ 61,589
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	1	1,830	18,304	1	\$ 600		\$ 560	\$ 1,160
Appliances	Res Dishwashers	0	288	3,744	0	\$ 125		\$ 115	\$ 240
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	2	2,309	39,733	6	\$ 3,325		\$ 1,215	\$ 4,540
HVAC	Res Heating								
HVAC	Res Shell	7	5,689	68,096	7	\$ 1,825		\$ 2,083	\$ 3,908
Lighting	Res Lighting	4	21,720	195,480	30	\$ 1,875		\$ 5,979	\$ 7,854
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	0	2,176	39,168	0	\$ 1,500		\$ 1,198	\$ 2,698
Other	Res Solar	6	12,000	360,000	6	\$ 37,500		\$ 11,011	\$ 48,511
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>31</b>	<b>113,892</b>	<b>1,471,205</b>	<b>66</b>	<b>\$ 85,500</b>		<b>\$ 45,000</b>	<b>\$ 130,500</b>

## LODI ELECTRIC UTILITY (LEU)



- Established in 1910
- 28,000 customers (23,000 residential; 5,000 commercial/industrial)
- Peak demand: 130 megawatts, occurs in: summer daytime
- Annual Energy Use: 459,637,092 kilowatt-hours (FY05/06)

### **LEU Energy Efficiency Program Highlights**

Since 1998, LEU has spent more than \$6 million on demand-side management rebates and programs to increase energy efficiency for the Lodi community, resulting in a 12 percent peak demand reduction and an 8 percent energy reduction.

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

- Lodi Commercial Rebate Program: Offers rebates to small business customers who purchase and install energy efficiency measures, such as: attic insulation, window tinting/shade screens, programmable thermostats, ceiling fans, maintain refrigeration/HVAC equipment.
- Lodi Industrial Customer High Efficiency Program: Offers rebates of up to \$10,000 to large commercial/industrial customers in Lodi; the rebate is for pumps/motors, process equipment improvements, building envelope improvements, HVAC/chiller replacements, lighting retrofits; the rebate formula- \$0.15 for every kilowatt-hours of proven energy savings.

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

- Lodi Appliance Rebate Program: Provides rebates to all customers who purchase an EnergyStar® refrigerator, dishwasher, and/or front-loading clothes washer.
- Lodi Energy Efficient Home Improvement Rebate Program: Provides rebates to residential customers for installing attic/wall insulation, ceiling fans, repairing/replacing HVAC duct work, for installing attic fans, whole fans, shade screens/window tinting.
- Lodi Helping Hands Project: Provides weatherization services to low-income families and senior shut-in's.

### **Current Commercial and Residential Customer Programs**

- Lodi Refrigerator/Freezer Recycling Program: Offers (once per year), the removal and recycling of old refrigerators/freezers to Lodi customers.
- Lodi Energy Audit Program: Provides free on-site and computer/on-line energy audits for residential and small commercial customers.

### **Current Public School Programs:**

- Lodi "LivingWise" Program: Provides energy efficiency kits and manuals to up to 500 6th grade students in Lodi schools - teaching them about the basics of energy and water conservation.
- Lodi Solar Schoolhouse Program: Provides teacher mini-grants and teacher training regarding solar/renewable energy resources; we also sponsor, via this program, an annual Lodi Solar Olympics: Held each May 2006 event we had 400 students participate; we utilize public benefits funds for the mini-grants, and to pay for the professional services of the Rahus Institute.

### **Current Low Income Residential Support Programs:**

- Lodi C.A.R.E. Package Program: Grants to very low-income in paying their electric utility account; the program coordination/customer screening is provided by the Lodi Salvation Army (we pay their time and talents, as well as grant dollars of up to \$150 per eligible family). Provides rebates to all customers who purchase an EnergyStar® refrigerator, dishwasher, and/or front-loading clothes washer.
- Lodi Helping Hands Project: Provides weatherization services to low-income families and senior shut-in's.

### **Measurement Methodology:**

Lodi utilizes the KEMA Consulting 'Measure Quantification Methodology' report for various residential and small commercial rebate programs; for large commercial/industrial customer rebates/programs, the customer is required to provide an energy audit detailing their projected savings.

### **Proposed LEU Energy Efficiency Programs and Services: (for 2006-2007)**

Maintain Existing Programs at current levels.

### **New Energy Efficiency Programs:**

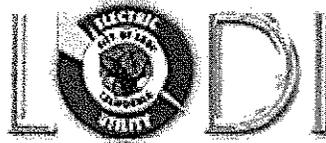
LEU has earmarked an additional \$100,000 in spending for demand-side management programs for this current fiscal year compared to FY05/06.

- Lighting Retrofit Lodi Library: LEU is scheduled to complete a retrofit of the lighting at the Lodi Library during FY06/07. The actual energy savings associated with the retrofit is projected to be approximately \$1,000 per month; the payback in energy savings alone will be just over 3 years.

### **LEU Demand Reduction Programs:**

LEU does not currently have any demand reduction programs in place.

# LODI ELECTRIC UTILITY (LEU)



**Time Period for Reporting Data: Fiscal Year ending 6/30/2006.**

Lodi - 0506 (V14)		Cost Summary							
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking	4	4,877	73,152	8	\$ 15,000		\$ 1,809	\$ 16,809
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	7	12,259	163,216	7	\$ 28,020		\$ 4,037	\$ 32,056
Lighting	Non-Res Lighting	190	7,045	70,448	190	\$ 15,844		\$ 1,742	\$ 17,586
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration	1	1,193	17,892	1	\$ 750		\$ 443	\$ 1,193
Appliances	Res Clothes Washers	25	60,861	608,608	25	\$ 26,600		\$ 15,052	\$ 41,652
Appliances	Res Dishwashers	3	7,866	102,253	2	\$ 8,300		\$ 2,529	\$ 10,829
Consumer Electronics	Res Electronics	0	172	1,548	0	\$ 250		\$ 38	\$ 288
HVAC	Res Cooling	8	16,561	174,594	10	\$ 5,380		\$ 4,318	\$ 9,698
HVAC	Res Heating								
HVAC	Res Shell	39	24,027	444,873	39	\$ 47,840		\$ 11,003	\$ 58,843
Lighting	Res Lighting	9	48,886	439,978	67	\$ 2,904		\$ 10,882	\$ 13,786
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	65	417,886	4,358,538	4	\$ 22,200	\$ 27,940	\$ 107,796	\$ 157,936
Other	Res Solar	4	9,600	288,000	4	\$ 27,200		\$ 7,123	\$ 34,323
Water Heating	Res Water Heating								
Other	Other	29	278,005	2,224,038	29	\$ 24,900		\$ 55,005	\$ 79,905
<b>Total</b>		<b>384</b>	<b>889,238</b>	<b>8,967,138</b>	<b>387</b>	<b>\$ 225,187</b>	<b>\$ 27,940</b>	<b>\$ 221,776</b>	<b>\$ 474,903</b>

Lodi - 0607 (V14)		Cost Summary							
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking	2	2,303	33,844	4	\$ 14,000		\$ 594	\$ 14,594
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	0	150	1,496	0	\$ 255		\$ 26	\$ 281
Lighting	Non-Res Lighting	29	110,610	1,236,464	30	\$ 7,000	\$ 20,000	\$ 21,686	\$ 48,686
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration	3	5,964	89,460	3	\$ 3,750		\$ 1,569	\$ 5,319
Appliances	Res Clothes Washers	15	35,464	354,640	15	\$ 11,625		\$ 6,220	\$ 17,845
Appliances	Res Dishwashers	2	6,496	84,448	2	\$ 7,125		\$ 1,481	\$ 8,606
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	6	24,816	260,640	20	\$ 9,555		\$ 4,571	\$ 14,126
HVAC	Res Heating								
HVAC	Res Shell	35	26,784	483,946	35	\$ 58,858		\$ 8,488	\$ 67,345
Lighting	Res Lighting	5	26,520	238,680	36	\$ 1,600		\$ 4,186	\$ 5,786
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	48	330,530	3,433,744	51	\$ 31,248		\$ 60,223	\$ 91,471
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	107	746,666	5,973,331	107	\$ 140,000		\$ 104,763	\$ 244,763
<b>Total</b>		<b>252</b>	<b>1,316,302</b>	<b>12,190,693</b>	<b>303</b>	<b>\$ 285,016</b>	<b>\$ 20,000</b>	<b>\$ 213,806</b>	<b>\$ 518,822</b>

## CITY OF LOMPOC



- Established in 1923
- 14,700 customers; 90 percent are residential, purchasing 44 percent of total sales. Commercial customers use 21.5 percent; industrial and demand customers 25.5 percent; and municipal facilities 9 percent.
- Peak demand – 26 megawatts; (winter peak)
- The City is located in coastal climate zone 4, subsequently, there is virtually no air conditioning needed in residential construction and a limited need in commercial buildings. The City does not offer rebates for retrofit to more efficient air conditioning units. The majority of the energy efficiency programs focus on rebates to increase appliance efficiency.

### **Energy Efficiency Program Highlights**

Lompoc initially implemented energy audit programs in 1981. In 1991, the programs were expanded to include energy efficiency education programs. In 2001, energy efficiency rebates and a low-income refrigerator subsidy program were added. Since then, additional programs have been added and existing programs modified to accommodate the community's needs.

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

- Commercial Lighting Rebate: A rebate of \$15 per ballast is paid to commercial customers who replace/retrofit current lighting with more energy efficient fixtures or hard wired in lamps and ballasts. This program was first offered in May 2001.
- Exit Sign Rebate: A rebate of \$15 to replace existing incandescent or fluorescent-lit exit signs with LED, or \$30 to replace same signs with electro-luminescence signs. This rebate was first offered in 2002. (Net Annual Savings: 28,126 kilowatt-hours).

#### **Current Commercial and Residential Customer Programs:**

- Refrigerator Rebate: A \$120 rebate is paid to electric customers or landlords who rent to City customers to replace working refrigerators or freezers manufactured before 1992 with a new model. The old appliance must be recycled at the City Landfill. (Net Annual Savings [all refrigerator programs]: 85,263 kilowatt-hours.)
- Refrigerator BuyBack Program: \$35 is paid to customers who recycle, at the Landfill, any second working refrigerator or freezer. This program was first offered in May 2001.

- Clothes Washer Rebate: A \$120 rebate is paid to customers who replace a working (non Energy Star®) clothes washer with a new Energy Star® model. The old clothes washer must be recycled at the Landfill. This program was first offered in March 2003. (Net Annual Savings: 3,405 kilowatt-hours).
- Dishwasher Rebate: A \$50 rebate is paid to electric customers who replace working dishwashers, which were manufactured before 1994, with an Energy Star® model. The old dishwasher must be recycled at the Landfill. This program was first offered in March of 2003. (Net Annual Savings: 1,347 kilowatt-hours ).
- Gas Conversion Payment: \$100 is paid to electric customers who replace and recycle an electric water heater or clothes dryer with a gas appliance. The electric appliance must be recycled at the Landfill. (Net Annual Savings: 12,717 kilowatt-hours).
- LED Holiday Lighting: A rebate of \$4 for up to 35 light strands and \$8 for larger strands is paid to utility customers who purchase LED holiday lighting. This program was first offered in October of 2005.
- Renewable Resource Rebate: Any electric customer who installs a grid-tied self-generating electric system that is considered to be renewable energy will receive a rebate of \$3.50 per watt. This program was first offered in February 2004. (Net Annual Savings: 24,000 kilowatt-hours).
- Energy Audits: Lompoc provides free energy audits for all customers and an online audit for residential customers.

#### **Current Low Income Customer Programs:**

- Income Qualifying Refrigerator Purchase Program: Up to a \$570 payment is made for a new refrigerator for income qualifying customers. The old refrigerator must be in working order; must have been manufactured before 1992; and will be recycled at the landfill. The customer is required to repay the City \$240 over a one-year time period.
- Rate and Energy Assistance Programs: Lompoc offers a rate discount for low-income customers and a special medical needs rate. Lompoc offers a subsidized refrigerator program to low-income customers.

#### **Current Community Programs:**

- Education Programs: Lompoc encourages energy conservation through school and community education programs.

#### **Proposed City of Lompoc Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain existing programs at current levels with additional promotion of these programs.
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures.
- Measure and evaluate the impact of energy efficiency programs.

#### **New Energy Efficiency Programs:**

- Rebate Program: Financial incentives for energy efficiency upgrade of existing equipment for both residential and commercial customers.

**System Upgrades:**

Lompoc will be continuing the upgrading of all 4 kilovolts lines to 12 kilovolts distribution lines and is purchasing only low-loss transformers.

**Lompoc Demand Reduction Programs:**

Lompoc offers a Firm Curtailable Load Purchase Program, but no customer has utilized it since it was created. Customers who have an average peak-period demand of at least 500 kilovolt-A during each of the last six summer months may sign up for this rate program. The customer must sign a contract for electric service for a five-year period, and will be required to reduce demand when the City requests such curtailment. The customer receives a demand payment of \$6.00 per kilowatt of curtailed demand per season and \$0.10 per kilowatt-hour.

# CITY OF LOMPOC



**Time Period for Reporting Data: Fiscal Year ending 6/30/2006.**

Lompoc 0506 (V14)		Cost Summary							
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	6	28,126	285,224	6	\$ 2,290	\$ 320	\$ 5	\$ 2,615
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	1	3,405	34,048	1	\$ 8,400	\$	\$ 45	\$ 8,445
Appliances	Res Dishwashers	0	1,347	17,514	0	\$ 1,800	\$ 1,620	\$ 45	\$ 3,465
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	8	85,263	1,534,738	8	\$ 20,850	\$ 3,330	\$ 45	\$ 24,225
Other	Res Solar	1	2,400	72,000	1	\$ 3,500	\$ 90	\$ 90	\$ 3,680
Water Heating	Res Water Heating	5	4,800	43,200	5	\$ 100	\$ 45	\$ 45	\$ 190
Other	Other	48	12,717	169,169	48	\$ 1,048	\$ 362	\$ 45	\$ 1,455
<b>Total</b>		<b>70</b>	<b>138,058</b>	<b>2,155,892</b>	<b>70</b>	<b>\$ 37,988</b>	<b>\$ 5,767</b>	<b>\$ 320</b>	<b>\$ 44,075</b>

Lompoc 0607 (V14)		Cost Summary							
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	9	42,166	439,664	9	\$ 8,140	\$ 320	\$ 5	\$ 8,465
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	2	3,840	38,400	2	\$ 9,360	\$	\$ 45	\$ 9,405
Appliances	Res Dishwashers	0	1,684	21,892	1	\$ 2,250	\$ 2,025	\$ 45	\$ 4,320
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	11	97,946	1,763,035	11	\$ 19,710	\$ 3,375	\$ 45	\$ 23,130
Other	Res Solar							\$ 90	\$ 90
Water Heating	Res Water Heating	5	4,800	43,200	5	\$ 100	\$ 45	\$ 45	\$ 190
Other	Other	56	13,268	166,278	56	\$ 1,240	\$ 390	\$ 45	\$ 1,675
<b>Total</b>		<b>81</b>	<b>163,705</b>	<b>2,472,469</b>	<b>82</b>	<b>\$ 40,800</b>	<b>\$ 6,155</b>	<b>\$ 320</b>	<b>\$ 47,275</b>

## **PORT OF OAKLAND**



- 200-300 customers, 100 percent are commercial
- Peak demand: 12 megawatts
- Annual energy use: 74 gigawatt-hours

## **Port of Oakland Energy Efficiency Program Highlights**

### **Current Energy Efficiency Projects:**

- The Port of Oakland is currently conducting an Energy Audit program that will result in recommendations of five major energy saving retrofit/improvement projects that could be undertaken to effectively support load reduction and the more efficient use of energy in the area. The proposed energy efficiency projects will be prioritized by highest to lowest energy savings. Rebates will be provided for the energy efficiency projects completed based on the energy audit recommendations, up to 100 percent of the total energy audit cost.
- Energy Efficient Equipment Upgrade Installation Rebates: The Port has implemented two programs that provide generous rebates and solid technical support for the installation of new, energy efficient equipment by our commercial customers. Under one program, the eligible projects must reduce energy usage by a minimum of 10 percent, and must be operated and produce verifiable energy savings for at least five (5) years to be eligible for a rebate of the equipment cost differential (up to a 100 percent rebate for energy saving of 40 percent or more). Under the second energy equipment installation program, customers will be reimbursed for projects based on a single flat incentive rate of \$0.08 per annual kilowatt-hours saved, applied to annual energy savings (kilowatt-hours) of 20 percent or more.
- Lighting Retrofit: A program providing rebates for the installation of energy efficient lighting that reduces annual energy usage by at least 35 percent in commercial facilities. This rebate is based on a single flat incentive rate of is \$0.05 per annual kilowatt-hours saved.

### **Research, Development, and Demonstration Programs:**

- The Port will provide a rebate of up to 20 percent of the total cost of an electric vehicle charging station(s) and/or a compressed natural gas station.

### **Proposed Port of Oakland Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain existing programs at current levels.

**New Port of Oakland Renewable (or Green) Energy Programs:**

- New Solar Energy Generating Facilities: Beginning January 1, 2007, this rebate will reimburse new solar energy generating facilities a one time flat rate of \$ 2.80 per watt (Direct Current); and in the event the new solar facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess solar electric power from the said facility at the same rate the Port sell power to the said facility. In addition, the new solar energy generating facilities must obtain Port Utility Administration (PUA) approval and must comply with all the regulatory requirements prior to the construction of the facility.
- New Wind Energy Generating Facilities: Beginning January 1, 2007, this rebate will reimburse new clean wind energy generating facilities that generates over 7.5 kilowatts a one-time flat rate of \$1.50 per watt. If the facility generates less than 7.5 kilowatts, then the rebate will be a one-time flat rate of \$ 2.50 per watt. In the event the new wind power facility generates more than the electric customer's monthly electric consumption, the Port will purchase the excess electric power from the said facility at the same rate the Port sell electric power to the said facility. In addition the new wind power energy generating facilities must obtain PUA approval and must comply with all the regulatory requirements prior to the construction of the facility.

**Port of Oakland Demand Reduction Programs:**

The Port of Oakland does not currently have any demand reduction programs in place.

# PORT OF OAKLAND



**Time Period for Reporting Data: Fiscal Year ending 6/30/2006.**

Port of Oakland - 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	98	879,170	14,066,720	98	\$ 43,959			\$ 43,959
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration								
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>98</b>	<b>879,170</b>	<b>14,066,720</b>	<b>98</b>	<b>\$ 43,959</b>			<b>\$ 43,959</b>

Port of Oakland - 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration								
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other		10,507	31,522		\$ 150,000			\$ 150,000
<b>Total</b>			<b>10,507</b>	<b>31,522</b>		<b>\$ 150,000</b>			<b>\$ 150,000</b>

## **CITY OF PALO ALTO UTILITIES**



CITY OF PALO ALTO  
UTILITIES

- The City of Palo Alto Utilities (CPAU) is the only municipal utility in California that operates city-owned utility services that provide electric, natural gas and water services to their customers.
- CPAU was founded in 1900.
- CPAU has 28,653 electric meters
- CPAU's annual electric load is 20 percent residential; 48 percent commercial and 32 percent industrial.
- CPAU's eligible renewable energy resources were 8 percent of the total load in 2005, and are projected to be 12 percent for 2006, and 17 percent by 2008. The Long-term Energy Acquisition Plan sets a target of 20 percent by 2015.
- CPAU offers a voluntary 100 percent renewable energy alternative for retail customers, which added 3 percent in 2005 and projected 4 percent in 2006. This "PaloAltoGreen" program was ranked #1 in the nation (based on per capita participation) by National Renewable Energy Laboratory in 2005.

### **CPAU Energy Efficiency Program Highlights**

CPAU implemented energy efficiency programs in the 1970s. In 1996, CPAU approved a policy to fund electric, gas and water efficiency programs at one percent of revenues per year. In 1998, CPAU increased the electric public benefits program budget to approximately 3 percent of revenues, with a one-year increase of an additional 8% from the electric commodity purchase budget during the 2001 energy crisis. Over the past 8 years, these programs have resulted in peak demand reductions of 7.8 megawatts. Cumulative energy savings are over 71,000 megawatt-hours with an equivalent 43 metric tons reduction in CO<sub>2</sub> production for the 8-year period.

#### **Current Commercial Customer Programs and Services:**

- **Commercial Advantage Program:** Incentives offered to commercial customers for investments in efficient lighting, motors, HVAC and Custom Project/targets peak demand and energy reductions. Net Peak savings: 4 megawatts; Net Annual Savings: 1.35 megawatt-hours, Program Cost: \$300,000.
- **Consultant Assistance for Resource Efficiency:** Comprehensive technical assistance for commercial customers to identify efficiency measures to facilitate peak demand reduction and energy savings. No quantified savings; Program Cost: \$250,000.

- MeterLinks: Online utility data accessible for large industrial customers that enable the customer to facilitate efficient implementation of load management programs and energy usage management. No quantified savings; Program Cost: \$60,000.
- Commercial Lighting Retrofit Program: Turnkey program for small commercial customers that provides an analysis of facility lighting needs and installs efficient lighting upgrades with minimal cost to the commercial customer. Net Peak savings: 65 kilowatts; Net Annual Savings: 285,000 kilowatt-hours; Program Cost: \$95,000.

**Current Residential Customer Programs and Services:**

- Smart Energy Programs: A comprehensive energy efficiency incentive program for residential customers. Rebates and technical assistance promote home shell improvements, and the installation of attic/roof insulation, high efficiency cooling and refrigeration equipment, appliances and lighting. Net Peak savings: 21 kilowatts; Net Annual Savings: 100,000 kilowatt-hours; Program Cost: \$300,000.
- Low-Income Assistance Programs: CPAU provides weatherization and equipment replacement to low-income residents. Net Peak savings: 23 kilowatts; Net Annual Savings: 60,000 kilowatt-hours; Program Cost: \$95,000.

**Community Education Program:**

- Community Energy Education: CPAU offers free residential online audits, and other energy conservation and efficiency education programs to target groups in the community. Activities include hosting commercial Facility Manager Network meetings, residential energy workshops, participation in Chamber of Commerce meetings, neighborhood association events, and local fairs and special events. No quantified savings; Program Cost: \$85,000.

**Public Schools Program:**

- Palo Alto Public Schools: (17 schools with 10,000 students): Annual education grants to the local schools to support teacher training programs and the development of curriculums and education projects that promote energy and water efficiency. CPAU also participates in monthly Sustainability committee meetings, and makes educational presentations to classes on energy efficiency and renewable energy. No quantified savings; Program Cost: \$57,000.

**Proposed New Energy Efficiency Programs and Services: (for 2006-2007)**

- Training building operators for retro-commissioning commercial facilities. (No quantified savings available).

**Modifications to Existing Energy Efficiency Programs: (for 2006-2007)**

**Commercial Customer Programs:**

- Expansion of Commercial Lighting Retrofit Program: Turnkey program for small commercial customers that provides an analysis of facility lighting needs and installs efficient lighting upgrades with minimal cost to the commercial customer. Expected net peak savings: 130 kilowatts; Net Annual Savings: 570,000 kilowatt-hours; Program Costs \$120,000.

- Revisions to the Commercial Advantage Program Scope: Revised incentives (to respond to changes in equipment efficiencies mandated by new energy codes: Title 20) offered to commercial customers for investments in efficient lighting, motors, HVAC and Custom Project/targets peak demand and energy reductions. Expected Net Peak savings: 4 megawatts; Net Annual Savings: 11.8 megawatt-hours; Program Costs: \$475,000.

**Residential Customer Programs:**

- Revision of measures in Residential Smart Energy Program: Comprehensive residential energy efficiency incentive program that provides rebates and technical assistance promote home shell improvements and the installation of attic/roof insulation, high efficiency cooling and refrigeration equipment, appliances and lighting. Expected net peak savings: 35 kilowatts; Net Annual Savings: 180,000 kilowatt-hours; Program Costs \$320,000.
- Expansion of Low-Income Program to More Customers: CPAU provides weatherization and equipment replacement to low-income residents. Expected net peak savings: 46 kilowatt; Net Annual Savings: 118,000 kilowatt-hours; Program Costs: \$125,000.

**Existing Energy Efficiency Programs without Major Modifications 2006-2007:**

**Commercial Customer Programs:**

- Consultant Assistance for Resource Efficiency
- MeterLinks

**Community Programs**

- Community Energy Education:

**Public Schools Programs:**

- Palo Alto Public Schools

**Future Energy Efficiency Programs: (beyond 2006-07)**

CPAU expects to significantly increase its investment in energy efficiency beyond what is funded through the public benefit charge. CPAU has completed a study (performed by Rocky Mountain Institute) to identify all cost-effective potential electric (and gas) efficiency measures, and is developing an implementation policy for the next fiscal year.

**CPAU Demand Reduction Programs:**

CPAU's demand response program is voluntary with a few key customers providing 3-5 megawatts of peak reduction upon request. There is no cost for this program. CPAU also owns 4 natural gas fired generation units to add 5 megawatts of demand during Stage 3 alerts. CPAU does not anticipate any changes to the existing voluntary demand response program.

# CITY OF PALO ALTO UTILITIES



CITY OF PALO ALTO  
UTILITIES

**Time Period for Reporting Data: Fiscal Year ending 6/30/06.**

Palo Alto 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	32	221,683	3,546,931	3,238	\$ 14,720		\$ 91,815	\$ 106,535
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	1	11,900	119,000	1	\$ 438		\$ 3,080	\$ 3,518
Lighting	Non-Res Lighting	69	321,670	2,405,281	70	\$ 49,899	\$ 30,596	\$ 62,262	\$ 142,757
Process	Non-Res Motors	6	39,044	585,660	8	\$ 2,865		\$ 15,160	\$ 18,025
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	5	11,066	110,664	5	\$ 113,049		\$ 2,865	\$ 115,914
Appliances	Res Dishwashers	4	10,496	136,448	3	\$ 30,750		\$ 3,532	\$ 34,282
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	1	1,176	13,277	3	\$ 555		\$ 344	\$ 899
HVAC	Res Heating	1	3,279	43,634	1	\$ 5,365		\$ 1,130	\$ 6,495
HVAC	Res Shell	11	1,585	29,109	11	\$ 8,791		\$ 754	\$ 9,544
Lighting	Res Lighting	6	66,962	525,960	6	\$ 17,961		\$ 13,615	\$ 31,576
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	5	30,763	553,738	5	\$ 53,040		\$ 14,334	\$ 67,374
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	17	1,157,102	8,657,726	17	\$ 73,598		\$ 224,111	\$ 297,709
<b>Total</b>		<b>158</b>	<b>1,876,727</b>	<b>16,727,428</b>	<b>3,368</b>	<b>\$ 371,031</b>	<b>\$ 30,596</b>	<b>\$ 493,000</b>	<b>\$ 834,627</b>

Palo Alto 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	32	221,683	3,546,931	3,238	\$ 14,720		\$ 56,867	\$ 71,587
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	1	11,900	119,000	1	\$ 438		\$ 1,908	\$ 2,345
Lighting	Non-Res Lighting	69	321,882	2,407,613	70	\$ 49,899	\$ 30,596	\$ 38,601	\$ 119,096
Process	Non-Res Motors	6	39,044	585,660	8	\$ 2,865		\$ 9,390	\$ 12,255
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	5	11,600	116,000	5	\$ 118,500		\$ 1,860	\$ 120,360
Appliances	Res Dishwashers	8	22,400	291,200	7	\$ 37,500		\$ 4,669	\$ 42,169
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	7	3,494	61,373	10	\$ 150		\$ 984	\$ 1,134
HVAC	Res Heating	3	8,198	109,087	3	\$ 13,418		\$ 1,749	\$ 15,167
HVAC	Res Shell	29	5,224	97,956	29	\$ 22,105		\$ 1,571	\$ 23,675
Lighting	Res Lighting	15	129,308	1,090,877	15	\$ 32,321		\$ 17,490	\$ 49,810
Pool Pump	Res Pool Pump	2	5,600	56,000	4			\$ 898	\$ 898
Refrigeration	Res Refrigeration	30	190,480	3,428,640	30	\$ 60,000		\$ 54,971	\$ 114,971
Other	Res Solar								
Water Heating	Res Water Heating	0	716	10,740	0			\$ 172	\$ 172
Other	Other	21	1,157,887	8,661,651	21	\$ 88,298		\$ 138,871	\$ 227,169
<b>Total</b>		<b>228</b>	<b>2,129,416</b>	<b>20,582,728</b>	<b>3,440</b>	<b>\$ 440,213</b>	<b>\$ 30,596</b>	<b>\$ 330,000</b>	<b>\$ 800,809</b>

## **PLUMAS-SIERRA RURAL ELECTRIC COOP (PSREC)**



- PSREC was established in 1937.
- 6,245 member-owners and 7574 metered accounts. Residential sales account for 50 percent of revenue, commercial/industrial for 44 percent, irrigators for 5 percent, and 1 percent other. Estimated growth rate of 2.9 percent per year.
- Peak demand: 30 megawatts for both summer (noon-8pm) and winter (5-10am)
- Annual energy use: 157 gigawatt-hours (49 percent commercial/industrial, 44 percent residential, 6 percent irrigation, 1 percent other)
- PSREC facilities include: two 69 kilovolts interconnect substations, 150 miles of transmission line, 11 distribution subs and 1200 miles of 12.47/7.2 kilovolts distribution line.
- PSREC employs 70 employees
- PSREC mission: To provide utility services with a high level of reliability for fair and reasonable costs. PSREC is dedicated to improving the quality of life of their member-owners and local communities. The focus is to provide electric, telecommunications, satellite television, and internet services that enhance the lives of the rural communities it serves.

### **Plumas–Sierra Energy Efficiency Program Highlights**

PSREC implemented energy efficiency programs in the early 1980s. These programs are designed to encourage members to be more energy efficient, decrease energy demand and costs, and conserve resources. PSREC has consistently exceeded its Public Benefits spending requirements. PSREC uses KEMA's Measure Quantification.

#### **Current Energy Efficiency Programs and Services:**

PSREC manages a comprehensive package of customer-centered energy efficiency programs, helping members make their homes more energy efficient.

- Energy Star® Rebates: Generous rebates and solid technical support are available to members who purchase and install Energy Star® appliances.
- GeoExchange Heating and Cooling Program: Includes rebates and 0 percent interest loop-leases, is one of the most successful ground-source heat pump programs in the Nation.
- Energy Audits: PSREC provides free energy audits for residential and business customers. It offers interactive online energy audit programs for residential customers interested in

quantifying the costs and benefits of pursuing energy efficient home retrofits or incorporating energy efficient building techniques and appliances into plans for a new home.

- PSREC also encourages the use of Marathon water heaters, compact fluorescent bulbs, water heater blankets and low-flow showerheads by providing discounts to members when they purchase them through us. PSREC also gives away hundreds of CFLs every year.
- PSREC's Solar Program provides generous rebates and loan options available for the purchase of photovoltaic and solar hot water systems. It also provides on-site analysis of solar resources and a valuable partnership with Cooperative Community Energy to assist with system design and financial analysis.

#### **Proposed PSREC Energy Efficiency Programs and Services: (2007)**

Maintain existing programs at current levels.

#### **New programs proposed:**

- Solar Incentives: PSREC plans to increase the incentives for residential or commercial installation of solar photovoltaic systems.
- New Construction: PSREC will be targeting energy reduction by suggesting specific energy efficiency techniques for all new construction in our upcoming "*Green Building*" program. This program will focus on load reduction for our largest residential loads, energy efficient air and water heating. The program will require certified homes to have some of the following features: GeoExchange system, Marathon water heater, and utilize either passive or active solar energy, a higher standard for insulation, windows, infiltration control, and sealed ductwork. These programs will reduce system costs for individual residents as well as encourage homebuilders and housing developments to participate and utilize our marketing resources as an additional value.

#### **PSREC Demand Reduction Programs:**

PSREC has implemented a demand reduction program that provides financial incentives to customers who agree to be available to curtail electric load in emergency situations, during peak periods for the summer months of July, August and September. The curtailment periods will occur to avoid the possibility of rolling blackouts. PSREC pays participating customers \$40 per 100 HP of load shed. Ranchers can earn a bonus at the end of the season for signing up, even if they are never curtailed. No requests to reduce load were made in 2005 or 2006, and therefore there were no peak demand reductions.

# PLUMAS-SIERRA RURAL ELECTRIC COOP (PSREC)



**PLUMAS-SIERRA REC**  
Electricity • Satellite TV • Internet

**Time Period for Reporting Data: Calendar Year ending 12/31/05**

Plumas Sierra 2005 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	3	6,635	66,352	3	\$ 1,450	\$ 9,102	\$	10,552
Appliances	Res Dishwashers	1	1,728	22,464	1	\$ 1,050	\$ 3,081	\$	4,131
Consumer Electronics	Res Electronics	0	138	1,238	0	\$ 40	\$ 170	\$	210
HVAC	Res Cooling	1	30,437	760,920	191	\$ 69,700	\$ 3,400	\$ 104,379	\$ 177,479
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting	3	17,534	157,810	25	\$ 3,036	\$ 21,647	\$	24,683
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	3	21,744	391,392	3	\$ 6,400	\$ 53,689	\$	60,089
Other	Res Solar								
Water Heating	Res Water Heating	1	4,270	64,056	1	\$ 2,735	\$ 8,787	\$	11,522
Other	Other		7,642	22,925			\$ 3,145	\$	3,145
<b>Total</b>		<b>12</b>	<b>90,128</b>	<b>1,487,157</b>	<b>224</b>	<b>\$ 84,411</b>	<b>\$ 3,400</b>	<b>\$ 204,000</b>	<b>\$ 291,811</b>

Plumas Sierra 2006 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	3	7,779	77,792	3	\$ 1,700	\$ 10,887	\$	12,587
Appliances	Res Dishwashers	1	2,074	26,957	1	\$ 1,260	\$ 3,772	\$	5,032
Consumer Electronics	Res Electronics	0	172	1,548	0	\$ 50	\$ 217	\$	267
HVAC	Res Cooling	1	28,646	716,160	180	\$ 92,000	\$ 8,000	\$ 100,224	\$ 200,224
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting	4	23,244	209,196	33	\$ 4,338	\$ 29,276	\$	33,614
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	1	8,802	158,443	1	\$ 4,925	\$ 22,173	\$	27,098
Other	Res Solar								
Water Heating	Res Water Heating	1	4,930	73,944	1	\$ 3,415	\$ 10,348	\$	13,763
Other	Other		95,520	286,560			\$ 6,000	\$ 40,103	\$ 46,103
<b>Total</b>		<b>12</b>	<b>171,167</b>	<b>1,550,600</b>	<b>219</b>	<b>\$ 107,688</b>	<b>\$ 14,000</b>	<b>\$ 217,000</b>	<b>\$ 338,688</b>

## **PORT OF OAKLAND**



- 200-300 customers, 100 percent are commercial
- Peak demand – 12 megawatts
- Annual energy use: 74 gigawatt-hours

### **Port of Oakland Energy Efficiency Program Highlights**

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

- Energy Audits: The Port is currently conducting an Energy Audit program that will result in recommendations of five major energy saving retrofit/improvement projects that could be undertaken to effectively support load reduction and the more efficient use of energy in the area. The proposed energy efficiency projects will be prioritized by highest to lowest energy savings. Rebates will be provided for the energy efficiency projects completed based on the energy audit recommendations, up to 100 percent of the total energy audit cost.
- Energy Efficient Equipment Upgrade Installation Rebates: The Port has implemented a program that provides generous rebates and solid technical support for the installation of new, energy efficient equipment by our commercial customers. Under one program, the eligible projects must reduce energy usage by a minimum of 10 percent, to be eligible for a rebate of the equipment cost differential (up to a 100 percent rebate for energy saving of 40 percent or more). Under the second energy equipment installation program, customers will be reimbursed for retrofitting existing equipment projects based on a single flat incentive rate of \$0.08 per annual kilowatt-hours saved, applied to annual energy savings (kilowatt-hours) of 20 percent or more.
- Lighting Retrofit: A program providing rebates for the installation of energy efficient lighting that reduces annual energy usage by at least 35 percent in commercial facilities. This rebate is based on a single flat incentive rate of is \$0.05 per annual kilowatt-hours saved.
- Research, Development, and Demonstration Programs: The Port will provide a rebate of up to 20 percent of the total cost of Electric Vehicle Charging Station(s). The Port will provide a rebate of up to 20 percent of the total cost of Clean Natural Gas (CNG) Station.

#### **Proposed Port of Oakland Energy Efficiency Programs and Services: (for 2006-2007)**

- Maintain existing programs at current levels.

#### **New Port of Oakland Renewable (or Green) Energy Programs:**

- New Solar Energy Generating Facilities: Beginning January 1, 2007, this rebate will reimburse new solar energy generating facilities a one time flat rate of \$ 2.80 per watt (Direct Current) of installed capacity. In the event the new solar facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess solar electric power from said facility at the same rate the Port sells power to said facility. In addition, the new solar energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility.
- New Wind Energy Generating Facilities: Beginning January 1, 2007, this rebate will reimburse new clean wind energy generating facilities that generates over 7.5 kilowatts a one time flat rate of \$ 1.50 per watt of installed capacity and if the facility generates less than 7.5 kilowatts then the rebate will be a one time flat rate of \$ 2.50 per watt of installed capacity. In the event the new wind power facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess electric power from said facility at the same rate the Port sells electric power to said facility. In addition, the new wind power energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility.

**Port of Oakland Demand Reduction Programs:** The Port of Oakland does not currently have any demand reduction programs in place.

# PORT OF OAKLAND



**Time Period for Reporting Data: Fiscal Year ending 6/30/06.**

Port of Oakland - 0506 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	98	879,170	14,066,720	98	\$ 43,959			\$ 43,959
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration								
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other								
<b>Total</b>		<b>98</b>	<b>879,170</b>	<b>14,066,720</b>	<b>98</b>	<b>\$ 43,959</b>			<b>\$ 43,959</b>

Port of Oakland - 0607 (V14)					Cost Summary				
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting								
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers								
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell								
Lighting	Res Lighting								
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration								
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other		10,507	31,522		\$ 150,000			\$ 150,000
<b>Total</b>			<b>10,507</b>	<b>31,522</b>		<b>\$ 150,000</b>			<b>\$ 150,000</b>

## **ROSEVILLE ELECTRIC (RE)**



Roseville Electric

- Established in 1912
- 48,891 customers (43,268 residential and 5,623 commercial). Roseville projects an average 1,500 new meters annually for the next 7 years
- Peak demand – 342.9 megawatts; summer afternoon peak
- Annual energy use: 1,192 gigawatt-hours (FY05/06)
- 151 employees

### **Roseville Electric Energy Efficiency Program Highlights**

Roseville Electric (RE) started energy efficiency programs in the early 1980s. From 2001 to 2006 these programs have resulted in peak demand reductions of 10.3 megawatts. Cumulative energy savings are over 79,000 megawatt-hours with an equivalent 59,000-ton reduction in CO<sub>2</sub> production for the six-year period.

#### **Current Commercial and Residential Customer Programs:**

- Energy Efficiency Technical Support Program: RE offers comprehensive technical support and incentives to facilitate installation of incrementally higher-efficiency cooling and refrigeration equipment, envelope measures, appliances, lighting and controls for commercial and residential customers.
- Energy Audits: Free, on-site energy audits by RE personnel are available for both business and residential customers. Online audit tool kits are also available for residential customers.
- Shade Tree Program: Provides complimentary shade trees for the properties of both residential and commercial customers to reduce air conditioning load. The program also provides educational information regarding the care of trees to help ensure energy savings.

#### **Current Rate and Energy Assistance Programs:**

- Low-Income Rate Assistance: A rate discount is available for low-income seniors, low-income customers with special medical needs and very low-income customers.

**Current New Construction Programs:**

- New Construction Agreements: RE requires developers to commit to new construction development agreements that contain specific energy efficiency requirements, including increased efficiency requirements for air conditioners.
- New Construction Program: RE also provides incentives for builders that go beyond the above agreements.

**Current Municipal Facilities Programs:**

- Municipal Facilities Upgrades: RE has implemented a 10-Year Plan to upgrade the efficiency of municipal facilities beyond code requirements during capital improvement, renovation and new construction projects including upgrades to improve the operations and performance of electrical and mechanical systems.
  - Lighting redesigns to reduce watts per sq ft in city buildings and improve worker environment.
  - HVAC upgrades: to more efficient HVAC units.
  - Use of properly selected and planted shade trees to reduce energy consumption.
  - Thermally restrictive windows (dual pane) to reduce the heat gain in the building space.
  - Install solar electric generation on City buildings.
  - New construction design features on City buildings including; LEED certification, shade overhanging eaves and skylights to reduce lighting needs.
- Utility Education Center: RE and other City entities are developing the "Utility Exploration Center" that will function as an educational resource for the community. The Center is scheduled to open 2007.
- Photovoltaic Systems: Two community buildings and one public pool generate power through rooftop photovoltaic systems. More are in the planning stage.

**Current School Programs:**

- Lighting retrofits: Assisted local schools with T12 to T8 and T12 to T5 retrofits.
- LED Exit Signs: Replacement of incandescent or fluorescent exit signs with LED signs.
- Energy Efficient Thermostats: installation of programmable thermostats.
- Computer Monitor Replacements: Replace computer monitors with more efficient monitors.

**Proposed Energy Efficiency Programs: (for 2006-2007)**

- Maintain existing programs with an effort to increase the participation in the residential and small commercial air conditioning programs.
- Introduce BEST Homes program. This new construction program encourages customer independence by incorporating energy efficient measures and PV systems in new homes.
- Promote the commercial new construction program to encourage all new commercial buildings to surpass Title 24.
- Sensor controlled light shades for the west side and other energy efficient enhancements included in construction of a new library building and utility exploration center.
- Investigate new energy efficient strategies.

**Renewable Energy Development:** (Currently 376 kilowatts of solar generation installed in Roseville.)

Fiscal year 2006:

- Introduction of RE's new Green Roseville (green energy) program to residential and commercial customers.
- To date, there is Continuing the residential and commercial solar retrofit incentive programs.
- RE is also working with NCPA to ensure the efficiency and longevity of the geothermal resources.

Proposed 2007:

- Continue what we are doing in FY06.
- Photovoltaic panels on Silverado Middle School and Roseville Civic Center.
- New Construction: RE will partner with builders to build renewable energy generation facilities in new developments. The proposed Roseville BEST program encourages 20 percent of all new homes to include rooftop photovoltaic systems and energy efficiency upgrades besides the energy efficient upgrades.

**Roseville Electric Demand Reduction Programs:** (Goal for all programs – 5 percent of load by 2012)

Fiscal year 05/06:

- Commercial/Industrial load reduction program with a 4 megawatts potential.

Proposed Fiscal Year 06/07:

- Implement residential load management program using AC switches and thermostats. RE goal is 1.0 megawatt in 2007 summer with an overall goal of 5 megawatts.
- Commercial/Industrial load reduction goal of 6 megawatts.
- Investigate new demand reduction and load shifting technologies such as thermal energy storage.

# ROSEVILLE ELECTRIC (RE)



Roseville Electric

Time Period for Reporting Data: Fiscal Year ending 6/30/06.

Roseville - 0506 (V14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	398.1	1,029,165	17,070,745	596.3	\$ 279,018		\$ 150,697	\$ 429,715
HVAC	Non-Res Heating								
HVAC	Non-Res Shell	12.4	43,775	490,234	12.4	\$ 23,677		\$ 4,328	\$ 28,005
Lighting	Non-Res Lighting	208.4	1,204,792	14,406,106	258.5	\$ 148,877		\$ 127,174	\$ 276,051
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	6.1	14,732	147,320	6.1	\$ 18,752	\$ 3,493	\$ 1,301	\$ 23,545
Appliances	Res Dishwashers	4.7	11,546	150,093	4.7	\$ 22,550	\$ 2,481	\$ 1,325	\$ 26,355
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	1,009.5	1,219,106	26,291,912	1,015.0	\$ 434,470	\$ 86,864	\$ 232,099	\$ 753,433
HVAC	Res Heating								
HVAC	Res Shell	220.6	207,487	2,182,120	220.6	\$ 78,916	\$ 1,189	\$ 19,263	\$ 99,368
Lighting	Res Lighting								
Pool Pump	Res Pool Pump	2.0	11,000	110,000	7.5	\$ 2,150	\$ 110	\$ 971	\$ 3,231
Refrigeration	Res Refrigeration	110.1	710,034	12,780,605	110.1	\$ 46,400	\$ 2,717	\$ 112,824	\$ 161,941
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	4.8	117,761	428,199	4.8	\$ 1,911	\$ 16,961	\$ 3,780	\$ 22,652
<b>Total</b>		<b>1,977</b>	<b>4,569,417</b>	<b>74,057,333</b>	<b>2,234</b>	<b>\$ 1,056,722</b>	<b>\$ 113,813</b>	<b>\$ 653,761</b>	<b>\$ 1,824,296</b>

Roseville - 0607 (V14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling	275	275,000	4,950,000	275	\$ 137,500		\$ 48,827	\$ 186,327
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	275	1,100,000	12,100,000	275	\$ 137,500		\$ 119,355	\$ 256,855
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	4	9,280	92,800	4	\$ 10,000	\$ 2,200	\$ 915	\$ 13,115
Appliances	Res Dishwashers	1	4,608	59,904	2	\$ 12,000	\$ 1,320	\$ 591	\$ 13,911
Consumer Electronics	Res Electronics								
HVAC	Res Cooling	1,018	1,366,950	29,029,472	1,065	\$ 912,410	\$ 93,846	\$ 286,347	\$ 1,292,603
HVAC	Res Heating								
HVAC	Res Shell	297	287,474	3,004,672	297	\$ 113,990	\$ 1,898	\$ 29,638	\$ 145,526
Lighting	Res Lighting								
Pool Pump	Res Pool Pump	22	56,000	560,000	38	\$ 15,000	\$ 275	\$ 5,524	\$ 20,799
Refrigeration	Res Refrigeration	76	487,920	8,762,560	76	\$ 30,000	\$ 1,650	\$ 86,631	\$ 118,281
Other	Res Solar								
Water Heating	Res Water Heating								
Other	Other	790	2,936,416	31,689,248	790	\$ 401,000		\$ 312,583	\$ 713,583
<b>Total</b>		<b>2,758</b>	<b>6,523,647</b>	<b>90,268,656</b>	<b>2,821</b>	<b>\$ 1,769,400</b>	<b>\$ 101,188</b>	<b>\$ 890,412</b>	<b>\$ 2,761,000</b>

## **TRUCKEE DONNER PUBLIC UTILITY DISTRICT**



- Established in 1927
- 12,562 customers, 88 percent are residential
- TDPUD projects an average growth rate of 3-5 percent per year, for the next 10 years
- 2005 Peak demand – 32.2 megawatts (winter peaking)
- 2005 Energy Use- 146.6 gigawatt-hours

### **TDPUD Energy Efficiency Program Highlights**

The Town of Truckee expects to become the “Greenest Small Town in America” by 2010 due to its high per capita number of green buildings and high energy and water efficiency and renewable energy projects expected to be built by 2010.

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

- Commercial Energy Audits: TDPUD offers free on-site energy audits conducted by a TDPUD Energy Specialist for commercial customers that provide specific recommendations on cost-effective energy improvements to manage and reduce energy load and provided savings.
- Commercial Energy Conservation Rebate Program: TDPUD provides a comprehensive commercial energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and technical support are available to commercial customers to promote the installation of energy efficiency measures including: ground source heat pumps; duct testing; and the purchase of energy efficient clothes washers and refrigerators, and electric GSHP and solar water heaters.

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

- Residential Energy Audits: TDPUD offers free on-site energy audits conducted by a TDPUD Energy Specialist for commercial customers that provide specific recommendations on cost-effective energy improvements to manage and reduce energy load and provided savings.
- Residential Energy Conservation Rebate Program: TDPUD provides a comprehensive residential energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and technical support are available to residential customers to promote the installation of energy efficiency measures including: ground source heat pumps; duct testing; and the purchase of energy efficient clothes washers and refrigerators, and electric GSHP and solar water heaters.

**Current Community Programs:**

- Green Building Education: TDPUD has partnered with the local Sierra Green Building Assn. and the Truckee Green Building Committee to design and implement green building education and training programs for the Truckee/Tahoe communities.
- Green Buildings Tour: TDPUD works with the Sierra Green Building Association, the Town of Truckee and local groups to provide tours of buildings in the community that incorporate green building design features.
- Green Building Design Assistance: TDPUD Energy Specialists work with homeowners, businesses and developers to provide information and resources design assistance for the development of “green” building plans. TDPUD has taken the lead in the production of a “Green Building Resource Guide” for the community.
- Landscape Water Conservation Workshops: TDPUD has partnered with local nurseries to conduct landscape water conservation workshops for the community.

**Current Education Programs:****Public Schools:**

- Energy Education: TDPUD personnel make presentations on energy issues to local schools each year.
- “LivingWise” Resource Efficiency Program: TDPUD collaborates with the 6<sup>th</sup> grade staff in the local schools to provides the curriculum and resources for “LivingWise” Resource Efficiency program.
- Truckee High School Green Film Festival: TDPUD organized and supported the 2006 Truckee HS “Green Film Festival”
- Climate Change Symposium: TDPUD assists the Tahoe-Truckee Regional Education Coalition w/Climate Change Symposium.

**Community Education Programs:**

- Green Building Symposium: TDPUD organizes and provides support for the Truckee Home Show’s Green Building Symposium.
- Smart Living EXPO: TDPUD helps organize and participates in the Smart Living EXPO in Reno, NV.
- Regional Sustainability Assessment/Education: TDPUD collaborates with No. NV AIA on Regional Sustainability Assessment/Education.

**Proposed TDPUD Energy Efficiency Programs and Services: (for 2006-2007)**

- Existing Programs to be maintained at current levels.

**New/Modified Commercial Customer Programs:**

- Commercial Water Conservation Rebate Program: TDPUD offers rebates to commercial customers for the installation of water-saving measures including water-efficient clothes washers. Additional water-efficient investments including low-flush toilets; waterless urinals and other water saving devices will soon be eligible for this rebate.
- Solar PV Program: TDPUD plans to offer financial incentives to commercial customers who incorporate solar PV technologies into their businesses.

**New/Modified Residential Customer Programs:**

- Residential Water Conservation Rebate Program: TDPUD offers financial rebates to residential customers for the installation of water-saving measures including water-efficient clothes washers. Additional water-efficient investments including low-flush toilets; waterless urinals and other water saving devices will soon be eligible for this rebate.
- Solar PV Program: TDPUD plans to offer financial incentives to residential customers who incorporate solar PV technologies into their homes.
- Low-Income Weatherization: TDPUD is providing home weatherization services to low-income residential customers.

**TDPUD Demand Reduction Programs:**

TDPUD does not currently have any demand reduction programs in place.

# TRUCKEE DONNER PUBLIC UTILITY DISTRICT



**Time Period for Reporting Data: Calendar year ending 12/31/05.**

Truckee PUD 2005 (v14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	0	1,562	17,178	0	\$ 1,600	\$ 2,000	\$ 4,000	\$ 7,600
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	2	3,661	36,608	2	\$ 800	\$	\$ 1,600	\$ 2,400
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell	0	926	12,043	0	\$ 6,000	\$ 5,000	\$ 10,000	\$ 21,000
Lighting	Res Lighting	4	19,200	172,800	25	\$ 7,500	\$ 12,000	\$ 24,000	\$ 43,500
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	0	1,375	24,754	0	\$ 950	\$	\$ 1,900	\$ 2,850
Other	Res Solar								
Water Heating	Res Water Heating	1	4,221	63,312	1	\$ 600	\$ 2,000	\$ 400	\$ 3,000
Other	Other		15,920	47,760				\$ 10,000	\$ 10,000
<b>Total</b>		<b>7</b>	<b>46,865</b>	<b>374,454</b>	<b>28</b>	<b>\$ 17,450</b>	<b>\$ 21,000</b>	<b>\$ 51,900</b>	<b>\$ 90,350</b>

Truckee PUD 2006 (v14)						Cost Summary			
CPUC Sector (Used for CEC Form 3.1a and 3.2)	Category	Net Peak kW Savings	Net Annual kWh Savings	Net Lifecycle kWh savings	Net Demand Savings (kW)	Utility Incentives Cost (\$)	Utility Direct Install Cost (\$)	Utility Mktg, EM&V, and Admin Cost (\$)	Total Utility Cost (\$)
Process	Non-Res Cooking								
HVAC	Non-Res Cooling								
HVAC	Non-Res Heating								
HVAC	Non-Res Shell								
Lighting	Non-Res Lighting	0	1,562	17,178	0	\$ 1,600	\$ 2,000	\$ 4,000	\$ 7,600
Process	Non-Res Motors								
Process	Non-Res Pumps								
Refrigeration	Non-Res Refrigeration								
Appliances	Res Clothes Washers	2	3,661	36,608	2	\$ 800	\$	\$ 1,600	\$ 2,400
Appliances	Res Dishwashers								
Consumer Electronics	Res Electronics								
HVAC	Res Cooling								
HVAC	Res Heating								
HVAC	Res Shell	0	926	12,043	0	\$ 6,000	\$ 5,000	\$ 10,000	\$ 21,000
Lighting	Res Lighting	4	19,200	172,800	25	\$ 7,500	\$ 12,000	\$ 24,000	\$ 43,500
Pool Pump	Res Pool Pump								
Refrigeration	Res Refrigeration	0	1,375	24,754	0	\$ 950	\$	\$ 1,900	\$ 2,850
Other	Res Solar								
Water Heating	Res Water Heating	1	4,221	63,312	1	\$ 600	\$ 2,000	\$ 400	\$ 3,000
Other	Other		15,920	47,760				\$ 10,000	\$ 10,000
<b>Total</b>		<b>7</b>	<b>46,865</b>	<b>374,454</b>	<b>28</b>	<b>\$ 17,450</b>	<b>\$ 21,000</b>	<b>\$ 51,900</b>	<b>\$ 90,350</b>