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ABSTRACT

The Governor and California Legislature have emphasized that energy efficiency is at the top of California's "loading order" for new energy resources. Assembly Bill 2021 (Levine, Chapter 734, Statutes of 2006) requires the California Energy Commission, along with the California Public Utilities Commission (CPUC), to develop statewide estimates of energy efficiency and demand reduction potential and savings targets for publicly owned utilities and investor-owned utilities for a 10-year period. The utility potential estimates and targets are to be developed within a public process sponsored by the Energy Commission and reported in the Commission's biennial *Integrated Energy Policy Report*.

The current targets for the investor-owned utilities are based upon those set by the CPUC for 2004-2013. For this report, the investor-owned utilities' potential estimates are derived from the most recent analysis completed in May 2006. Three levels of potential were evaluated: technical potential, which is the maximum possible; economic or cost-effective potential; and feasible or achievable potential. Data and methods used to develop technical and economic potential estimates for the publicly owned utilities came from this same source in addition to studies done for individual utilities. Each publicly owned utility also used internal sources to develop proposed savings targets from its potential estimates.

Energy Commission staff evaluated the reasonableness of the technical and economic potential estimates and the annual savings targets of the investor-owned and publicly owned utilities. Staff compared the proposed targets to economic potential, to consumption, and to growth rates of forecasted natural gas consumption, electricity consumption, and peak electricity demand. The investor-owned and publicly owned utilities' combined proposed savings are expected to achieve 71 percent of the economic potential for electric consumption savings, 89 percent of the economic potential for peak demand savings, and 73 percent of the economic potential for natural gas consumption savings.

The Energy Commission recommends a statewide savings goal to achieve 100 percent of the economic potential savings for electricity, peak demand, and natural gas usage.

Keywords

Energy efficiency, energy savings, demand reduction, electricity consumption, natural gas consumption, electric peak demand reduction, energy efficiency potential estimates, energy efficiency targets, energy efficiency goals, Assembly Bill 2021, Senate Bill 1037, investor-owned utilities, publicly owned utilities

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EXECUTIVE SUMMARY

Introduction

Assembly Bill 2021 (Levine, Chapter 734, Statutes of 2006) requires the California Energy Commission to develop statewide estimates of potentially achievable energy efficiency resources and provide recommendations on annual savings targets developed by California's private and public utilities. Analysis and data for these efficiency savings goals and targets originate with potential studies conducted by Itron that were funded under the auspices of the California Public Utilities Commission (CPUC) for the investor-owned utilities and were extended to the publicly owned utilities by the Rocky Mountain Institute. The legislation requires, among other mandates, that the publicly owned utilities identify all potentially achievable cost-effective electricity energy savings, establish annual targets for achieving feasible and reliable energy efficiency savings and demand reduction for the next 10-year period, and report these targets to the California Energy Commission.

The CPUC has adopted annual efficiency targets for the investor-owned utilities and the publicly owned utilities have established and reported annual energy efficiency targets for each utility. When combined into a statewide estimate, these proposed targets **do not** achieve 100 percent of economic potential.

Staff's analysis shows that some utilities might have difficulty meeting the public policy goal of capturing all cost-effective energy efficiency resources. Initially, staff proposed a goal of achieving even 80 percent of the economic potential statewide. Based upon the potential studies available, and considering the need for aggressive energy efficiency savings to help meet climate change goals, the Energy Commission has established a statewide target to achieve 100 percent of the economic potential identified for energy efficiency. This target is significantly higher than the combined goals proposed by the publicly owned utilities, the investor-owned utilities, and other parties to this proceeding. The Energy Commission expects this statewide target to be achieved through a combination of utility and non-utility programs coordinated at the state level by the Energy Commission and the CPUC.

AB 2021 also mandates the Energy Commission to report on each utility's progress toward achieving the statewide and service area savings goals as part of its biennial Integrated Energy Policy Report process. This final staff report describes the methods and analyses staff will pursue to evaluate whether each of the publicly owned utilities has achieved the annual energy saving targets set for fiscal year 2006/2007.

Objective and Analytical Approach

Staff's objectives were to evaluate estimates of the technical, economic, and feasible potential to save energy over the next decade and the feasibility of achieving the annual savings targets submitted by the publicly owned utilities and by the CPUC for the investor-owned utilities. The

primary concerns were the accuracy of the potential estimates and the reasonableness and sufficiency of the utilities' proposed targets to accomplish the mandates of AB 2021 – acquiring all potentially achievable cost-effective efficiency and reducing energy consumption. Staff critiqued the methods used to estimate cost-effective potential and analyzed whether the annual program savings estimates provided by each utility were both achievable and reliable from the perspective of resource procurement.

Data Collection Process

The Energy Commission created a comprehensive statewide data set that aggregated the forecasts of energy consumption, estimates of energy efficiency potential, and proposed savings targets for the investor-owned utilities and publicly owned utilities. The current targets for the investor-owned utilities are based upon those set by the CPUC for 2004-2013. For this report, the investor-owned utilities' technical and economic potential estimates are derived from the most recent potential study by Itron, Inc., titled *California Energy Efficiency Potential Study* (May 2006). For the publicly owned utilities, the potential analyses were completed at different times by different contractors. Five of the publicly owned utilities (Sacramento Municipal Utility District, Los Angeles Department of Water and Power, Redding Electric Utility, City of Palo Alto Utilities, and Silicon Valley Power) began their studies before the passage of AB 2021. In June 2007, the Rocky Mountain Institute completed the potential estimates for the remaining 34 publicly owned utilities. For most publicly owned utilities, the estimate of feasible potential became their "proposed targets" because their governing boards had not yet adopted them. By mid-October virtually all POU governing boards had adopted their first AB 2021 energy efficiency savings targets.

For all the utilities, the analytical approach was similar and based on the current investor-owned methodology and data sources. Data and methods used to develop estimates of technical and economic potential for the publicly owned utilities service areas came from three sources: (1) the investor-owned utilities' *2006 Itron* potential study, (2) *2007 Rocky Mountain Institute* potential study, and (3) each publicly owned utility.

The publicly owned utilities' selection of their proposed targets was based on the results from the Rocky Mountain Institute analysis and, in some cases, adjustments were made based on additional factors and criteria not fully described in their submission to Energy Commission staff. In late August, staff interviewed personnel at the 13 largest publicly owned utilities to gain additional information on their specific savings forecasts. This final staff report provides a close evaluation of the feasibility and reliability of the savings forecast of each of these utilities. Although many of the public utilities' projected savings appeared to be unrealistically aggressive, staff suggested additional strategies for how they might reach their proposed targets.

Staff relied on the energy demand forecasts for electricity, peak demand, and natural gas contained in the California Energy Commission's *California Energy Demand 2008-2018, Staff Draft*

Forecast (July 2007) to provide the basis for the aggregated comparisons in this report. Technical, economic, and feasible potential energy savings estimates were subtracted from these baseline forecasts. Subtracting the savings yielded projections of what the 2007-2016 energy consumption patterns would be if these levels of savings were achieved relative to the baseline forecasts. While some program savings may already be reflected in the baseline forecasts, the analysis here assumes that savings are incremental.

Key Results Based on Forecasts Submitted by Investor-Owned and Publicly Owned Utilities

The combined economic potential to save energy in 2016 for the investor-owned and publicly owned utilities is estimated to be 39,500 gigawatt hours of electricity, 6,600 megawatts of peak electrical demand and 750 million therms of natural gas, excluding the potential savings that might be available from emerging technologies. California Energy Commission staff evaluated the reasonableness of the technical and economic potential estimates, and of the targets of the investor-owned utilities and publicly owned utilities. Staff compared the proposed targets relative to economic potential, and the proposed targets relative to the consumption and growth rates of forecasted natural gas consumption, electricity consumption and peak electricity demand.

Targets Compared to Economic Potential

Successful achievement of the investor-owned utilities' targets for electricity savings will result in cumulative savings equivalent to 74 percent of the estimated economic potential by the end of the decade. This ratio assumes that the CPUC will direct the investor-owned utilities to achieve savings at a rate equal to the average annual growth from 2004-2013, the years covered by D.04-09-060, the governing decision.

The publicly owned utilities will achieve 63 percent of the economic potential if they achieve their proposed savings targets for electricity for the same period. On a statewide basis, the investor-owned utilities and the publicly owned utilities combined expect to achieve 71 percent of their economic efficiency potential if they can meet their 10-year electric energy savings targets.

For peak electrical demand, the investor-owned utilities expect to achieve 98 percent of the estimated economic savings potential, while the publicly owned utilities project to achieve 68 percent. Combined, the investor-owned utilities and the publicly owned utilities expect to achieve 89 percent of the economic potential for peak electricity demand savings by 2016.

Natural gas efficiency targets are proposed to capture a smaller percentage of the economic potential than the electric efficiency. Much of the potential savings is in the existing industrial sector whose customers are less likely to participate in utility programs. Investor-owned utilities aim to achieve 73 percent of the economic potential and the publicly owned utilities 21

percent. Since the overwhelming portion of the natural gas consumption is represented by the investor-owned utilities, the combined percentage is also 73 percent of the economic potential.

Targets Compared to Forecasted Consumption and Growth

The proposed savings targets partially offset the forecasted increase in electricity and natural gas consumption between 2007 and 2016.

The publicly owned utilities' program savings targets meet 70 percent of the electricity consumption and 55 percent of the peak demand growth for this period.

The investor-owned utilities' savings are projected to offset more than their forecasted electricity consumption growth (104 percent) and 82 percent of their peak demand.

Combining both publicly owned and investor-owned utilities on a statewide basis, the savings targets will meet 93 percent of electricity consumption growth and 74 percent of the peak demand growth.

For natural gas, proposed savings targets (predominantly investor-owned utilities) will meet 4.7 percent of the forecasted consumption in 2016 and 75 percent of the consumption growth between 2007 and 2016. Only one publicly-owned utility serves natural gas end-use customers.

Staff's Analyses and Recommendation

To develop a recommendation for a statewide target for the next ten years, staff developed a set of criteria to evaluate a variety of options for the target. There are four criteria:

1) *Policy Context* – Does the target meet AB 2021 mandates?

2) Plausibility/Feasibility – Given the different levels of existing efficiency experience among utilities, are the annual ramp-up rates necessary to meet the target feasible and can the utilities acquire the resources to achieve them?

3) Motivational – Will the target motivate all publicly owned and investor-owned utilities to achieve a significant increase in the level of electricity and natural gas savings currently achieved?

4) Cost-Effectiveness – Do the energy and peak savings' benefits exceed the customer and program costs of delivering them?

Staff used these criteria to evaluate four options:

Option 1 –A statewide target based on CPUC Targets for IOUs/Proposed Targets for POUs: For the IOUs, continue progress on the targets set by the CPUC through 2013. After 2013, continue programs with the incremental savings equal to the average annual growth rate from 2004-2013, the years for which targets were set by the CPUC in 2004. For the POUs, set targets at their proposed levels.

Option 2 – Eighty Percent Economic Potential: Set the target at 80 percent of the combined economic potential for both the IOUs and the POUs.

Option 3 – Full Economic Potential: Set the target at meeting full economic potential for both IOUs and POUs. This is in line with policy established in SB 1037 which states that California's utilities should capture all cost-effective potential. This would constitute a "stretch goal."

Option 4 – Ten Percent Consumption Reduction: For both the IOUs and POUs combined, set the savings target to achieve a 10 percent reduction in electricity consumption by 2016. Even though not required by AB 2021, consider this same option for peak demand and for natural gas consumption.

The Energy Commission adopts Option 3-a statewide savings goal to achieve 100 percent of the estimated economic potential savings for electricity, peak demand and natural gas usage. There is a difference between the cumulative savings from the proposed utility programs and the Committee's goal of achieving 100 percent of economic potential savings by 2016. The state will need to find roughly 12,000 gigawatt hours and 700 megawatts of additional electricity savings, and an additional 200 million therms of natural gas savings to achieve 100 percent of economic efficiency potential.

The future challenge is to narrow the gap between the proposed annual savings targets from utilities and the full economic potential of energy efficiency. In part, this may be accomplished by an improvement in the accuracy of both the forecasts of economic potential and the program savings results to consider the unique features of each utility service area. In addition, escalating energy prices and the cost of greenhouse gas emissions reduction may increase the amount of economic savings over the next decade. Given the requirements of Assembly Bill 32 (Núñez-Pavley, Chapter 488, Statutes of 2006) and the fact that verified savings are less than reported savings, the statewide savings targets will likely need to be increased in future updates by developing new approaches to achieve economic potential, as well as accelerate the deployment of emerging technologies.

Staff has also developed several process recommendations that are described in Chapter 6. These are intended to help the Energy Commission better understand individual utility perspectives, help the publicly owned utilities improve the effectiveness of their programs, institute an effective evaluation, measurement and verification system for the publicly owned utilities, develop a system to track progress toward goals, and make the next AB 2021 planning cycle more effective.

CHAPTER 1: Introduction and Background

Purpose and Objectives of This Report

Assembly Bill 2021 (Levine, Chapter 734, Statutes of 2006) (AB 2021)[1] requires the California Energy Commission (Energy Commission) to develop statewide energy efficiency potential estimates and savings targets and provide recommendations on targets for California's investor-owned and publicly owned utilities. AB 2021 also mandates the Energy Commission to report progress of the legislation's implementation as part of its biennial Integrated Energy Policy Report (IEPR) proceeding. This report describes the purpose and background of the legislation, the responsibilities of the involved parties, and implementation efforts to date.

The intent of AB 2021 is for California's utilities to expand their efficiency programs to reduce customer energy consumption and bills, increase system reliability, and improve public health through better air and environmental quality by reducing greenhouse gas emissions (GHG). The energy savings achieved through AB 2021 implementation are an essential component of the state's plan to meet Governor Schwarzenegger's greenhouse gas reduction targets established in Executive Order S-03-05 and the California Global Warming Solutions Act of 2006 (Assembly Bill 32 [Núñez-Pavley, Chapter 488, Statutes of 2006]) (AB 32). Electricity production is a chief source of carbon emissions, which makes these environmental mandates foundational to future state energy policy. Energy efficiency is attracting significant attention because it is both emissions-free and the lowest cost energy resource option.

For this reason, the Legislature states in AB 2021 the intent that: "…all load serving entities procure all cost-effective energy efficiency measures so that the state can meet the goal of reducing total forecasted electrical consumption by 10 percent over the next 10 years." AB 2021 directs the pursuit of "all cost-effective, reliable, and feasible energy savings [both electricity and natural gas] and [peak] demand reductions." The California investor-owned utilities (IOUs) have energy consumption and peak demand savings goals for 2004-2013. These goals are reviewed for updating every three years. AB 2021 extends the practice of setting 10-year goals and updating them every three years to publicly owned utilities (POUs). This report will focus on the issues involved with the achievement of these legislative thresholds.

This document is the final staff report and is the result of staff's consideration of many comments and concerns expressed to staff during the September 17, 2007, IEPR workshop on AB 2021 and in other venues. It is an updated version of the draft staff report, S*tatewide Energy*

[1] See Appendix A for the complete text of the chaptered bill.

Efficiency Potential Estimates and Targets for California Utilities, posted on the Energy Commission website on September 7, 2007.[2]

Background

In response to the energy crisis of 2000-2001, the Energy Commission, the California Public Utilities Commission (CPUC), and the California Power Authority developed "the loading order" as a joint policy vision articulated in the *2003 Energy Action Plan* (*EAP*) and in the *2003 Integrated Energy Policy Report (2003 IEPR).* The loading order defines a set of preferences for meeting California's future energy resource needs, starting with energy efficiency and conservation, including demand response, then adding new generation first through renewable energy resources and distributed generation, and finally by improving infrastructure including repowering or adding new natural gas-fired generators.[3]

The CPUC and Energy Commission worked together to develop electricity and natural gas savings goals for each of the IOUs from 2004-2013.[4] These goals were adopted by the CPUC in 2004.[5] This decision also instructed the IOUs to include these goals as the basis of their 2006-2008 efficiency program portfolios and their 2006 (and subsequent) resource procurement plans. In September 2004, the CPUC announced that the *2005 Integrated Energy Policy Report (2005 IEPR)* would be the "initiation of a new, integrated, statewide resource planning process," which, among other things, would "recommend broad, statewide resource preference policies."[6]

A new CPUC rulemaking is focused on the post-2005 efficiency policies, incentive mechanisms, programs, and evaluation, including planning the 2009-2011 program cycle.[7] IOU efficiency

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[2]California Energy Commission, *Statewide Energy Efficiency Potential Estimates and Targets for California Utilities, Draft Staff Report,* September 2007, available at http://www.energy.ca.gov/2007publications/CEC-200-2007-019/CEC-200-2007-019-SD.PDF

[3] CPUC and Energy Commission, *The Energy Action Plan,* adopted in 2003. Available at http://www.cpuc.ca.gov/static/energy/electric/energy+action+plan/index.htm

[4] California Energy Commission *Proposed Energy Savings Goals for Energy Efficiency Programs in California, Staff Report*, Pub. No. 100-03-021, October 27, 2003; and California Energy Commission, *2003 Integrated Energy Policy Report*, Pub. No. 100-03-019, December 2003.

[5] California Public Utilities Commission (CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond.*

[6] CPUC, Rulemaking 04-04-003, Assigned Commissioner's Ruling, September 16, 2004, p. 2 and Attachment A.

[7] CPUC, Rulemaking 06-04-010, Order Instituting Rulemaking to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification and Related Issues, filed April 2006.

potentials and targets are being reviewed and updated in this venue. The CPUC is considering innovative 'big, bold, ideas' to guide IOU program development to meet future efficiency targets.

California's POUs are not regulated by the CPUC and have not been subject to the same energy efficiency mandates as the IOUs. AB 2021 is not the first time that POUs have been required to report on their energy efficiency activities. The federal Energy Policy Act of 1992 required them to report on energy efficiency to the federal Western Area Power Administration (Western), which is a primary source of publicly owned power for most of California's POUs. Since the early 1990s, Western has required California POUs to file Integrated Resource Plans (IRP) every five years with annual progress reports.[8] In the IRP, each POU must evaluate energy efficiency as an energy supply alternative. It is too early to tell how these two regulatory obligations will be integrated.

The Energy Commission's Title 20 data regulations obligate the POUs to submit historic and forecast electric and natural gas consumption and peak demand data in IEPR proceedings if their loads exceed 200 megawatts (MW). Roughly one-third of California's POUs are subject to this regulation.[9] As part of these submittals, the POUs report efficiency program portfolio expenditures by market sector and estimate savings impacts. The data in these submittals typically is uneven in quality.

New Energy Efficiency Legislation for Utilities

Two recent legislative bills, Senate Bill 1037 (Kehoe, Chapter 366, Statutes of 2005) (SB 1037) and AB 2021, recognize the magnitude of electricity in California provided by POUs and take steps to obligate the POUs to contribute toward meeting critical state goals of electric reliability and environmental mitigation.

SB 1037 provided the first step by codifying the pursuit of energy efficiency as the first priority in the loading order of energy resources as expressed in the *EAP* and already being implemented by the CPUC. The bill requires the CPUC, in consultation with the Energy Commission, to identify all potentially achievable cost-effective electric and natural gas energy efficiency measures for the IOUs, set targets for achieving this potential, review the energy procurement plans of IOUs, and consider cost-effective supply alternatives such as energy efficiency. In addition to these IOU requirements, SB 1037 requires that all POUs, regardless of size, report investments in energy efficiency programs annually to their customers and to the Energy Commission.

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[8] Western Area Power Administration, US Department of Energy, Energy Planning and Management Program, Programmatic EIS, Appendix C: Extract of Public Law 102-486.

[9] California Code of Regulations, Title 20, Public Utilities and Energy Division, Chapter 3, Article 2, Section 1345: Demand Forecasts.

In response to SB 1037, the POUs produced their first legislative report in December 2006 titled *Energy Efficiency in California's Public Power Sector: A Status Report*. The report includes previous and current year's expenditures as well as savings for the energy efficiency programs for all 39 POUs offering energy efficiency programs. The report also includes an overview of the public benefit programs administered by the POUs, information about the local customer base, and any demand reduction programs currently in place or being considered for the future.

Requirements for SB 1037 reference the POUs' *historical* energy efficiency accomplishments. With the passage of AB 2021 in 2006, the POUs joined the IOUs in being required to provide a *forecast* of energy efficiency savings to the Energy Commission.

AB 2021 became law in September 2006. As SB 1037 codified for the IOUs, AB 2021 directed the POUs to first acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible. The legislation intent specifically states that the reason for doing this is "so that the state can meet the goal of reducing total forecasted electrical consumption by 10 percent over the next 10 years."[10]

Additionally, the legislation requires each POU to:

1. Account for energy efficiency and demand reduction resource expenditures as procurement investments in resource planning.
2. Identify all potentially achievable cost-effective electricity energy saving every three years, establish annual targets for energy efficiency savings and demand reduction for the next 10-year period, and report these targets to the Energy Commission.
3. Report annually to its customers and the Energy Commission its investment in energy efficiency programs, description of programs, expenditures, cost-effectiveness, expected and actual energy savings results, and sources of funding for investments.
4. Report methodologies and input assumptions used to determine cost-effectiveness.
5. Report the results of independent evaluation, measurement, and verification of the energy efficiency savings.

AB 2021 also directs the Energy Commission to:

1. Develop a 10-year statewide potential estimate of "potentially achievable cost-effective electricity and natural gas savings" using the utility submittals and other sources of information. The Energy Commission is directed to produce this estimate in consultation with the CPUC as the regulator of IOU energy efficiency programs.
2. Establish statewide annual targets for potentially achievable cost-effective energy efficiency and demand reduction for a 10-year period.

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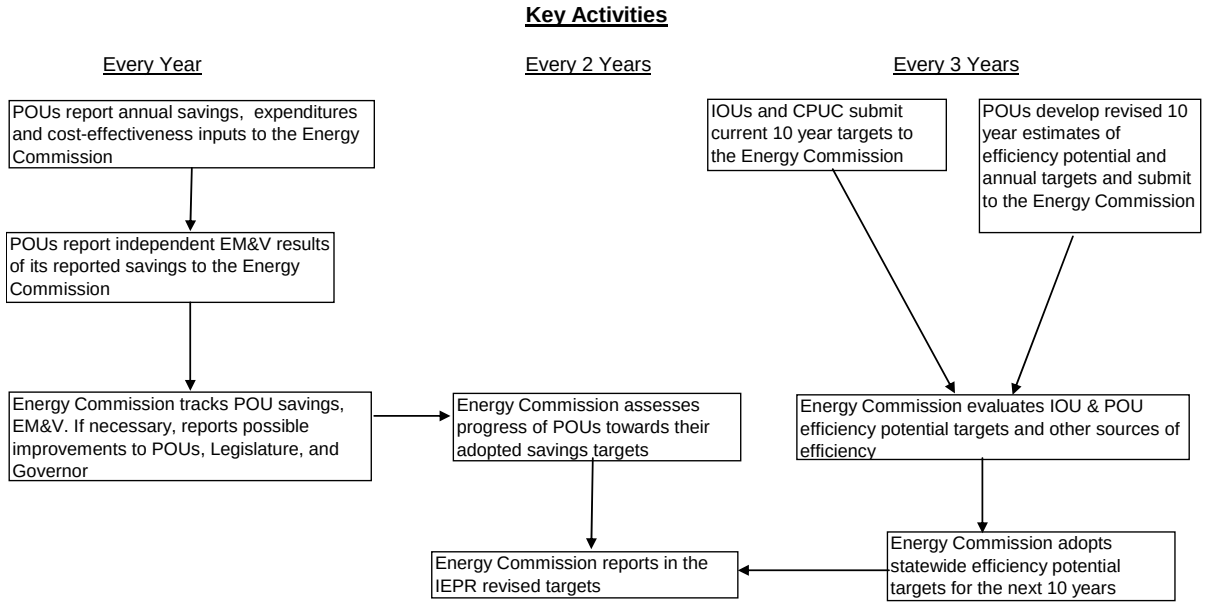
[10] Assembly Bill 2021 (Levine, Chapter 734, Statutes of 2006), Section 1. (a). Full text in Appendix A.

3. Propose improvements in the process for the next cycle of utility efficiency potential estimation and targets.
4. Include in the IEPR the POU information noted above, as well as a comparison of each utility's energy efficiency targets and actual results for each POU.
5. Recommend to POUs, the Legislature, and the Governor any improvements that could be made in the level of aggregate achievement by POUs or in the level of achievement by any individual POU. (This will take place when the POUs begin to report program results in early 2008 and this progress is evaluated.)

For the *2007 IEPR*, Energy Commission staff has developed a recommendation on the first statewide potential estimate and target. The Energy Commission will consider this recommendation and adopt a statewide target. Figure 1 identifies the annual, biennial, and triennial activities related to setting targets and tracking energy savings required by SB 1037 and AB 2021.

Figure 1: Process: Setting Statewide Efficiency Potential and Targets for California Utilities



Source: Energy Commission staff work.

These obligations necessitate collecting data, evaluating the potential estimates from all utilities, developing methods to aggregate IOU-POU data, developing options for setting targets, and creating criteria for evaluating those options. By July 2, 2007, the Energy Commission had received all data on efficiency potential and proposed targets from the POUs and the CPUC (for

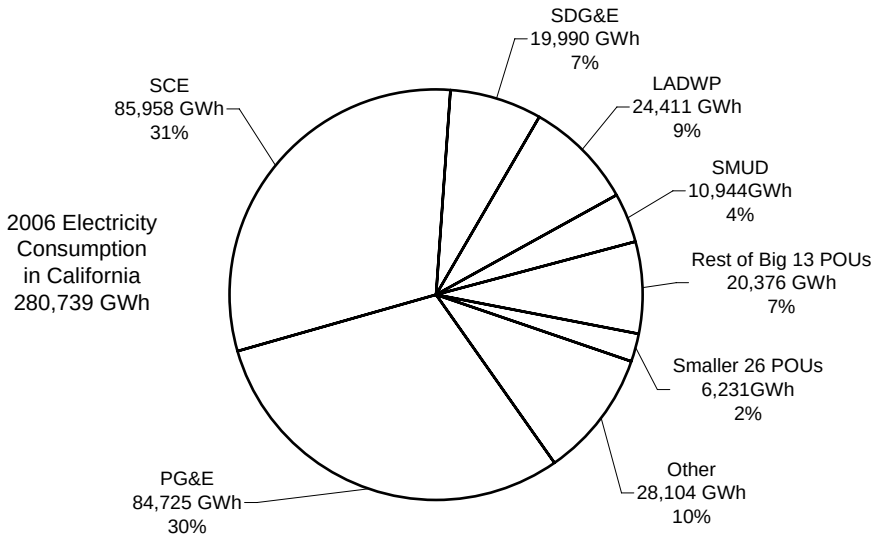
the IOUs). Most of the POUs submitted *draft* targets at this time. By mid-October virtually all POUs had their draft targets approved by their governing boards or city councils.

Energy Commission staff is optimistic that, through the implementation of AB 2021, California utilities will gain the knowledge, methods, and motivation to achieve a significantly higher magnitude of energy efficiency. This should provide an effective means of addressing the state's long term need for reliable energy supplies and a healthy environment.

Differences Between Publicly Owned and Investor-Owned Utilities

As part of the background story, it is helpful to know certain characteristics of the POUs and IOUs. The electricity needs of most Californians are met through a combination of IOUs and POUs. There are three major IOUs serving electricity (Pacific Gas and Electric Company [PG&E], Southern California Edison [SCE], and San Diego Gas & Electric Company [SDG&E]) and more than 40 POUs located throughout the state. Figure 2 shows that the IOUs provided about 68 percent of the 281,000 gigawatt hours (GWh) of electricity consumed in California in 2006; the POUs collectively provided about 22 percent.[11]

Figure 2: IOU and POU Shares of California's Electricity Consumption in 2006



Source: California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007.

[11] Based on California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007.

Excluding entities outside the AB 2021 process this year, the IOUs provide 75 percent and the POUs 25 percent of California's electricity. Natural gas is provided by three major IOUs (PG&E, SDG&E, and Southern California Gas Company [SCG]) for a total of 98 percent. Palo Alto is the only natural gas POU reporting targets this year. Some of the state's electricity (10 percent) and some of the natural gas is provided by entities not participating in the AB 2021 process this year (see Chapter 2).

There are significant differences in scale between the average publicly owned and investor-owned utility that affect their energy efficiency histories. Even among POUs, the range of sizes is dramatic: one-third of the POUs account for over 90 percent of POU electricity sales. The IOUs dwarf most of the POUs in the size of their territory and the number of customer accounts. The POUs vary greatly in the number of customers served. LADWP provides service to the largest number of customers at 1.5 million accounts, while Pittsburg Power Company provides service to less than 300 accounts. Most of the POUs serve between 10,000 and 90,000 customers. As a result, the POUs tend to have a less heterogeneous customer mix than the IOUs.

From 2000 through 2003, the IOUs reported 4,838 GWh, 1,248 megawatts (MW), and 93 million therms (MMth) of energy efficiency savings. In the CPUC's 2004-2005 program cycle, the IOUs reported energy efficiency savings of 4,773 GWh, 948 MW, and 77 MMth with a total expenditure of $965 million. For the CPUC's 2006-2008 efficiency program cycle, the IOUs budgeted a total of $2 billion for three years of efficiency programs for projected savings of 6,812 GWh, 1,006 MW, and 111 MMth.[12]

Like the IOUs, the POUs administer a variety of energy efficiency programs for their customers. During 2005-2006, all POUs collectively spent more than $54 million dollars on energy efficiency and saved over 170 million kilowatt hours (kWh) and 53 MW of peak electricity. Figure 3 shows the electric energy savings reported for 2005 for both IOUs and POUs. Combined, the IOUs' programs resulted in 95 percent of the savings. The two largest POUs in the state, SMUD and LADWP, both of which have had energy efficiency programs as long as the IOUs, account for 3.2 percent of the statewide savings, but 60 percent of the savings that came from the POUs. SMUD had the highest energy efficiency expenditures at $22 million, close to half of the entire amount spent for all 39 POUs. LADWP spent the next highest amount at $11 million for their energy efficiency programs.[13]

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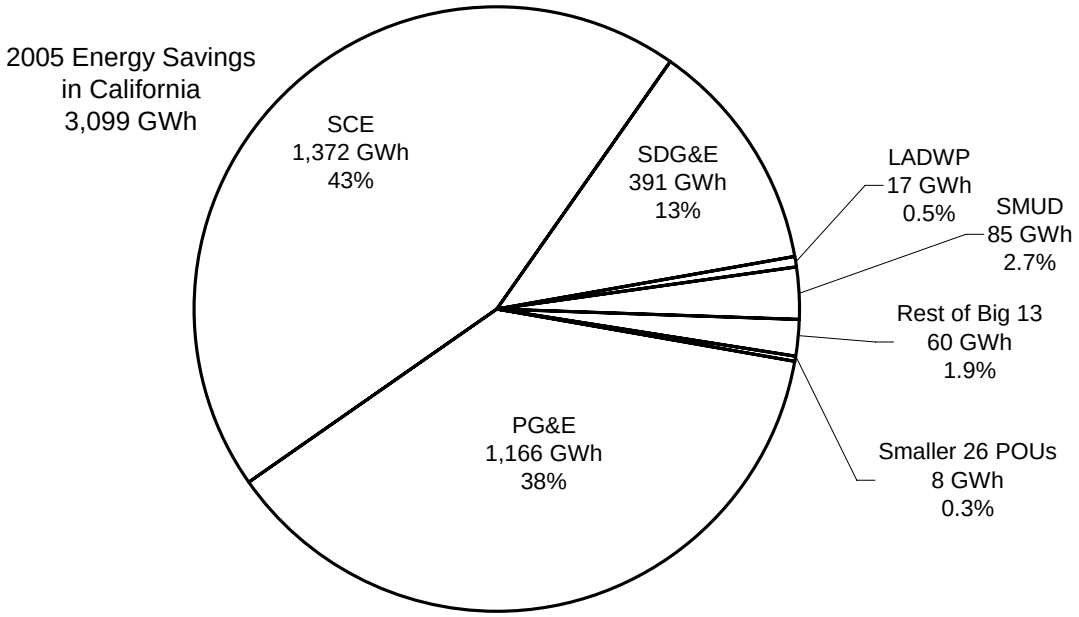
[12] CPUC, D.05-09-043, Interim Opinion: Energy Efficiency Plans and Program Funding Levels for 2006-2008-Phase I Issues, September 22, 2005, and Proposed Corrections to this decision, November 29, 2005.

[13] California Municipal Utilities Association (CMUA), *Energy Efficiency in California's Public Power Sector: A Status Report*, December 2006. (*2006 CMUA Energy Efficiency Status Report*)

Figure 3: IOU and POU Share of Electric Energy Savings in 2005



Sources: *2006 Energy Efficiency Annual Reports* for the investor-owned utilities. California Municipal Utilities Association (CMUA), *Energy Efficiency in California's Public Power Sector: A Status Report*, December 2006 for the publicly owned utilities.

The remainder of this report is organized in the following manner.

- Chapter 2 presents the data collection activities, analytical approaches, and methods used by the IOUs, POUs, and state agencies to implement AB 2021.
- Chapter 3 presents the data as submitted to the Energy Commission by the 13 largest POUs and provides an analysis and evaluation of their proposed savings targets.
- In Chapter 4, staff develops an estimate of statewide energy efficiency potential and target using data from all POUs and IOUs and other information.
- Chapter 5 presents and evaluates options for a statewide efficiency target.
- Chapter 6 presents staff's recommendations on the statewide target and on ways to optimize the next AB 2021 cycle.

There are four appendices.

- Appendix A contains the chaptered text of AB 2021.

- Appendix B contains energy efficiency and demand reduction potentials and savings targets for each utility. Electric and natural gas utilities are grouped separately.
- Appendix C contains additional supporting figures and tables.
- Appendix D contains public comments and staff responses.

CHAPTER 2: Data Sources and Methods

Introduction

This chapter provides information on the methods used by the IOUs and POUs to develop their efficiency potential estimates and targets, and on the data sources used by the Energy Commission to develop statewide efficiency potential estimates and targets.

Technical potential is a measure of savings that would be captured if all applicable energy efficiency measures were installed without regard for practicality or cost. Economic potential is a measure of savings that would be achieved if all customers could be convinced to invest in all available efficiency measures shown to be cost-effective. Cost effectiveness of the measures is determined using the Total Resource Cost (TRC) test, which includes the present value of the electricity savings evaluated at avoided costs, incremental measure costs, and program administrative costs. Typically, a third level of potential is defined that represents the smaller portion of economic potential that will actually be installed in homes and businesses through efficiency programs. Achievable potential considers such factors as market conditions, public policy, incentives, and general customer behavior that affect rates of measure adoption, and varies with specifics of efficiency policy and program characteristics.

The Energy Commission retained Navigant Consulting (Navigant) to assist with data management and analyses. Navigant developed a comprehensive statewide data set that aggregated the baseline forecasts of energy consumption, estimates of energy efficiency potential and proposed savings data for the IOUs and POUs[14]. Sources of this data are described in the next section of this chapter.

Potential studies for the IOUs and POUs were completed at different periods and by different contractors. Itron completed the most recent potential estimates for the IOUs in May 2006.[15] Five of the POUs began their studies before the passage of AB 2021 (Sacramento Municipal Utility District, Los Angeles Department of Water and Power, City of Redding, City of Palo Alto, and Silicon Valley Power) using various contractors. The California Municipal Utilities Association (CMUA), Northern California Power Agency (NCPA), and Southern California Public Power Authority (SCPPA) jointly retained the Rocky Mountain Institute (RMI) in early 2007 to perform

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[14] Under a separate effort, Navigant assisted the Energy Commission with a scenario analysis project. Staff has made an effort to use consistent data sets for both projects. In particular, the technical and economic potential estimates both come from the same source, the 2006 Itron report.

[15] Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006 (*2006 Itron*).

potential estimations for the remaining 34 POUs.[16] In all of the studies, however, the approaches were based on the methods and data sources, including the Energy Commission's demand forecast, used in recent California IOU studies.

Data for the Investor-Owned Utilities

The current goals for the IOUs, shown in Table 1, were adopted by the CPUC in D.04-09-060 for 2004-2013. The CPUC issued a new decision, D. 07-10-032,[17] on October 18, 2007, that did not change any of the adopted savings goals for the IOUs for 2009-2013. In this decision, the CPUC directed their staff to work with the IOUs to develop "temporary" savings goals for 2014-2020 as part of an overall strategic plan. The CPUC will consider updating these 2014-2020 goals after the efficiency potential study currently underway is complete.

The staff analysis looks at (1) the impact of having no IOU efficiency programs after 2013; and (2) the impact of projecting the goals beyond 2013 using the average growth in energy savings from 2004-2013.[18] This projection adds 4 percent to the GWh estimation of savings for the combined IOUs in 2016. These estimated savings are higher than the uncommitted energy efficiency in the IOUs long-term procurement plans for electricity.[19] They are less than the savings contained in the Energy Commission's 2005 Transmittal Report.[20] Source data and estimated savings are roughly consistent with the high energy efficiency development scenario (Case 3A) in the preliminary Energy Commission scenarios analysis work.[21]

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[16] California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*) Although Silicon Valley Power completed its own potential analyses, CMUA included them in the combined POU report.

[17] California Public Utilities Commission (CPUC), Decision 07-10-032, October 18, 2007, *Interim Opinion on Issues Relating to Future Savings Goals and Program Planning for 2009-2011 Energy Efficiency and Beyond.*

[18] The IOU goals were projected by taking the average annual growth rate in energy from 2004-2013 for each utility and applying this same growth rate to each utility for 2004-2016. The adjusted growth rate for PG&E and SCE is roughly 5 percent and for SDG&E is 2.2 percent.

[19] IOU filings of uncommitted energy in CPUC, R.06-02-013, Order Instituting Rulemaking to Integrate Procurement Policies and Consider Long-Term Procurement Plans, December 2006.

[20] California Energy Commission, *Transmittal of 2005 Energy Report Range of Need and Policy Recommendations to the California Public Utilities Commission,* Commission Report, CEC-100-2005-008-CMF, November 2005. The difference between the two is 485 GWh or 6 percent for electricity and 91 MW or 5 percent for peak. The Transmittal Report did not provide numbers for natural gas consumption.

[21] California Energy Commission, *Scenario Analyses of California's Electricity System: Preliminary Results for the 2007 Integrated Energy Policy Report*, Staff Draft Report, CEC-200-2007-010-SD, June 2007.

Table 1: Approved 2004-2013 CPUC Targets for IOUs

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total Annual Electricity Savings (GWh/yr)	1,838	1,838	2,032	2,275	2,505	2,538	2,465	2,513	2,547	2,631
Total Cumulative Savings (GWh/yr)	1,838	3,677	5,709	7,984	10,489	13,027	15,492	18,005	20,552	23,183
Total Peak Savings (MW)	379	757	1,199	1,677	2,205	2,740	3,259	3,789	4,328	4,885
Total Annual Natural Gas Savings (MMTh/yr)	21	21	30	37	44	52	54	57	61	67
Total Cumulative Natural Gas Savings (MMTh/yr)	21	42	72	110	154	206	260	316	377	444

Source: CPUC Decision 04-09-060, September 23, 2004 - INTERIM OPINION: ENERGY SAVINGS GOALS FOR PROGRAM YEAR 2006 AND BEYOND

The goals identified in Table 1 were based on a potential study from 2002. In this report, Energy Commission staff used the *2006 Itron* potential study as the basis for the IOUs' estimates of technical and economic potential through 2016. The *2006 Itron* study included separate estimates of savings from mainstream and emerging technologies.

Since the *2006 Itron* potential study used 2004 as its base year, the potential estimates need to be adjusted for the program savings that have already been realized. Table 2 summarizes the potential estimates from the *2006 Itron* study, utility energy efficiency program accomplishments from 2004 to 2008[22], and identifies the remaining potential, both with and without emerging technologies.[23] All estimates are presented as gross total savings from cumulative adoptions from 2004-2016, which means they have not been reduced by either a naturally occurring estimate or a net-to-gross ratio.

Table 2 presents technical and economic potential only for the IOUs. The potential for the IOUs and the POUs combined is shown in Table 6. The relationship between the available economic and technical potential and the CPUC selected goals is shown for each utility in Appendix B.

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[22] The Estimated 2004-2008 Savings column in Table 3 is composed of two groups of numbers. The Itron memo titled *Where Are We Now?* April 30, 2007, is the source for the savings from 2004-2006. Data in this memo originated in each IOUs' 2005 Energy Efficiency Annual Reports, and the 2004-2006 IOU Energy Efficiency Groupware Application (EEGA-data filed monthly with CPUC). For the savings in 2007 and 2008, the savings are taken from the CPUC decision, D.04-09-060.

[23] Staff has separated out standard technical and economic potential from the potential savings due to emerging technologies that are "near-term opportunities" that are currently "lacking market acceptance." (Itron 2006, Chapter 11) The *2006 Itron* study examined the potential from emerging technology only for the IOUs. Emerging technologies were not addressed in the potential studies done for the POUs, so the numbers shown in Table 3 are likely to be understated.

Table 2: Remaining Efficiency Potential for IOUs

	2004-2016 Itron Potentials		2004-2008 Reported Savings	Post 2008 Remaining Potentials	
	Technical	Economic		Technical	Economic
Energy (GWh)					
PG&E	22,326	17,833	4,534	17,792	13,299
SCE	23,315	18,199	5,277	18,038	12,922
SDG&E	5,061	4,005	1,308	3,754	2,698
Sub-Total	**50,702**	**40,037**	**11,119**	**39,584**	**28,919**
Emerging Technology	12,481	12,481		12,481	12,481
Total	**63,183**	**52,518**		**52,065**	**41,400**
Demand (MW)					
PG&E	5,086	3,076	936	4,150	2,140
SCE	4,989	3,082	1,006	3,983	2,076
SDG&E	1,068	652	264	805	389
Sub-Total	**11,143**	**6,810**	**2,206**	**8,938**	**4,605**
Emerging Technology	4,288	4,288		4,288	4,288
Total	**15,431**	**11,098**		**13,226**	**8,893**
Gas (10^6 Th)					
PG&E	750	439	84	666	355
SoCalGas	932	416	80	852	336
SDG&E	125	68	15	110	53
Sub-Total	**1,807**	**923**	**179**	**1,628**	**744**
Emerging Technology	547	547		547	547
Total	**2,354**	**1,470**		**2,175**	**1,291**

Sources: Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006 (2006 Itron) for the technical and economic potential. Itron memo titled *Where Are We Now?* April 30, 2007 for reported savings 2004-2006. CPUC Decision 04-09-060, September 23, 2004 - *Interim Opinion: Energy Savings Goals For Program Year 2006 And Beyond* for reported savings 2007-2008.

Data for the Publicly Owned Utilities

Rocky Mountain Institute Potential Study

CMUA, NCPA, and SCPPA contracted with the Rocky Mountain Institute (RMI) to provide an independent assessment of energy savings potential for the preparation of a report titled, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021 (2007 CMUA Report)*, which provides efficiency potential and "preliminary targets" for 35 of California's POUs.[24] An

[24] California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007 (*2007 CMUA Report*). CMUA updated this report on October 15, 2007 to reflect targets subsequently adopted by local POU boards just as this staff report was submitted for final review.

earlier study from the POUs, *Energy Efficiency in California's Public Power Sector: A Status Report,* provides data on 2005-2006 efficiency investments and savings.[25]

Data and methods used to develop estimates of technical, economic, and feasible program savings estimates for the POU service areas came from three sources: (1) the IOUs' *2006 Itron* study, (2) the model and methodology provided by RMI for the *2007 CMUA Report*, and (3) each POU. RMI used the Itron analysis at the customer sector and end-use levels for the geographically closest IOU to produce new estimates of technical and economic potential for each of the POUs. Each POU then developed independent estimates of achievable potential or proposed targets on an annual basis over the next decade.

To help POUs set feasible[26] efficiency targets, RMI developed a method (Option 1) that identified three possible levels of savings (percentages of consumption reduced) relative to their economic potential. Utilities could choose this simplified option by selecting their savings targets at their current level, 50 or 80 percent of economic potential, or by selecting one of two other options: Option 2: adjust the per measure savings if market penetration of measures is known; or Option 3: use both Options 1 and 2 plus existing state energy goals and local market conditions. Those using Options 2 or 3 included the following factors in their target calculation:

- Market is perceived to be saturated for some measures (for example, compact fluorescent light bulbs (CFLs).
- Some measures are not possible (for example, air conditioning for winter peaking utilities such as Alameda, Lompoc, Truckee-Donner).
- Lack of customer diversity limits the markets for some measures.
- Economic and demographic factors such as recession, growth, and so forth.

Unfortunately, RMI did not identify which POU selected which option, making it difficult for staff to evaluate their feasible targets.

The relationship between the available economic and technical potential and the proposed target levels developed by RMI is shown for each utility in Appendix B.

Potential Studies for the Other Publicly Owned Utilities

Four utilities conducted their own potential studies, which were not included in the RMI report. Energy Commission staff developed tables and graphs showing economic and technical potential for these POUs using the same format as used by RMI. These tables and graphs are also located in Appendix B.

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[25] California Municipal Utilities Association, *Energy Efficiency in California's Public Power Sector: A Status Report*, December 2006.

[26] In this report, the terms "achievable potential" and "feasible potential" are used interchangeably.

Los Angeles Department of Water and Power (LADWP)

The technical and economic potential numbers for 2017 were extracted from *Los Angeles Department of Water and Power Energy Efficiency Study*.[27] The baseline forecasts and proposed savings numbers were provided by LADWP on July 2, 2007 in conjunction with its submittal, *Energy Efficiency Targets – Los Angeles Department of Water and Power: Submittal in Response to AB 2021*.[28]

City of Palo Alto Utilities

The City of Palo Alto Utilities (CPAU) provided the Energy Commission with its *Utilities Ten-Year Energy Efficiency Plan 2007*, approved by the City Council on April 23, 2007. The CPAU potential study was part of a 2005 report, *Implementation of Energy Resource Portfolio Planning for the City of Palo Alto Utilities*.[29] CPAU provided the data used in this analysis to the Energy Commission on July 12, 2007 in a "Ten Year Efficiency Plan Summary" for 2008-2017.

Redding Electric Utility

Redding Electric Utility provided the Energy Commission with a report, *Achievable Potential for Energy Efficiency Report*, by Nexant Consultants[30]. The report did not provide technical and economic potential numbers but did provide proposed savings targets and a baseline 10-year electricity consumption forecast.

Sacramento Municipal Utility District (SMUD)

The SMUD Board of Directors adopted 10-year targets on May 17, 2007 and provided SMUD's potential and proposed savings numbers for 2008-2017 on July 5, 2007. The base year for their calculations was 2007, so staff decided to use data for 2007 to 2016 in this analysis. SMUD's baseline forecasts of energy and demand are taken from the utility's October 2006 report, *SMUD Forecast of System Loads, Customer Accounts and Energy Sales 2007-2016*. SMUD's estimates of potential are derived from a report completed for SMUD in 2006 by Itron.[31]

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[27] Quantum Consulting, *Los Angeles Department of Water and Power Energy Efficiency Potential Study, Final Report*, submitted to LADWP, February 8, 2006.

[28] Communication to Commissioner J. Pfannenstiel, Energy Commission, from R. Deaton, General Manager, LADWP, dated June 29, 2007.

[29] Rocky Mountain Institute (RMI), *Implementation of Energy Resource Portfolio Planning for the City of Palo Alto, Final Report, Volume I*, submitted to City of Palo Alto, December 2005.

[30] Nexant Consultants, *Achievable Potential for Energy Efficiency Report,* submitted to Redding Electric Utility, City of Redding, June 11, 2007.

[31] Itron, Inc., *Energy Efficiency Potential Study*, submitted to SMUD, June 2, 2006.

Data Evaluation Challenges

The current efficiency goals for the IOUs are based on the potential studies completed during 2002-2003.[32] These potential estimates were revised in the *2006 Itron* study, which is based on 2005 data. A newer Itron study (2007) is in progress, but it is too soon to know whether this revision will increase or decrease the IOU potential estimates. The IOUs have stated that if the future potential is reduced, then their goals should be reduced. In part, this argument is based on the differences between the 2002 and the 2006 potential studies, which showed that less potential was identified in 2006 than in 2002, the study on which the CPUC based the 2004-2013 goals.[33]

Many factors influence potential estimates, including program accomplishments; new energy efficient building codes and standards; new saturation studies; new customer end-use survey data; behavioral data; updated list of measures and their savings; revised rate forecasts; new demographic data; and emerging technologies. Numerous differences between the studies also complicated the comparison. Staff believes that until these influences and differences are fully evaluated and potential estimates are further updated for the IOUs, use of the 2006 potential estimates and current goals (set in 2004) is a reasonable approach because it applies the most current and officially accepted information.

While use of the IOUs' *2006 Itron* study for determining efficiency potential for the POUs may be a reasonable approach, several uncertainties are introduced because: 1) POU sector and end-use level data needed to make reliable estimates of economic potential is lacking; and, 2) IOU data used as a proxy for unavailable POU data may be too variable.

Staff has several concerns about the use of the available potential studies for IOUs or POUs.

First, while the potential studies are detailed and comprehensive and reflect extensive data on the utilities' customers and program experience, there are a number of limitations. The IOUs'

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[32] Kema-Xenergy, Inc., *California Statewide Commercial Sector Energy Efficiency Potential Study. Final Report, Volumes 1-2,* July 2002.

Kema-Xenergy, Inc., *California Statewide Residential Energy Efficiency Potential Study. Final Report, Volumes 1-2*, April 2003.

Kema-Xenergy, Inc., *California Statewide Commercial Sector Natural Gas Energy Efficiency Potential, Final Report, Volumes 1-2*, May 2003 (revised July 2003).

Kema-Xenergy, *California's Secret Surplus: The Potential for Energy Efficiency, Final Report*, submitted to Energy Foundation and Hewlett Foundation, September 23, 2002.

[33] CPUC, Rulemaking 06-04-010, OIR to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification, and Related Issues, Workshop held June 20, 2007.

2006 potential study[34], which also served as the primary source for most of the POUs' studies, is based on 2005 data. Numerous limitations and caveats are noted in the study including exclusion of behavioral measures, limited scope of emerging technologies, and need for improved data on saturations and market adoption. A related issue is the Total Resource Cost (TRC) calculation, which determines cost-effectiveness. The inclusion of costs, choice of discount rates, and so forth, needs to be revisited before future potential studies are initiated.[35]

Second, there are differences among the six available potential studies that serve as the basis for estimating technical and economic potential, and there are differences in the methods used to establish the feasible potential (and proposed savings goals). Almost all of the potential studies used the same data (that is, derived from the *2006 Itron* study and the Database for Energy Efficient Resources database). All of the IOUs used the same Itron study. The others employed methods similar to those used by the IOUs, and most of the studies relied upon the data from the *2006 Itron* study. While all of the studies employed rigorous analysis and best available data, there are some significant differences. The major differences (aside from the utility service area specific characteristics) among these studies are:

- Avoided energy costs – The avoided energy costs used by each utility are not readily documented. This obviously affects the economic potential. Some POUs appear to have very low avoided costs relative to rest of the state. In addition, it appears that some POUs did not include an avoided capacity cost in their cost-effectiveness calculations.[36].
- Derivation of feasible targets – Various methods were used to go from the economic potential to the feasible potential/proposed savings goals for each POU area. Many of the POUs appear to have used a subjective process of setting the feasible savings at 50 percent of the economic potential.[37] Other utilities discounted the potential from some measures because: (a) they thought other programs and efforts in their communities would be attaining those improvements; (b) the measures are not really applicable in

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[34] Itron (May 2006), *op. cit.*

[35] Total Resource Cost (TRC) terminology and applications vary among existing efficiency potential studies. In *Itron 2006* the TRC measure for determining economic potential includes avoided costs, measure costs and program costs. This *utility perspective* measure includes a discount rate of 5 percent based on the utilites' costs of capital. In the earlier version of *Itron 2006*, the 2000 Kema-Energy potential study, the TRC was *societal perspective* which included environmental costs and a lower societal discount rate.

[36] CMUA, June 2007. *op. cit.*

[37] For example, see Palo Alto, April 2007, *Ten Year Energy Efficiency Portfolio Plan*, memo to Utilities Advisory Commission, Palo Alto, CA, April 4, 2007, or see CMUA, June 2007, *op. cit.*

their service area; (c) the measures already have market penetration in their service area; and (d) they did not think a utility program would attain high market penetration.

Third, there were wide variations in the expected program savings among utilities relative to:

- Forecasted electricity consumption,
- Peak electrical demand and natural gas consumption in 2016,
- Economic and technical potential, and,
- A reduction in consumption or peak demand by 10 percent by 2016.

These variations can be attributed to many factors, including differences in customer base, size of the existing energy efficiency program budget, available staff and experience in developing energy efficiency programs, and views about the cost effectiveness of specific energy measures across utilities.

Fourth, the methods used by RMI and the individual POUs to determine achievable potential still remain unclear to staff. The *2007 CMUA Report* indicates that "… each POU established … targets based on the results of the RMI study and knowledge of their respective service areas."[38] Although a list of possible adjustment options are provided in the study, the specific methods of adjustment for each POU and their implications are unknown. To fully assess the method and results used to develop achievable potential, Energy Commission staff needed answers to the following:

- The general method used to set annual program savings targets. Which of the three options given by RMI did they select?
- The extent to which the method used estimates of economic or technical savings potential to bound or inform the level of savings found to be reasonable.
- Which of the following factors were used in the development of annual efficiency program targets?
    - Historical program savings results over time.
    - Estimates of available program funding.
    - Consideration of ramp-up constraints: available program staff, product vendors, trade allies in area, stock turnover rates, new home starts, and so forth.
    - Consideration of other external factors, emerging technologies, such as advanced metering deployment and new communication devices.

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[38] CMUA, June 2007. *op. cit.* p. 23.

AB 2021 legislation realized that importance of understanding the derivation of POU targets by directly requiring the POUs to "…..report those targets to the California Energy Commission and the basis for establishing those targets."[39]

To obtain answers to these questions, the staff held telephone interviews with energy efficiency personnel of the 13 largest POUs during late August 2007.[40] The results of this investigation with POU staff are discussed in Chapter 3.

Data Aggregation

The data aggregation and analysis for the POUs are based on data sheets provided with the June *2007 CMUA Report*. The report contained separate tables for 33 of the 35 POU participants in the report: the City of Industry and Vernon did not submit data. Each of the POU tables contained annual values for 2007-2016 in the following categories:

- Technical Potential: Energy as noted in megawatt hours (MWh) and Demand as noted in megawatts (MW)
- Economic Potential: Energy (MWh) and Demand (MW)
- Feasible Targets (that is. Feasible Potential): Energy (MWh) and Demand (MW)
- Baseline Energy Forecast (MWh) and Baseline Demand Forecast (MW)

In most cases, these numbers had not been adopted by each POU board before the June 2007 submission to the Energy Commission. Staff used these proposed June numbers to prepare this final staff report. On October 15, 2007, CMUA submitted a revised report incorporating final board-adopted targets for 33 utilities.[41] In aggregate, the changes equate to 51,000 MWh and 15 MW, or less than 1.1 percent in each case. Staff was unable to fully incorporate these October changes throughout this final report, but did revise Tables 6 and 7 in Chapter 4 to show the differences between proposed and adopted targets for each POU.

Technical, economic, and feasible potential energy savings estimates were subtracted from the baseline forecasts. Subtracting the savings yielded projections of what the 2007-2016 energy consumption patterns would be if these levels of savings were achieved.

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[39] AB 2021, p. 4.

[40] Telephone interviews were held between Energy Commission staff (Gary Klein, Cynthia Rogers, Mike Messenger, and Belen Valencia) and various POU utility personnel between the dates of August 27-29, 2007.

[41] California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021, Final Update.* October 2007.

The data obtained from the other POUs and IOUs were entered into similar data sheets to allow comparison among all utilities. Data for the natural gas utilities were compiled in the same way. The aggregated data served as the foundation for the analyses provided in Chapter 4 of this report.

Energy Consumption and Peak Demand Forecasts

For making statewide estimates and comparisons, staff has relied on the energy demand forecasts contained in the Energy Commission's *California Energy Demand 2008-2018, Staff Draft Forecast*, which covers each of the transmission planning areas in the state.[42] To develop energy use forecasts for each individual utility, staff applied the planning area growth rate to the most recent recorded year of electricity and natural gas consumption. For electricity, the last historic year is 2005, but natural gas was updated with 2006 actual consumption.

For the IOUs and larger POUs, Energy Commission staff developed a peak demand forecast by applying the planning area forecast growth rate to the staff's estimate of weather-adjusted 2006 peak demand, documented in *Staff Forecast of 2008 Peak Demand*.[43] For smaller POUs, the peak demand forecast submitted by the POU was used.

Energy efficiency impacts from the IOUs' approved 2006-2008 program portfolios are treated as committed energy savings and have been embedded in the Energy Commission's demand forecast. In contrast, the pre-2008 efficiency impacts for the POUs have not been accounted for in the Energy Commission's forecast because data was inconsistent. Energy savings estimates beyond 2009 are treated as uncommitted savings for both the IOUs and the POUs.[44] When comparing aggregated energy savings estimates to the forecasts for electricity, peak demand and natural gas, the impact of this treatment for the IOUs was that the remaining technical and economic potential covers 2009 to 2016. For the POUs it covers 2007-2016. Chapter 4 contains graphs showing these comparisons of the potential estimates to the electricity, peak demand, and natural gas forecasts.

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[42] California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007.

[43] California Energy Commission, *Staff Forecast of 2008 Peak Demand*, Staff Final Report, CEC-200-2007-006-SF, June 18, 2007. See Table 1-8 for a description of forecast planning areas.

[44] This assumption may result in some overstatement of program impacts for the IOUs in the forecast years 2009-2016. In the staff's final report on the demand forecast, it states that uncommitted savings impacts are captured post-2008 to the extent that efficiency portfolio and program designs remain unchanged into the future. This extent of program design constancy and its impact on uncommitted savings in the baseline forecast is under investigation. See California Energy Commission, *California Energy Demand 2008-2018 Staff Revised Forecast,* Staff Final Report, CEC-200-2007-015-SF2, pp. 25-31.

Other Utilities

A number of utilities have not participated in the AB 2021 process this year either because they did not specifically qualify as publicly owned (municipal) utilities or they are self-generators (electricity) or private marketers (natural gas). The self-generators represent 4 percent of electricity consumption and the private marketers represent 17 percent of natural gas end-use consumption. The other electric utilities, presented in Table 3, account for approximately 6 percent of California's electric energy consumption (of which Department of Water Resources is one-half). The other gas utilities represent 2 percent of the natural gas consumption. This report does not include efficiency potential estimates and targets for these utilities, self-generators or private marketers.

Table 3: Other Utilities and Corresponding Planning Areas

Electricity		
#	Utility	Planning Area
1	Anza	SCE
2	Calaveras	PG&E
3	DWR	DWR
4	MWD	SCE
5	Pacificorp	Other
6	San Francisco	PG&E
7	Sierra Pacific	Other
8	Southern California Water	SCE
9	Surprise Valley	Other
10	Tuolumne	PG&E
11	USBR-CVP	PG&E
12	USBR-Parker Davis	SCE
13	Valley Electric	SCE

Natural Gas		
#	Utility	Planning Area
1	Avista Energy	Other
2	Coalinga	PG&E
3	Long Beach	SCG
4	Southwest Gas Corporation	Other

Source: Demand Analysis Office based on California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007.

CHAPTER 3: Analysis of Energy Efficiency Data Provided by the Publicly Owned Utility Companies

Introduction

AB 2021 requires that:

> "…each publicly owned utility, in procuring energy to serve the load of its retail end use customers, shall first acquire all available energy efficiency demand reduction resources that are cost-effective, reliable and feasible."
>
> Under this requirement, the legislation goes on to require that each POU:
>
> "…shall identify all potentially achievable electricity efficiency savings AND shall establish annual targets for energy efficiency and demand savings for the next ten year period."

In this chapter, Energy Commission staff first analyzes whether the POUs have fulfilled these legislative requirements to identify all "potentially achievable cost-effective" energy savings with the information provided on their behalf by CMUA in June 2007.[45] Staff then analyzes whether the annual savings targets established by the POUs are likely to provide resources that are cost-effective, reliable, and feasible" as specified in law above.

Many participants to this proceeding have focused on different interpretations of the words "available," "potentially achievable," "cost-effective," "feasible," and "reliable" to modify or characterize the level of energy savings the POUs should be encouraged to achieve over time. Staff presents its interpretation or definition of each of these words below. This is important because of differences among the parties on how they define these words and use them in their analysis of the potentially achievable savings and related annual targets provided by the POUs. The definitions are presented in descending order, from the largest quantity of energy savings to the smallest.

Definitions of Cost-Effective Energy Efficiency Resources

Cost-Effective

In AB 2021, the term "cost-effective" is used to describe energy efficiency resources or savings in a number of different places. Staff believes the term "cost-effective" refers to those programs or investments that will result in net benefits to society when compared to the estimated costs of installing the measure and implementing the program. In the energy efficiency field, the TRC test has been used for 25 years to assess the overall societal costs and benefits from proposed

[45] CMUA, June 2007. *op. cit.*

utility energy efficiency programs. Programs or measures are defined to be cost-effective if the net present value of the forecasted energy and peak savings benefits in dollars from a given set of energy efficiency investments exceeds the customer and programmatic costs of installing the same. Itron and RMI report the results of these TRC cost effectiveness calculations at the measure and technology level as part of the savings assessments relied upon by utilities in this proceeding. They use this definition of cost effectiveness to define a cumulative amount of energy savings over a 10- year period that is found to be cost-effective. The shorthand for the sum of these savings is economic potential or all cost-effective resources.

Estimating the total amount of energy savings that is cost-effective does not require the definition of a specific program design or identification of a sponsoring organization that has committed funds to deliver them. Both Itron and RMI chose to assume that a generic rebate program design can be used to estimate program costs and that the balance of program costs could be estimated using information provided by the publicly owned utilities on the fraction of their program costs that were devoted to administrative and evaluation, measurement and verification costs for the 2005 and 2006 years in the 2*006 CMUA Energy Efficiency Status Report*.

Achievable Cost-Effective Savings

These savings are a subset of the level of energy savings found to be economic or cost-effective that accounts for the difficulties and increased costs of reaching 100 percent saturation of all cost-effective technologies for all customers. Achievable savings is a varying percentage of economic potential, depending on specific program design and operation characteristics. It accounts for the fact that a fraction of customers have in the past refused to participate in programs regardless of the incentive levels offered to customers or the ease of program participation. Those customers may only be reached by mandates, such as building and appliance standards or local ordinances. Achievable cost-effective savings is also used by some parties to describe the maximum achievable or full market savings level discussed in the Itron study.[46] Staff notes that the maximum achievable savings levels for utility programs are usually estimated using a separate scenario that makes judgments about the fraction of customers who will ultimately install an energy efficiency measure in response to a utility program offer or simply install a given measure on their own. In general, most energy efficiency scenarios limit the saturation of measures installed at 50 to 70 percent of the total customers eligible for a given technology or measure.

Potentially Achievable Cost-effective Savings

AB 2021 "…requires the Energy Commission…to develop a statewide estimate of all potentially achievable cost-effective (PACE) savings…." Staff believes this term describes an energy savings level that may be higher than the achievable cost-effective level typically identified, because it includes new program designs and or new delivery agents **not included** in the

[46] See, for example, the comments made at the September 17, 2007 AB 2021 workshop by SCE.

definition of achievable savings by the Itron or other efficiency potential studies. For example, local governments could pass ordinances or codes requiring the installation of measures as part of their zoning or permitting processes, or state or federal standards could mandate the installation of certain measures, and local programs could act to increase the rate of compliance with new standards.

In fact, it is conceivable that potentially achievable cost-effective savings could reflect a level of energy savings beyond economic potential in two ways: inclusion of savings from programs and or technologies not included in the underlying potential study, and inclusion of savings from emerging technologies which have been excluded from the definition of cost-effective savings.

Analytical Approach

The law requires that each POU submit annual savings targets to acquire resources that are "cost-effective, reliable, and feasible." This section provides staff's analysis of whether these annual targets are cost-effective, reliable and feasible." Staff has reviewed the annual energy and peak savings targets filed in June by each of the 13 largest POUs using the definitions from the previous section in four steps.

> *Step 1 – Determination of Compliance with Cost-effective* energy savings: In this step, staff determines whether the utilities have complied with this aspect of the legislation.
>
> *Step 2 – Determination of Overall Reliability and Feasibility*: In this step, staff proposes definitions of the terms "reliable" and "feasible" savings to guide the analysis of the POU annual savings forecasts and assesses whether the utilities have complied with these aspects of the legislation.
>
> *Step 3 – Annual Ramp-up Rates*: In this step, staff explores the feasibility of these forecasts by looking at the range of savings forecasts submitted by all of the POU's and contrast these levels with the annual changes in energy savings reported by IOUs for 1996-2005.
>
> *Step 4 – Assessing Individual POU Savings Targets*: In this step, staff provides its assessment of whether the annual savings targets for the 13 largest POUs meet the feasibility and reliability criteria posed in the statute and, if not, what actions can be taken to remedy this situation.

Step 1 – Determination of Compliance with Cost-effective Energy Savings

CMUA members submitted information on the levels of cumulative and annual energy savings developed by their consultant, RMI. A handful of other publicly owned utilities submitted this information on their own since they had access to information on the cost-effective and/or achievable energy savings for their service territories. Each of the POUs represented these numbers as cost-effective and achievable; therefore, staff finds that all of the publicly owned

utilities have met the first requirement of the legislation. The authors also note that there may be cost-effective energy savings beyond that identified and attested to by the utilities in their submissions to the Energy Commission. These additional savings will comprise the potentially achievable cost-effective (PACE) level of savings.

Step 2 – Determination of Overall Reliability and Feasibility

Reliable Energy Savings

The legislation requires POUs to procure or commit to annual saving targets that are "cost-effective, reliable and feasible." In this context "reliable" refers to the ability of a program or resource manager to accurately forecast that a portfolio or set of programs will achieve a specific level of energy and peak savings.

Staff considers forecasts of future program savings to be reliable if a given POU program has developed a track record of delivering energy or peak savings. Staff proposes that a utility submittal of program forecasts can be found to be "reliable" if the POU submits evidence that shows the level of savings actually achieved or verified by independent evaluations of its programs is within plus or minus 20 percent of the forecasted level of savings from the previous year. In other words, the realization rate for a utility's entire program should consistently exceed 80 percent.

Staff submits that developing a record of reliable savings requires that the sponsoring organization or program manager has a record of at least one year of forecasting program savings levels and a comparison that shows that the achieved savings were at least 80 percent of the forecasted amounts. The process of building a reliable forecast of program savings should include the use of a credible and transparent process to verify efficiency measure installations at the customer site and evaluating the gross and net energy savings achieved by the program. The results of this independent evaluation process should be presented to the public and to POU boards as part of an annual report.

AB 2021 states that:

> (d) Each local publicly owned electric utility shall report annually to its customers and to the State Energy Resources Conservation and Development Commission. The report shall contain, but is not limited to, both of the following:
>
> > (1) Its investments in energy efficiency and demand reduction programs.
> >
> > (2) A description of programs, expenditures, cost-effectiveness, and expected and actual energy efficiency savings and demand reduction results.[47]

[47] SEC. 3. Section 9615 of the Public Utilities Code, from AB 2021.

Unfortunately, only a few of the major POUs presented their annual savings reports to the Energy Commission. Staff concludes that most of the new energy efficiency programs at the POUs have not had the time or staff to have developed a track record of reliably procuring energy efficiency resources and have not published realization rates for individual program or their program portfolios. Staff plans to work with the POUs to make these reports more easily obtainable.

To encourage future reliability, staff informally surveyed each POU to find out if they currently have program tracking and reporting systems that can help them develop a reputation for reliable forecasts of energy savings. The results are shown in Table 4.

This table suggests the POUs have made a reasonable effort to begin tracking and reporting on the energy and peak savings from their programs over the last two years. Staff looks forward to working with each publicly owned utility to increase customers' awareness of their program achievements by making tracking data available to the public and discussing third party verification methods before the next report documenting program energy savings is due in March 2008. In this way, the energy savings projected by POU staffs will become more reliable over time.

Table 4: Tracking and Reporting Capabilities of the POUs

In the past year, has your utility…	Maintained a measure or program tracking system with the ability to provide quarterly reports on energy and peak savings?	Periodically hired third parties to verify both the assumed energy savings per measure and the reported installation of measures on a sampling basis for all programs?	Published an annual report on program energy and peak savings that is available to the public and local customers?	Made its annual report publicly available on utility website?
Anaheim	Yes	Yes	Yes	Summary savings yes, detail no.
Burbank	Yes	Plan to	Yes	Yes
Glendale	Yes	Yes	Yes	Yes
Imperial Irrigation District	Basic, but plan to improve	Yes and no, independent in most cases	Available to public but not published	No
Los Angeles DWP	Yes	Yes	Yes	No
Modesto Irrigation District	No but working on it	No	Yes	No
Pasadena	Yes	Yes	Yes	Yes
Redding	No but working on it	Not yet	Yes	Yes
Riverside	Yes	Yes	Yes	??
Roseville	Yes	Yes on savings. 2006 program inspections were done internally. 2007 program inspections are being done by 3rd party.	Yes	Yes
Sacramento Municipal Utility District	Yes	Yes	Yes	Yes
Silicon Valley Power	Yes	Yes* (Implementers & Robert Mowris)	Yes	Yes
Turlock Irrigation District	Yes	Yes, industrial verification	In Planning	

* Utility also plans to use NCPA to hire an independent contractor to evaluate the savings per measure in the E3 tool.

Source: Interviews with staff from each utility.

Feasible Energy Savings

Ideally, to evaluate the feasible level of energy savings that could be achieved by each POU, staff would need to review each organization's program experience, its process for obtaining additional program funding and the length of the commitment, the energy efficiency expertise

level of the staff, and any other factors that may motivate or discourage each utility from achieving the forecast level of energy savings. Unfortunately, staff has not been able to obtain enough information related to how multi-year budgets are assembled, presented, and approved at POU boards, but plans to work cooperatively with the POU staff to gain additional insights over the next year. In the meantime, the annual savings targets submitted by each of the POUs in this first forecasting round should be considered feasible as long as their boards have adopted the multi-year savings goals in this first round of the AB 2021 process.

One year of historical program savings information for each of the POUs was made available in the 2*006 CMUA Energy Efficiency Status Report*. However, this is not sufficient to establish a track record for predicting program savings or comparing forecast levels to the levels actually achieved. Absent a historical record of achieved annual savings or program realization rates, staff examined the feasibility of each POU's forecasts by comparing the level of forecasted savings to the ramp-up rates of energy savings achieved and verified by other utilities with similar levels of funding.

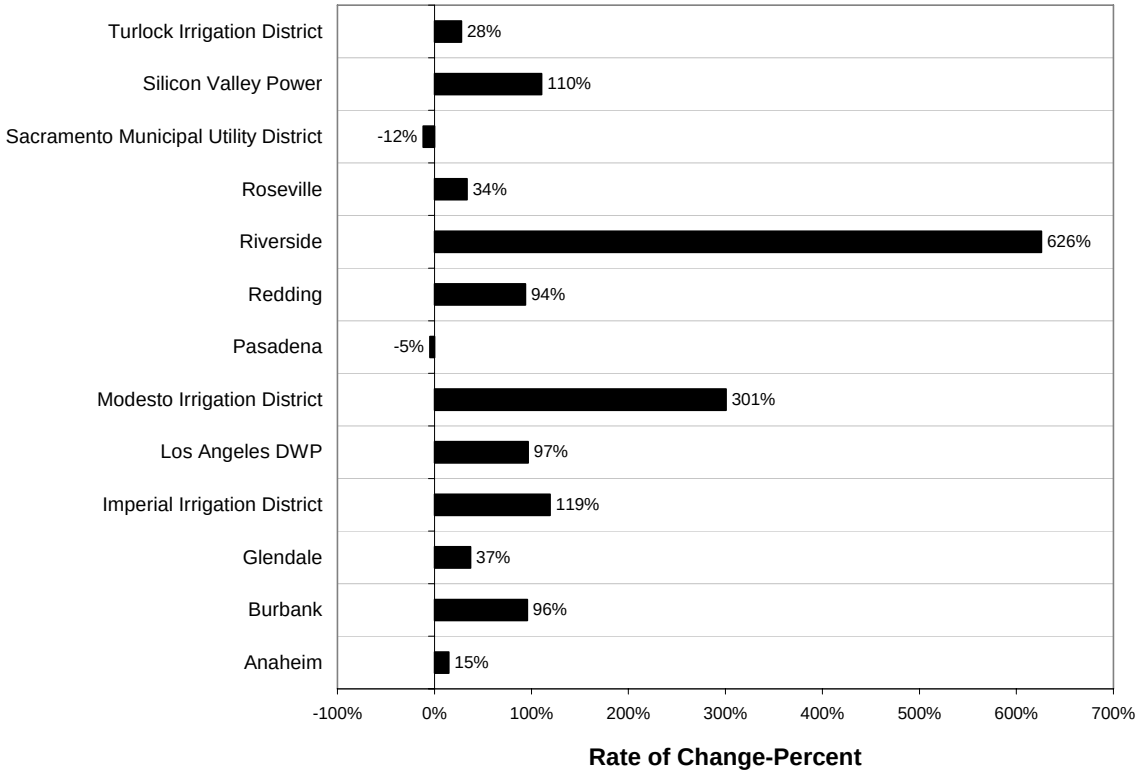
Step 3 – Annual Ramp-up Rates

Staff presents the range of projected increases or decreases in annual saving levels for the next three years to illustrate that each POU considers significantly different increases in annual savings to be both reliable and feasible. Figure 5 shows the rate of change in the first year of their forecasted savings.

Some of this variation in the ramp-up rates in annual savings could be explained by differences in governing board philosophies, differences in program experience levels, and differences in budgeting processes at each utility. Another reason may be the lack of a universal standard or definition of level of "feasible" ramp-up rates for annual savings. [48] The main point is that the ramp-up rate is primarily a function of budget and staff resources, not the remaining level of economic potential.

[48] The CMUA filing of projected savings by POU does not provide a universal definition of reliable or feasible savings levels or how the feasible levels were determined.

Figure 5: Comparison of Percentage Change in Annual Savings – Fiscal Year 2007/2008 Versus 2006/2007

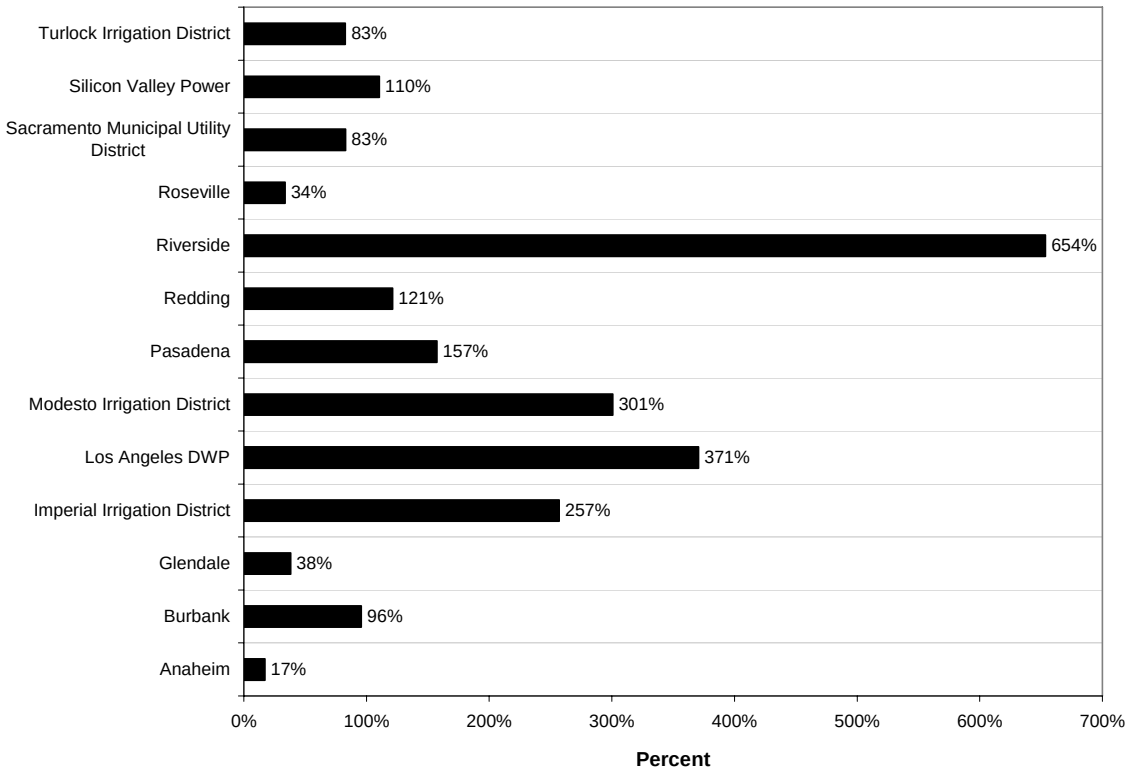


Source: Data provided by each utility in Appendix B.

Staff had some additional concerns when it examined the three-year projections of annual savings from 2007 to 2010. To remove the effect of year-to-year fluctuations based on the start up process for each POU, Figure 6 shows the percentage increase in energy savings projected by each utility over the first three years of the forecast from fiscal year 2006/2007 to fiscal year 2009/2010.

This figure shows that seven of the 13 largest POUs intend to double the level of annual savings achieved annually between now and the middle of 2010. The authors note that it took most of the investor-owned utilities 10 years to achieve the same effect of doubling their annual program savings level. To actually achieve two-to six-fold increases in annual savings is likely to require a corresponding 200 to 500 percent increase in funding. This level of funding is far above the minimum levels of funding for all public goods programs mandated in AB 1890 and, thus, will probably require a different level of justification and analysis to achieve board approval.

Figure 6: Percentage Change in Annual Electricity Savings for the Large POUs from Fiscal Year 2006/2007 to 2009/2010

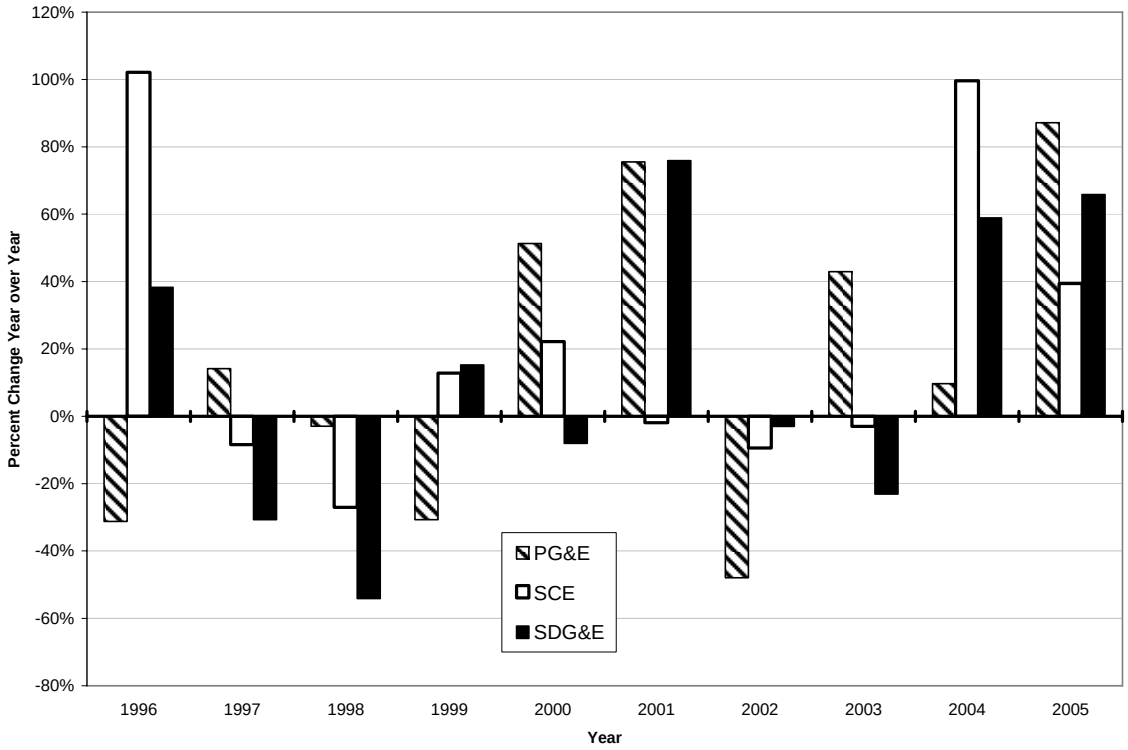


Source: Data provided by each utility in Appendix B.

The proposed level of savings increases will certainly test the limits of the procurement and contracting functions at some of these utilities. The key will be to ensure that each funding increase level anticipated by the utilities is accompanied by a realistic showing that the previous years' program effort, met or exceeded the forecast in program savings.

Figure 7 shows the percentage change in reported annual savings for PG&E, SCE, and SDG&E to illustrate the wide variation in this indicator. This historical record also offers some insights into the pattern and level of increases in program energy savings that can be sustained by any given utility over a decade. Overall program savings for PG&E and SCE increased by a factor of two from 1996 to 2005, but as the figure clearly shows, changes in annual energy savings fluctuate widely over the 10-year period. This is probably due to a variety of factors related to economic growth conditions and changes in regulatory policies.

Figure 7: Annual Percentage Change in Reported Program Energy Savings for the Investor-Owned Utilities from 1996-2005



Source: Energy Commission staff historical database of utility reported program savings from their annual program savings reports published over the last decade.

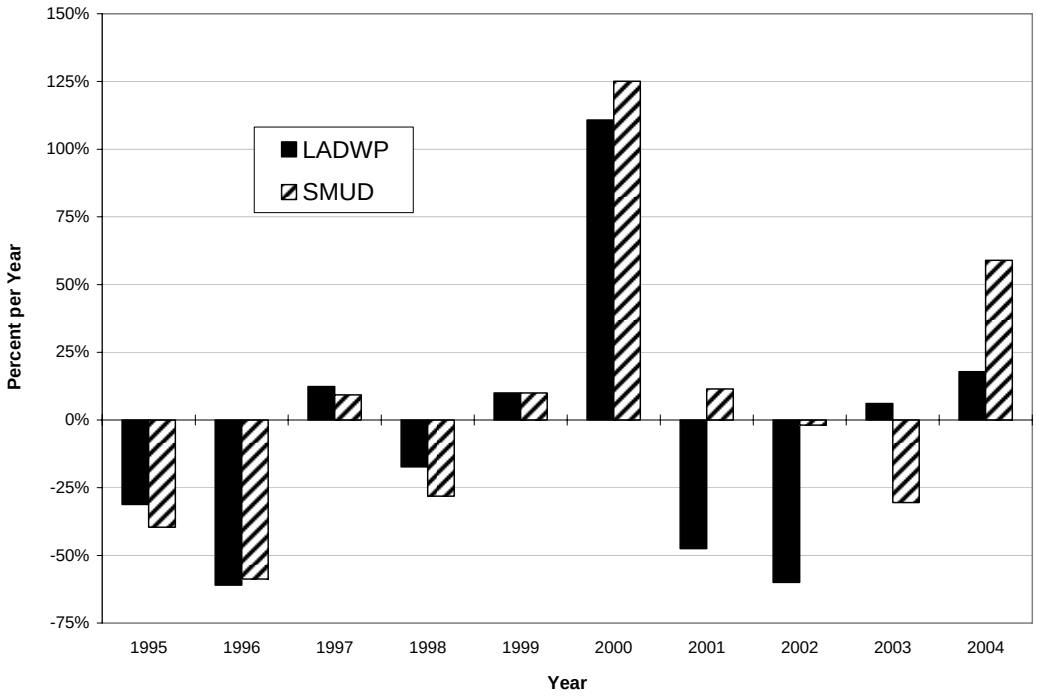
Examination of the historical record contains some interesting patterns that may be relevant to the energy savings projections of the POUs.

First, no utility (IOU or POU) has ever reported increases in annual energy savings for more than three consecutive years. One possible explanation is that it is very difficult to consistently increase savings using a given set of program designs, and that most utility program managers use the third or fourth year as a breathing space to develop new strategies, which results in a pause or actual decline in energy savings every three to four years.

Second, the third year of each ramp-up cycle for the IOUs and two of the major POUs, SMUD and LADWP, usually shows a 20 to 50 percent decrease in annual savings relative to the second year. In fact, if the ramp-up in savings gains for the first two years have been significant (for example, the percentage increases in annual energy savings were greater than 35 percent), the third year's annual savings declined by 15 to 50 percent in 75 percent of the cases where the utilities had reported annual increases for the first two years of a cycle.

Figure 8 shows the same trends in year-to-year changes for SMUD and LADWP to provide some comparison with the IOU experience shown in Figure 7. Staff provides this data only for LADWP and SMUD because they are the only POUs that have kept records of their program accomplishments over the last decade and made them public.

Figure 8: Comparison of Annual Change in Energy Savings Reported by LADWP and SMUD – Percentage Change from Previous Year



Source: Energy Commission staff historical database of utility reported program savings from their annual program savings reports published over the last decade.

Figure 8 shows there is a high level of fluctuation in year-to-year change in annual savings. Both LADWP and SMUD report five years where annual savings increased from the previous year and five years where annual savings declined from the previous year. LADWP reported an average annual decline in savings of 6.6 percent per year while the average change for SMUD was a 5.5 percent increase.

Table 5 shows the reported level of annual energy savings reported by LADWP and SMUD in 2005 as compared to 1996. The last two columns compare the observed change in annual savings for the last decade to the projected savings for the next decade. Clearly a much different approach will be needed to sustain energy savings at each utility given the declines in energy savings witnessed over the last decade.

Table 5: Trend in Annual Energy Savings (in GWh) Over 20 years

	1996	2005	2015	2005 vs 1996 (% change)	2015 vs 2006 (% change)
LADWP	109	58	252	-46.8%	334%
SMUD	84	81	222	-3.6%	174%

Source: Energy Commission staff historical database of utility reported program savings from their annual program savings reports published over the last decade.

These historical trends suggest it may be very difficult for LADWP to achieve its projected 334 percent increase in annual savings from 2007 to 2010 and that SMUD may have an equally challenging task of increasing its annual savings by more than a factor of two relative to its most recent program accomplishments in 2005.

These facts support staff's hypothesis that it is unlikely that energy savings from any POU program will suddenly jump by a factor of two or three and then remain level over the next five to ten years as projected by many of the POUs. The ups and downs of recorded program savings over a three year period suggest that there may be a natural breathing period, perhaps every three years, that is used by portfolio managers to consolidate the savings achieved in the previous cycle and or launch new shifts in program strategies that naturally drives reported savings down in the third or fourth year of a program expansion cycle. In fact, annual energy savings in the third year of up cycles decreased by an average of 43 percent after every two-year period where annual energy savings had increased more than 50 percent.

Staff acknowledges that it does not have access to enough information on the level of management commitment, available funding, and motivational factors that may exist at each POU to exactly identify what level of increase in annual energy savings is feasible. Rather than propose alternative savings targets that appear more feasible, staff recommends ways to increase the probability that each POU can meet its savings targets.

Step 4 – Assessing Individual POU Savings Targets

In this section staff analyzes whether the savings targets submitted by the 13 largest POUs are reliable and feasible. In the cases where staff finds the savings levels may not be feasible or attainable, the authors make specific recommendations on how each utility might work with the Energy Commission to increase the probability that the savings goals proposed are achieved. In many cases the authors needed to convert estimates or reported savings from a fiscal year into a calendar year to facilitate graphing and comparisons with utilities on calendar year reporting. In all cases the authors use the earliest date in the fiscal year listing to convert to calendar year. Thus energy savings reported for fiscal year 2005/2006 are reported in both figures and tables as savings for the calendar year 2005. Data in these figures are from the June *2007 CMUA Report*, and are unchanged in the final October *2007 CMUA Report* unless noted otherwise.

Anaheim Public Utilities

Description

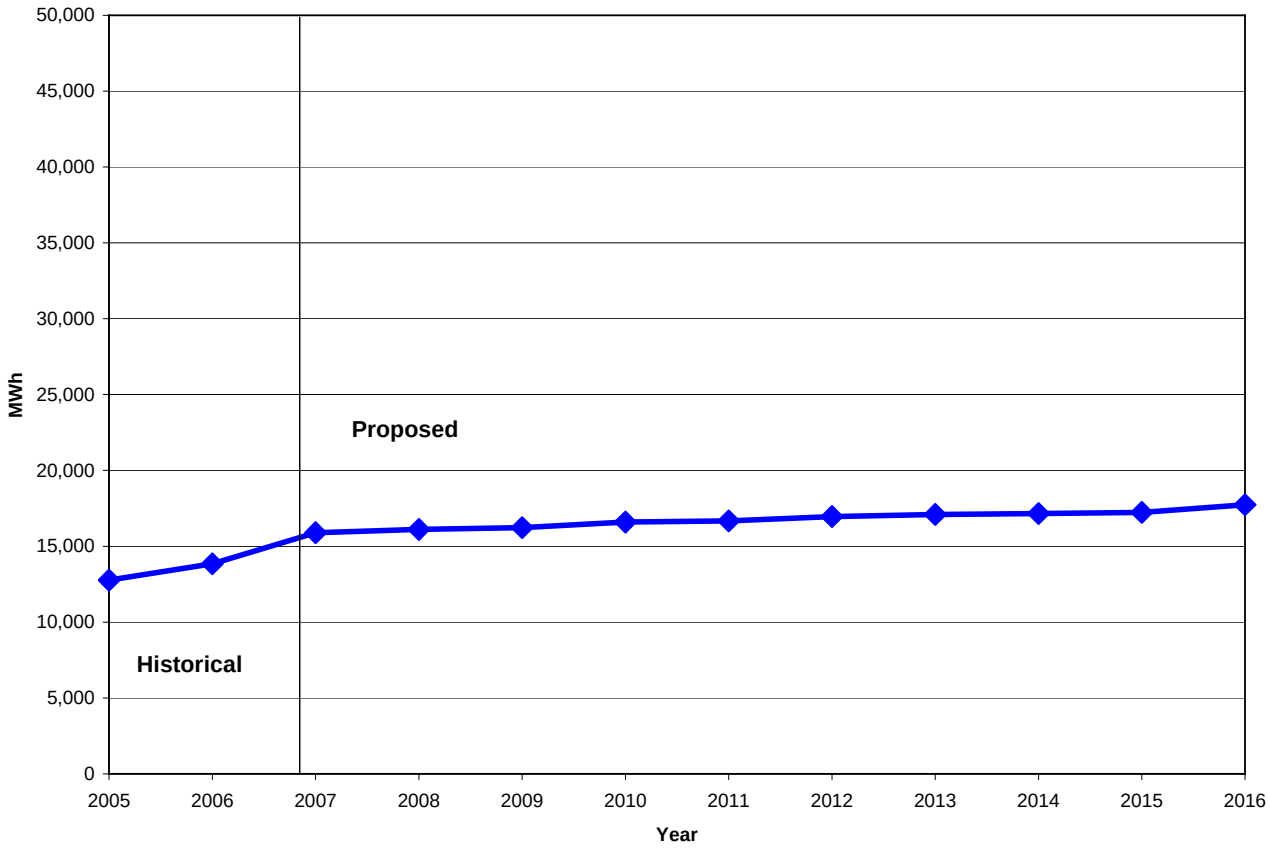
Figure 9 shows Anaheim's plans to acquire additional energy savings from its electricity efficiency programs over the next 10 years. Projected first-year savings from efficiency programs are expected to increase by 16 percent from 2005 to 2007 and by 28 percent above the baseline year of 2006 by 2016. Efficiency program spending is projected to increase by 11 percent by 2006 and an additional 20 percent by 2007. Based on discussions with Anaheim staff, program savings for 2005 were equivalent to 0.48 percent of 2005 electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of electricity sales reported by POUs for 2005 (see Figure 24). Anaheim expects to increase its program savings-to-sales ratio from 0.48 to 0.60 percent from 2007 to 2016. Anaheim's adopted energy targets are unchanged in the October *2007 CMUA* update.

Assessment of Feasibility

The program savings trajectory appears to be a feasible forecast of the level of electricity and peak savings to be captured by Anaheim's programs because the rate of growth in annual savings is modest (less than 5 percent per year) and it does not exceed the historical growth rates experienced by IOU's over the last decade. The forecast of annual energy savings from 2007 to 2016 will result in the capture of 53 percent of the savings found to be economic by RMI. Implicitly, more energy savings could be feasibly achieved if additional funding or programs were pursued.

Staff believes that Anaheim has the capability to achieve significantly more energy savings over the next decade, but is willing to adopt the more cautious approach and wait to see if the predicted savings can be verified over the next three years before working with Anaheim to increase the level of savings.

Figure 9: Anaheim Public Utilities
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Reliability of Program Sales Forecast

Anaheim publishes an annual savings report and uses standardized energy savings values for energy efficiency measures from a peer-reviewed database. Review of the annual reports shows that Anaheim has an established track record of delivering the level of energy savings forecast in the previous year.

Anaheim has an experienced staff that has shown it has the capability to achieve a 10 to 30 percent increase in program savings annually. Anaheim has received authorization from its board to increase its program spending in the next few years to achieve the additional savings contained in this forecast. Staff concludes Anaheim has submitted a reliable forecast of savings based on its previous reputation for completing annual program saving reports.

Recommended Improvements

The recommendations below are intended to increase the probability that the level of energy savings predicted by Anaheim will actually be recorded and verified.

1. Staff proposes to work with Anaheim staff to discuss methods of decoupling the loss in electricity sales from successful efficiency programs with a corresponding loss in electricity revenue. This includes analyzing the impact of successfully achieving Anaheim's goal on the projected revenue stream and its impact on the municipal budget. The intent is to ensure that the projected success of Anaheim's programs in reducing energy use does not lead to pressures to reduce the rate of growth in Anaheim's efficiency program budget that will be needed to sustain the projected growth in annual energy savings.
2. Staff plans to work with Anaheim to ensure the results of its annual program savings report are available to its customer-owners by request or on a website.

Burbank Water and Power

Description

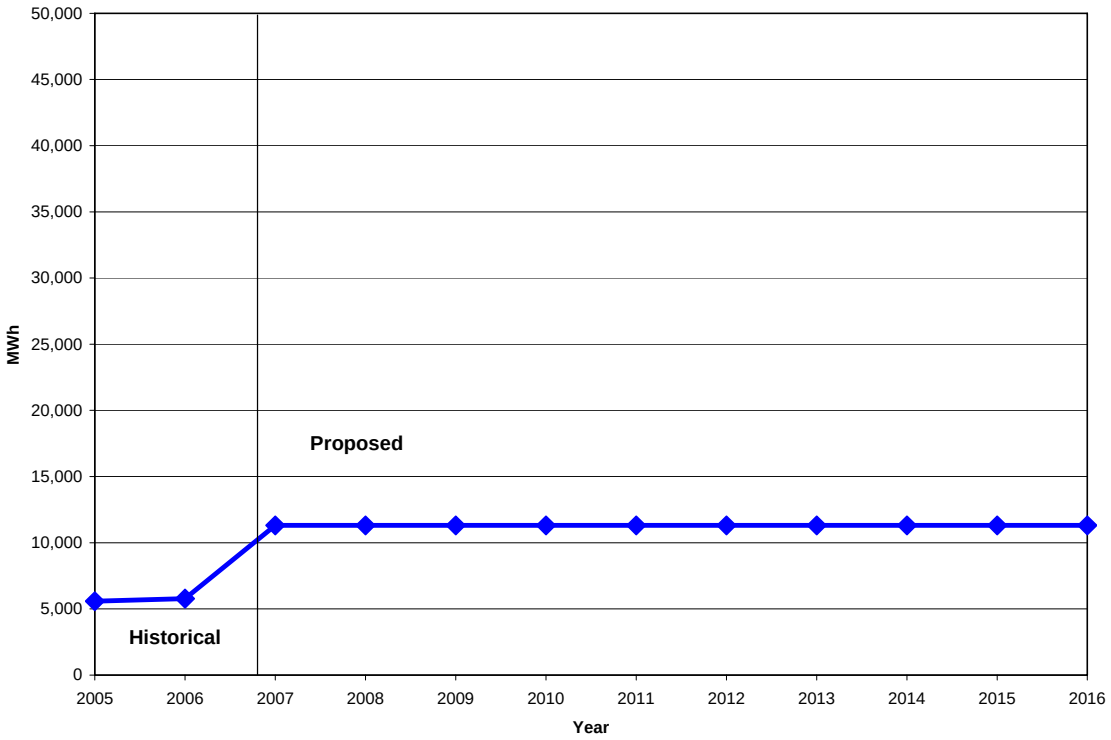
Figure 10 shows Burbank's plans to acquire savings from its electric energy efficiency programs over the next 10 years. Historical savings were flat in 2005 and 2006, with a projected increase of 95 percent in 2007. After 2007, annual first-year program savings are projected to stay flat until 2016. Efficiency program spending is projected to increase by 17.7 percent from 2005 to 2006 (base year=FY 2005/06) and would need to increase by an additional 70 to 90 percent to achieve the rapid ramp-up in savings projected for 2007. Program savings for 2006 were equivalent to 0.5 percent of annual electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. The annual savings projected for 2016 is equivalent to 0.9 percent of forecasted electricity sales, a reasonable number. Burbank's adopted target for 2016 is 5,000 MWh higher in the October *2007 CMUA Report*.

Assessment of Feasibility

The savings trajectory includes a very steep percentage increase (95 percent) between fiscal years 2006/2007 (2006 in graph) and 2007/2008 (2007 in graph). Annual program savings are expected to more than double in two years, leading to an increase in the program savings to sales ratio from 0.5 percent in 2006 to 1.0 percent in 2008. It is likely that Burbank may encounter some short-term funding and staffing constraints that will make it very difficult to achieve verified energy savings of more than 11,000 MWh in 2007 relative to the base savings reported of 5,300 MWh in 2006. Interviews with Burbank staff members suggest that they do not perceive the amount of program funding available will be a constraint to achieving these energy savings goals, but acknowledge it may be difficult to add additional staff beyond current

levels. Energy Commission staff concludes it may be feasible to achieve this significant increase in energy savings, but it will probably take three years rather than one and will require some additional program funding increases.

Figure 10: Burbank Water and Power
Historical Compared to Proposed Annual Energy Savings 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Reliability of Program Sales Forecast

Burbank staff members report that they have purchased a program reporting system and plan to use third parties to document the achieved energy and peak savings from their program. Staff plans to work with Burbank and other utilities to develop a reporting system that will be available on the Web to provide the Energy Commission and other parties with reliable information on the progress each utility is making toward its savings targets. With these improvements, Burbank will have a better chance to increase the perceived reliability of energy efficiency as a resource in the procurement process. Staff concludes that Burbank is on track to develop a reliable record of forecasting program savings.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Burbank will actually be recorded and verified.

1. Staff plans to work with Burbank staff to help develop new programs and secure the funding needed to support this significant increase in program energy savings
2. Staff will explore decoupling program success in reducing electricity sales from the anticipated loss of revenues that support the city budget.
3. Burbank should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Glendale Water and Power

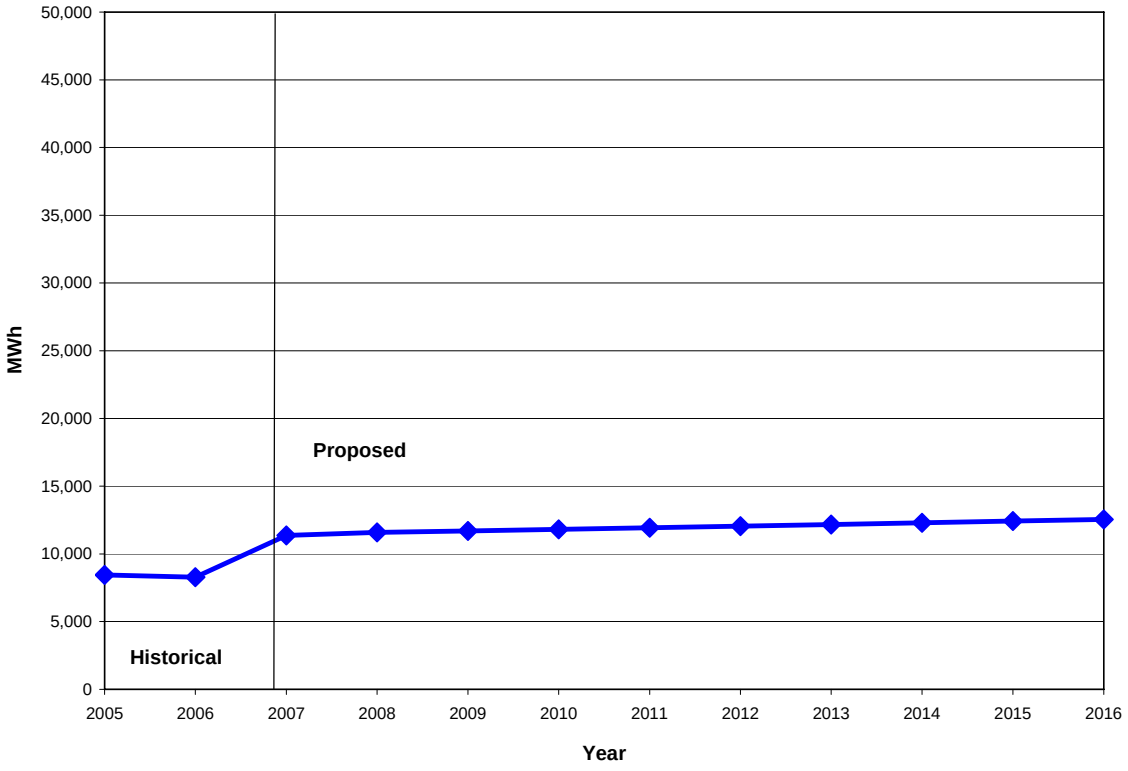
Description

Figure 11 shows Glendale's plans to gradually increase the energy savings from its energy efficiency programs over the next 10 years. Glendale's projected savings from efficiency programs are expected to increase by 34 percent from 2005 to 2007 and then stay flat for the next 10 years. Efficiency program spending is projected to remain constant between fiscal years 2005 and 2006 and would need to increase by an additional 10 percent to 20 percent annually from 2008 thru 2010 to achieve the ramp-up in savings projected for 2008 and beyond. Program savings for 2006 were equivalent to 0.8 percent of annual electricity sales, at the high end of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. This fraction is projected to increase to 1.0 percent of forecasted electricity sales in 2016, a significant increase. Glendale's adopted targets as shown in the October *2007 CMUA Report* are 6,000 higher .

Assessment of Feasibility

The overall savings trajectory looks feasible and plausible, particularly given the fact that Glendale has been running an aggressive efficiency program over the last five years. During interviews, staff learned that this flat trajectory for savings beyond 2007 was not a conscious decision by Glendale staff, but a simplification introduced by RMI in its analysis process. Rather than estimate a first year annual savings trajectory over time, RMI simply estimated a fraction of the total economic potential in 2016 (ranging from 50 to 100 percent), divided this sum by 10, and spread this level of saving over the years 2007 to 2016. Conversations with Glendale staff revealed they had made some adjustments to some of the RMI assumptions related to the potential savings that could be achieved through programs that promote CFLs and recycling of old refrigerators. The net effect of these adjustments was to reduce the long-term savings target down slightly.

Figure 11: Glendale Water and Power
Historical Compared to Proposed Annual Energy Savings 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Glendale staff expects very little growth in population or electricity sales over the next 10 years, making a nearly flat program savings trajectory over the next decade feasible. Energy Commission staff believes it is more likely that that annual program savings after 2009 will continue to increase at 10 to 30 percent per year despite flat sales forecasts for the region because of peer competition from neighboring utility programs. For example, Pasadena has committed to pursuing a doubling of energy savings over the next decade. Energy Commission staff concludes this forecast of energy savings is feasible to attain and that more savings are potentially achievable.

Assessment of Reliability of Program Sales Forecast

Glendale has developed the three building blocks needed to establish a reliable savings and forecasting record – a tracking system, an annual report, and third-party verification of program savings. Glendale uses the E3 model to track energy savings, produces annual savings reports, and plans to have third parties independently verify the energy savings in the E3 periodically. Commission staff concludes this forecast of energy and peak savings is likely to be reliable if

Glendale follows through on its plans to improve the scope of its verification process and annually report achieved versus forecasted levels of program savings.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Glendale will actually be recorded and verified.

1. Staff plans to host workshops on new program ideas and provide Glendale with additional opportunities to develop new efficiency programs.
2. Staff will work with Glendale staff to explore strategies to decouple the loss of electricity sales resulting from efficiency program success from the anticipated loss of electricity revenues and the impact on municipal budgets.
3. Glendale should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Imperial Irrigation District

Description

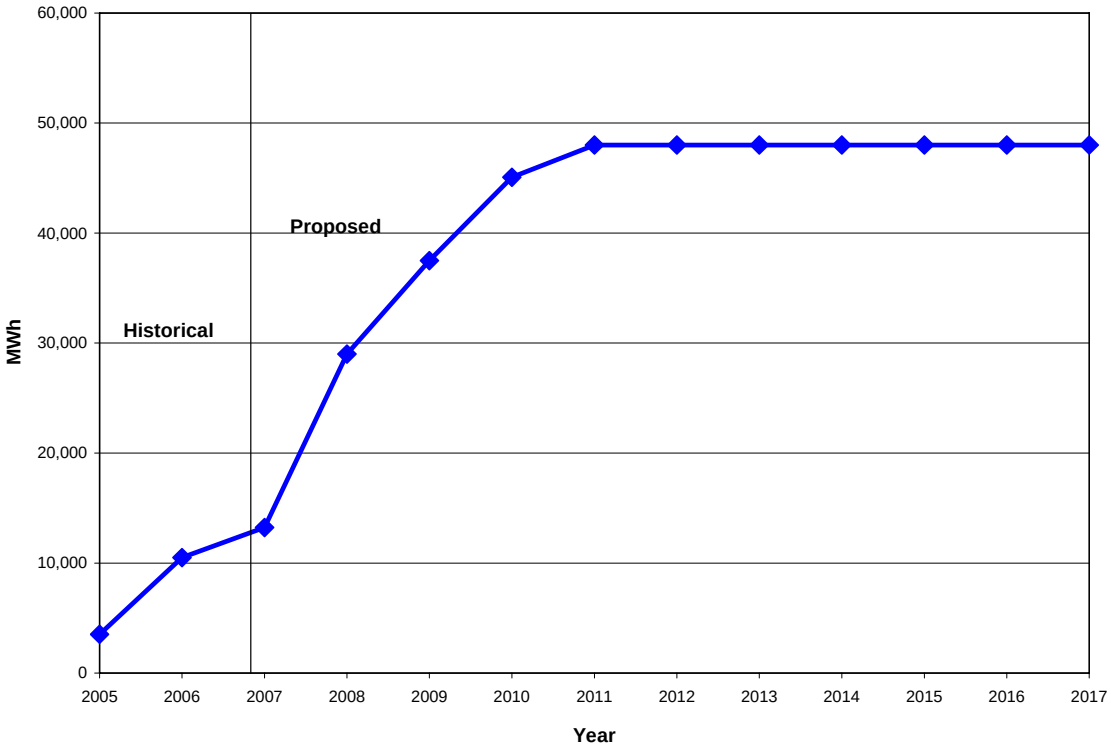
Figure 12 shows Imperial Irrigation District's (IID) plan to dramatically increase the annual energy savings from its energy efficiency programs over the next 10 years.[49] The adopted numbers in the final October *2007 CMUA Report* are virtually unchanged. IID expects to increase annual savings by a factor of 20 (2,086 percent) between 2005 and 2007. IID staff reported verified program savings of 2 GWh in 2005 and 11 GWh in 2006. The 2006 savings level was equivalent to 0.3 percent of annual electricity sales, at the bottom end of the range of 0.01 percent to 0.81 percent of savings to sales ratios reported by POUs for 2005. Going from a 0.3 percent (savings-to-sale ratio) in 2006 to a ratio of 1.2 in 2009 seems to be a difficult ramp-up path. Staff contacted IID to better understand the driving factors behind this forecast.

IID staff explained that its forecast of a rapid increase in program savings from 2005 to 2007 is rational because it is trying to "catch up" from previous years where program efforts and expenditures were minimal. IID staff explained it is ramping up the expected annual savings from their energy efficiency programs because a significant amount of public goods charge (PGC) funding had been carried forward from previous years given lower levels of efficiency program activity. As a result, IID program staff does not expect the availability of program funding needed to achieve the level of savings forecast to become an issue until mid-2009 based on current rates of program spending and the available PGC fund balance. IID staff members

[49] IID submitted savings data on August 31, 2007, that was different from its June submission. The figure presents the revised data.

also expect to receive board support for a proposed increase in program staff and plan to outsource some efficiency programs to third parties if internal program staff cannot be hired.

Figure 12: Imperial Irrigation District
Historical Compared to Proposed Annual Energy Savings 2005-2017



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Feasibility

The forecast of an increase of over 300 percent in annual program savings over three years from 2006 to 2009 is not likely to be feasible or sustainable given the authors' previous analysis of what other utilities with much higher levels of program funding and staff have been able to achieve over the last 20 years. All IOUs in California experienced reductions in program savings in 2006 after a rapid ramp up in reported savings from 2004 and 2005. In part this was due to reductions in the deemed energy savings estimates for CFLs as a result of evaluation studies. The IOU experience suggests that utilities that rely on deemed or stipulated savings for a majority of their portfolio total savings (in this case from CFLs) often find out during the verification phase of the cycle that the actual energy savings achieved were far less than projected. One remedy for this problem is to spend more time reviewing the validity of the

deemed savings estimates before allocating program funding to programs that are dependent on these savings estimates being verified.

However, it is possible that the track record of the IOUs and the larger POUs may not be relevant to the potential savings that can be achieved by utilities such as IID. This would be particularly true if the IID, and similar-sized POUs, developed new program designs that were different than the designs used by larger utilities. Energy Commission staff proposes to explore different approaches to achieving more energy savings in a program planning workshop to be held with the POUs.

Staff recommends that the Energy Commission accept the annual savings targets from IID despite the previous analysis that suggests IID's ramp-up rate may be very difficult to achieve. The best way to increase staff's confidence that this forecast of annual program savings is feasible would be for the IID board to approve a multi-year budget, preferably for three years, that provides sufficient staff and dollar resources to support the increase in annual savings provided in its forecast.

Assessment of Reliability of Program Sales Forecast

IID reports that it has purchased a program reporting system and plans to produce an annual report documenting the energy and peak savings achieved by its program next year. Staff plans to work with IID and other utilities to develop a reporting system that will be available on the Web to provide the Energy Commission and other parties with reliable information on the progress each utility is making toward its savings targets. With these improvements, IID will be on the way to building a more reliable forecast of energy savings. Therefore, staff finds that IID's annual targets can be considered reliable subject to the condition that its work to improve the verification of its program savings estimates proceeds.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by IID will actually be recorded and verified.

1. Staff plans to work with Imperial staff to help develop new efficiency programs and secure the funding needed to support this significant increase in program energy savings
2. Staff will explore decoupling the anticipated revenue losses from successful energy efficiency programs with the funds needed to support the IID internal program budgets.
3. Given IID's plans for a significant expansion in energy and peak savings, staff will offer to work with IID to help develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Staff is willing to work with IID to attempt to secure the funding necessary to achieve its long-term savings goals of 48,000 MWh per year. Staff will provide IID with reports that keep it abreast of new emerging technologies that are available in the marketplace and trends in the new construction market. A particular focus on developing new construction programs to increase the efficiency of new buildings is warranted given IID's current rapid customer growth rate that is averaging 7 percent per year and that may "slow down" to 5 percent per year in the long run.

Los Angeles Department of Water & Power

Description

Figure 13 shows LADWP's plans to dramatically increase the energy savings from its energy efficiency programs over the next 10 years. Projected savings from efficiency programs are expected to increase by five fold (over 400 percent) from 2006 to 2010 and then stay at nearly that level for the next five years. [50] LADWP staff stated this savings trajectory is consistent with the maximum achievable savings levels recommended by its contractor, Quantum Consultants, in a February 2006 study titled *Los Angeles Department Of Water And Power Energy Efficiency Potential Study.* There is no change to this target in the final October *2007 CMUA Report*.

Reported net program savings of 58 GWh for 2006 were equivalent to 0.3 percent of annual electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. LADWP expects to increase annual program savings to over 300 GWh per year in 2016, or 1.3 percent of projected 2016 sales. The cumulative energy savings from this forecast is equivalent to 75 percent of the economic potential.

Assessment of Feasibility

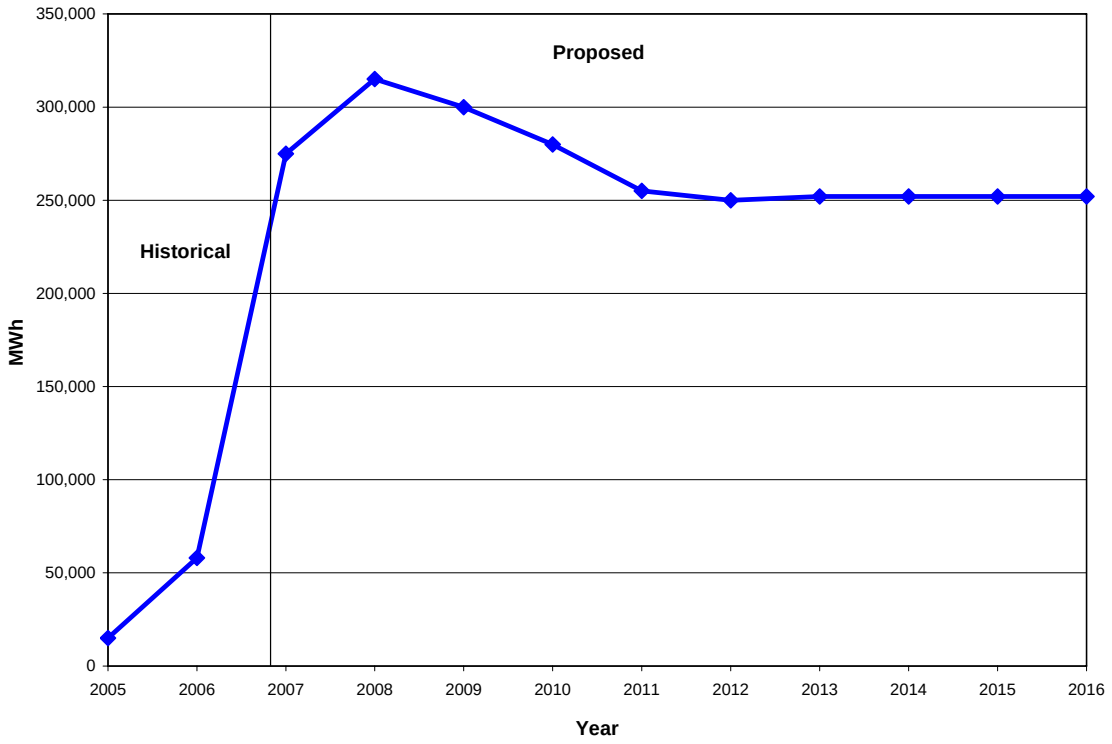
The savings trajectory implies a rapid ramp-up in both program funding and the level of staff required to implement and evaluate the programs. Energy Commission staff interviewed LADWP program staff to understand the driving factors supporting this forecast of rapid program savings over the next five years.

LADWP has received approval to increase its program funding from $10 million per year to $75 million per year. LADWP staff stated that something closer to $85 million per year may be necessary to reach the stretch savings goals in the first three years of the forecast. LADWP is relying on a significant expansion of its CFL programs, both distribution and manufacturer buydown programs, and a new direct install program to help support the dramatic increase in

[50] LADWP chose to increase its forecast of annual energy savings for the last five years of the forecast relative to its original forecast of savings submitted in June 2007. In late September 2007, LADWP staff submitted savings estimates different from those submitted in June 2007. The figure presents these new goals, which were adopted by LADWP's board.

post-2007 savings. LADWP's board has approved some form of energy cost adjustment factor account to make up for lost revenues from successful energy efficiency programs. LADWP plans to launch a number of new programs to try to capture additional energy savings. The new programs include pursuit of emerging technologies and standard performance contracts. LADWP staff members expressed optimism that their programs would be able to reach a program savings goal of more than 300 GWH per year within a year or two, but acknowledged that, to date, their efforts had yielded energy savings five to six times below this level in fiscal year 2006/2007.

Figure 13: Los Angeles Department of Water & Power
Historical Compared to Proposed Annual Energy Savings 2005-2017



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Staff had concerns after reviewing LADWP's proposed portfolio of efficiency programs. Based on a PowerPoint presentation made to LADWP's board, program staff is relying on CFL "distribution" programs to achieve more than 50 percent of the total energy savings for the residential sector and up to 25 percent of the total program savings. Implicit in this projection is the assumption that a program can be used to provide up to 2 million CFLs free to reach *all* of the 1 million households in LADWP and, in addition, operate a manufacturer buydown program to achieve an additional 45 MWh of savings from CFLs. Staff has a concern that LADWP may find that the actual energy savings from these CFL programs is much lower than expected after the evaluations of these programs are complete and urges LADWP to consider diversifying its program offerings to ensure too many eggs are not put in the CFL basket. Staff plans to work with LADWP to increase the breadth of programs offered in its portfolio and maximize the savings from the CFL giveaway programs.

Staff concludes that it is feasible to achieve the cumulative energy savings that result from these annual savings targets, but is not yet convinced that the ramp-up rate shown above is the best way to get there.

Assessment of Reliability of Program Sales Forecast

LADWP reports that it has purchased a program reporting system and produces an annual report documenting the achieved energy and peak savings from its program. LAWDP does not make this annual report available to the public. Staff's experience is that a decision not to allow for a peer review of annual savings estimates often leads to uncovered errors in internal reports and may alienate potential customer-owners who would normally be supportive of the efficiency programs. The LADWP board should consider publishing its annual program reports on the LADWP website to increase its reputation as a reliable forecaster of reliable program savings estimates.

Staff plans to work with LADWP and other utilities to develop a reporting system that will be available on the Web to provide the Commission and other parties with reliable information on the progress each utility is making towards its savings targets. This should result in a more reliable forecast of program savings.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by LADWP will actually be achieved and verified.

1. The expected revenue loss from successful LADWP energy efficiency programs may be the largest barrier to achieving the savings forecast. In early discussions, LADWP staff stated it was exploring the use of the energy cost adjustment factor to decouple program success from revenue streams counted on by LADWP to support the city budget and bond obligations. Staff plans to follow up on these discussions.

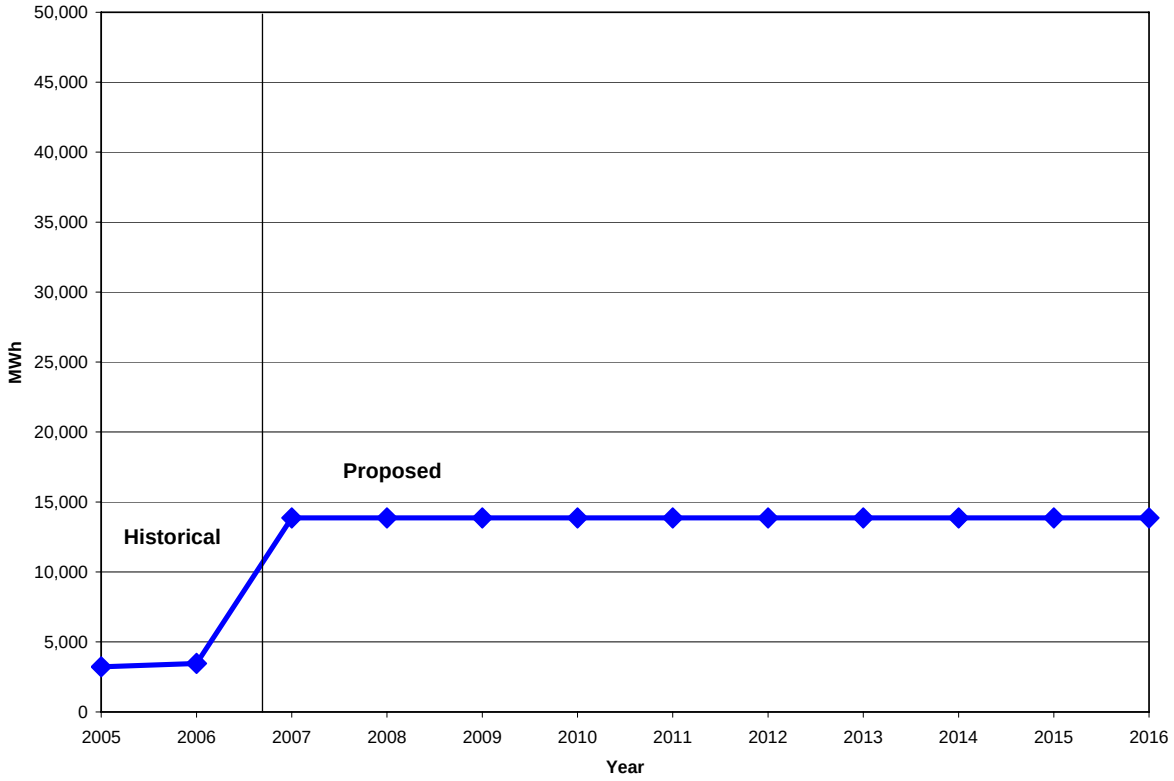
2. LADWP should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval or at least review of this multi-year budget.

Modesto Irrigation District

Description

Figure 14 shows Modesto's plans to dramatically increase the energy savings from its energy efficiency programs over the next 10 years. Modesto's reported program savings for 2006 were equivalent to 0.1 percent of annual electricity sales, at the low end of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Electricity savings from efficiency programs are then projected to increase three fold or 304 percent from 2006 to 2007 and then stay flat for the next 10 years. Annual savings are projected to increase from 0.13 percent of 2006 annual sales to 0.5 percent of annual sales in 2007 and slowly decline to 0.4 percent of sales in 2016..

Figure 14: Modesto Irrigation District
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Feasibility

The three-fold increase in the annual savings rate projected from 2006 to 2007 will require a significant increase in both funding and staff to ensure the energy savings actually occur. Staff is also concerned about the proposed flat trajectory of annual energy savings from 2008 to 2016. MID staff explained that this flat trajectory had come from the RMI model, and it may take slightly longer to achieve the three-fold increase in annual savings. Modesto's board adopted its 10-year savings targets on September 25, 2007. The adopted goals are less than originally reported in the June *2007 CMUA Report*. They are shown here as adopted.

Modesto staff also agreed that actual program savings reported on a year-to-year basis are likely to be much more volatile based on its experience and worries that some energy efficiency measures identified in the RMI model may reach high saturation levels and diminishing returns over the decade. Energy Commission staff supports Modesto's quest to triple its annual energy savings in one year.

Assessment of Reliability of Program Sales Forecast

MID reports that it has purchased a program reporting system and that it plans to produce an annual report documenting the achieved energy and peak savings from their programs. Staff plans to work with MID and other utilities to develop a reporting system that will be available on the Web to provide the Energy Commission and other parties with reliable information on the progress each utility is making towards its savings targets. In the meantime, staff will assume that the annual savings targets proposed by MID are reliable.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by MID will actually be recorded and verified.

1. Staff plans to work with MID staff to help develop new agricultural efficiency and water pumping programs and help secure the funding needed to support this significant increase in program energy savings.
2. Staff will explore decoupling the reduction in electricity sales expected from MID's efficiency programs from the annual revenues that are needed to support MID infrastructure.
3. MID and Energy Commission staff should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Pasadena Water & Power

Description

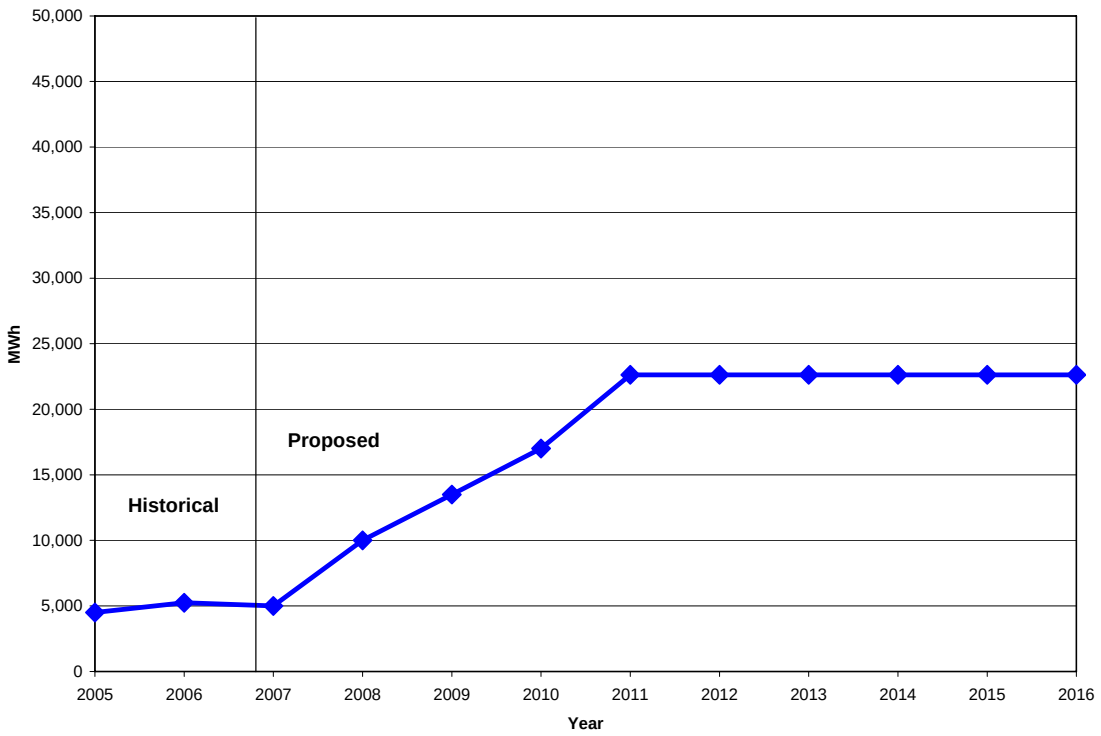
Figure 15 shows Pasadena's plans to significantly increase the energy savings from its energy efficiency programs over the next 10 years. Annual savings are projected to increase from 5,000 MWh to more than 22,000 MWh over the next five years, a four-fold increase. Projected savings from efficiency programs are expected to stay flat from 2005 to 2007, then dramatically increase by over 300 percent from 2007 to 2011, and finally stay flat for the next five years. Pasadena's annual program savings for 2006 were equivalent to 0.4 percent of annual electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected savings in 2016 are equivalent to 1.56 percent of forecasted electricity sales for Pasadena. After SMUD, this ratio of program savings-to-sales is the second highest of all POU projections. The final October *2007 CMUA Report* shows no change in the adopted targets.

Assessment of Feasibility

Pasadena's steep ramp-up rate in annual energy savings is the most aggressive ramp-up rate of all the POU filings reviewed. Pasadena staff provided the following explanation for the steep

ramp-up rates. Its board has directed Pasadena staff to achieve a 10 percent reduction in their forecast of total consumption by 2012 and to achieve 100 percent of the economic potential estimates from RMI by 2016. Pasadena's participation in a number of UN-sponsored climate change initiatives that call for achieving dramatic increases in energy savings at the municipal level is partially responsible. To its credit, the Pasadena management recognized this would require a significant increase in program funding and also revealed it is worried about relying on high levels of CFL saturations to achieve a significant fraction of the initial year energy savings (over 40 percent). The cumulative savings achieved by this ramp-up rate is less than the level of savings found to be economic and will be feasible as long as the Pasadena board provides the necessary funding support to achieve the savings trajectory described above.

Figure 15: Pasadena Water & Power
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Energy Commission staff believes that the funding increases needed to support this level of annual program savings would be equivalent to at least a three-fold increase in program funding from the current base of $1.2 million per year. Staff pledges to provide its analytical support to help Pasadena justify this level of funding increase and increase the chances that the program will be successful.

Assessment of Reliability of Program Sales Forecast

Pasadena has developed staff's three building blocks needed to develop a reliable savings forecasting record – a tracking system, an annual report, and third-party verification of program savings. Pasadena currently uses the E3 model to track energy savings, produces annual savings reports, and plans to have third parties independently verify the energy savings in the E3 tool periodically. In staff's judgment, these are the necessary first steps to building a reputation of producing reliable savings forecasts, but Pasadena will need a few more years before this forecast can be considered as reliable as a power purchase contract for procurement. In the meantime, staff finds the annual savings targets submitted by Pasadena to be reliable.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Pasadena will actually be recorded and verified.

1. Staff plans to host workshops on new program ideas and provide Pasadena with additional opportunities to develop new efficiency programs.
2. Staff will work with Pasadena staff to explore strategies to decouple the loss of electricity sales resulting from efficiency program success from electricity revenues.
3. Pasadena should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board review and approval of this multi-year budget.

Redding Electric Utility

Description

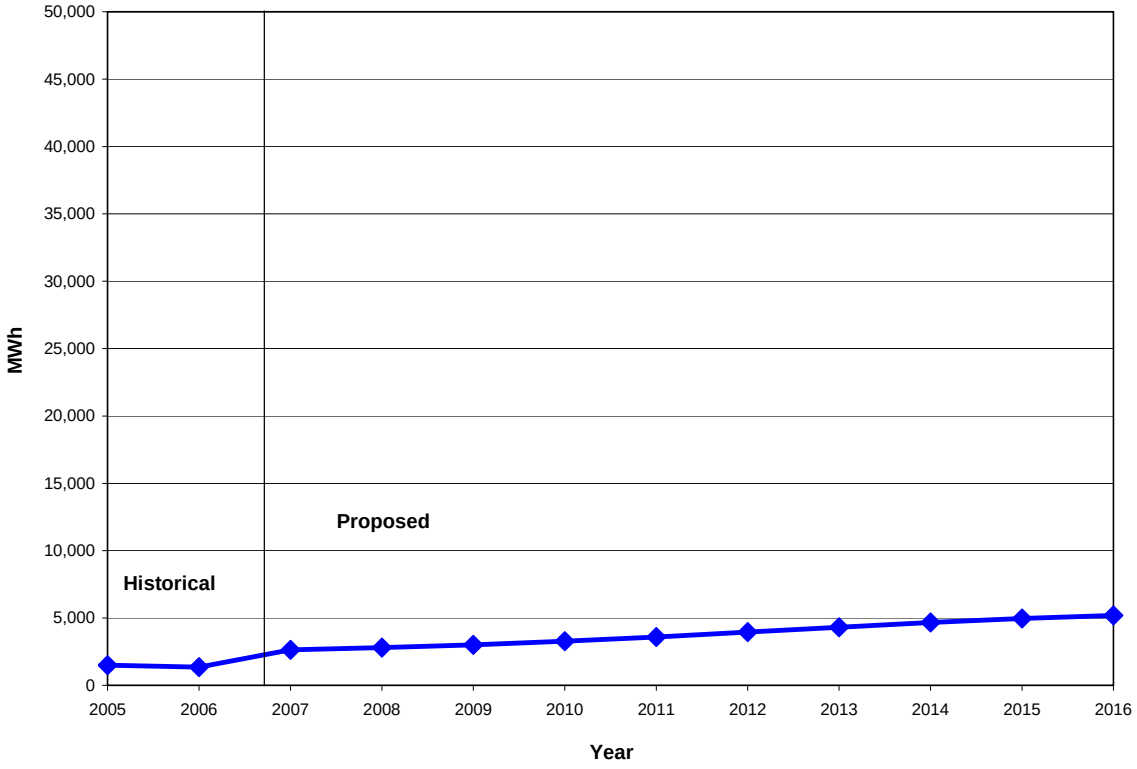
Figure 16 shows Redding's plans to significantly increase the annual energy savings from its energy efficiency programs in the first three years of the decade and then gradually increase savings at a rate of roughly 5 percent per year. Annual savings from Redding's programs declined in fiscal year 2006/2007 relative to fiscal year 2005/2006 but they are projected to increase from 1,361 MWh to 2,641 MWh for fiscal year 2007/2008. Annual energy savings from Redding's efficiency programs are expected to increase by 281 percent or a four-fold increase over the 10-year period (from 2007 to 2016) to 5,241 MWh/year.[51] Redding's annual program savings for fiscal year 2006/2007 were equivalent to 0.17 percent of its annual electricity sales, at the bottom of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005.

[51].After the September 17, 2007 workshop, Redding staff submitted savings data that was different from what was submitted in June 2007. The figure presents the revised numbers.

Assessment of Feasibility

Redding's proposed increases in annual energy savings from 2006 to 2007 represent a doubling of energy savings in less than one year. It is difficult to assess the feasibility of these projections because Redding did not provide any information on its estimates of potential to reduce electricity use over the decade or the level of program funding authorized by its board. Staff plans to work with Redding staff to develop estimates of the funding levels that may be needed to achieve these increases in savings and make sure the Redding board is aware of the level of commitment necessary to achieve the large increase in savings.

Figure 16: Redding Electric Utility
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Reliability of Program Sales Forecast

Redding is working on the development of the three building blocks needed to establish a reliable savings and forecasting record – a tracking system, an annual report, and third-party verification of measure installations and program savings. Redding uses the E3 model to track

energy savings, is working on an annual report proposal, and plans to have third parties independently verify the energy savings in the E3 tool periodically.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Redding will actually be recorded and verified.

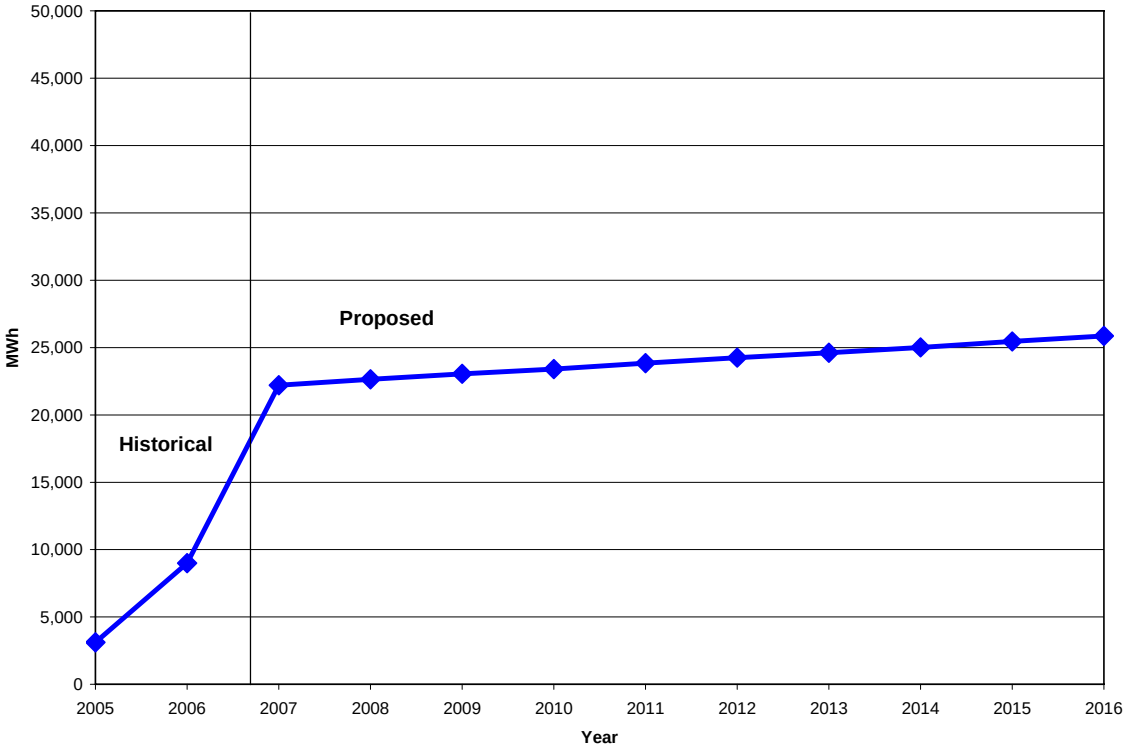
1. Staff plans to host workshops on new program ideas and provide Redding with additional opportunities to develop new efficiency programs.
2. Staff will work with Redding staff to explore strategies to decouple the loss of electricity sales resulting from efficiency program success from the anticipated impact on municipal budgets.
3. Redding should develop estimates of the level of funding that will be needed to secure their energy savings forecast for the next three years and seek board approval of this multi-year budget.

Riverside Public Utilities

Description

Figure 17 shows Riverside's plans to significantly increase the energy savings from its energy efficiency programs over the next 10 years. Annual savings are projected to increase from 3,100 MWh in 2005 to over 22,000 MWh in 2007, a seven-fold increase. Projected savings from energy efficiency programs are expected to steadily increase by roughly 30 percent from 2007 to 2016. The rapid increase in Riverside's efforts to grow annual program savings is in part a result of its commitment to achieve roughly 66 percent of the cumulative economic energy savings identified by RMI over the decade. Riverside's program savings for 2006 were equivalent to 0.6 percent of annual electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected savings in 2016 are equivalent to 1.0 percent of forecast electricity sales for Riverside.

Figure 17: Riverside Public Utilities
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)Assessment of Feasibility

In the *2006 CMUA Energy Efficiency Status Report*, Riverside submitted an estimate that it would save 3,000 MWh in 2006. In discussions with Energy Commission staff, Riverside staff felt that the energy savings estimated for its 2006 programs was too low and should be adjusted to 9,000 MWh based on the latest information. This change is documented in Figure 17. The original seven-fold increase in annual savings in one year did not seem plausible and has not happened to staff's knowledge for any utility in California over the last 25 years. When adjusted for the new information, the ramp-up rate between 2006 and 2007 is now a more manageable 250 percent increase in annual energy savings. Riverside staff concluded there is no reason to adjust its savings goals for 2016 based on the savings produced by its 2006/2007 program and is confident its board would provide the necessary resources to achieve these goals. Riverside staff indicated it will be going to its board in October to approve the target savings numbers, but is not expecting any program budget increases for the near term. The adopted savings are the same.

Energy Commission staff believes the funding increases needed to support this dramatic increase in program savings would be equivalent to at least a three-fold increase in program

funding (to achieve a 3.5-fold increase in energy savings) from the current base funding of $1 million per year. Staff will work with Riverside to improve its request for program funding and potentially justify the adoption of a three year budget commitment. Staff finds the cumulative savings to be achieved by Riverside is feasible if its board provides the funding and support needed to reach the higher annual savings targets.

Assessment of Reliability of Program Sales Forecast

Riverside is working on the development of a program tracking system to monitor progress toward its annual energy saving targets and it plans to annually report on its program savings. It plans to investigate the possibility of third party verification of measure installations. These are reasonable steps that show progress toward increasing the reliability of its savings forecasts.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Riverside will actually be recorded and verified.

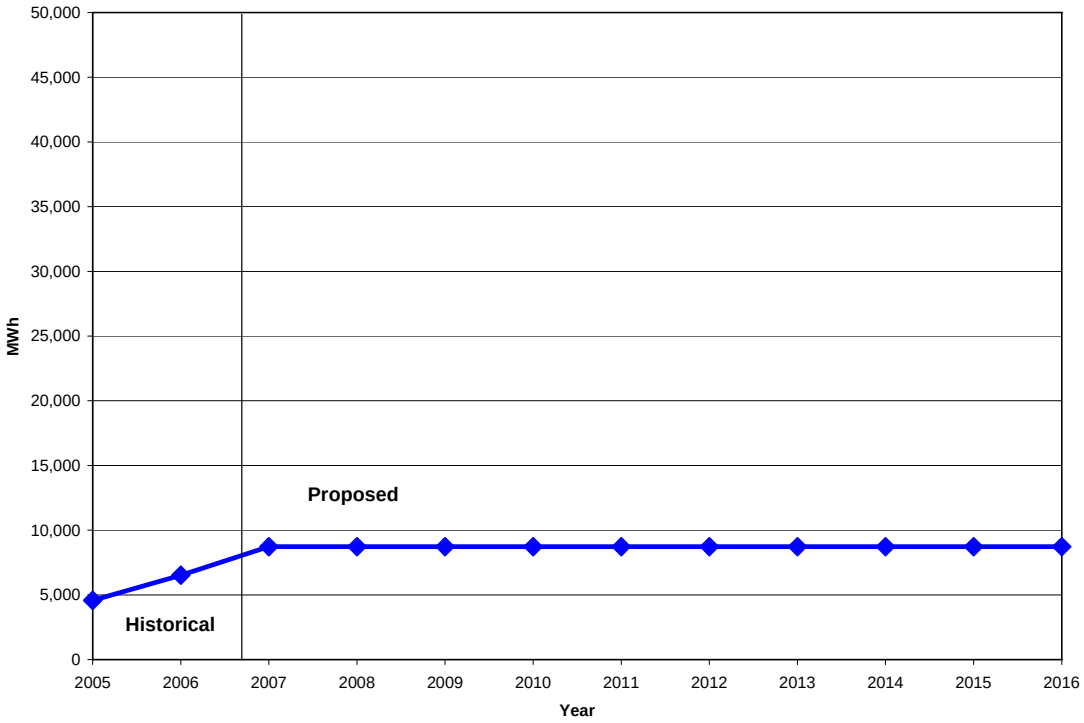
1. Staff plans to work closely with Riverside to set up and or purchase a tracking system to monitor the level of reported and verified savings achieved in the near term.
2. Staff plans to host workshops on new program ideas and provide Riverside with additional opportunities to develop new efficiency programs.
3. Staff will work with Riverside staff to explore strategies to decouple the loss of electricity sales resulting from efficiency program success from the anticipated loss in revenues and the impact on municipal budgets.
4. Riverside should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Roseville Electric

Description

Figure 18 shows Roseville's plans to significantly increase the energy savings from its energy efficiency programs over the next 10 years. Annual savings are projected to increase from 6,524 MWh in fiscal year 2006/2007 to more than 8,700 MWh in FY 2007/2008, a 33 percent increase. Projected savings from efficiency programs are expected to increase by 30 percent in 2007 and then stay flat for the next eight years. Roseville's program savings for 2006 were equivalent to 0.5 percent of annual electricity sales, in the middle of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected savings in 2016 are equivalent to 0.6 percent of forecast electricity sales for Roseville. This fraction represents Roseville's commitment to achieve roughly 50 percent of the savings identified as economic by RMI over the decade.

Figure 18: Roseville Electric
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of the Feasibility of Annual Savings Targets

The forecasted trajectory of feasible program savings from 2007 to 2010 seems plausible and within the range of historical experience, but staff thinks it is unlikely that annual savings will remain flat from 2011 to 2016. The authors are optimistic that Roseville will be able to achieve its near-term savings goals because its board indicated strong support by recently approving significant increases in staffing levels. Roseville has a strong tradition of successful new construction programs, which bodes well for its future ability to capture savings from the estimated 20,000 new homes that will be built in its area over the next decade. Staff concludes these annual savings targets are feasible to achieve and that more savings could be achieved on top of this level.

Assessment of Reliability of Program Sales Forecast

Roseville has developed the three building blocks needed to develop a reliable savings forecasting record – a program tracking system, an annual report, and third-party verification of program savings. Roseville uses the E3 model to track energy savings, produce annual savings reports and plans to have third parties independently verify the energy savings in the E3 tool

periodically. Staff finds the forecast of annual savings targets are likely to be reliable given Roseville's experience.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Roseville will actually be recorded and verified.

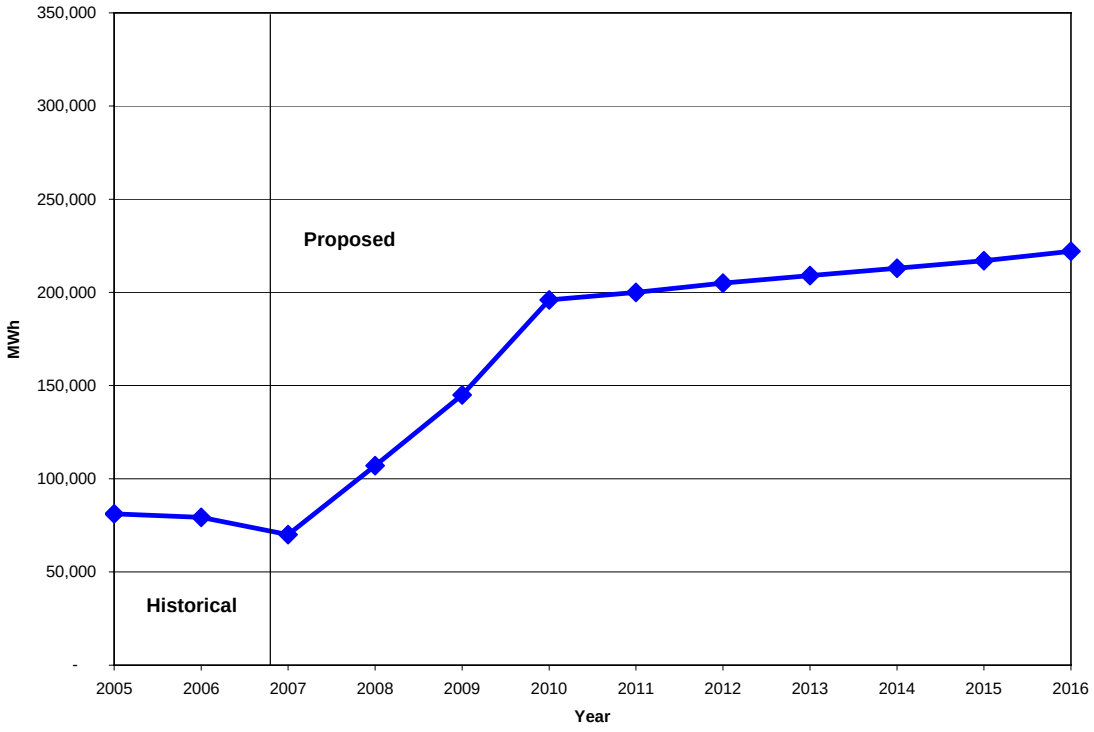
1. Staff plans to host workshops to discuss new program ideas and provide Roseville with additional opportunities to develop new efficiency programs.
2. Staff will work with Roseville staff to explore strategies to decouple the loss of electricity sales and revenues resulting from efficiency program success from the need to maintain sufficient revenues to support municipal budgets.
3. Roseville should develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Sacramento Municipal Utility District

Description

Figure 19 shows SMUD's plans to significantly increase the energy savings from its energy efficiency programs over the next 10 years. Annual savings are projected to increase from 84,000 MWh to more than 200,000 MWh over the next five years, a 250 percent increase. SMUD's program savings for 2006 were equivalent to 0.8 percent of annual electricity sales, at the high end of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected savings from efficiency programs are expected to decline slightly from 2005 to 2007 and then steadily increase from 2008 to 2016. Projected program savings in 2016, the last year of the forecast, are equivalent to 1.59 percent of forecast electricity sales. This savings-to-sales fraction is the highest of all POU projections and represents SMUD's commitment to achieve 70 percent of the savings identified as economic by RMI over the decade.

Figure 19: Sacramento Municipal Utility District
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Feasibility

The steep ramp-up in feasible program savings from 2007 to 2009 will require sustained commitment from SMUD's board both in terms of increased funding and potentially additional staff. This is particularly true given the recent reported decline in annual program savings recorded between 2005 and 2006. Staff recommends working closely with SMUD to develop an early warning tracking system to identify if there are significant deviations between projected and actual savings over the next three years. Staff finds the cumulative level of savings to be achieved by annual program targets is feasible as long as the SMUD board continues to provide the resources support necessary to achieve the savings forecasted from above.

Assessment of Reliability of Program Sales Forecast

SMUD has developed and maintained the necessary building blocks to develop a reliable savings forecasting record – a tracking system, a publicly available annual report that includes energy savings (since 2002), and third-party verification of program savings. SMUD has used third-party contractors to independently verify the energy savings from the programs for the last decade. SMUD's year-to-year forecasts of electricity savings can be considered reliable, but

its 10-year record of forecasting savings has yet to be proven, particularly given the savings achieved over the last decade.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by SMUD will actually be reported and verified.

1. Staff will work closely with SMUD staff to make sure it is made aware of new program savings opportunities. Staff plans to periodically host a workshop or WebEx meeting to highlight new opportunities.
2. Staff will work with SMUD staff to explore strategies to decouple the loss of electricity sales resulting from successful efficiency program success from the anticipated loss of revenues and the expected impact on municipal budgets.
3. Staff will work with SMUD staff to develop estimates of the level of funding that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Silicon Valley Power

Description

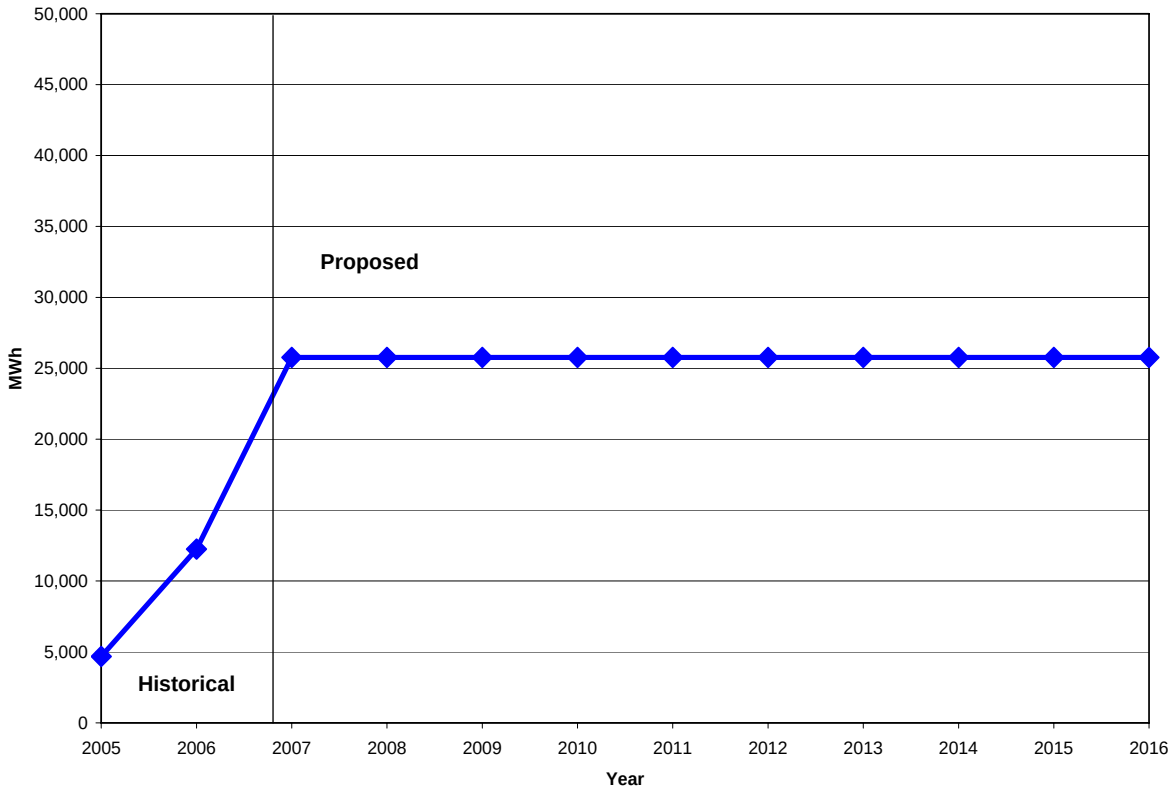
Figure 20 shows Silicon Valley Power's (SVP) plans to significantly increase the energy savings from its energy efficiency programs over the next 10 years. Annual savings are projected to increase from 5,000 MWh in 2005 to more than 25,000 GWh in 2007, a five-fold increase in one year, and then remain flat for the next nine years. The cumulative energy savings from these programs are projected to achieve 50 percent of the savings identified as economic by RMI over the decade. SVP's program energy savings in 2006 were equivalent to 0.2 percent of annual electricity sales, at the low end of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected savings in 2016 are equivalent to 0.8 percent of forecast electricity sales for SVP.

Assessment of Feasibility

The steep ramp-up in feasible program savings from 2005 to 2007 will require a significant increase in internal staff and funding resources, particularly given the characteristics of SVP's service territory. SVP has very little residential air conditioning load and few industrial facilities with significant capacity. SVP staff indicated that the city council had approved these savings goals but not any significant funding increases, reducing the probability that the savings goals will be met from staff's perspective. The funding increases needed to support this level of savings would be equivalent to at least a five-fold increase in program funding from the current base of $3.8 million per year. In discussion with Energy Commission staff, SVP staff agreed that it might be worthwhile to construct a more gradual ramp-up rate than that called for in the RMI

report in the initial years, but remain committed to achieving a significant percentage of the economic potential over the entire decade. The projected targets remain the same in the final October *2007 CMUA Report*.

Figure 20: Silicon Valley Power
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Reliability of Program Sales Forecast

SVP has developed the three building blocks needed to develop a reliable savings forecasting record – a program tracking system, an annual report, and third-party verification of program savings. SVP currently uses the E3 model to track energy savings, produce annual savings reports and estimate the cumulative energy and peak savings from its programs. Staff considers this to be a reliable method of verifying savings and using the results of the evaluations to project future program savings.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by SVP will actually be recorded and verified.

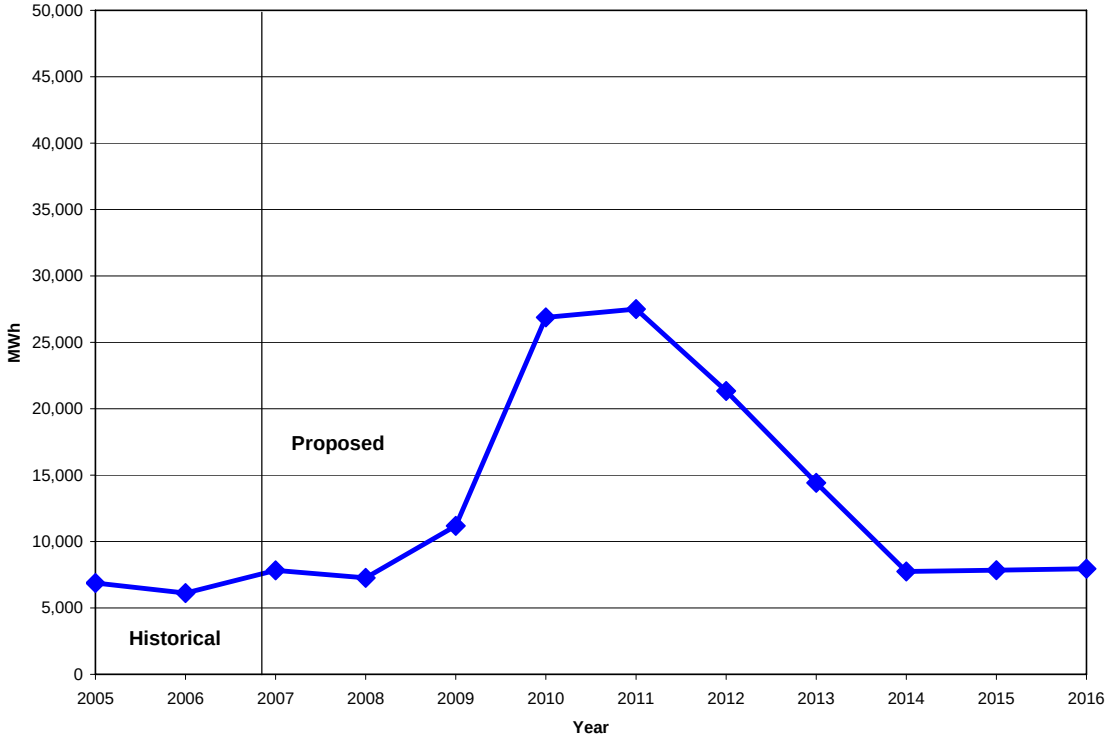
1. Staff plans to host workshops on new program ideas and provide SVP with additional opportunities to develop new efficiency programs.
2. Staff will work with SVP staff to explore strategies to decouple the loss of electiricty sales resulting from efficiency program success from the anticipated loss in revenues needed to support municipal budgets.
3. Staff will offer to assist SVP in the development of multi-year funding levels that will be needed to secure its energy savings forecast for the next three years and seek board approval of this multi-year budget.

Turlock Irrigation District

Description

Figure 21 shows Turlock's plans to significantly increase the energy savings from its energy efficiency programs over the next five years and then shrink the program savings five-fold over the remaining five years. Annual savings are projected to increase from 6,000 MWh to more than 25,000 MWh over the next five years, a four-fold increase. Projected savings from efficiency programs are expected to stay flat from 2005 to 2008, dramatically increase by over 300 percent from 2008 to 2011, and finally fall dramatically for the next three years. Turlock's program savings for 2006 were equivalent to 0.3 percent of annual electricity sales, toward the lower end of the range of 0.01 percent to 0.81 percent of sales reported by POUs for 2005. Projected program savings in 2011 are expected to increase to 1.3 percent of electricity sales in 2011 and then decline to 0.3 percent of forecast electricity sales in 2016. Turlock's trajectory changed in the final October *2007 CMUA Report*, but the reported savings targets are the same.

Figure 21: Turlock Irrigation District
Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: California Municipal Utilities Association, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, June 2007. (*2007 CMUA Report*)

Assessment of Feasibility

Staff met with Turlock staff to help understand the drivers of the forecast of the savings shown above. Turlock staff felt this savings forecast was plausible for the following reasons:

It will take 6 to 18 months to make its customers aware of the new efficiency programs it plans to offer. This is the reason that savings are not projected to increase until 2009.

Turlock does not have the staffing levels to rapidly develop new programs and felt that the lower levels of disposable income in the Central Valley would make it more difficult to achieve the level of savings achieved by some of the larger utilities, such as PG&E, which could tap into higher levels of disposable income.

Turlock is worried that some of the potential savings from the RMI assessment of economic potential might not be realized because they are based on unrealistic projections of the number of CFLs that could be installed in its customers' homes.

Finally, Turlock is unconcerned about the sharp downturn in projected energy savings projected for 2012 to 2016 because of its opportunity to revise the savings goals every three years. It points out that if the programs are successful in achieving their 2009 goals by the next goal setting process, it would be easy to adjust or raise the program savings goals in 2010 for these outer years.

Energy Commission staff remains unconvinced by many of the arguments above and maintains it is unlikely that annual savings levels will dramatically increase between 2009 and 2010 and then dramatically fall back to 2005 levels by 2012. Staff believes that the savings forecast presented by Turlock is feasible for the next two years, and after that there is insufficient evidence to make a determination of the additional energy savings that could be achieved for the remainder of the decade.

Assessment of Reliability of Program Sales Forecast

Turlock has developed the three building blocks needed to develop a reliable savings forecasting record – a tracking system, an annual report, and third-party verification of program savings. Turlock uses the E3 model to track energy savings, produces annual savings reports, and plans to have third parties independently verify the energy savings in the E3 tool periodically. Staff concludes that Turlock is taking the right steps to increase the reliability of its program savings forecasts.

Recommended Improvements

The following recommendations are intended to increase the probability that the level of energy savings predicted by Turlock will actually be recorded and verified.

1. Staff plans to host workshops on new program ideas and provide Turlock with additional opportunities to develop new efficiency programs.
2. Staff will work with Turlock staff to explore strategies to decouple the loss of electricity sales resulting from efficiency program success from the anticipated loss in revenues needed to support municipal budgets.
3. Turlock and staff should work together to develop estimates of the level of funding that will be needed to secure Turlock's energy savings forecast for the next three years and seek board approval of this multi-year budget.

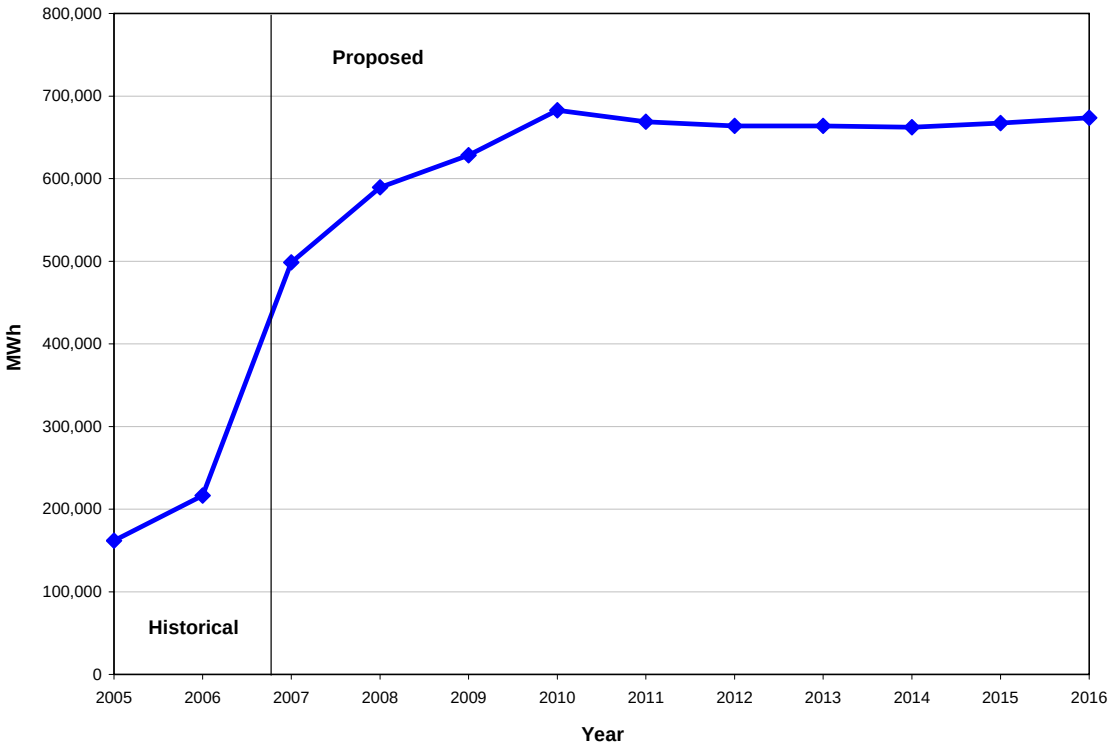
Summary of the POU Annual Targets

Staff analyzed the POU proposed annual savings targets along two dimensions: feasibility of achieving the annual savings over time and whether these savings could be counted on as reliable within a procurement process. Staff's analysis of the POU forecasts shows that some of the POUs have produced savings estimates that are likely to feasible (given staff's definitions),

while other savings trajectories are not likely to be feasible in the near term, but could be reached and be feasible in the long term. In most cases staff's analysis showed that that not enough time has passed to demonstrate that the level of energy savings forecasted by each POU can be considered reliable from a procurement perspective.

Figure 22 shows the sum of the 13 largest POUs reported annual savings accomplishments for 2005 and the preliminary savings reported for the fiscal year ending June 30, 2007, compared with the sum of their forecasted annual savings goals for 2007 to 2016. Projected savings from these 13 utilities represent more than 90 percent of the aggregate savings from all POUs in California. From fiscal year 2005 to 2006, the largest 13 POUs expect their annual their program savings to increase by 34 percent. They are anticipating more than a doubling of energy savings beyond that level in the next year 2007/2008. Over three years they plan to increase their program annual savings more than by 208 percent or just over a tripling in annual savings. After 2010, annual savings are projected to flatten out for reasons that have to do with the method to project feasible annual savings by RMI (as discussed earlier).

Figure 22: Publicly Owned Utilities – 13 Largest Combined Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: Energy Commission staff work aggregating data from 13 largest POUs contained in Appendix C, Table C-1.

CHAPTER 4: Combined Energy Efficiency Data for All Utilities

Introduction

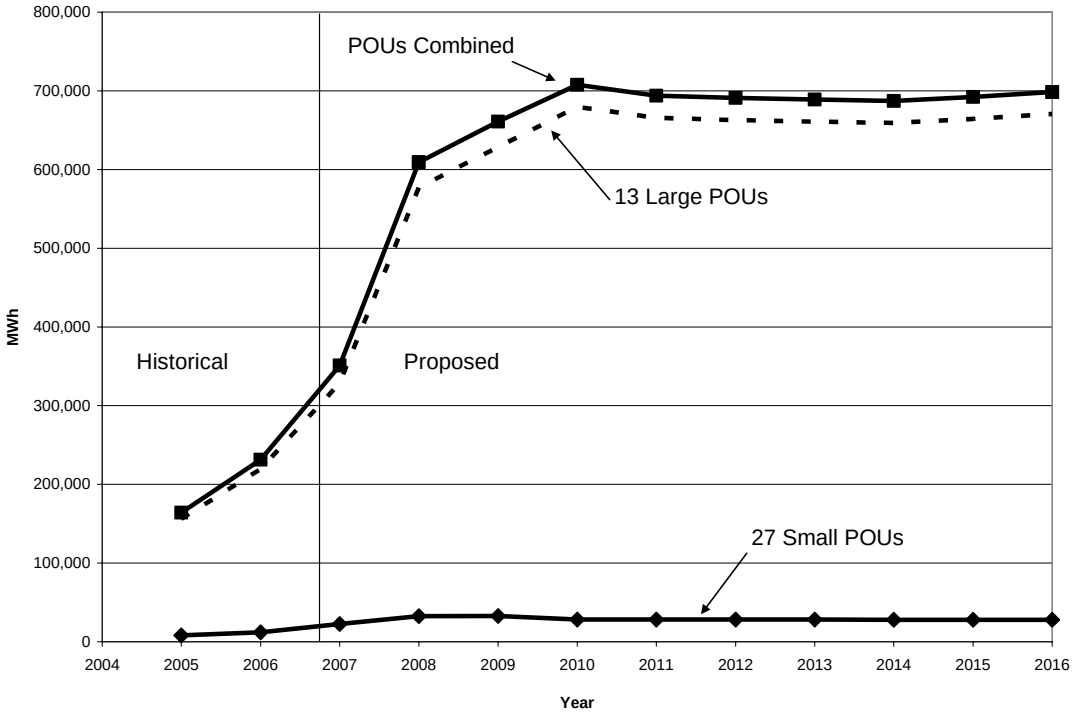
The first section in this chapter presents the energy and peak savings targets for the POUs (the major 13 plus the remaining 27 smaller POUs). The second section presents this information for the IOUs. The third section compares the proposed electricity, peak demand, and natural gas savings targets for the IOUs and POUs. The fourth section aggregates these proposed savings targets and examines the net impact of the savings from all of these efficiency programs on the forecasts of electricity, peak demand, and natural gas and on the fraction of economic potential achieved if the programs successfully reach their targets. Staff plans to analyze and potentially propose modifications to these targets every three years.

Appendix B contains the data for individual utilities. This data was compiled from the June *2007 CMUA Report*. A table and graphs on electricity consumption (MWh) and peak demand (MW) are presented for each utility. Each natural gas utility has a table and a graph on natural gas (in million therms [MMth or 10^6 th]).

POU Saving Targets

Figure 23 expands on Figure 22 by presenting the proposed annual savings for all POUs. The 13 large POUs represent 95 percent of the annual savings in 2007, rising to 96 percent by 2016. The annual electricity savings from the 27 smaller POUs starts at 22,145 MWh in 2007 and rises to a peak of 32,622 in 2009. Their proposed annual savings declines to 28,022 in 2010 and remains roughly flat to 2016. The combined annual electricity savings for the POUs reaches a peak of more than 700,000 MWh in 2010 and remains roughly flat to 2016.

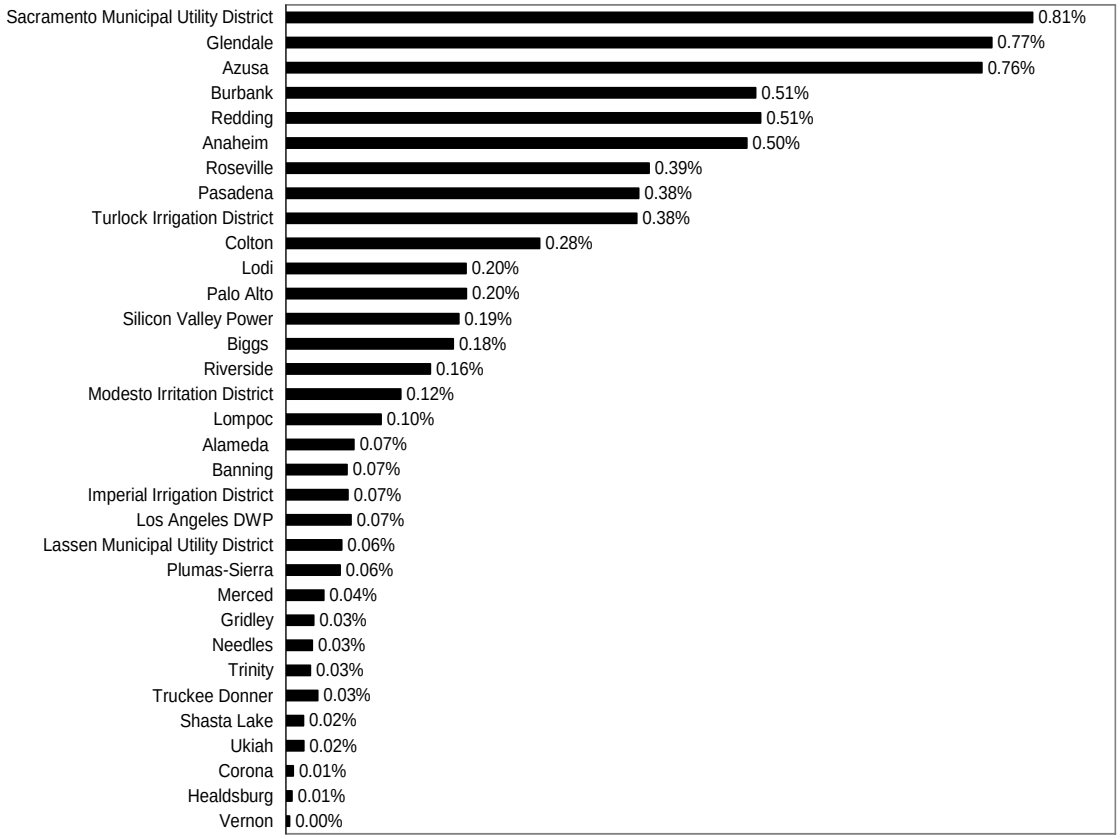
Figure 23: Publicly Owned Utilities – Historical Compared to Proposed Annual Energy Savings, 2005-2016



Source: Energy Commission staff work based on data contained in Appendix C, Table C-1.

The proposed savings varies among the utilities in both magnitude and compared to annual electricity consumption. One of the common metrics used to compare utility programs is the ratio of annual savings to annual consumption. Figure 24 depicts the variation of this ratio in 2005, before the AB 2021 legislation took effect. Based on their CMUA efficiency status report, for those utilities reporting energy efficiency programs, the ratio ranges from 0.01 to 0.81 percent.

Figure 24: Ratio of Savings to Electricity Consumption in 2005



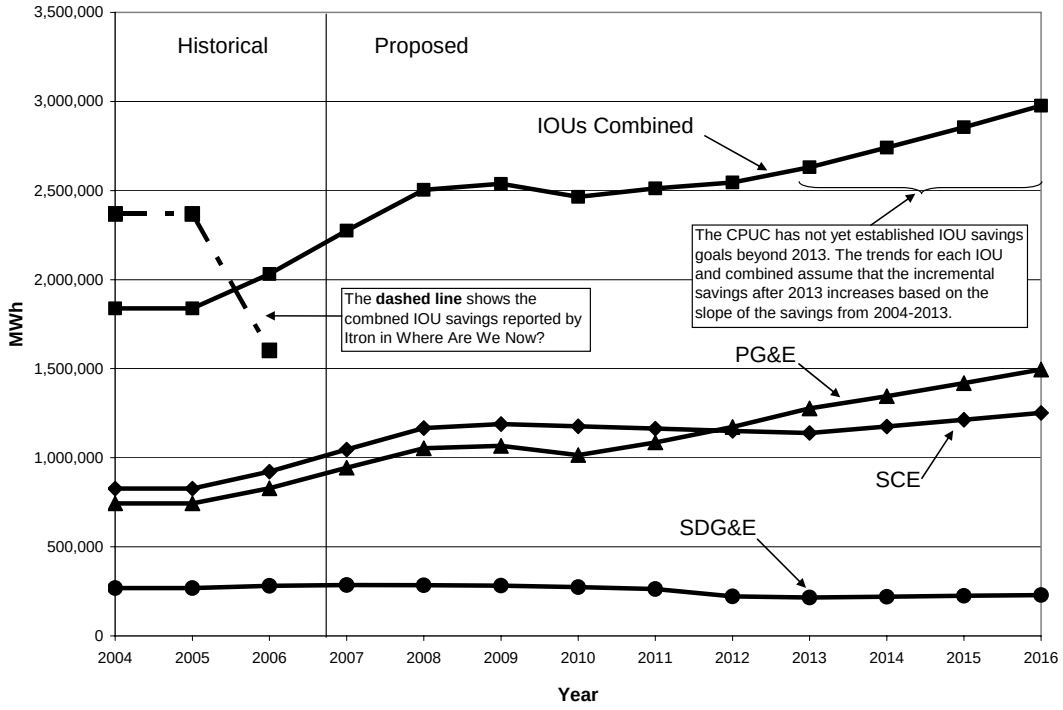
Source: California Municipal Utilities Association (CMUA), *Energy Efficiency in California's Public Power Sector: A Status Report*, December 2006 for the publicly owned utilities.

Investor-Owned Utilities Savings Targets and Likely Success in Achieving Them

Figure 25 shows the IOUs' annual savings accomplishments as reported by Itron for 2004 - 2006. Between 2005 and 2006, the IOUs' annual savings dropped 32 percent. With the new program cycle that began in 2006, the IOUs increased their program savings targets by 56 percent through 2009. After that, the savings rate dips down for one year and ramps up from 2010 to 2013, the end of the period for which the CPUC has established savings targets. From 2014 to 2016, the savings are shown as increasing based on the slope of the savings from 2004-2013.

The steep drop in savings from 2005 to 2006 and the nearly-as-steep increase from 2006-2007 is indicative of stopping and starting program cycles.[52] Closer inspection of the combined trend shows that the targets set by the CPUC for PG&E and SCE are the primary drivers of the increase in ramp-up rate through 2009 and of the sustained levels through the end of the projection period. SDG&E's targets show a decline after 2011. Appendix B contains individual graphs for each IOU.

Figure 25: Investor-Owned Utilities – Historical Compared to Proposed Annual Energy Savings, 2004-2016



Source: Energy Commission staff work based on data contained in Appendix C, Tables C-1 and C-2.

Energy Commission staff based its review of the original IOUs' savings targets for 2004-2013 set by the CPUC on historical experience of the IOUs' programs, trends in savings per dollar, and a comparison of proposed savings level to the level of economic potential estimated for each utility.[53] The IOUs' annual program reports document their success in meeting their 2004 and

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[52] In 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006, and now they are only able to account for the actual savings in the year they occur. Subtracting out the committed savings for 2004 and 2005 makes the change to 2006 much smaller.

[53] California Energy Commission, *Proposed Energy Savings Goals for Energy Efficiency Programs in California*, 100-03-021, October 27, 2003.

2005 electricity savings targets. However, the reported level of program savings is often reduced by 10 to 30 percent on the basis of third-party evaluation.[54]

Meeting the 2006 annual electricity savings targets seems to be proving more difficult for the IOU's, although this may be due to the late start-up of the 2006-2008 program cycle. The IOUs project that they will meet their 2007 savings targets and express confidence that they will meet the cumulative three-year energy and peak demand targets for the 2006-2008 timeframe. Achieving natural gas targets is proving more difficult for the IOUs; about half of the 2006-07 targets have been reached by mid-2007.

The IOUs believe the current targets should be revised downward based on the results of recent evaluations and smaller estimates of remaining economically achievable savings in the *2006 Itron* report than the KEMA-Xenergy study completed in 2003. The issue of potentially revising the energy efficiency savings potential and targets adopted in 2005 is a major controversy in current CPUC proceedings. Southern California Edison filed forecasted energy efficiency targets that are considerably lower than the CPUC targets in its 2006 Long-Term Procurement Plan (CPUC Proceeding R.06-02-013). Pacific Gas and Electric's plan states that the targets can be met only through significant changes to the current efficiency policy rules. Utilities are requesting the CPUC to give credit for program "spillover" (customers who take action without receiving a rebate), to expand the savings attributable to utilities from codes and standards advocacy programs, and to change the estimation of net-to-gross savings from programs.

As reported by the IOUs in the CPUC's Energy Efficiency Groupware Application (EEGA) database, the data suggest that the IOUs are likely to meet their 2006-2008 targets.[55] However, given the likelihood that their savings estimates will be reduced when evaluated by independent parties, it is staff's expectation that at least some of the IOUs are likely to fall short of these targets unless the rules for counting savings are changed. If the utilities are successful in convincing the CPUC to make these policy rule changes, it should be much easier to achieve verified savings that exceed the current targets.

The CPUC and utilities recognize that the gap between the achievable potential represented by the current savings targets and the economic potential may not be feasible through normal

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CPUC, D.04-09-060, *Interim Opinion on Energy Savings Goals for 2004 and Beyond*, September 24, 2004.

[54] TecMarket Works, *Preliminary Findings from Completed Impact Evaluation Reports*, Memorandum from Carmen Best and Nick Hall to Michael Wheeler at the CPUC dated April 30, 2007.

[55] CPUC, Energy Efficiency Groupware Application (EEGA), contains monthly IOU savings reporting for 2006-2008 programs, located at http://eega2006.cpuc.ca.gov

program channels. In its Decision 07-10-032 the CPUC initiated Big Bold Energy Efficiency Strategies designed to identify new IOU energy efficiency programs to close this gap.[56]

Impact of Utility Energy Efficiency Programs on Forecasts of Electricity Consumption and Economic Potential

This section aggregates the savings targets proposed by the state's utilities and assesses their impact on energy and peak demand forecasts. This section also assesses how these cumulative savings compare to estimates of the economic potential to save electricity and natural gas between 2007 and 2016.

Electricity Consumption Savings Targets by Utility

This section shows the impact of achieving the utilities' proposed electricity savings targets on the forecast of 2016 electricity consumption, on the forecasted increase in electricity consumption for 2007 through 2016, and the cumulative savings relative to the 10 percent savings target compared to the baseline forecast in 2016. Supporting data for the figures in this section, taken from Appendix B, have been combined into a summary table contained in Appendix C, Table C-3 and in Table 6. Unless otherwise noted, data are from June 2007.

Percentage of Forecasted Consumption in 2016 (See Figure 26)

The combined IOUs' savings represent 10 percent of the forecasted 2016 electric energy consumption and the combined POUs' savings represent 9 percent. There is significant variation among the individual utilities, ranging from a low of zero to a high of 13 percent. The 13 largest POUs account for more than 95 percent of the POU sales. The savings targets for the 13 large POUs, as a percentage of their combined 2016 consumption, are twice as high as for the 26 small POUs (10 percent compared to 5 percent).

Percentage of Consumption Growth by 2016 (See Figure 27)

Even greater variation is seen when the savings are compared to growth in electric energy consumption. For the IOUs, the savings as a percent of growth are 104 percent, for the POUs 70 percent, and combined 93 percent. The percentage ranges from a low of zero to a high of 129 percent for LADWP.

Ten Percent Reduction in Consumption by 2016 (See Figure 28)

AB 2021 establishes a statewide target reduction of 10 percent compared to 2016 electricity consumption. Compared to this target, the IOUs combined will meet that goal and POUs will fall short by 7 percent. Combined, the IOUs and the POUs will reach 98 percent of the reduction

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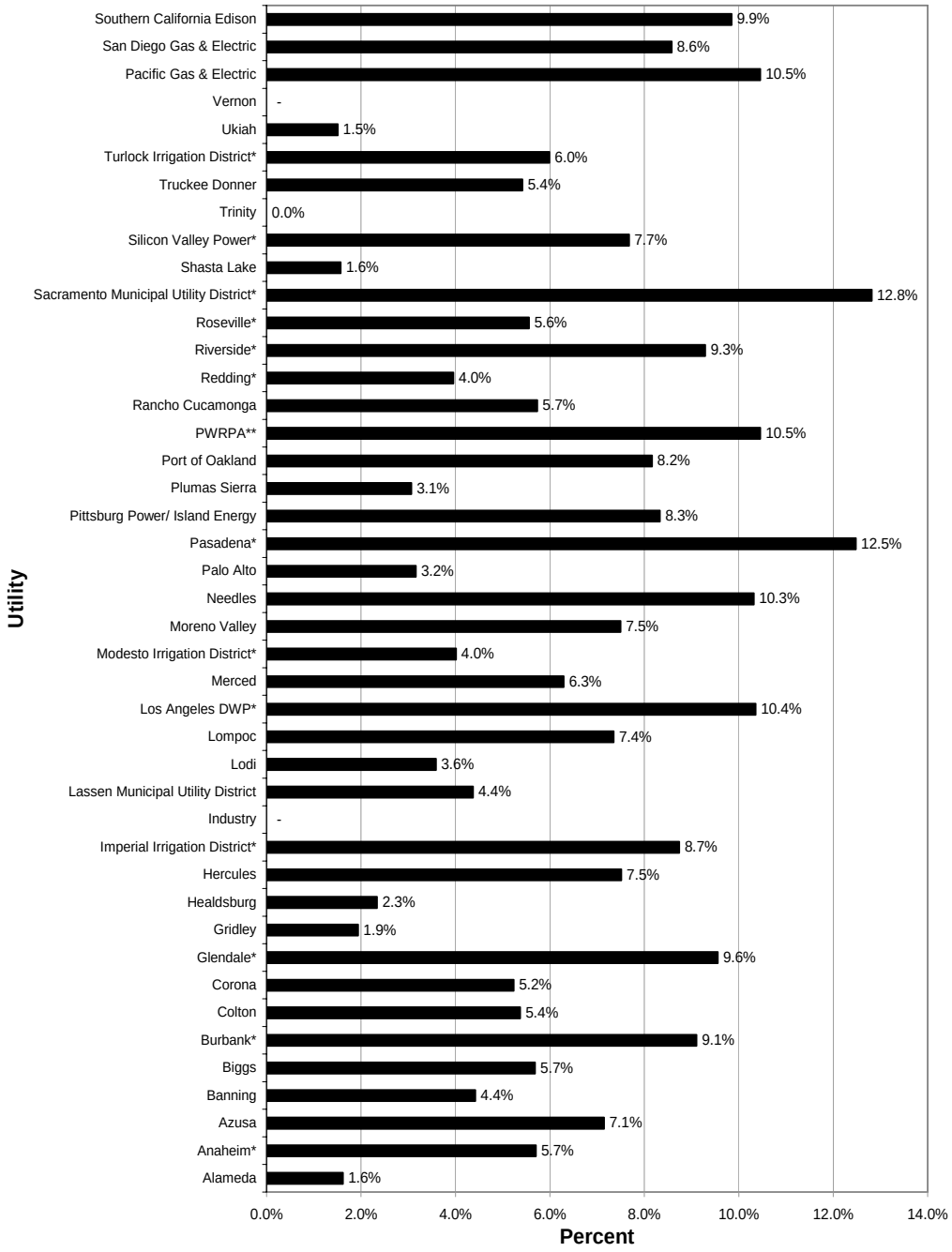
[56] CPUC, Decision 07-10-032, October 18, 2007, *Interim Opinion on Issues Relating to Future Savings Goals and Program Planning for 2009-2011 Energy Efficiency and Beyond.*

target. Only five utilities, SMUD, Pasadena, the Power and Water Resources Pooling Authority, Needles, and PG&E, are planning to exceed a 10 percent reduction in electricity consumption by 2016.

Figure 26: Electricity Savings Targets as a Percentage of 2016 Consumption Forecast

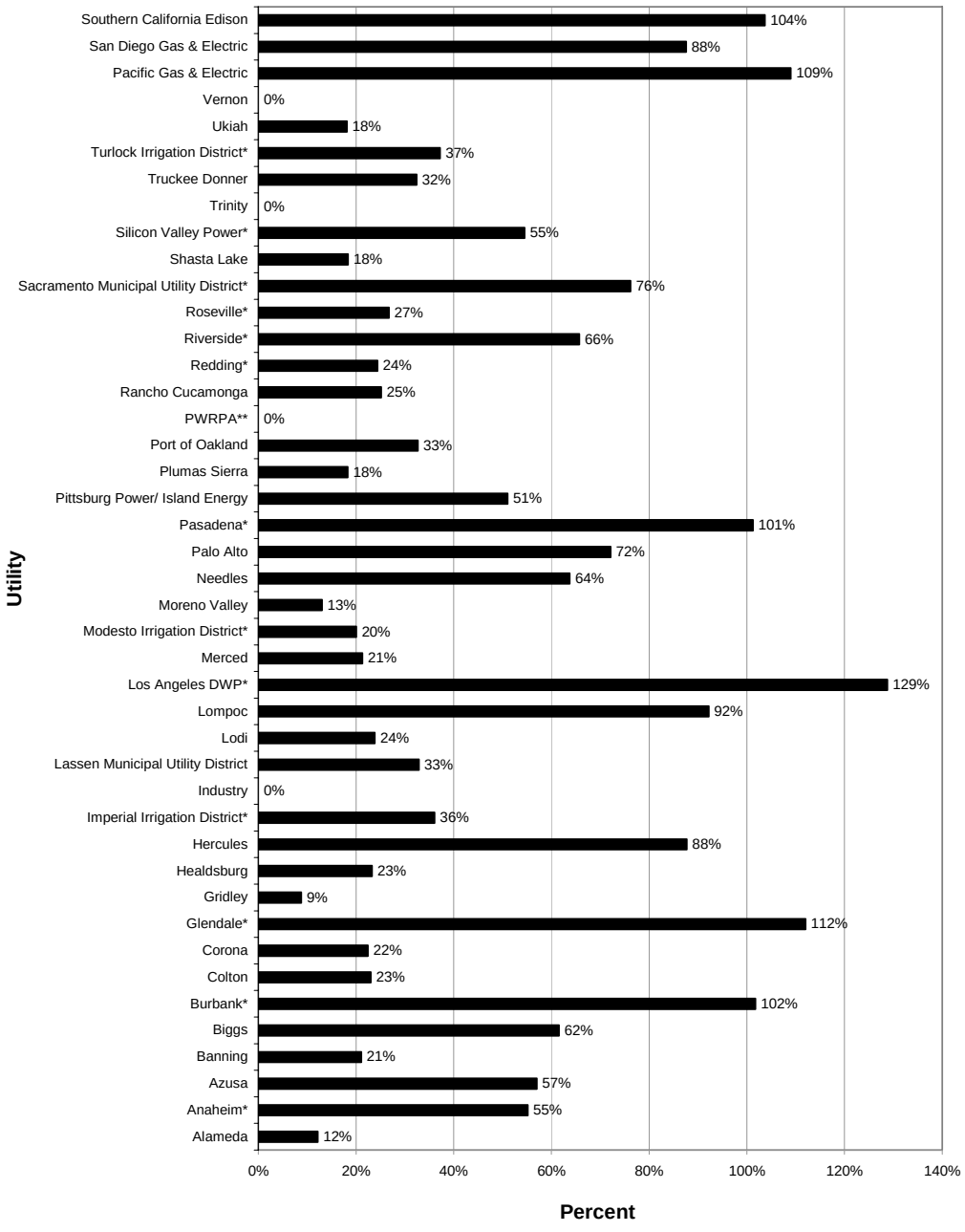
Larger utilities are proposing larger reductions to their 2016 forecasted consumption than smaller utilities.



Source: Energy Commission staff work based on data contained in Appendix B.

Figure 27: Electric Savings Targets Relative to Consumption Growth by 2016

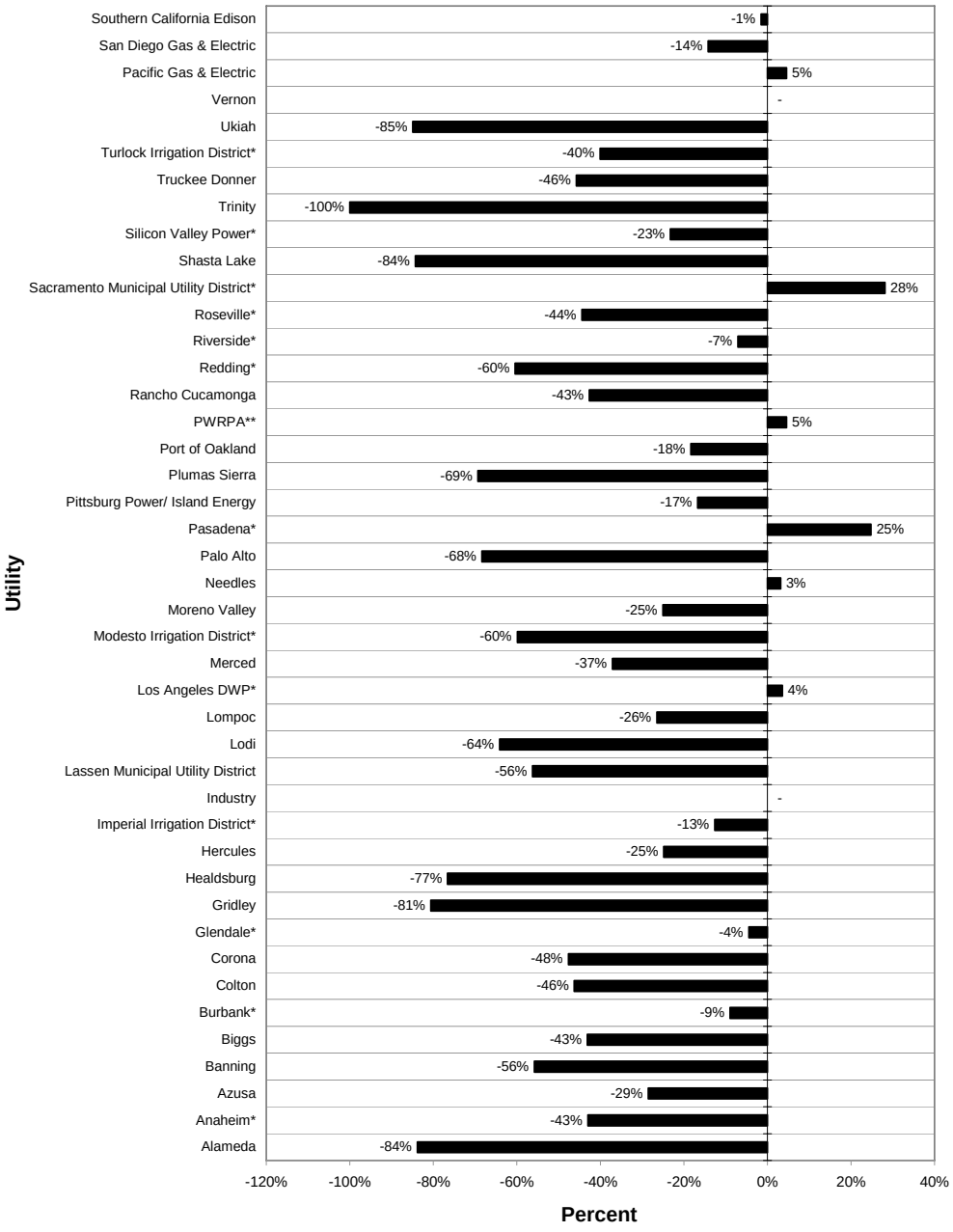
The IOU targets keep consumption growth flat. One-third of the POUs propose targets to reduce their 10-year consumption by more than half of expected growth. Six utilities plan to more than meet their forecasted growth.



Source: Energy Commission staff work based on data contained in Appendix B.

Figure 28: Electricity Savings Targets Compared to 10 Percent Reduction in Consumption by 2016

Four of the POUs propose targets that achieve a 10 percent reduction in 2016 forecasted consumption as called for in AB 2021. On average, the utilities are 17 percent short of meeting this guideline.



Source: Energy Commission staff work based on data contained in Appendix B.

Percentage of Remaining Potential

Table 6 compares the individual electricity savings goals to technical and economic potential. The degree of change between proposed and adopted savings targets is shown in this table. Despite double-digit changes for some small utilities, the aggregate change is less than one percent. On average, the IOU targets capture 74 percent of the remaining economic potential, while the POUs capture 63 percent of theirs. Individual POUs capture between zero and 100 percent of their future economic consumption potential.

Table 6: Electricity Savings Targets Compared to Potential

	Total Technical Potential (MWh)	Total Economic Potential (MWh)	June Proposed Cumulative Savings in 2016 (MWh)	October Adopted Cumulative Savings in 2016 (MWh)	Change btw. Jun & Oct Savings Numbers	% Change btw. Jun & Oct Savings Numbers	Economic as % of Technical	Proposed Savings as % of Technical	Proposed Savings as % of Economic
Publicly Owned Utilities									
Alameda	89,404	68,379	7,605	7,605	0	0.00%	76%	9%	11%
Anaheim*	430,783	317,446	167,682	167,682	0	0.00%	74%	39%	53%
Azusa	50,561	41,198	20,840	27,292	6,452	30.96%	81%	41%	51%
Banning	44,810	35,129	8,734	10,414	1,680	19.24%	78%	19%	25%
Biggs	3,355	2,936	1,063	374	-689	-64.82%	88%	32%	36%
Burbank*	217,783	181,393	113,073	118,627	5,554	4.91%	83%	52%	62%
Colton	86,298	70,410	26,254	26,254	0	0.00%	82%	30%	37%
Corona	12,182	8,835	4,669	4,669	0	0.01%	73%	38%	53%
Glendale*	234,756	193,174	113,620	119,904	6,284	5.53%	82%	48%	59%
Gridley	8,966	6,410	917	917	0	0.00%	71%	10%	14%
Healdsburg	14,953	11,827	1,984	1,984	0	0.00%	79%	13%	17%
Hercules	3,086	2,513	1,364	1,563	199	14.59%	81%	44%	54%
Imperial Irrigation District*	1,006,526	839,496	450,666	447,567	-3,099	-0.69%	83%	45%	54%
Industry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lassen Municipal Utility District	32,263	25,338	7,333	6,374	-959	-13.08%	79%	23%	29%
Lodi	104,120	67,565	20,001	20,001	0	0.00%	65%	19%	30%
Lompoc	24,494	21,489	11,210	10,405	-805	-7.18%	88%	46%	52%
Los Angeles DWP*	5,057,000	4,049,000	2,685,000	2,685,000	0	0.00%	80%	53%	66%
Merced	88,019	72,009	36,195	23,219	-12,976	-35.85%	82%	41%	50%
Modesto Irrigation District*	589,690	276,984	138,557	91,311	-47,246	-34.10%	47%	23%	50%
Moreno Valley	21,447	15,941	8,221	8,221	0	-0.01%	74%	38%	52%
Needles	20,500	16,694	8,173	8,173	0	0.00%	81%	40%	49%
Palo Alto	70,000	70,000	32,800	32,800	0	0.00%	100%	47%	47%
Pasadena*	250,161	181,260	181,260	181,260	0	0.00%	72%	72%	100%
Pittsburg Power/ Island Energy	2,721	2,254	1,777	1,661	-116	-6.51%	83%	65%	79%
Plumas Sierra	34,104	26,434	6,209	6,209	0	0.01%	78%	18%	23%
Port of Oakland	16,714	12,325	8,837	4,731	-4,106	-46.46%	74%	53%	72%
PWRPA**	51,242	51,242	51,242	51,242	0	0.00%	See note	See note	See note
Rancho Cucamonga	13,464	8,641	4,478	4,478	0	0.00%	64%	33%	52%
Redding*	38,471	38,471	38,471	38,471	0	0.00%	See note	See note	See note
Riverside*	478,402	393,171	240,380	240,380	0	0.00%	82%	50%	61%
Roseville*	286,337	169,699	87,162	85,092	-2,070	-2.38%	59%	30%	51%
Sacramento Municipal Utility District	3,228,328	2,518,873	1,784,000	1,784,000	0	0.00%	78%	55%	71%
Shasta Lake	17,557	13,213	1,292	1,540	248	19.17%	75%	7%	10%
Silicon Valley Power*	686,469	514,914	257,620	257,620	0	0.00%	75%	38%	50%
Trinity	17,838	-	-	-	-	0.00%	0%	0%	0%
Truckee Donner	32,303	20,321	10,014	10,014	0	0.00%	63%	31%	49%
Turlock Irrigation District*	409,151	294,747	139,990	139,990	0	0.00%	72%	34%	47%
Ukiah	22,088	17,599	1,979	2,636	657	33.17%	80%	9%	11%
Vernon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotals	**13,796,344**	**10,657,331**	**6,680,672**	**6,629,680**	**-50,992**	**-0.76%**	**77%**	**48%**	**63%**
Investor-Owned Utilities									
Pacific Gas & Electric	17,792,000	13,299,000	9,877,844	9,877,844	0	0.00%	75%	56%	74%
San Diego Gas & Electric	3,753,500	2,697,500	1,928,485	1,928,485	0	0.00%	72%	51%	71%
Southern California Edison	18,038,000	12,922,000	9,459,391	9,459,391	0	0.00%	72%	52%	73%
Subtotals	**39,583,500**	**28,918,500**	**21,265,720**	**21,265,720**	**0**	**0.00%**	**73%**	**54%**	**74%**
IOU and POU	**53,379,844**	**39,575,831**	**27,946,392**	**27,895,400**	**-50,992**	**-0.18%**	**74%**	**52%**	**71%**

* Identifies the Big 13 POUs.

PWRPA and Redding did not provide technical and economic potential. Both of these values were set equal to their proposed savings.

City of Industry and Vernon did not submit data during the AB 2021 process.

Source: Energy Commission staff work based on data contained in Appendix B.

Peak Demand Savings Targets

The following sections compare the utilities' proposed peak demand savings targets to the forecasted 2016 peak demand, to the forecasted growth in peak electrical demand for 2007 through 2016, and to the 10 percent savings target relative to the baseline forecast in 2016. Even though this last metric was not required under AB 2021, staff decided it was a useful comparison. Supporting data, taken from Appendix B, has been combined into a summary table contained in Appendix C, Table C-4 and in Table 7. Unless otherwise noted, data are from June 2007.

Percentage of Forecasted Peak Demand in 2016 (See Figure 29)

The combined IOUs' savings represent 9 percent of the forecasted 2016 peak electrical demand, and the combined POUs' savings represent 8 percent. There is significant variation among the individual utilities, ranging from a low of zero to a high of 14 percent. The 13 largest POUs account for 93 percent of the POU peak demand. The savings targets for the 13 largest POUs as a percent of their combined 2016 peak electrical demand are four times as high as for the 26 small POUs (8 percent compared to 2 percent).

Percentage of Peak Demand Growth by 2016 (See Figure 30)

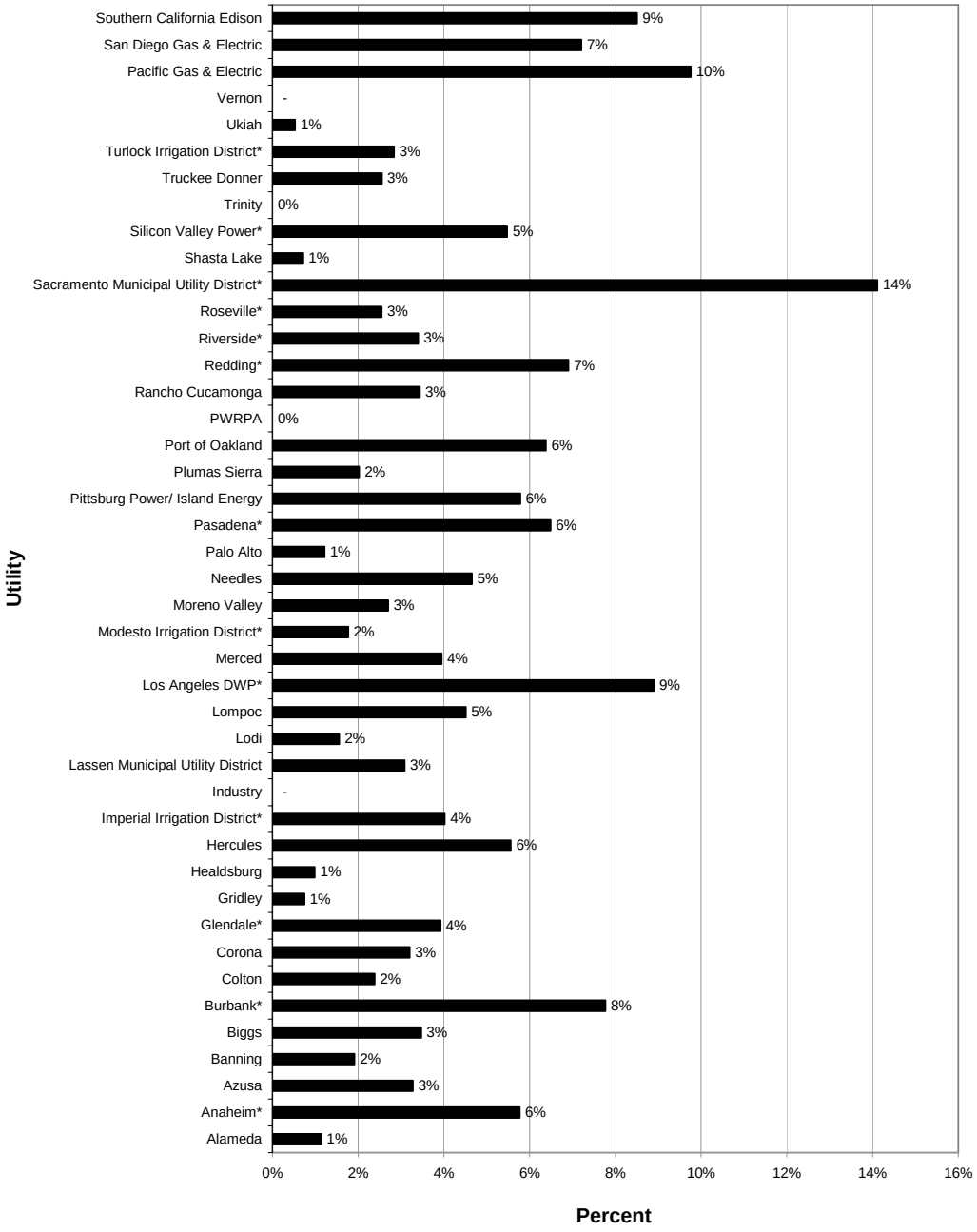
Comparing the savings to growth in peak demand reveals even greater variation. For the IOUs, the savings as a percent of growth are 82 percent, for the POUs 55 percent, and combined 74 percent. The percentage ranges from a low of zero to a high of 135 percent for Burbank, which is expecting its peak demand to grow only a few percentage points by 2016 and has proposed to reduce the peak compared to 2007 by a significant amount.

Ten Percent Reduction in Peak Demand by 2016 (See Figure 31)

AB 2021 establishes a target reduction of 10 percent compared to 2016 electricity consumption. Staff applied the same metric for peak demand. When compared to the target, the IOUs will fall short by 11 percent and the POUs by 22 percent. Combined, the IOUs and the POUs will reach 86 percent of the reduction target. Only SMUD is planning to exceed a 10 percent reduction in peak demand.

Figure 29: Peak Demand Savings Targets as a Percentage of 2016 Peak Demand Forecast

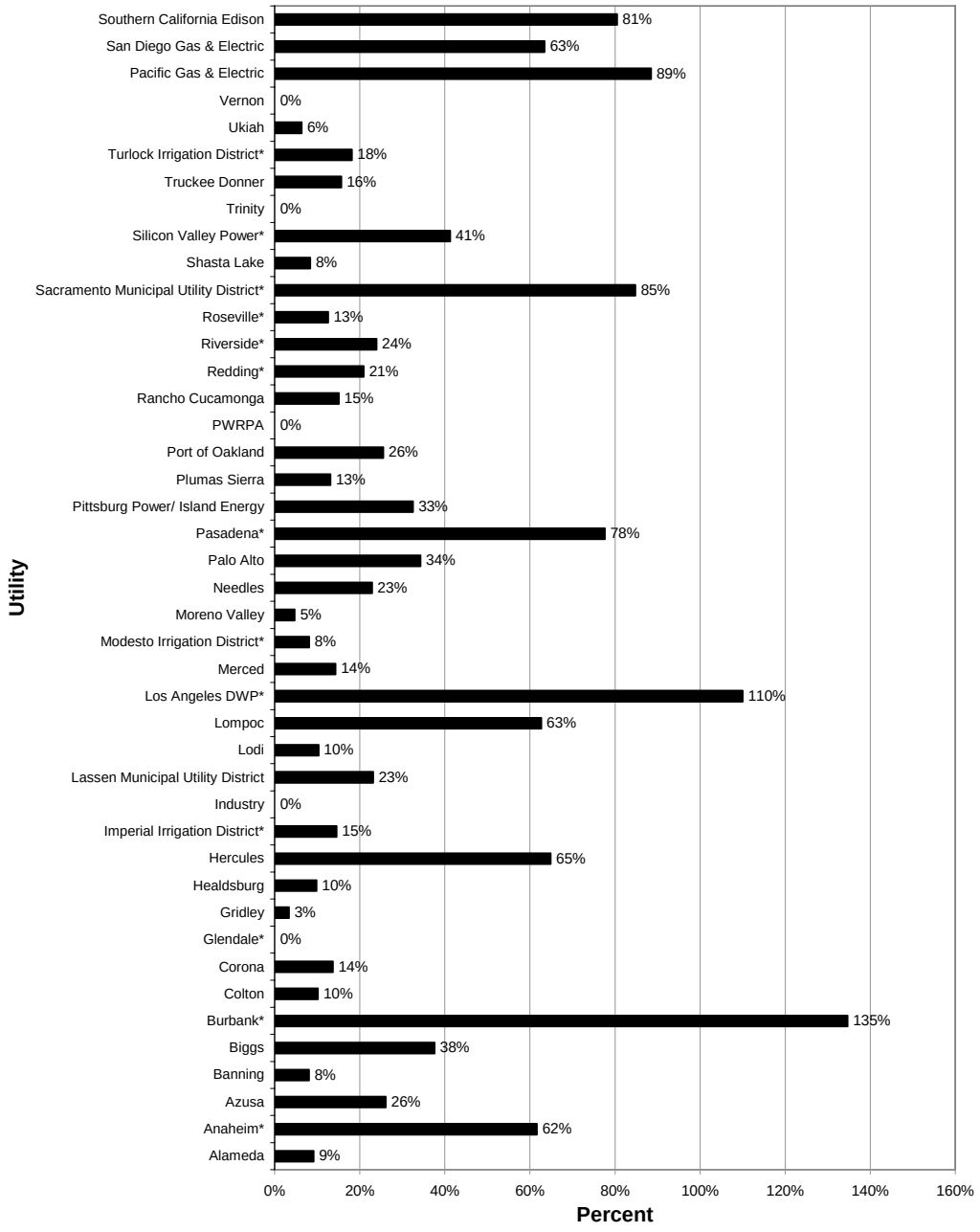
Larger utilities are proposing larger reductions in their 2016 forecasted peak demand than smaller utilities.



Source: Energy Commission staff work based on data contained in Appendix B.

Figure 30: Peak Demand Savings Targets as a Percentage of Growth by 2016

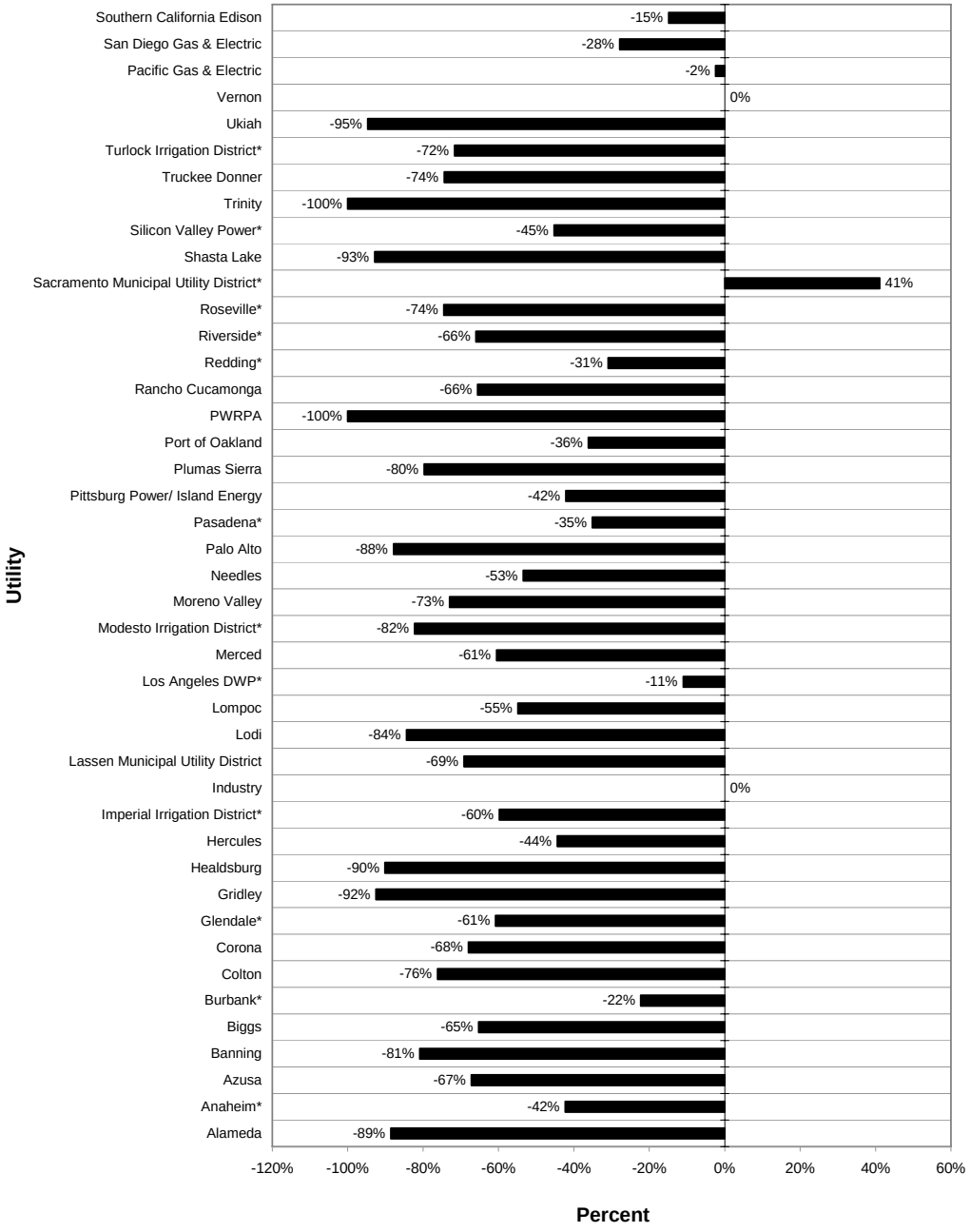
Peak demand growth is more difficult to reduce. IOU targets would reduce their projected peak growth by 80 percent over the decade, while POUs propose to reduce peak growth by more than half.



Source: Energy Commission staff work based on data contained in Appendix B.

Figure 31: Peak Demand Savings Targets Compared to 10 Percent Reduction in Peak Demand by 2016

Only one utility proposed to reach a 10 percent reduction in 2016 peak demand. On average, the utilities are 18 percent short of reaching this level of peak reduction.



Source: Energy Commission staff work based on data contained in Appendix B.

Percentage of Remaining Potential

The peak demand savings targets are compared to the technical and economic potential in Table 7. The degree of change between targets proposed in June and those adopted by October is shown. Although some individual differences appear high, the aggregate change is 15 MW, less than 1.1 percent. The IOU targets capture 98 percent of their remaining economic potential, while the POUs capture 68 percent of theirs. The POUs proposals for achieving available economic peak demand potential range from zero to 118 percent.

Table 7: Peak Demand Reduction Targets Compared to Potential

	Total Technical Potential (MW)	Total Economic Potential (MW)	June Proposed Cumulative Savings in 2016 (MW)	October Adopted Cumulative Savings in 2016 (MW)	Change btw. Jun & Oct Savings Numbers	% Change btw. Jun & Oct Savings Numbers	Economic as % of Technical	Proposed Savings as % of Technical	Proposed Savings as % of Economic
Publicly Owned Utilities									
Alameda	10.75	7.84	0.91	0.90	-0.01	-1.59%	73%	9%	12%
Anaheim*	55.79	37.70	35.22	35.20	-0.02	-0.06%	68%	63%	93%
Azusa	6.56	4.70	2.40	6.80	4.40	183.62%	72%	37%	51%
Banning	6.16	4.64	1.23	1.40	0.17	13.68%	75%	20%	27%
Biggs	0.40	0.33	0.16	0.10	-0.06	-37.31%	84%	40%	48%
Burbank*	27.13	20.60	24.24	30.30	6.06	25.00%	76%	89%	118%
Colton	10.64	8.14	2.79	2.80	0.01	0.48%	76%	26%	34%
Corona	1.52	1.05	0.57	0.60	0.03	5.73%	69%	37%	54%
Glendale*	29.52	21.88	13.00	13.70	0.70	5.38%	74%	44%	59%
Gridley	1.14	0.72	0.11	0.10	-0.01	-12.04%	63%	10%	16%
Healdsburg	1.90	1.37	0.23	0.20	-0.03	-13.09%	72%	12%	17%
Hercules	0.43	0.32	0.18	0.20	0.02	8.56%	74%	43%	58%
Imperial Irrigation District*	139.96	113.87	61.10	60.50	-0.60	-0.98%	81%	44%	54%
Industry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lassen Municipal Utility District	3.97	2.89	0.93	0.80	-0.13	-14.28%	73%	24%	32%
Lodi	17.17	9.53	2.46	2.50	0.04	1.57%	55%	14%	26%
Lompoc	2.65	2.31	1.25	1.20	-0.05	-4.29%	87%	47%	54%
Los Angeles DWP*	1,377.00	927.00	538.00	538.00	0.00	0.00%	67%	39%	58%
Merced	11.30	8.85	4.47	2.90	-1.57	-35.18%	78%	40%	51%
Modesto Irrigation District*	75.27	31.72	15.87	10.60	-5.27	-33.23%	42%	21%	50%
Moreno Valley	2.83	2.00	1.05	1.10	0.05	4.43%	71%	37%	53%
Needles	3.06	2.42	1.19	1.20	0.01	0.72%	79%	39%	49%
Palo Alto	5.00	5.00	2.34	2.00	-0.34	-14.54%	n/a	n/a	n/a
Pasadena*	34.25	21.67	21.73	21.70	-0.03	-0.14%	63%	63%	100%
Pittsburg Power/ Island Energy	0.40	0.30	0.29	0.30	0.01	2.86%	76%	74%	97%
Plumas Sierra	3.76	2.87	0.71	0.70	-0.01	-1.28%	76%	19%	25%
Port of Oakland	2.15	1.53	1.09	0.40	-0.69	-63.39%	71%	51%	72%
PWRPA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Rancho Cucamonga	1.75	1.06	0.56	0.60	0.04	7.55%	61%	32%	53%
Redding*	26.00	26.00	26.00	26.00	0.00	-0.01%	n/a	n/a	n/a
Riverside*	58.06	44.57	22.27	22.30	0.03	0.12%	77%	38%	50%
Roseville*	43.25	20.89	10.50	22.30	11.80	112.34%	48%	24%	50%
Sacramento Municipal Utility District*	1,154.93	557.22	518.00	518.00	0.00	0.00%	48%	45%	93%
Shasta Lake	2.08	1.40	0.14	0.10	-0.04	-31.02%	67%	7%	10%
Silicon Valley Power*	80.55	59.54	29.82	29.80	-0.02	-0.07%	74%	37%	50%
Trinity	1.91	0.00	0.00	0.00	0.00	0.00	0%	0%	0%
Truckee Donner	4.23	2.48	1.13	1.10	-0.03	-2.77%	59%	27%	46%
Turlock Irrigation District*	58.00	35.00	16.00	16.40	0.40	2.50%	60%	28%	46%
Ukiah	2.83	2.05	0.22	0.30	0.08	38.70%	73%	8%	11%
Vernon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotals	**3,264.27**	**1,991.44**	**1,358.20**	**1,373.10**	**14.90**	**1.10%**	**61%**	**42%**	**68%**
Investor-Owned Utilities									
Pacific Gas & Electric	4,176.90	2,166.90	2,159.39	2,159.39	0.00	0.00%	52%	52%	100%
San Diego Gas & Electric	803.60	387.60	366.64	366.64	0.00	0.00%	48%	46%	95%
Southern California Edison	3,957.90	2,050.90	2,001.60	2,001.60	0.00	0.00%	52%	51%	98%
Subtotals	**8,938.40**	**4,605.40**	**4,527.63**	**4,527.63**	**0.00**	**0.00%**	**52%**	**51%**	**98%**
IOU and POU	**12,202.67**	**6,596.84**	**5,885.83**	**5,900.73**	**14.90**	**0.25%**	**54%**	**48%**	**89%**

* Identifies the Big 13 POUs.
PWRPA did not submit any projections for peak demand.
City of Industry and Vernon did not submit data during the AB 2021 process.

Source: Energy Commission staff work based on data contained in Appendix B.

Proposed Natural Gas Energy Savings Targets

Table 8 compares the natural gas savings targets for each utility to forecasted demand for natural gas, to the forecasted growth in natural gas demand for 2007 through 2016, and to a 10 percent savings relative to the 2016 baseline forecast. Even though not required by AB 2021, staff decided it was a useful comparison.

Table 8: Summary of Proposed Gas Savings Targets (2007-2016)

	Cumulative Proposed Natural Gas Savings Goals (MMth)		Forecasted Natural Gas Consumption (MMth)		10-yr Total Natural Gas Proposed Savings Goals (MMth)	% Reduction in 2016 Forecast	Savings as % of Growth	Reduction Needed to Meet 10% Target (MMth)	Difference between Planned Savings and 10% Target	
	2007	2016	2007	2016					(MMth)	(%)
Publicly Owned Utilities										
Palo Alto	-	0.93	31.1	32.4	0.9	2.9%	71%	3	(2)	-71%
Subtotals	**-**	**0.9**	**31.1**	**32.4**	**0.9**	**2.9%**	**71%**	**3**	**(2)**	-71%
Investor-Owned Utilities										
Pacific Gas & Electric	-	203.7	4,614	4,936	204	4.1%	63%	494	(290)	-59%
San Diego Gas & Electric	-	43.8	572	643	44	6.8%	62%	64	(21)	-32%
Southern California Gas Company	-	295.5	5,690	6,019	295	4.9%	90%	602	(306)	-51%
Subtotals	**-**	**543**	**10,876**	**11,598**	**543**	**4.7%**	**75%**	**1,160**	**(617)**	**-53%**
IOU and POU	**-**	**544**	**10,907**	**11,631**	**544**	**4.7%**	**75%**	**1,163.1**	**(619)**	**-53%**

MMth is million therms.

Source: Energy Commission staff work based on data contained in Appendix B.

Percentage of Forecasted Consumption in 2016 (Table 8)

The IOUs' savings represent 4.7 percent of the forecasted 2016 natural gas demand, while Palo Alto's savings, the only natural gas POU reporting, represents 2.9 percent. There is a modest variation among the utilities, ranging from a low of 2.9 to a high of 6.8 percent.

Percentage of Consumption Growth by 2016 (Table 8)

When the savings are compared to growth in natural gas consumption, there is greater substantial variation. The savings as a percentage of growth represent 75 percent for the IOUs, 71 percent for Palo Alto, and 75 percent for the combined utilities.

Ten Percent Reduction in Consumption by 2016 (Table 8)

AB 2021 establishes a target reduction of 10 percent compared to 2016 electricity consumption. Staff applied the same metric for natural gas. When compared to the target, the IOUs will fall short of that goal by 53 percent and Palo Alto will fall short by 71 percent. Combined, the IOUs and the POUs will reach 47 percent of the reduction target.

Percentage of Remaining Potential (Tables 8 and 9)

Comparing the amount needed for the IOUs to reach a 10 percent reduction target of 1,160 million therms (see Table 8), to the economic potential of 744 million therms shown in Table 9,

indicates that there is insufficient economic potential for the IOUs to reach a 10 percent reduction in natural gas consumption over 10 years. This observation needs to be tempered with the fact that the economic potential used for analysis in this report does not include the savings available from emerging technologies. According to the *2006 Itron* study, emerging technologies could provide another 547 million therms of savings, more than enough to reduce consumption in 2016 by 10 percent. Table 9 also shows that the savings as a percentage of economic potential ranges from 21 to 88 percent.

Table 9: Natural Gas Savings Targets Compared to Potential (2007-2016)

	Total Technical Potential (MMth)	Total Economic Potential (MMth)	Proposed Savings (MMth)	Economic as % of Technical	Proposed Savings as % of Technical	Proposed Savings as % of Economic
Publicly Owned Utilities						
Palo Alto	5.60	4.50	0.9	80%	17%	21%
Subtotals	**5.6**	**4.5**	**0.9**	**80%**	**17%**	**21%**
Investor-Owned Utilities						
Pacific Gas & Electric	666	355	204	53%	31%	57%
San Diego Gas & Electric	110	53	44	48%	40%	82%
Southern California Gas Company	852	336	295	39%	35%	88%
Subtotals	**1,628**	**744**	**543**	**46%**	**33%**	**73%**
IOU and POU	**1,634**	**749**	**544**	**46%**	**33%**	**73%**
Including Emerging Technologies	2,181	1,296	544	59%	25%	42%

MMth is million therms.

Source: Energy Commission staff work based on data contained in Appendix B.

Statewide Perspective

This section of the chapter examines the aggregated savings of the IOUs and the POUs, as groups of utilities and combined. The aggregated energy savings targets are compared to the forecasted consumption in 2016, to the forecasted growth by 2016, and to the remaining technical and economic potential.

Proposed Savings Targets as a Percentage of Forecasted Consumption and Forecasted Growth

The proposed savings targets relative to forecasted consumption over the next 10 years are summarized in Table 10. The consumption forecasts used for this table are from the California

Energy Commission 2007 Staff Draft forecast.[57] The proposed savings were aggregated from the individual utility data presented in Appendix B.

Table 10: Savings Targets Relative to Energy Consumption and Growth Forecasts

Electric Energy Consumption					
Utility Type	**Forecasted Electric Consumption in 2007 (GWh)**	**Forecasted Electric Consumption in 2016 (GWh)**	**Proposed Savings (GWh)**	**Proposed Savings as % of Forecasted Consumption in 2016**	**Proposed Savings as % of Forecasted Growth from 2007 to 2016**
IOU	192,582	212,969	21,266	10.0%	104%
POU	61,950	71,438	6,642	9.3%	70%
IOU and POU	**254,532**	**284,407**	**27,908**	**9.8%**	**93%**

Electric Peak Demand					
Utility Type	**Forecasted Electrical Demand in 2007 (MW)**	**Forecasted Electrical Demand in 2016 (MW)**	**Proposed Savings (MW)**	**Proposed Savings as % of Forecasted Peak Demand in 2016**	**Proposed Savings as % of Forecasted Growth from 2007 to 2016**
IOU	45,227	50,730	4,528	8.6%	79%
POU	14,875	17,320	1,353	7.8%	55%
IOU and POU	**60,102**	**68,050**	**5,880**	**8.4%**	**72%**

Natural Gas Consumption					
Utility Type	**Forecasted Natural Gas Consumption in 2007 (MMth)**	**Forecasted Natural Gas Consumption in 2016 (MMth)**	**Proposed Savings (MMth)**	**Proposed Savings as % of Forecasted Consumption in 2016**	**Proposed Savings as % of Forecasted Growth from 2007 to 2016**
IOU	10,876	11,598	543	4.7%	75%
POU	31.1	32.4	0.9	2.9%	71%
IOU and POU	**10,907**	**11,630**	**544**	**4.7%**	**75%**

Source: Energy Commission staff work based on data contained in Appendix B.

During this period, the proposed savings targets offset the majority of the forecasted growth in electricity and retail natural gas consumption between 2007 and 2016. The POUs' program savings targets meet 70 percent of the electricity consumption and 55 percent of the peak electrical demand growth for this period. The IOUs' programs savings are projected to more than offset (104 percent) the growth in electrical consumption and 79 percent of the peak demand growth. Combined, the savings targets will meet 93 percent of the growth in electricity consumption and 72 percent of the growth in peak demand. Since only one POU serves natural

[57] California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007.

gas end-use customers, the consumption of natural gas considered in this report is mainly by IOU customers. The proposed savings targets will reduce forecasted natural gas consumption by almost 5 percent in 2016 and will offset 75 percent of the growth between 2007 and 2016.

Proposed Savings Targets as a Percentage of Potential

This section compares the sum of the technical and economic potential estimates to the sum of the energy savings targets proposed by the POUs or set as targets by the CPUC for the IOUs.

The technical and economic potential estimates are contrasted with the proposed savings targets for the IOUs and the POUs in Table 11. As discussed in Chapter 2, the proposed savings and the technical and economic potential shown in this table cover 2009-2016, while for the POUs they cover 2007-2016. The IOUs expect to achieve 74 percent of the economic potential by 2016 for electricity consumption if they meet all of their annual savings targets, whereas the POUs proposed savings targets for the same period are equivalent to 63 percent of the economic potential. On a statewide basis, the combined IOUs and POUs expect to achieve 71 percent of the economically achievable savings if they can meet their 10-year electric energy savings targets.

Table 11: Summary of Utility Proposed Savings Targets and Potentials by 2016

Electric Energy Consumption						
Utility Type	**Technical Potential (GWh)**	**Economic Potential (GWh)**	**Proposed Savings (GWh)**	**Economic as % of Technical**	**Proposed Savings as % of Technical**	**Proposed Savings as % of Economic**
IOU	39,584	28,919	21,266	73%	54%	74%
POU	13,796	10,657	6,681	77%	48%	63%
IOU and POU	**53,380**	**39,576**	**27,946**	**74%**	**52%**	**71%**
Including Emerging Technology	65,861	52,057	27,946	79%	42%	54%

Electric Peak Demand						
Utility Type	**Technical Potential (MW)**	**Economic Potential (MW)**	**Proposed Savings (MW)**	**Economic as % of Technical**	**Proposed Savings as % of Technical**	**Proposed Savings as % of Economic**
IOU	8,938	4,605	4,528	52%	51%	98%
POU	3,264	1,991	1,358	61%	42%	68%
IOU and POU	**12,203**	**6,597**	**5,886**	**54%**	**48%**	**89%**
Including Emerging Technology	16,491	10,885	5,886	66%	36%	54%

Natural Gas Consumption						
Utility Type	**Technical Potential (MMth)**	**Economic Potential (MMth)**	**Proposed Savings (MMth)**	**Economic as % of Technical**	**Proposed Savings as % of Technical**	**Proposed Savings as % of Economic**
IOU	1,628	744	543	46%	33%	73%
POU	5.6	4.5	0.9	80%	17%	21%
IOU and POU	**1,634**	**749**	**544**	**46%**	**33%**	**73%**
Including Emerging Technology	2,181	1,296	544	59%	25%	42%

Source: Energy Commission staff work based on data contained in Appendix A. Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006 (*2006 Itron*) for the technical and economic potential of emerging technologies.

The lower percentage for the POUs relative to the IOU projections is attributable to multiple factors including the limitations in the method used to converting technical and economic potential estimates from the IOU efficiency potential study to the POU service areas (see Chapter 2), the less diverse customer base for most POUs, less experience with energy efficiency programs, the fact that a regulatory agency set the energy savings targets for the IOUs, and the differences in what each POU considered appropriate or cost-effective measures given their program cost structure and avoided costs estimates.

For peak demand, the IOUs are expecting to achieve 98 percent of the economic potential, while the POUs are projecting to achieve 68 percent. In part this is because IOUs placed more emphasis on achieving peak demand savings relative to base load energy savings in response to CPUC policy rules after the 2000-2001 energy crisis. Most of the difference may be linked to the way the POUs and IOUs estimated economic potential and selected 10-year savings targets. Combined, the IOUs and the POUs are expecting to achieve 89 percent of the economic potential for peak demand savings by 2016.

Natural gas efficiency programs capture a smaller percentage of the economic potential than the electric programs. The IOUs aim to achieve 73 percent of the economic potential and the POUs 21 percent. Since most natural gas consumption is by IOU customers, the combined percentage is also 73 percent of the economic potential.[58]

Summary

The wide range in estimates suggests that there may have been some methodological problems for RMI in converting the Itron estimates of potential savings to the POU service areas. Other problems may relate to the scope of programs considered. The studies of technical and economic potential consider only demand savings resulting from energy efficiency measures. Impacts from demand response and load management measures and programs are not included. The IOUs and large POUs have separate demand response programs, which provide additional coincident peak demand reductions.

[58] The natural gas consumption numbers in this report refer to retail end-use natural gas consumption – that is, natural gas used in electricity generation plants is excluded.

CHAPTER 5: STATEWIDE EFFICIENCY OPTIONS

Introduction

Chapter 4 aggregated the individual savings targets from each of the utilities to the statewide level and compared the impact of successfully achieving these goals on the service area forecasts and the statewide forecast of electricity and natural gas use. This chapter develops four statewide savings target options that were reviewed at the September 17, 2007, workshop, summarizes the comments related to these options from the workshop, and recommends a final option that responds to the comments of parties and to the direction from the IEPR Committee.

AB 2021 legislation requires the Energy Commission to develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas savings and establish statewide annual targets for energy savings to help achieve that goal over 10 years. The legislation also requires the Energy Commission to consider the information provided by the POUs and IOUs in deriving the statewide savings goal. Once a statewide target is adopted, the Energy Commission, the CPUC, the IOUs, and the POUs all have to work together to establish the criteria that will be used to evaluate progress toward both statewide and individual savings targets and to develop additional strategies to achieve the umbrella statewide goal if needed.

Criteria to Evaluate Statewide Efficiency Goal and Targets

This section provides a brief discussion of criteria staff initially used in developing an overall statewide energy savings target that is inclusive of utility and other programs. These criteria are consistent with the definitions noted in Chapter 3 for the terms used in the AB 2021 legislation.

> *Policy Context* – It is the intent of the Legislature in AB 2021 and SB 1037 that the IOUs and POUs procure all cost-effective energy efficiency savings. The legislation provides a guideline of reducing projected energy consumption by 10 percent in 10 years. In addition, there are other considerations mentioned in the AB 2021 legislation, most notably the impacts of energy efficiency on air quality and reduction of harmful greenhouse gas emissions.[59] This policy context will guide program funding allocations and program philosophy, for example, an emphasis on immediate peak demand reduction vs. avoiding lost opportunities over the long run.
>
> *Plausibility/Feasibility* – The plausibility of a statewide target is dependent on the plausibility of individual plans by all utilities and agencies to achieve their savings goals. Since utility targets are a significant portion of the overall statewide target, their proposed annual target trajectories or ramp-up rates must themselves be considered plausible. Plausible in this context means it is conceivable that each utility and other

[59] Executive Order S-3-05 by the Governor of the State of California, June 1, 2005.

entities can attract or commit the necessary staff and funding resources to achieve the proposed goals and that the numbers themselves look reasonable given recent historical efficiency program experience.

Motivation - A statewide efficiency target must have an impact on the level of savings achieved by individual utilities and other efficiency entities in the state. The Energy Commission should aim to set an energy savings goal that will motivate all utilities (POUs and IOUs) to achieve a significant increase in the level of electricity and natural gas savings beyond the levels currently achieved by their programs. In turn, the Energy Commission will appropriately recognize those utilities that actually achieve their goals at the service territory level.

Cost Effectiveness - AB 2021 requires that utilities pursue all potentially achievable cost-effective energy savings. As discussed in Chapter 2, cost-effectiveness is one of the key elements in the determination of economic potential. Therefore, by definition, all options are supposed to be cost-effective. However, it is important to recognize that not all utilities view the components of cost-effectiveness exactly the same way, nor do they have exactly the same numeric values for all inputs. These differing perspectives need to be addressed in future cycles of the AB 2021 process.

The draft staff report included a fifth criterion "margin of error". After considering the report comments, staff dropped this criterion because it is believed that while utilities should include a "margin of error" in designing their portfolios; it should not be in the target.[60]

Statewide Savings Goals

Staff developed and presented four statewide savings targets or options in the draft staff report that were discussed at a workshop held on September 17, 2007. These targets were based on the savings data provided by the utilities on achievable and cost-effective potential and the impact of these programs on forecasts of electricity consumption, peak demand, and natural gas consumption.

Option 1 – A statewide target based on CPUC Targets for IOUs/Proposed Targets for POUs: Set the statewide goal as the sum of the individual savings targets submitted by the POUs and IOUs. For the IOUs, continue progress on the targets set by the CPUC through 2013. After 2013, continue programs with the incremental savings equal to the 2013 target set by the CPUC in 2004. For the POUs, set targets at their proposed levels.

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[60] Devra Wang and Eric Wanless, Natural Resources Defense Council (NRDC), September 21, 2007, comments on *Statewide Energy Efficiency Potential Estimates and Targets for California Utilities, Draft Staff Report*, California Energy Commission, #200-2007-019-SD, September 2007.

Option 2 – Eighty Percent Economic Potential: Set the target at 80 percent of the combined economic potential for both the IOUs and the POUs.

Option 3 – Full Economic Potential: Set the target at meeting full economic potential as estimated by Itron and RMI for both IOUs and POUs. This is in line with policy established in SB 1037 and in AB 2021, which states that California's utilities should strive to capture all cost-effective potential. This would constitute a "stretch goal. "

Option 4 – Ten Percent Consumption Reduction: For both the IOUs and POUs combined, set the savings target to achieve a 10 percent reduction in electricity consumption by 2016. Even though not required by AB 2021, consider this same option for peak demand and for natural gas consumption.

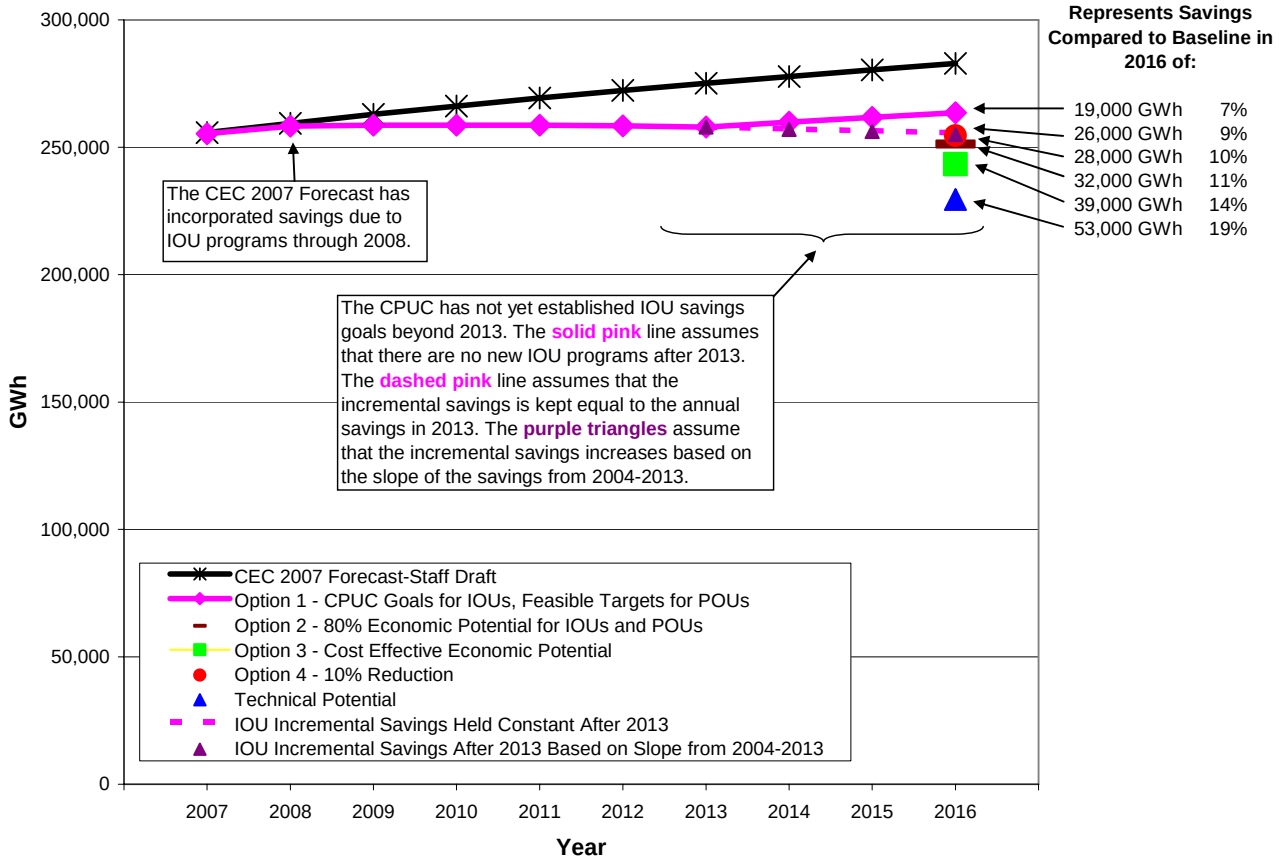
The following sections present the impact of adopting these on the forecasts of electric energy consumption (GWh), peak demand (MW), and natural gas consumption (million therms (MMth or 10^6 th)) for the IOU and POU areas.

Electric Energy Consumption and Peak Demand

Figure 32 illustrates the impact of the four different savings targets on reducing statewide electricity consumption. The top line shows the projected demand for electricity absent the effects of IOU or POU programs for 2007-2016 (2009-2016 for the IOUs). The solid pink line with diamonds (Option 1) shows the resulting statewide consumption if both the POUs and IOUs are successful in meeting the energy savings goals proposed to the Energy Commission and adopted by the CPUC (and extended at the incremental 2013 rate through 2016). The other lines and symbols on this graph show the potential impact of achieving the higher savings goal represented by the IOUs and POUs obtaining 80 percent of their economic potential (Option 2), IOUs and POUs achieving all cost-effective economic potential (Option 3), a 10 percent reduction in consumption in 2016 (Option 4) and, total technical potential (not presented as an option).

After the workshop, staff reexamined the IOU electricity savings projections beyond 2013. Staff decided it made more sense to continue the upward trend in annual energy and peak savings contained in the adopted goals from 2004 to 2013 rather than to assume the energy and peak savings would remain constant for 2014 to 2016. Figure 32 shows the additional savings (purple triangles) that would be obtained if the IOU savings goals for 2014 to 2016 continue to increase at the rates maintained over the prior 10 years. These incremental savings rates ranged from 2.2 percent per year for SDG&E to 4.5 percent per year for PG&E.

Figure 32: IOU and POU Electric Energy Consumption 2007-2016



Source: Energy Commission staff work based on data contained in Appendix B.

Adopting Option 1, the sum of the filed electricity savings targets from all POUs and the adopted targets for the IOUs, would achieve 71 percent of the identified cost-effective economic potential in the *2006 Itron* study.

Adopting Option 2, setting the statewide target to capture 80 percent of the economic potential, would increase the overall energy savings achieved from 28,000 GWh (Option1) to 32,000 GWh.

Adopting Option 3, setting the target so that the combined utilities achieve all of the cost-effective economic potential, would increase the overall savings level by 2016 from 28,000 GWh to 39,000 GWh, a 39 percent increase in overall savings.

Adopting Option 4, setting the target to achieve a 10 percent reduction in forecasted energy used, would provide savings of 28,000 GWh per year by 2016, which is by coincidence essentially the same as Option 1.

The economic and technical potential numbers shown in the graph do not include the potential for additional savings from emerging technologies. If these savings were included, economic and technical potential would each increase by more than 12,000 GWh (see Table 2). This means that there are more savings "in the bucket"[61] than has been considered thus far in the analysis. By their nature, the savings from emerging technologies are less certain than the savings from existing technologies. They do, however, provide an additional reserve of potential savings.

Figure 33 illustrates the potential impact on statewide peak demand of meeting different savings targets. The top line shows the projected peak demand for electricity absent the effects of IOU or POU programs for 2007-2016 (2009-2016 for the IOUs). The dashed line (Option 1) shows the resulting statewide peak demand if both the IOUs and POUs are successful in meeting the energy savings goals proposed to the Energy Commission and adopted by the CPUC (and extended at the incremental 2013 rate through 2016). The other symbols on this graph show the potential impact of achieving the higher savings goal represented by the IOUs and the POUs obtaining 80 percent of their economic potential (Option 2), IOUs and POUs capturing all cost-effective economic potential (Option 3), a 10 percent reduction compared to 2016 (Option 4), and total technical potential (not presented as an option).

After the workshop, staff reexamined the IOU peak demand savings projections beyond 2013. Figure 33 shows the additional savings (purple triangles) that could be achieved based on the slope of the savings identified in the CPUC decision from 2004 to 2013.

Adopting Option 1, the sum of the filed peak demand savings targets from all POUs and the adopted targets for the IOUs would achieve 89 percent of the cost-effective economic potential in the *2006 Itron* study.

Adopting Option 2, setting the statewide target to capture 80 percent of the economic potential would increase the overall energy savings achieved from 4,000 MW (Option 1) to 5,300 MW.

Adopting Option 3, setting the statewide target so that the combined utilities achieve all of the cost-effective economic potential would increase the peak demand savings to 6,600 MW.

Adopting Option 4, setting the target to achieve a 10 percent reduction in forecasted peak demand would provide savings of 6,800 MW per year by 2016.

As discussed above, the economic and technical potential numbers shown in the graph do not include the potential electricity or natural gas savings from emerging technologies. If these savings were included, estimates of economic and technical potential would each increase by more than 4,000 MW (See Table 2).

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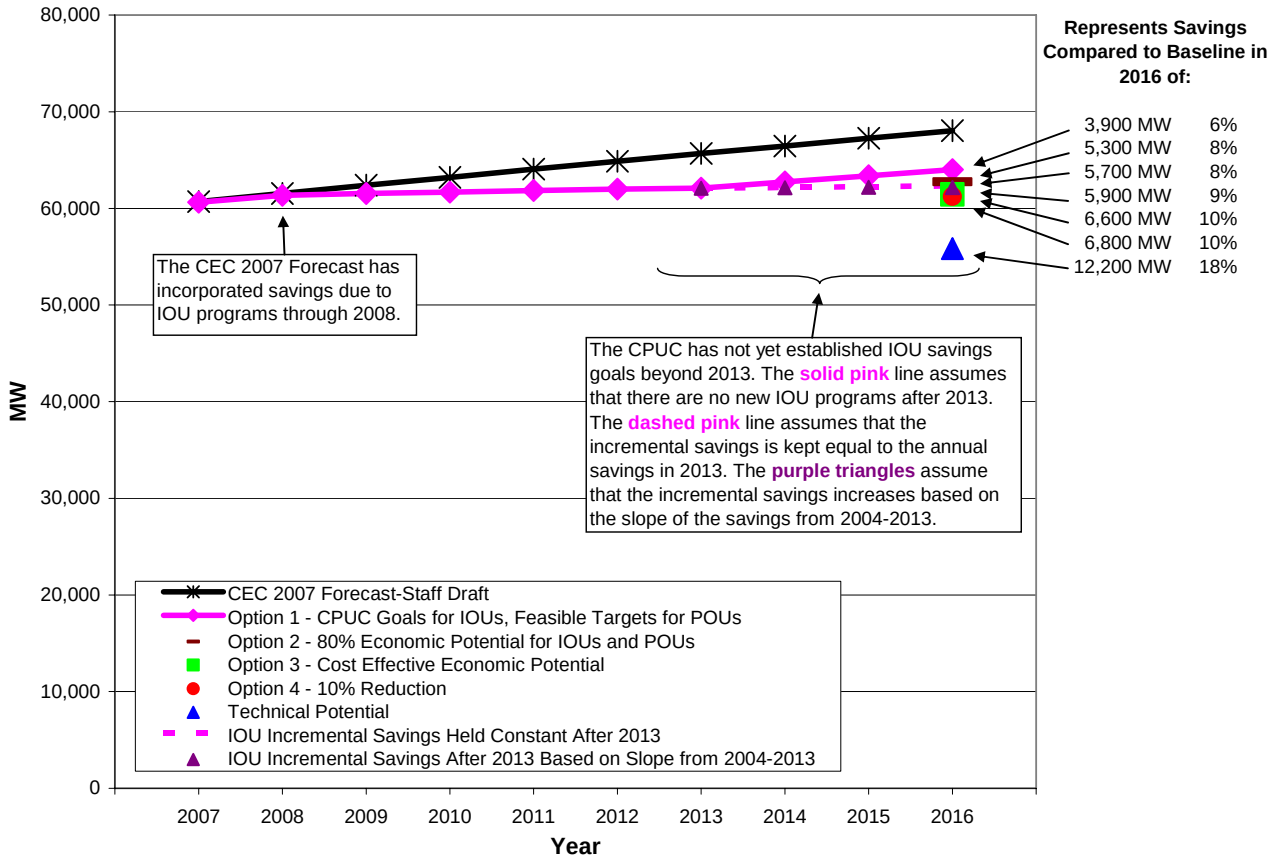
[61] Description of economic and technical potential provided by Karl Knapp with the City of Palo Alto Utilities in a phone conversation with Commission staff member Gary Klein on July 12, 2007.

Figure 33: IOU and POU Peak Electric Demand 2007-2016



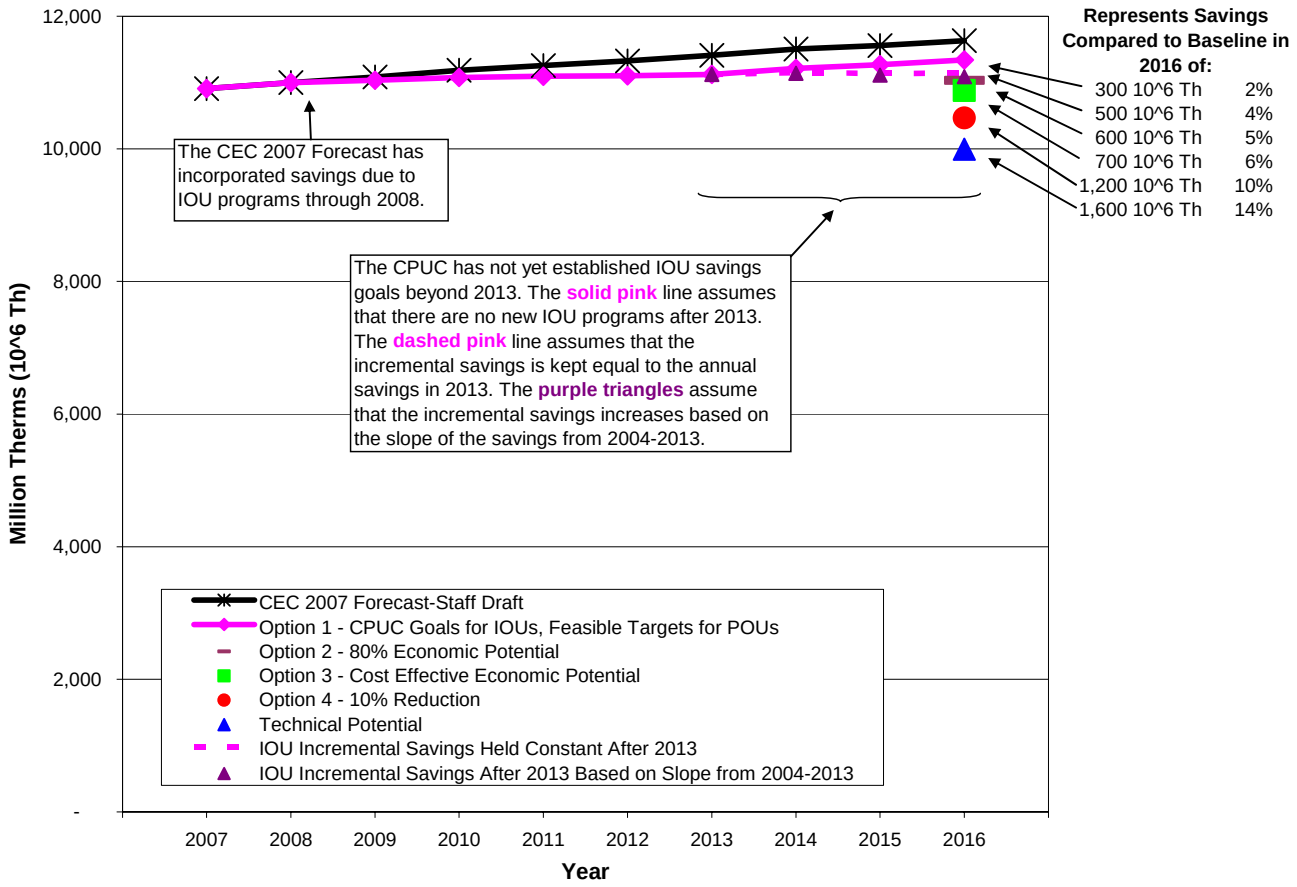
Source: Energy Commission staff work based on data contained in Appendix B.

Natural Gas Consumption

Figure 34 illustrates the potential impact on statewide natural gas consumption of meeting different savings targets. The top line shows the projected demand for natural gas absent the effects of IOU or POU programs for 2007-2016 (2009-2016 for the IOUs). The dashed pink line (Option 1) shows the resulting statewide consumption if both the IOUs and POUs are successful in meeting the energy savings goals proposed to the Energy Commission and adopted by the CPUC (and extended at the incremental 2013 rate through 2016), respectively. The other symbols on this graph show the potential impact of achieving the higher savings goal represented as the POUs obtaining 80 percent of their economic potential (Option 2), IOUs and POUs capturing all cost-effective economic potential (Option 3), a 10 percent reduction compared to 2016 (Option 4), and total technical potential (not presented as an option).

After the workshop, staff reexamined the IOU natural gas savings projections beyond 2013. Figure 34 shows the additional savings (purple triangles) that could be achieved based on the assumption that the incremental savings increases based on the slope of the savings identified in the CPUC decision from 2004 to 2013.

Figure 34: IOU and POU Natural Gas Consumption 2007-2016



Source: Energy Commission staff work based on data contained in Appendix B.

Adopting Option 1, the sum of the filed natural gas savings targets from Palo Alto and the adopted targets for the IOUs would achieve 73 percent of the cost-effective economic potential identified in the *2006 Itron* study.

Adopting Option 2, setting the statewide target to capture 80 percent of the economic potential would increase the overall energy savings achieved from 300 million therms (Option1) to 600 million therms.

Adopting Option 3, setting the target so that the combined utilities achieve all of the cost-effective economic potential would increase the overall savings level by 2016 from 300 million to 750 million therms, a 260 percent increase in overall savings.

Adopting Option 4, setting the target to achieve a 10 percent reduction in forecasted energy used would provide savings of 1,200 million therms per year by 2016, an amount larger than economic potential, excluding the savings from emerging technology.

The economic and technical potential numbers shown in the graph do not include the savings from emerging technologies. If these savings were included, both economic and technical potential would increase by more than 500 million therms (See Table 2).

Summary of Comments Received on Staff's Originally Proposed Statewide Savings Target

None of the parties who provided comments supported the staff draft report's recommendation to set a statewide savings target at 80 percent of the economic potential. All of the parties considered this savings level too high for a variety of reasons. Different rationales were provided including:

1. The Itron study estimated that the achievable potential from programs was somewhere between 45 and 50 percent of economic potential.
2. The POUs' estimates of achievable potential were considered superior to the RMI potential estimates because they considered unique local conditions that resulted in a downward adjustment of the level of savings considered feasible.
3. The definition of economic potential used by Itron and RMI does not include several constraints to the deployment of programs, including the limits of utility marketing, potential saturation of delivery channels, and the fact that some customers are not likely to participate in utility programs.

NCPA and some of the POUs recommended that the Commission adopt Option 1, which is simply the sum of the individual targets submitted by the POUs or the targets adopted by the CPUC. NRDC supported summing the POU proposed targets, but suggested increasing the targets of any utility with low targets to at least 50 percent of economic potential or 1 percent annual savings as a percent of sales. Summaries of comments by parties and staff responses are in Appendix D.

Additional Achievable Energy and Peak Savings

At the AB 2021 workshop, some parties and Committee members suggested that staff investigate the potential energy savings that could be achieved from local initiatives or program designs. The potential savings from these programs were not included in the utility filings

because they are not likely to be delivered as utility programs. The IEPR Committee recommends that the Energy Commission, the CPUC, the POUs and IOUs work with other organizations to make up the gap between the expected savings from the established utility programs and the economic potential. These savings could be considered additional savings above the savings from utility program and be part of the state's stretch goal of "potentially achievable and cost-effective" savings called for in the legislation.[62]

Staff developed a list of programs that could be delivered outside of normal utility channels by local governments or the Legislature. Promising candidate programs included in the AB 549 report included Time-of-Sale Information Disclosure, Benchmarking of Commercial Buildings, and Mandatory Equipment Tune-ups.[63] In addition, staff has provided an estimate of the potential savings from time-of-sale mandatory retrofit regulations for measures with payback of less than five years.

The mandatory retrofit ordinance uses the assumptions developed in the previous AB 549 report to estimate the number of residential sales made per year, but increases the fraction of the cost-effective measures adopted by customers from 20 to 70 percent used for the time-of-sale disclosure program to a measure penetration of 70 to 90 percent that could be expected from a mandatory retrofit at time-of-sale ordinance. Staff assumed these efforts would not get off the ground until the beginning of 2009 and ramp up to full target population by 2011. The resulting potential cumulative savings are equivalent to roughly 2,000 GWh, 138 MW, and 140 MMTh per year by 2016 as illustrated in Table 12. This level of cumulative savings is roughly 40 percent of the POU cumulative energy savings resulting from the POU programs for the same year.[64].

Staff hopes that local governments and other entities will consider adopting some or all of these programs at the local level to increase the level of savings achieved over and above the level of savings the POUs and IOUs have committed to pursue. The authors note that additional savings could be achieved.

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[62] The staff did not include future federal and state building and appliance standards in this discussion of new alternative program designs. However, the efficiency savings contribution from future standards will certainly help fill the efficiency gap between utility programs and full economic potential.

[63] These programs were previously discussed and analyzed in the California Energy Commission's AB 549 report, Options for Energy Efficiency in Existing Buildings. (CEC-400-2005-039-CMF, December 2005)

[64] This calculation assumes that all of these programs were to get started by 2009 and gradually ramp up to the participation rates of 20 percent for commercial benchmarking, 50 percent for equipment tune-ups and recommended measures at the time-of-sale, and 90 percent penetration by 2016 for the mandatory retrofit ordinance for all cost-effective measures with a payback of five years or less.

Table 12: Estimated Energy Savings from Additional Efficiency Initiatives

	2009	2010	2011	2012	2013	2014	2015	2016
Electricity	**GWh**	**GWh**	**GWh**	**GWh**	**GWh**	**GWh**	**GWh**	**GWh**
Identified Mechanisms								
First Year Savings	59	123	178	226	289	340	401	474
Cumulative Savings	59	182	360	586	874	1,214	1,615	2,089
Mechanisms Not Yet Identified								
First Year Savings	1,399	1,336	1,281	1,233	1,170	1,119	1,058	985
Cumulative Savings	1,399	2,735	4,015	5,248	6,418	7,537	8,595	9,579
Peak Demand	**MW**	**MW**	**MW**	**MW**	**MW**	**MW**	**MW**	**MW**
Identified Mechanisms								
First Year Savings	32	53	67	80	97	111	128	148
Cumulative Savings	32	85	152	232	329	440	568	716
Natural Gas	**MMTh**	**MMTh**	**MMTh**	**MMTh**	**MMTh**	**MMTh**	**MMTh**	**MMTh**
Identified Mechanisms								
First Year Savings	6	9	12	15	19	22	25	29
Cumulative Savings	6	16	28	43	62	83	108	138
Mechanisms Not Yet Identified								
First Year Savings	8	8	8	8	8	8	8	8
Cumulative Savings	8	17	25	34	42	51	59	68

Source: Energy Commission staff work based on data contained in the California Energy Commission's AB 549 report, *Options for Energy Efficiency in Existing Buildings*. (CEC-400-2005-039-CMF, December 2005).

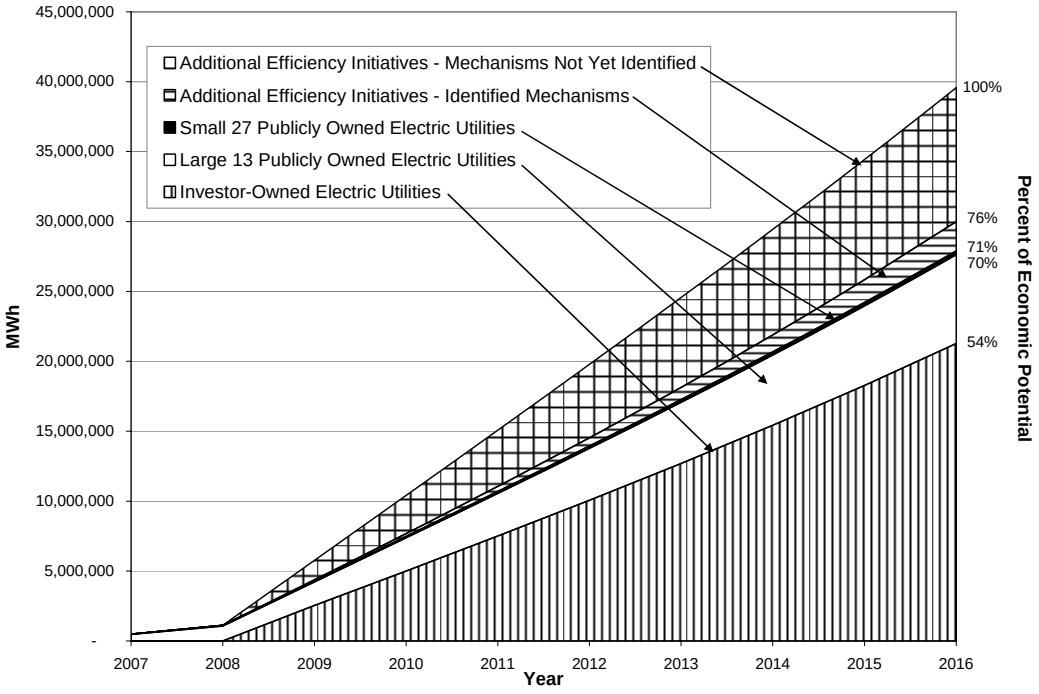
Figures 35, 36, and 37 show the effect of adding the additional savings from these non-utility initiatives to the cumulative savings levels already aggregated from the IOU and POU filings for electricity, peak demand, and natural gas savings, respectively. The data in these three figures combines the savings presented in Chapter 4 with the savings presented in Table 12.

Figure 35 suggests that adding the savings from these additional initiatives would increase the level of economic potential captured from 71 to 76 percent. Adopting this higher statewide savings goal would also provide a strong signal to local governments that the state encourages them to adopt local ordinances to supplement the savings expected from the state's utilities.

Figure 36 shows a similar incremental effect from adding the savings from these new initiatives. The figure suggests that the state's utilities expect to capture roughly 89 percent of the economic potential to reduce peak demand on their own, and the additional saving from these initiatives could increase this total to 99 percent of the economic potential estimates.

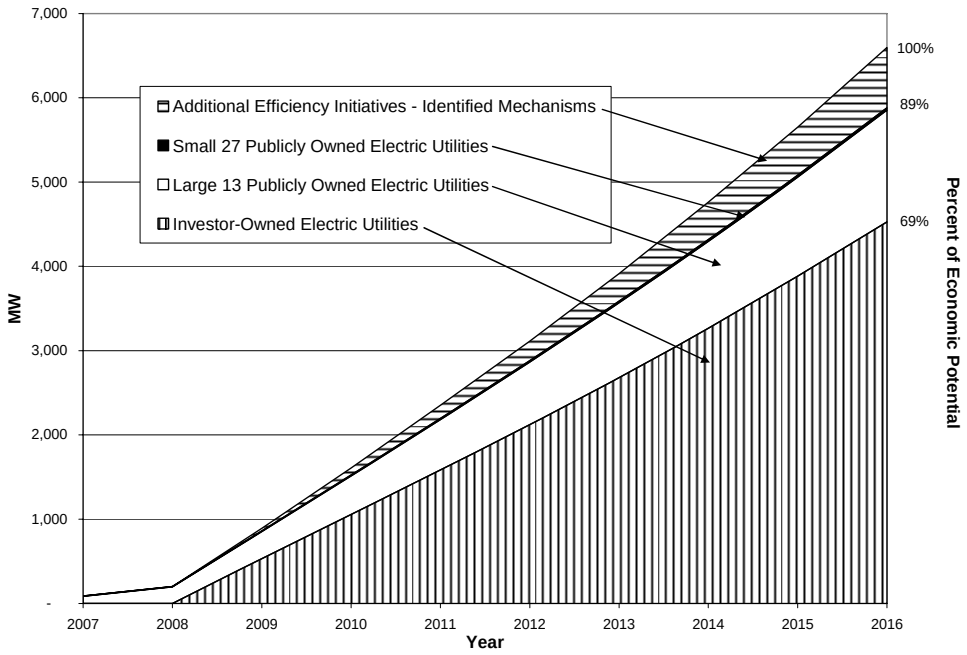
Figure 37 shows a similar incremental effect from adding the gas savings from these new initiatives. The figure suggests that the state's utilities expect to capture roughly 73 percent of the economic potential to reduce natural gas consumption through their programs, and the additional savings from these initiatives could increase this total to 91 percent of the economic potential estimates.

Figure 35: Cumulative Electricity Savings from Proposed Utility Programs and Additional Efficiency Initiatives



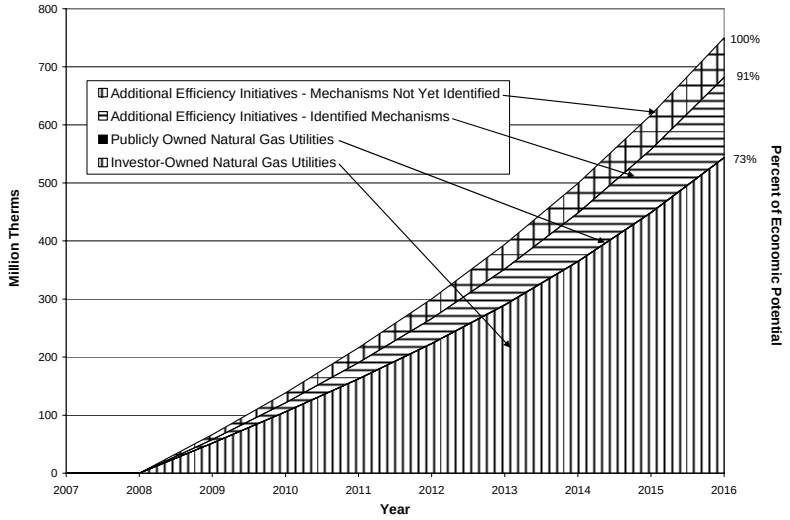
Source: Energy Commission staff work based on the savings data presented in Chapter 4 and in Table 12.

Figure 36: Cumulative Peak Demand Savings from Proposed Utility Programs and Additional Efficiency Initiatives



Source: Energy Commission staff work based on the savings data presented in Chapter 4 and in Table 12.

Figure 37: Cumulative Natural Gas Savings from Proposed Utility Programs and Additional Efficiency Initiatives



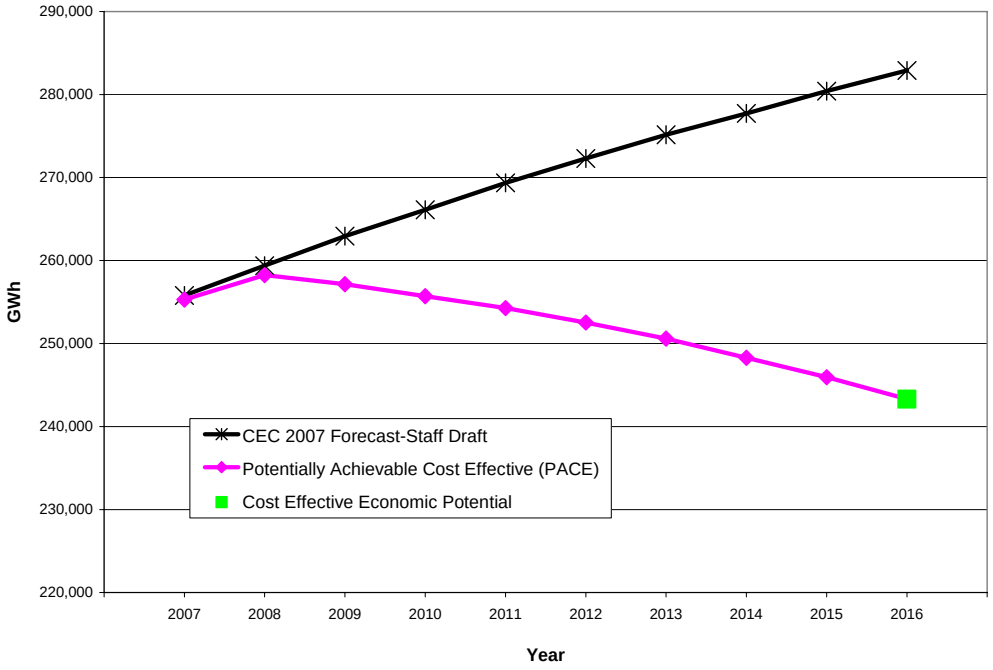
Source: Energy Commission staff work based on the savings data presented in Chapter 4 and in Table 12.

Summary: The Impact of Achieving Option 3

The Energy Commission has adopted Option 3, aiming to achieve 100 percent of the economic potential for saving electricity and natural gas over the next decade. Achieving this goal would result in statewide energy savings equivalent to savings of 39,500 GWh, 6,600 MW, and 750 million therms per year by 2016. By adopting Option 3, the Energy Commission is calling for the acquisition of all potentially achievable cost-effective energy (PACE) savings over the next decade. Figures 38, 39, and 40 present the impact of achieving these statewide energy savings on the baseline forecast of electricity consumption, peak demand, and natural gas usage. The data in these three figures is based on information contained in Appendix B.

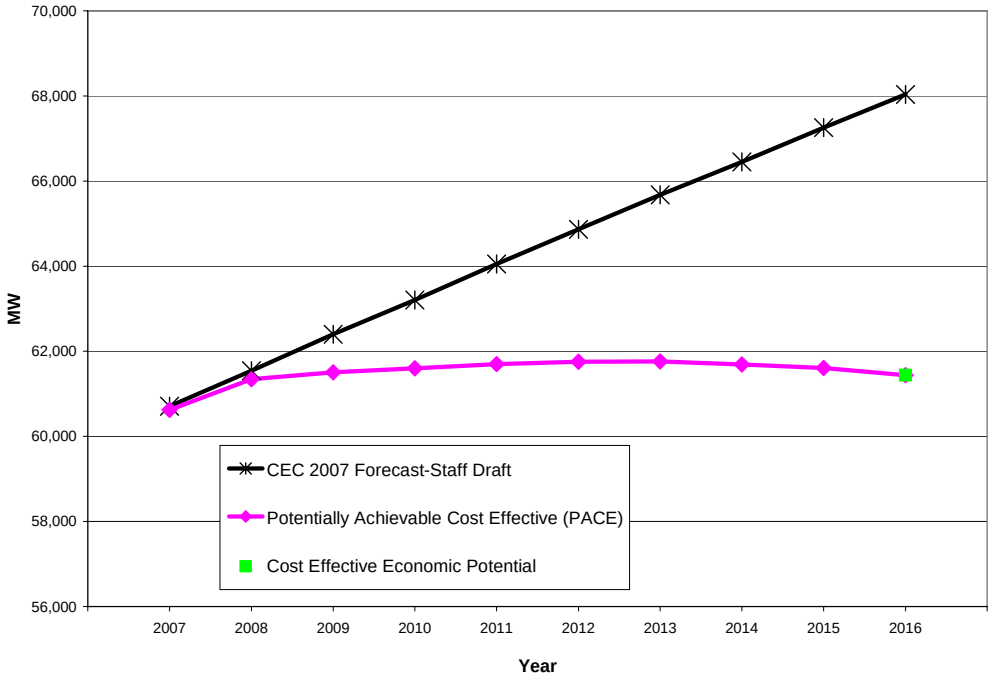
Achievement of these goals will reduce projected electricity consumption in 2016 to below 2007 levels, stabilize peak demand at roughly 61,000 MW, and result in no net increase in natural gas consumption from 2007 to 2016.

Figure 38: PACE-Electricity Compared to Forecast and Economic Potential



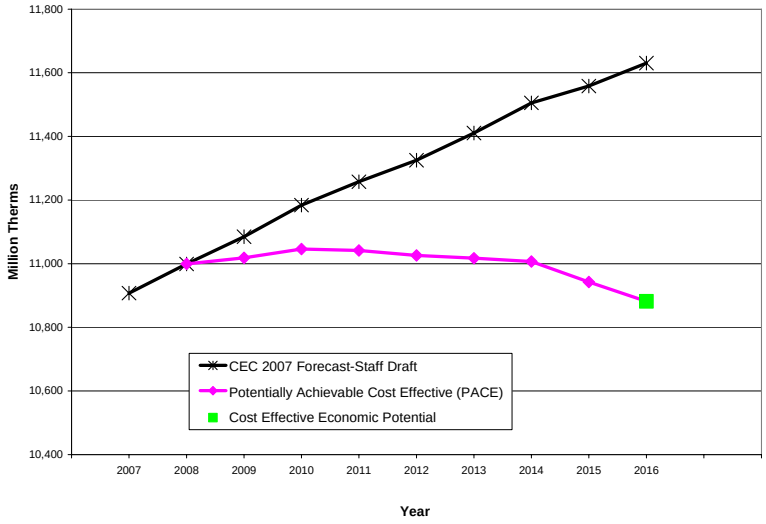
Source: Energy Commission staff work based on data contained in Appendix B and Tables 13, 14, and 15.

Figure 39: PACE-Peak Demand Compared to Forecast and Economic Potential



Source: Energy Commission staff work based on data contained in Appendix B and Tables 13, 14, and 15.

Figure 40: PACE-Natural Gas Compared to Forecast and Economic Potential



Source: Energy Commission staff work based on data contained in Appendix B and Tables 13, 14, and 15.

CHAPTER 6: RECOMMENDATIONS AND NEXT STEPS

Recommended Statewide Efficiency Goal and Annual Targets

The staff recommends that the Energy Commission adopt the IEPR Committee's proposed Option 3 as the statewide energy and peak savings goal for all California utilities to pursue over the next decade. Pursuit of this goal is consistent with AB 2021 requiring the Commission to "identify all potentially achievable cost-effective electricity efficiency savings and then establish annual savings targets for the next 10-year period." Table 16 shows the cumulative energy savings that will need to be achieved by the IOUs and POUs to reach this ambitious goal of capturing all economic savings.

Table 13: Summary of IOU and POU Economic Potential and Savings Targets

	Electric Energy Consumption			Electric Peak Demand			Natural Gas Consumption		
	100% Economic Potential (GWh) through 2016	Proposed Savings (GWh) through 2016	Additional Efficiency Savings Needed to Reach Economic Potential (GWh) through 2016	100% Economic Potential (MW) through 2016	Proposed Savings (MW) through 2016	Additional Efficiency Savings Needed to Reach Economic Potential (MW) through 2016	100% Economic Potential (MMth) through 2016	Proposed Savings (MMth) through 2016	Additional Efficiency Savings Needed to Reach Economic Potential (MMth) through 2016
IOU	28,919	21,266	7,653	4,605	4,528	77	744	543	201
POU	10,657	6,642	4,015	1,991	1,353	638	4.5	0.9	4
IOU and POU	**39,576**	**27,908**	**11,668**	**6,596**	**5,881**	**715**	**749**	**544**	**205**

This goal will require utilities to pursue energy savings above their forecast of energy and peak savings from their programs. Staff proposes to work with POUs to identify new mechanisms or cooperative agreements with other parties to achieve these savings during the coming months. This chapter also outlines staff's plans to help improve and standardize the reporting process that will be used to verify the actual energy savings achieved from these programs and compare them to the forecast of energy and peak savings as required by AB 2021.

Staff plans to keep a careful record of each utility's forecast of annual program savings versus the actual level of savings verified in the next three years to keep the Energy Commission current on progress toward its goals. It may be appropriate to convert the cumulative energy savings goal adopted for each utility area into annual savings targets to facilitate comparison with program and non-program efforts in the early years. Staff will produce a draft of these annual savings targets at the service territory level and work with utility to achieve consensus on the conversions.

Staff plans to develop a common understanding of the terms reliable and feasible and other terms during the next set of analyses called for in AB 2021, which are due by March 2008. In those analyses, the Energy Commission must compare the actual level of verified energy savings to the annual savings targets adopted by the Energy Commission. Reaching agreement

on a common definition of these terms will be important in assessing the feasibility and reliability of future program energy savings forecasts.

Next Steps to Improve the Evaluation and Planning Process Over the Next Three-Year Cycle

The POUs have made considerable progress in developing estimates of the economic potential to save energy and using this information to develop estimates of feasible efficiency program savings targets. The results of this process exceeded Energy Commission staff's initial expectations. Three years ago, it would have been hard to believe that the POUs would not only be reporting the energy and peak savings results of their efficiency programs but also developing proposed savings targets over the next 10 years. This is a huge step forward for the POUs and their customers.

The Energy Commission's challenge is to build on this progress by helping to develop a process that will stimulate new program designs, track program activity, verify the savings actually achieved, and use this information to improve the forecasts of program savings and program development. The Energy Commission needs to develop an approach that encourages each utility to strive toward both the statewide target and its individual service area targets, and that provides its board and the Energy Commission with useful information on what has been achieved.

To continue making progress toward achieving the statewide energy savings goal, staff plans to work with the POUs in three crucial areas:

1. The purpose and use of setting energy savings targets.
2. Improving the monitoring, verification, and evaluation process.
3. Improving the next planning cycle used to identify potentially achievable savings and establish annual savings targets.

Next Steps 1 – The Purpose and Use of Setting Energy Savings Targets

What is the purpose of setting an energy savings target? Is it to provide motivation for program managers to expand existing programs or develop new ones? is the primary purpose to send a signal to resource planning managers that they need to procure additional efficiency savings to displace the need to procure carbon-intensive supply resources? Or is there a desire to hold POU management accountable to demonstrate that their programs have met or exceeded a precise set of energy and peak savings targets and thus provide a measure of overall program performance?

All of these perspectives may be needed. The ultimate goal is to reduce electric and natural gas consumption to displace the need to procure additional reliable energy supplies in a carbon

constrained world. Energy efficiency is generally the cheapest, fastest way to accomplish this, but the energy savings forecast must be verified and shown to be reliable so it can be counted on in a procurement process. The targets must ultimately be translated into real resources, "negawatt-hours and negawatts," that can be counted on in utilities' resource plans. Evaluation, measurement, and verification must be effective, lessening the gap between the ideal and real efficiency resources.

Staff plans to use the newly adopted targets as a motivational aid to help mobilize the resources needed to develop new program designs to go beyond the current generation of designs and as a gross indicator of progress being made toward the decade long goal of capturing all economic potential. In addition, staff plans to use the annual saving targets as a means of keeping track of any progress made toward the service area and statewide savings goals annually. This will be accomplished by annually informing the Energy Commission of the level of program savings that have been verified and comparing them to the previous years' forecast of savings and how this compares to the annual savings targets that need to be captured to achieve all cost-effective potential. However, staff intends that this reporting process will be consistent with the level of precision justified by the criterion to date. In other words, if a utility comes within plus or minus 20 percent of meeting its first annual savings goal, this will be sufficient for staff as grounds for concluding the utility is making reasonable progress (in Chapter 3).

To help bridge the gap between the level of energy savings forecast by the POUs and the savings targets adopted by the Energy Commission, staff plans to initiate a collaborative program planning process. This process will be designed to provide POUs with additional information on program designs that have been successful outside California and to provide a forum to discuss opportunities for developing joint programs to minimize the cost and burden on smaller utilities. Additional topics to explore include:

1. Innovative and "non-traditional" efficiency programs at quarterly workshops or in newsletters.
2. Fiscal or programmatic ways to promote the commercialization of emerging energy efficiency technologies.
3. Partnerships to increase the level of public education, advertising, and outreach to trade allies, which can lead to long-term savings.
4. Encouraging local governments to design their own energy codes and standards that go beyond Titles 20 and 24.
5. Working with the Energy Commission to achieve additional savings through the adoption of new building and appliance standards.
6. Encouraging local governments to enact ordinances to establish a "time-of-sale" home energy efficiency audit. These audits would require that any single-family home or multi-family housing meet a minimum energy efficiency level at the time-of-sale. Any

energy efficiency deficits that were found would need to be corrected before transfer of title occurred. A similar ordinance could be enacted for existing home retrofits or major remodels. The costs of these energy efficiency measures could be financed as part of the mortgage.

7. Funding research to identify the factors that lead to successful expansion of POU program savings. This may also include discussion of different methods to decouple the effects of saving electricity from reducing the gross electricity revenues needed to support POU and or local budgets. This effort could begin as a quarterly newsletter with Energy Commission and POU staff as contributors.

Next Steps 2 – Improving the Evaluation, Measurement, and Verification (EM&V) Process

The Energy Commission will pursue two types of initiatives to help the POUs achieve their savings goals over the next six months.

Verifying Annual Program Savings for FY 2006/2007

Staff plans to hold workshops to discuss and help define the process that POUs intend to use to produce independent verification of their program savings for fiscal year 2006/2007 in their March 2008 annual program saving report. This will include discussion of how and when the Energy Commission staff will review interim or final products and the level of review envisioned.

Workshop on Tracking Systems, Verification of Installations, and Reporting Program Savings

Staff plans to work with the POUs to explore the development of better program tracking systems so that POU customers and the Energy Commission can ascertain if POUs are on track to meet their savings goals. Staff plans to explore the establishment of an online tracking/reporting system where the POUs can input the energy savings from their internal tracking systems monthly or quarterly. This would enable the customer/owners of the POUs to look at the website and track progress against each utility's targets.

Staff would also like to help improve the overall evaluation planning approach if the POUs are willing and interested. This will include development of a consensus approach to decide what type and level of independent verification of measure installations may be needed, determination of how often to review the *ex ante* savings estimates in the E3 tool, and agreement on the process that might be used to review the energy and peak program savings estimates contained in the annual program savings reports. Staff believes it is important to discuss how and when Energy Commission staff or independent contractors will be involved in this process before the final program savings reports are completed.

Next Steps 3 – Improving the Next AB 2021 Forecasting and Planning Cycle

AB 32 will require that significantly more energy efficiency be captured by both IOUs and POUs. The Energy Commission has the responsibility for estimating statewide potential, assessing statewide targets, and evaluating POU results under AB 2021. The Energy Commission's role should be to make it more likely that each POU can meet its adopted goal and increase its goals by the next AB 2021 cycle in 2010.

To accomplish this, the Energy Commission needs to establish a common understanding of:

- All terms used to guide the development of feasible program saving forecasts. This includes defining the terms "reliable and feasible program savings" and "potentially achievable savings." The goal is to have consensus definitions before the forecasting of program savings begins to minimize misunderstanding or miscommunication.
- The forecast (Energy Commission or local POU) that will be used to assess the impact of achieving additional program savings to minimize misunderstanding or miscommunication.
- The metrics that will be used to evaluate the relative success of the POUs' efforts in achieving targets – that is, annual energy savings achieved as a percentage of electricity sales, annual savings as a percentage of annual target, and so forth.

The Energy Commission also needs to work with POUs to understand the process and data they used to develop annual program savings targets over a 10-year period. Staff plans to work with each POU to:

- Give the Energy Commission a better idea of their rationale and mechanisms for developing program savings targets and budgets, which may lay the groundwork for potentially expanding their targets next time.
- Understand the constraints each POU encountered that made it difficult to provide either short-term or long-term forecasts of program savings and to work with each to reduce or eliminate these constraints.
- Understand the underlying components of each utility's determination of program level and portfolio cost effectiveness.

All participants in this year's process recognized that the compressed time frame was not optimal. Energy Commission staff will work with all parties to establish a more reasonable timeline for the next cycle, which nominally has the POUs submitting their target numbers by June 1, 2009. The POUs should strive to provide a justification for the specific annual savings targets. Was the target level adopted based on a consideration of the feasible level of budget increases, staffing levels, cost effectiveness, or some other factors? This should include an

explanation of any changes that were made to the assumptions used in the cost effectiveness tests, especially for their avoided costs and discount rates specific to their utility.

After the POUs have turned in target numbers, Energy Commission staff needs to:

- Prepare preliminary tables and graphs illustrating the impacts of these targets on energy and peak forecasts and then send them to each POU for review and comment.
- Provide each POU with a draft critique or review of its annual targets and justifications.
- Schedule appointments to go over these preliminary tables and graphs and justifications with each POU to ensure all the data are accurate before final numbers and support are submitted.

Summary

Pursuit of the steps outlined above should improve the Energy Commission's understanding of the real world constraints faced by all of the energy efficiency program managers involved in this process, improve the credibility and accuracy of the program savings targets, and increase the probability that the staff and POUs working together can achieve the adopted energy and peak savings targets.

APPENDIX A

Assembly Bill 2021
(Levine, Chapter 734, Statutes of 2006)

Assembly Bill No. 2021

CHAPTER 734

An act to add Section 25310 to the Public Resources Code, and to amend Section 9615 of the Public Utilities Code, relating to energy efficiency.

[Approved by Governor September 29, 2006. Filed with Secretary of State September 29, 2006.]

LEGISLATIVE COUNSEL'S DIGEST

AB 2021, Levine. Public utilities: energy efficiency.

(1) The Warren-Alquist State Energy Resources Conservation and Development Act establishes the State Energy Resources Conservation and Development Commission (Energy Commission) and requires it to prepare an integrated energy policy report on or before November 1, 2003, and every 2 years thereafter. Under that act, the Energy Commission also administers existing law with respect to energy conservation.

Existing law authorizes the Public Utilities Commission to regulate public utilities, including electrical and gas corporations. The Public Utilities Act requires the commission to review and adopt a procurement plan for each electrical corporation. Under existing law, the commission, in consultation with the Energy Commission, is required to identify all potentially achievable cost-effective electricity efficiency savings and to establish efficiency targets for an electrical corporation to achieve pursuant to its procurement plan. Existing law requires that an electrical corporation's procurement plan include a showing that the electrical corporation will first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible. Existing law requires the commission, in consultation with the Energy Commission, to identify all potentially achievable cost-effective natural gas efficiency savings and to establish efficiency targets for the gas corporation to achieve these targets and to require that a gas corporation first meet its unmet gas resource needs through all available natural gas efficiency and demand reduction resources that are cost effective, reliable, and feasible.

This bill would require the Energy Commission, on or before November 1, 2007, and every 3 years thereafter, in consultation with the commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, to develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish statewide annual targets for energy efficiency savings and demand reduction over 10 years. The bill would require the commission to base its estimate at least in part on the most recent targets

established by the commission and local publicly owned electric utilities. The bill would require the Energy Commission to include in the integrated energy policy report, for each electrical corporation and each gas corporation, a comparison of the public utility's annual energy efficiency targets, and the public utility's actual energy efficiency savings and demand reductions.

(2) The bill would require the Energy Commission to investigate options and develop a plan to improve the energy efficiency of, and to decrease the peak electricity demand of, air-conditioners in the state. The bill would require the Energy Commission, on or before January 1, 2008, to prepare and submit to the Legislature a report on that plan.

(3) Existing law requires each local publicly owned electric utility, in procuring energy, to first acquire all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible. Existing law requires each local publicly owned electric utility to report annually to its customers and to the Energy Commission, its investment in energy efficiency and demand reduction programs, as specified.

This bill would require a local publicly owned electric utility, on or before June 1, 2007, and every 3 years thereafter, to identify all potentially achievable cost-effective electricity efficiency savings and to establish annual targets for energy efficiency savings and demand reduction over 10 years. The bill would require a local publicly owned electric utility to report those targets to the Energy Commission within 60 days of the date of adoption. The bill would require an annual report by a local publicly owned electric utility to its customers and the Energy Commission on its investments, programs, expenditures, cost-effectiveness, and results, as prescribed. The bill would also require an annual report to the Energy Commission on investment funding, cost-effectiveness methodologies, and an independent evaluation. The bill would require the Energy Commission to include a summary of the information reported by local publicly owned electric utilities and a comparison of each utility's energy efficiency targets and actual results in the integrated energy policy report. The bill would require the Energy Commission, if it determines that improvements can be made in setting or meeting annual targets, to provide recommendations to the local publicly owned electric utility, the Legislature, and the Governor on those improvements. The bill, by establishing new requirements for local publicly owned electric utilities, would create a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. (a) In order to ensure that prudent investments in energy efficiency continue to be made that produce cost-effective energy savings, reduce customer demand, reduce overall system costs, increase reliability, and increase public health and environmental benefits, it is the intent of the Legislature that all load-serving entities procure all cost-effective energy efficiency measures so that the state can meet the goal of reducing total forecasted electrical consumption by 10 percent over the next 10 years.

(b) Expanding California's energy efficiency programs will promote lower energy bills, protect public health, improve environmental quality, stimulate sustainable economic development, create new employment opportunities, and reduce reliance on imported fuels.

(c) Expanding California's energy efficiency programs will ameliorate air quality problems throughout the state and will also reduce harmful greenhouse gas emissions.

(d) The energy savings achieved through the enactment of this act are an essential component of the state's plan to meet the Governor's greenhouse gas reduction targets established in Executive Order S-3-05.

SEC. 2. Section 25310 is added to the Public Resources Code, to read:

25310. On or before November 1, 2007, and by November 1 of every third year thereafter, the commission in consultation with the Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, shall, develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish targets for statewide annual energy efficiency savings and demand reduction for the next 10-year period. The commission shall base its estimate at least in part on information developed pursuant to Sections 454.55, 454.56, and 9615 of the Public Utilities Code. The commission shall, for each electrical corporation and each gas corporation, include in the integrated energy policy report, a comparison of the public utility's annual targets established pursuant to Sections 454.55 and 454.56, and the public utility's actual energy efficiency savings and demand reductions.

SEC. 3. Section 9615 of the Public Utilities Code is amended to read:

9615. (a) Each local publicly owned electric utility, in procuring energy to serve the load of its retail end-use customers, shall first acquire all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.

(b) On or before June 1, 2007, and by June 1 of every third year thereafter, each local publicly owned electric utility shall identify all potentially achievable cost-effective electricity efficiency savings and shall establish annual targets for energy efficiency savings and demand reduction for the next 10-year period. A local publicly owned electric utility's determination of potentially achievable cost-effective electricity efficiency savings shall be made without regard to previous minimum investments undertaken pursuant to Section 385. A local publicly owned

electric utility shall treat investments made to achieve energy efficiency savings and demand reduction targets as procurement investments.

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

(d) Each local publicly owned electric utility shall report annually to its customers and to the State Energy Resources Conservation and Development Commission. The report shall contain, but is not limited to, both of the following:

(1) Its investments in energy efficiency and demand reduction programs.

(2) A description of programs, expenditures, cost-effectiveness, and expected and actual energy efficiency savings and demand reduction results.

(e) Each local publicly owned electric utility shall also annually develop and submit to the State Energy Resources Conservation and Development Commission a report containing all of the following:

(1) The sources of funding for its investments in energy efficiency and demand reduction program investments.

(2) The methodologies and input assumptions used to determine cost-effectiveness.

(3) The results of an independent evaluation that measures and verifies the energy efficiency savings and reduction in energy demand achieved by its energy efficiency and demand reduction programs.

(f) The State Energy Resources Conservation and Development Commission shall include a summary of the information reported pursuant to subdivision (e) in the integrated energy policy report prepared pursuant to Chapter 4 (commencing with Section 25300) of Division 15 of the Public Resources Code. The State Energy Resources Conservation and Development Commission shall also include, for each local publicly owned electric utility, a comparison of the local publicly owned electric utility's annual targets established in accordance with this section, and the local publicly owned electric utility's actual energy efficiency savings and demand reductions. If the State Energy Resources Conservation and Development Commission determines that improvements can be made in either the level of a local publicly owned electric utility's annual targets to achieve all cost-effective, reliable, and feasible energy savings and demand reductions and to enable the local publicly owned electric utilities, in the aggregate, to achieve statewide targets established pursuant to Section 25310, or in meeting each local publicly owned electric utility's annual targets, the State Energy Resources Conservation and Development Commission shall provide recommendations to the local publicly owned electric utility, the Legislature, and the Governor on those improvements.

SEC. 4. (a) The Legislature finds and declares that the use of air-conditioners in a hot, dry climate drives peak electricity demand in much of this state.

(b) The State Energy Resources Conservation and Development Commission shall do both of the following:

(1) Investigate options and develop a plan to improve the energy efficiency of, and to decrease the peak electricity demand of, air-conditioners.

(2) On or before January 1, 2008, prepare and submit to the Legislature a report on the plan developed pursuant to subdivision (a), including, but not limited to, any changes in law the State Energy Resources Conservation and Development Commission recommends to implement the plan.

SEC. 5. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

APPENDIX B

Energy Efficiency and Demand Reduction Potential and Savings Targets

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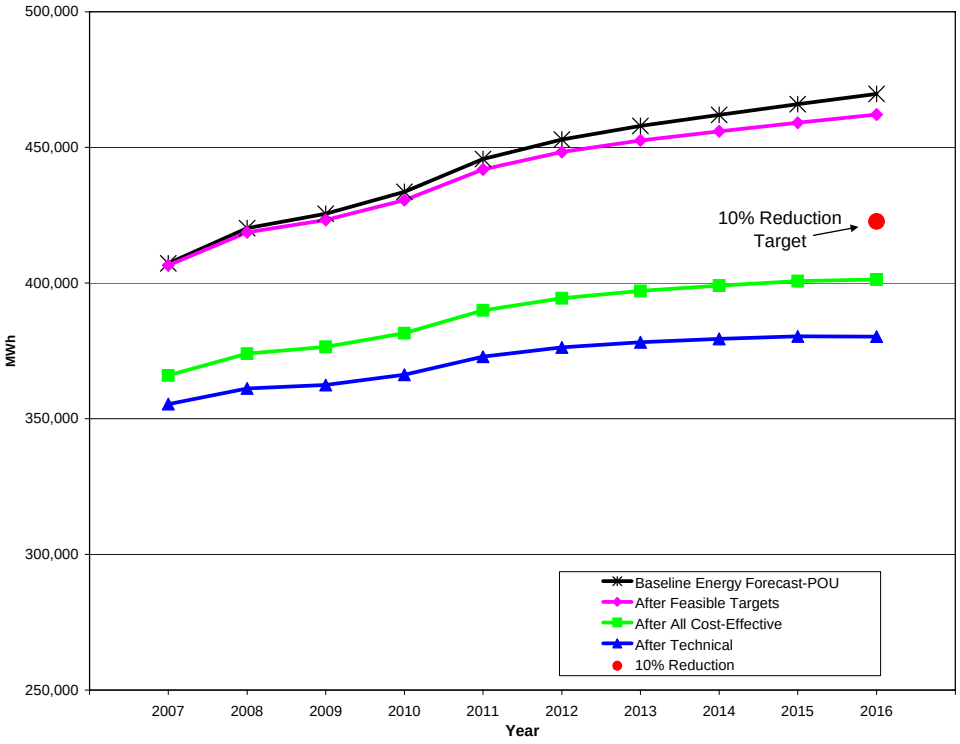
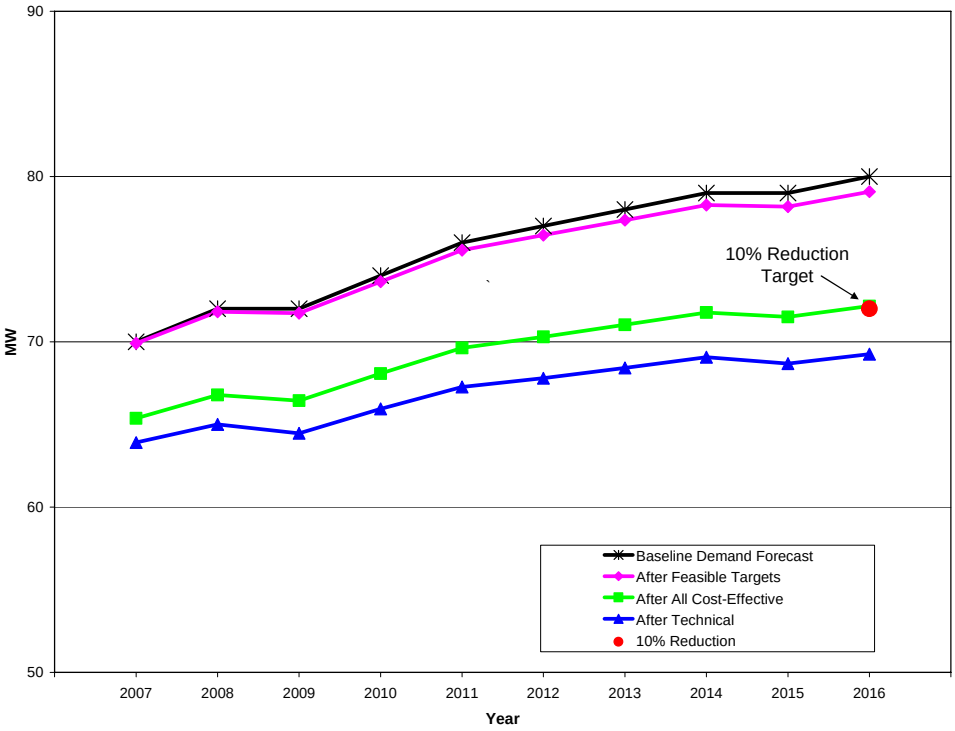
Alameda Power & Telecom

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Alameda Power & Telecom – Energy Efficiency and Demand Reduction Potentials

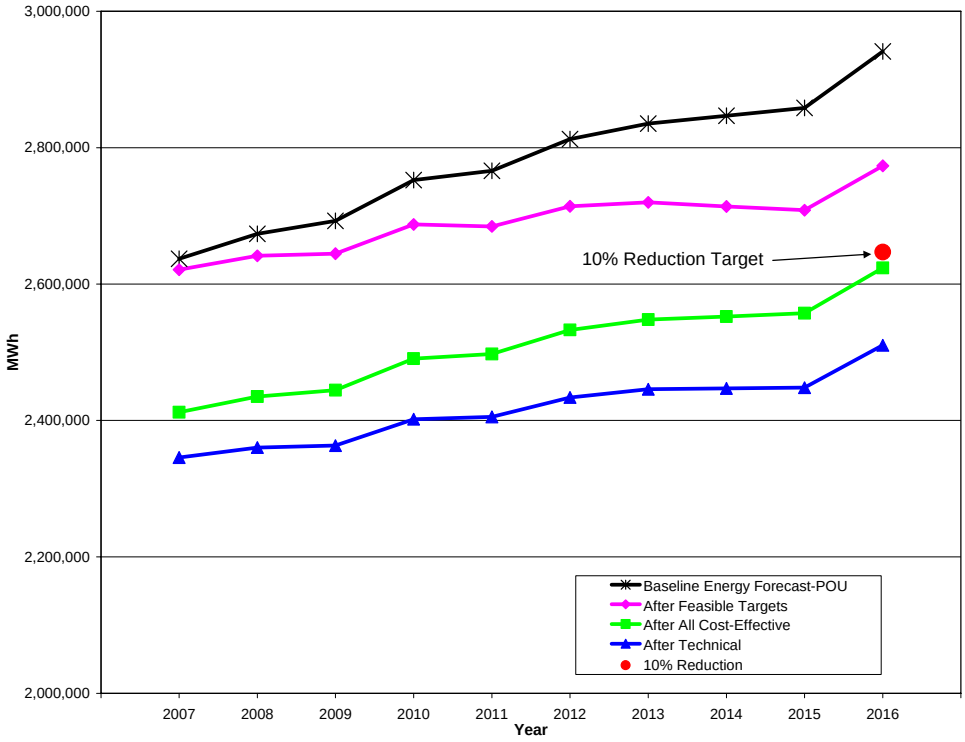
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**51,885**	**59,042**	**63,077**	**67,370**	**72,828**	**76,628**	**79,694**	**82,574**	**85,549**	**89,404**
		Residential			26,882	28,853	29,990	30,878	31,787	32,777	33,790	34,783	35,741	37,888
		Commercial			25,004	30,189	33,087	36,491	41,041	43,851	45,904	47,791	49,808	51,516
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**6**	**7**	**8**	**8**	**9**	**9**	**10**	**10**	**10**	**11**
		Residential			3	3	3	3	3	3	3	3	4	4
		Commercial			3	4	5	5	6	6	6	6	7	7
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**41,312**	**46,187**	**49,026**	**52,046**	**55,733**	**58,470**	**60,774**	**62,964**	**65,176**	**68,379**
		Residential			21,067	22,683	23,560	24,247	24,935	25,682	26,443	27,187	27,908	29,773
		Commercial			20,245	23,504	25,466	27,799	30,798	32,788	34,331	35,778	37,268	38,606
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**5**	**5**	**6**	**6**	**6**	**7**	**7**	**7**	**7**	**8**
		Residential			2	2	2	2	2	2	3	3	3	3
		Commercial			3	3	3	4	4	4	4	5	5	5
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**760**	**1,521**	**2,281**	**3,042**	**3,802**	**4,563**	**5,323**	**6,084**	**6,844**	**7,605**
		1st Year Savings	279	611	760	760	760	760	760	760	760	760	760	760
		Annual Rate of Change		118.8%	24.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-POU**			**407,300**	**420,200**	**425,500**	**433,600**	**445,700**	**452,900**	**457,900**	**462,000**	**465,900**	**469,700**
		CEC 2007 Forecast		394,259	399,620	404,950	410,393	415,233	420,470	425,050	429,499	433,458	437,604	441,536
		After Feasible Targets			406,540	418,679	423,219	430,558	441,898	448,337	452,577	455,916	459,056	462,095
		After All Cost-Effective			365,988	374,013	376,474	381,554	389,967	394,430	397,126	399,036	400,724	401,321
		After Technical			355,415	361,158	362,423	366,230	372,872	376,272	378,206	379,426	380,351	380,296
		10% Reduction												422,730
	Demand (MW)	**Baseline Demand Forecast**			**70**	**72**	**72**	**74**	**76**	**77**	**78**	**79**	**79**	**80**
		CEC 2007 Forecast			70	72	72	74	76	77	78	79	79	80
		After Feasible Targets			70	72	72	74	76	76	77	78	78	79
		After All Cost-Effective			65	67	66	68	70	70	71	72	72	72
		After Technical			64	65	64	66	67	68	68	69	69	69
		10% Reduction												72

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.01%
		Average Annual Cost-Effective Potential	1.54%
		Average Annual Feasible Targets	0.17%
	Demand (MW)	Average Annual Technical Potential	1.42%
		Average Annual Cost-Effective Potential	1.04%
		Average Annual Feasible Targets	0.12%

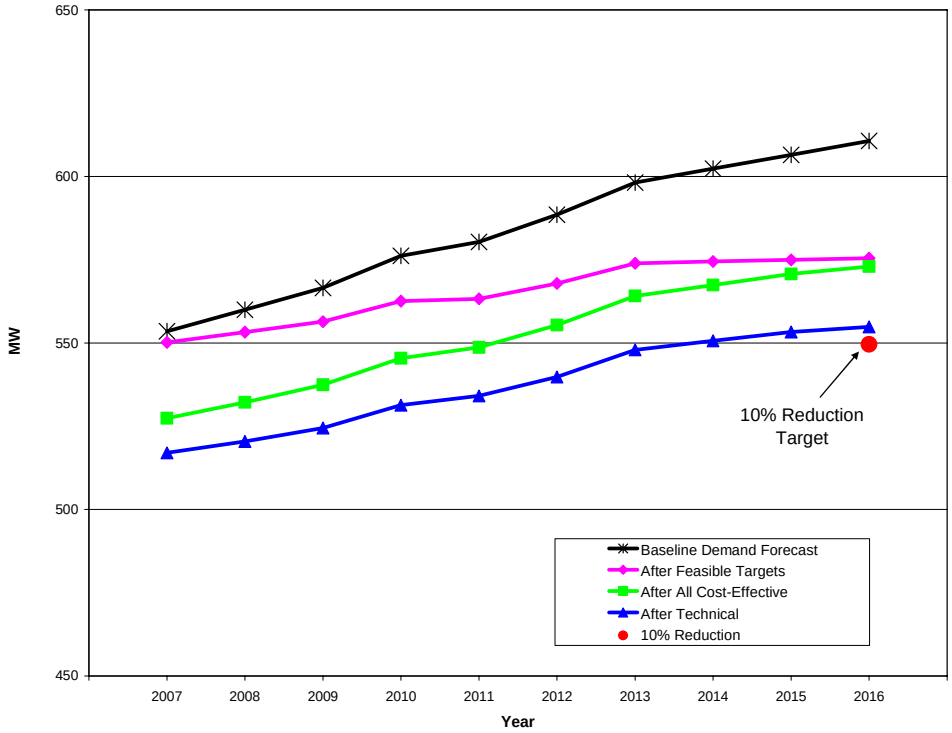
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Anaheim Public Utilities

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Anaheim Public Utilities – Energy Efficiency and Demand Reduction Potentials

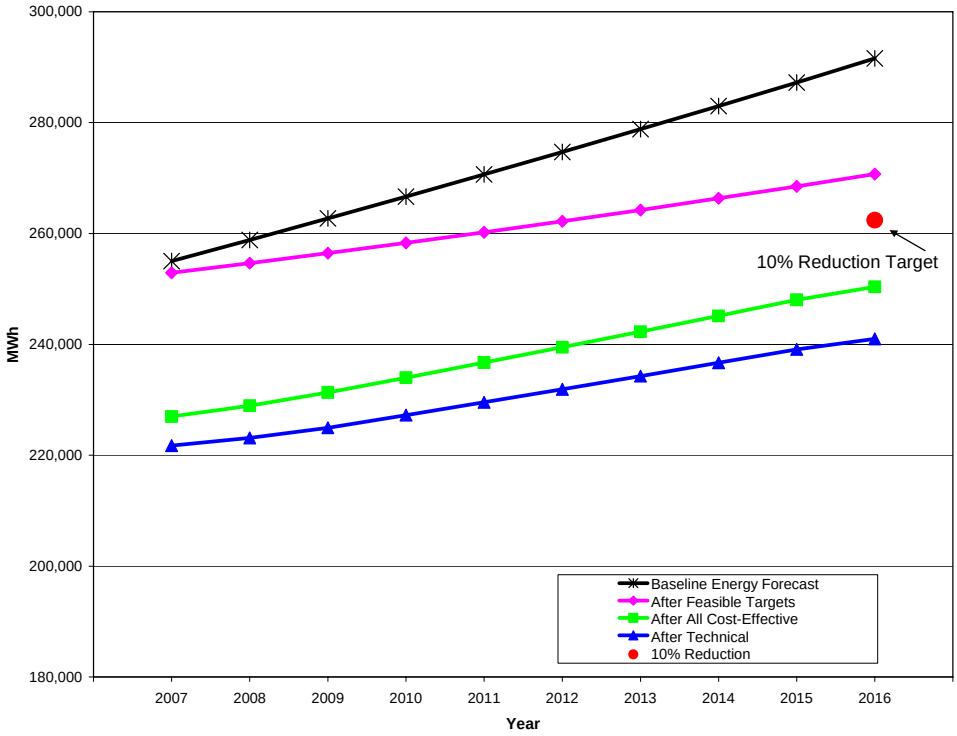
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**291,105**	**313,142**	**329,442**	**350,530**	**360,540**	**378,757**	**389,534**	**399,444**	**409,992**	**430,783**
		Residential			86,544	95,519	101,028	106,054	110,147	114,048	118,042	122,137	126,091	136,078
		Commercial			138,065	150,814	160,728	176,348	181,005	193,887	198,437	202,975	208,292	212,573
		Conventional Industrial			66,496	66,809	67,686	68,129	69,389	70,822	73,055	74,332	75,609	82,132
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**36**	**40**	**42**	**45**	**46**	**49**	**50**	**52**	**53**	**56**
		Residential			9	10	11	12	12	13	13	14	14	15
		Commercial			20	22	23	25	26	28	29	29	30	31
		Conventional Industrial			8	8	8	8	8	8	8	8	9	9
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**224,808**	**238,366**	**248,088**	**261,499**	**268,389**	**279,912**	**287,385**	**294,095**	**300,810**	**317,446**
		Residential			68,513	74,852	78,483	81,791	84,410	86,852	89,323	91,826	94,230	102,195
		Commercial			97,729	104,672	109,991	119,704	122,864	130,689	133,764	136,845	140,031	143,159
		Conventional Industrial			58,566	58,842	59,614	60,005	61,115	62,371	64,298	65,423	66,548	72,092
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**26**	**28**	**29**	**31**	**32**	**33**	**34**	**35**	**36**	**38**
		Residential			6	7	7	8	8	8	9	9	9	10
		Commercial			13	14	15	16	17	18	18	18	19	19
		Conventional Industrial			7	7	7	7	7	7	7	7	8	8
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**15,897**	**32,014**	**48,247**	**64,839**	**81,514**	**98,470**	**115,562**	**132,722**	**149,952**	**167,682**
		1st Year Savings	12,766	13,849	15,897	16,117	16,233	16,593	16,675	16,956	17,092	17,161	17,230	17,730
		Annual Rate of Change		8.5%	14.8%	1.4%	0.7%	2.2%	0.5%	1.7%	0.8%	0.4%	0.4%	2.9%
		Savings as a Percent of Consumption			0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	Demand (MW)	**System Total**			**3.3**	**6.7**	**10.1**	**13.6**	**17.1**	**20.6**	**24.3**	**27.9**	**31.5**	**35.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-POU**			**2,636,957**	**2,673,451**	**2,692,696**	**2,752,352**	**2,765,997**	**2,812,572**	**2,835,224**	**2,846,571**	**2,858,113**	**2,941,017**
		CEC 2007 Forecast		2,553,464	2,585,612	2,628,388	2,670,075	2,707,366	2,743,541	2,776,687	2,808,410	2,836,730	2,866,356	2,893,185
		After Feasible Targets			2,621,060	2,641,437	2,644,449	2,687,513	2,684,483	2,714,103	2,719,662	2,713,848	2,708,160	2,773,335
		After All Cost-Effective			2,412,149	2,435,085	2,444,608	2,490,853	2,497,608	2,532,661	2,547,839	2,552,476	2,557,303	2,623,571
		After Technical			2,345,852	2,360,308	2,363,254	2,401,821	2,405,457	2,433,816	2,445,689	2,447,127	2,448,120	2,510,234
		10% Reduction												2,646,915
	Demand (MW)	**Baseline Demand Forecast**			**554**	**560**	**567**	**576**	**580**	**589**	**598**	**602**	**606**	**611**
		CEC 2007 Forecast			589	598	607	615	622	630	638	645	652	659
		After Feasible Targets			550	553	556	563	563	568	574	574	575	575
		After All Cost-Effective			527	532	537	545	549	555	564	567	571	573
		After Technical			517	520	524	531	534	540	548	551	553	555
		10% Reduction												550

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.55%
		Average Annual Cost-Effective Potential	1.14%
		Average Annual Feasible Targets	0.60%
	Demand (MW)	Average Annual Technical Potential	0.95%
		Average Annual Cost-Effective Potential	0.65%
		Average Annual Feasible Targets	0.60%

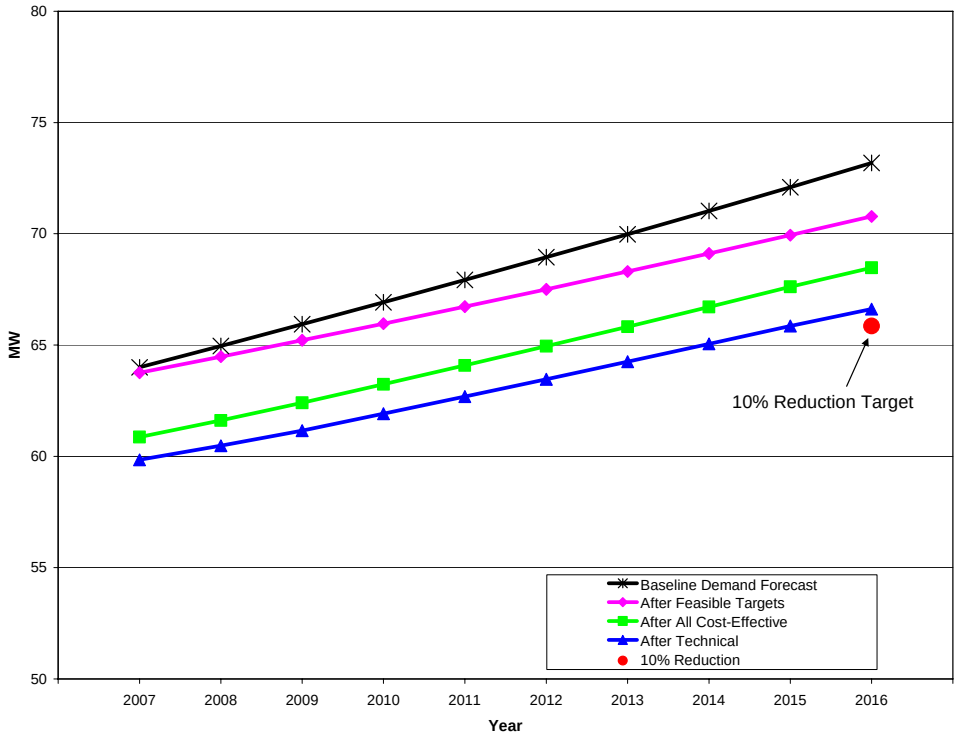
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Azusa Light & Water

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Azusa Light & Water – Energy Efficiency and Demand Reduction Potentials

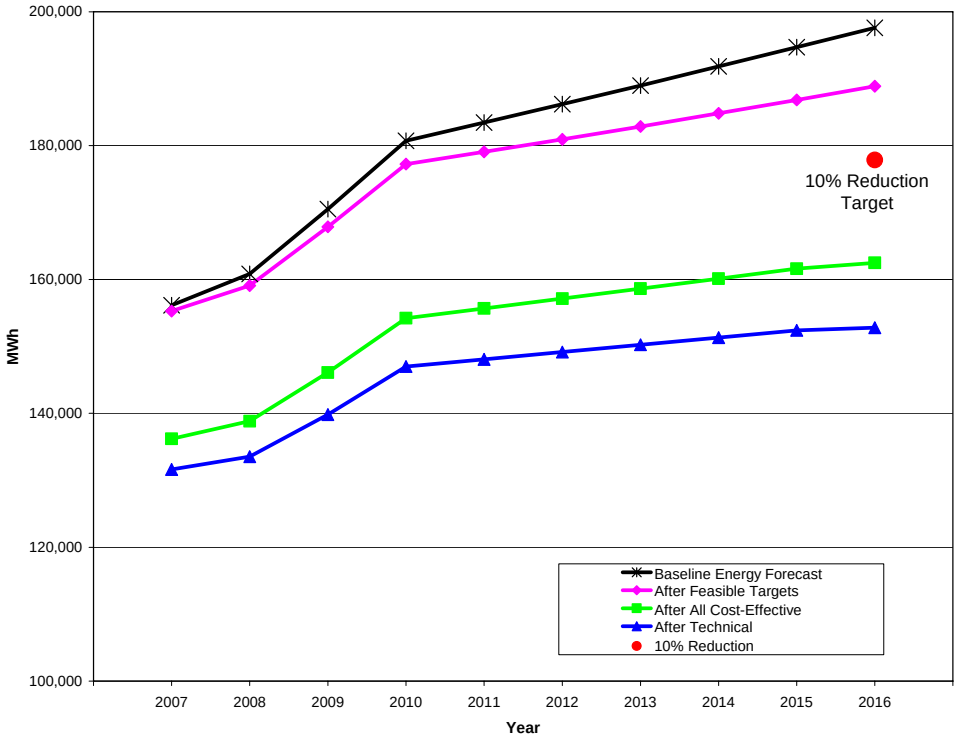
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**33,262**	**35,703**	**37,736**	**39,408**	**41,092**	**42,805**	**44,547**	**46,323**	**48,145**	**50,561**
		Residential			14,446	15,851	16,806	17,587	18,337	19,095	19,871	20,666	21,456	22,913
		Commercial			7,040	7,735	8,468	9,008	9,585	10,178	10,776	11,384	12,037	12,612
		Conventional Industrial			11,776	12,117	12,463	12,814	13,170	13,532	13,899	14,272	14,651	15,036
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**4**	**4**	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**7**
		Residential			2	2	2	2	2	2	3	3	3	3
		Commercial			1	1	1	1	1	1	2	2	2	2
		Conventional Industrial			1	1	1	1	2	2	2	2	2	2
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**28,011**	**29,887**	**31,372**	**32,656**	**33,936**	**35,227**	**36,538**	**37,870**	**39,212**	**41,198**
		Residential			11,696	12,806	13,492	14,050	14,580	15,110	15,649	16,198	16,738	17,942
		Commercial			5,602	6,059	6,545	6,953	7,379	7,814	8,252	8,698	9,156	9,590
		Conventional Industrial			10,713	11,022	11,335	11,653	11,976	12,304	12,636	12,974	13,318	13,666
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**3**	**3**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**
		Residential			1	1	1	1	2	2	2	2	2	2
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			1	1	1	1	1	1	1	1	2	2
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**2,084**	**4,168**	**6,252**	**8,336**	**10,420**	**12,504**	**14,588**	**16,672**	**18,756**	**20,840**
		1st Year Savings	1,897	1,897	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084
		Annual Rate of Change		0.0%	9.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.7%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%
	Demand (MW)	**System Total**			**0.2**	**0.5**	**0.7**	**1.0**	**1.2**	**1.4**	**1.7**	**1.9**	**2.2**	**2.4**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**255,000**	**258,825**	**262,707**	**266,648**	**270,648**	**274,707**	**278,828**	**283,010**	**287,256**	**291,564**
		CEC 2007 Forecast		255,957	258,803	262,591	266,282	269,584	272,787	275,721	278,530	281,038	283,661	286,036
		After Feasible Targets			252,916	254,657	256,455	258,312	260,228	262,203	264,240	266,338	268,499	270,724
		After All Cost-Effective			226,989	228,938	231,335	233,992	236,712	239,480	242,290	245,140	248,044	250,366
		After Technical			221,738	223,122	224,972	227,240	229,556	231,902	234,281	236,687	239,111	241,004
		10% Reduction												262,408
	Demand (MW)	**Baseline Demand Forecast**			**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**
		CEC 2007 Forecast			64	65	66	67	68	69	70	71	72	73
		After Feasible Targets			64	64	65	66	67	68	68	69	70	71
		After All Cost-Effective			61	62	62	63	64	65	66	67	68	68
		After Technical			60	60	61	62	63	63	64	65	66	67
		10% Reduction												66

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.85%
		Average Annual Cost-Effective Potential	1.51%
		Average Annual Feasible Targets	0.76%
	Demand (MW)	Average Annual Technical Potential	0.96%
		Average Annual Cost-Effective Potential	0.69%
		Average Annual Feasible Targets	0.35%

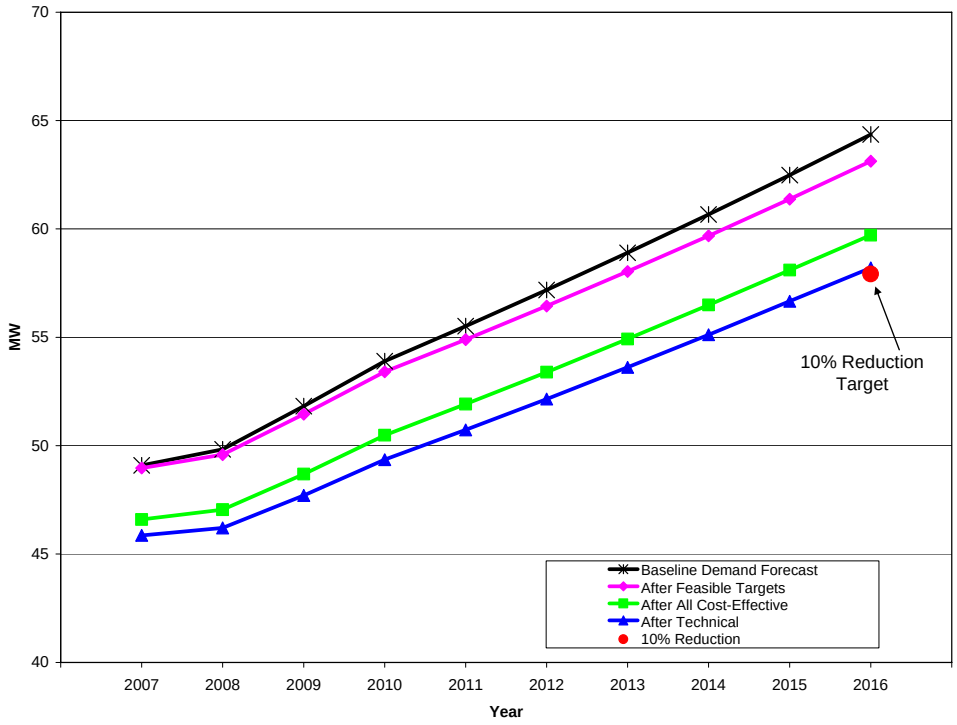
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Banning Electric Utility

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Banning Electric Utility – Energy Efficiency and Demand Reduction Potentials

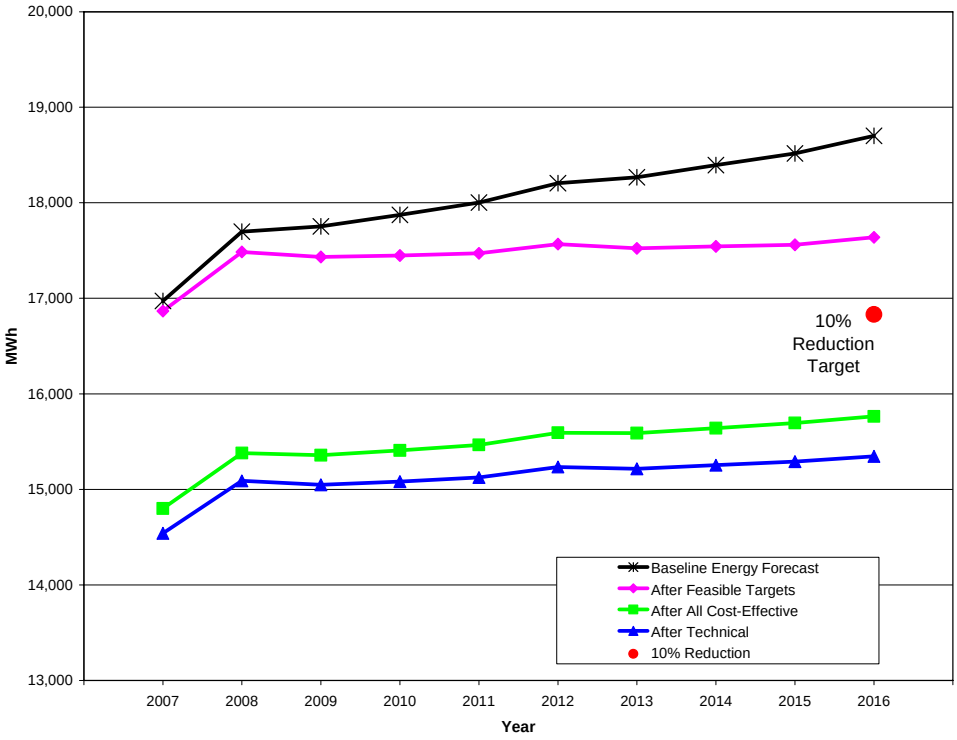
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**24,533**	**27,300**	**30,671**	**33,729**	**35,364**	**37,037**	**38,743**	**40,492**	**42,300**	**44,810**
		Residential			17,160	19,075	21,069	22,898	24,005	25,134	26,298	27,495	28,701	30,682
		Commercial			6,138	6,928	8,198	9,314	9,792	10,286	10,777	11,277	11,827	12,302
		Conventional Industrial			1,234	1,298	1,404	1,518	1,567	1,617	1,668	1,720	1,772	1,825
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**3**	**4**	**4**	**5**	**5**	**5**	**5**	**6**	**6**	**6**
		Residential			2	2	3	3	3	3	3	4	4	4
		Commercial			1	1	1	1	1	2	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**19,953**	**22,021**	**24,398**	**26,507**	**27,764**	**29,052**	**30,356**	**31,694**	**33,085**	**35,129**
		Residential			13,871	15,312	16,706	17,945	18,795	19,664	20,563	21,489	22,433	24,066
		Commercial			5,005	5,584	6,486	7,271	7,638	8,017	8,381	8,752	9,157	9,526
		Conventional Industrial			1,076	1,126	1,206	1,291	1,331	1,371	1,412	1,453	1,495	1,538
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**3**	**3**	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**5**
		Residential			2	2	2	2	2	2	3	3	3	3
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**873**	**1,747**	**2,620**	**3,494**	**4,367**	**5,240**	**6,114**	**6,987**	**7,861**	**8,734**
		1st Year Savings	96	253	873	873	873	873	873	873	873	873	873	873
		Annual Rate of Change		164.9%	244.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.5%	0.5%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.4**	**0.5**	**0.6**	**0.7**	**0.9**	**1.0**	**1.1**	**1.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**156,164**	**160,849**	**170,500**	**180,730**	**183,441**	**186,192**	**188,985**	**191,820**	**194,697**	**197,618**
		CEC 2007 Forecast		144,447	146,053	148,191	150,274	152,137	153,945	155,601	157,186	158,601	160,081	161,422
		After Feasible Targets			155,290	159,102	167,880	177,236	179,074	180,952	182,871	184,833	186,837	188,884
		After All Cost-Effective			136,211	138,828	146,102	154,222	155,677	157,140	158,629	160,125	161,612	162,488
		After Technical			131,631	133,549	139,829	147,000	148,077	149,155	150,242	151,328	152,397	152,808
		10% Reduction												177,856
	Demand (MW)	**Baseline Demand Forecast**			**49**	**50**	**52**	**54**	**56**	**57**	**59**	**61**	**62**	**64**
		CEC 2007 Forecast			49	50	52	54	56	57	59	61	62	64
		After Feasible Targets			49	50	51	53	55	56	58	60	61	63
		After All Cost-Effective			47	47	49	50	52	53	55	56	58	60
		After Technical			46	46	48	49	51	52	54	55	57	58
		10% Reduction												58

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.47%
		Average Annual Cost-Effective Potential	1.94%
		Average Annual Feasible Targets	0.48%
	Demand (MW)	Average Annual Technical Potential	1.09%
		Average Annual Cost-Effective Potential	0.82%
		Average Annual Feasible Targets	0.22%

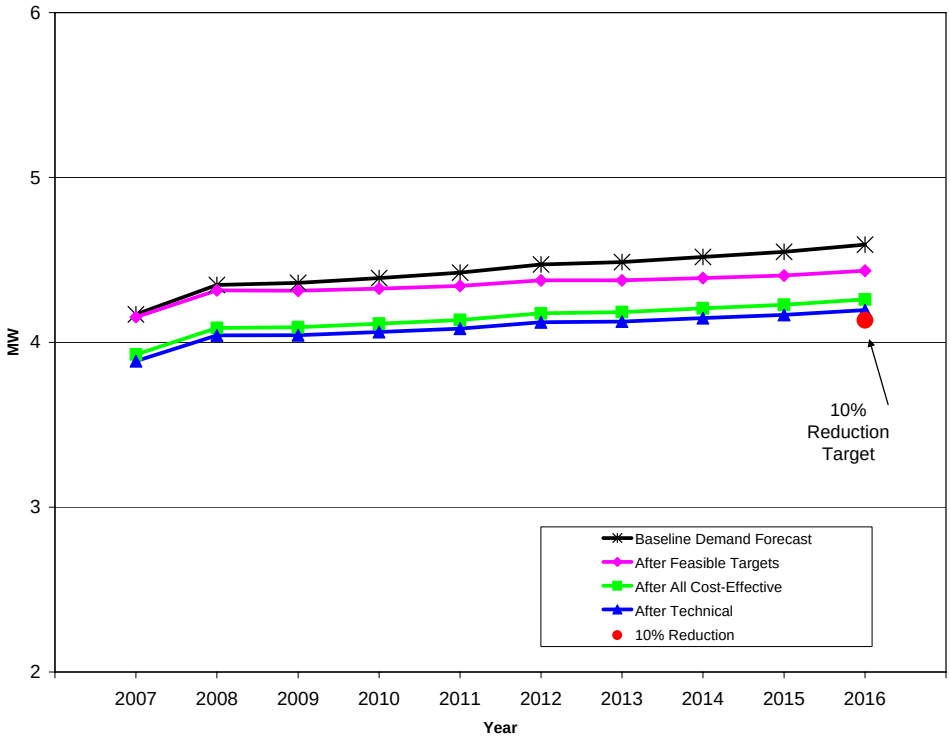
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Biggs

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Biggs – Energy Efficiency and Demand Reduction Potentials

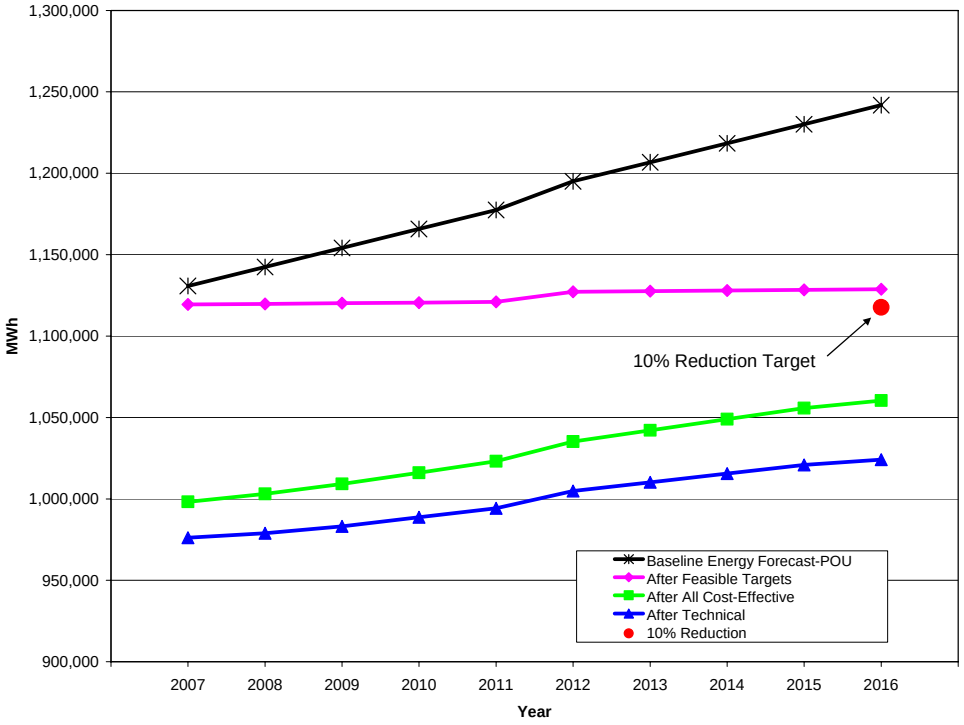
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**2,434**	**2,609**	**2,705**	**2,792**	**2,878**	**2,970**	**3,052**	**3,140**	**3,227**	**3,355**
		Residential			941	1,045	1,102	1,150	1,195	1,242	1,286	1,333	1,378	1,463
		Commercial			211	246	259	271	284	300	312	325	339	353
		Conventional Industrial			1,281	1,318	1,344	1,371	1,399	1,428	1,455	1,482	1,510	1,539
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**2,174**	**2,318**	**2,394**	**2,466**	**2,536**	**2,612**	**2,680**	**2,752**	**2,823**	**2,936**
		Residential			759	843	884	919	953	987	1,020	1,054	1,087	1,161
		Commercial			176	200	209	219	230	243	253	264	275	286
		Conventional Industrial			1,240	1,275	1,300	1,327	1,354	1,382	1,407	1,434	1,461	1,489
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**106**	**213**	**319**	**425**	**532**	**638**	**744**	**850**	**957**	**1,063**
		1st Year Savings	35	131	106	106	106	106	106	106	106	106	106	106
		Annual Rate of Change		277.5%	-19.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.7%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**16,974**	**17,698**	**17,752**	**17,874**	**18,002**	**18,205**	**18,268**	**18,393**	**18,518**	**18,701**
		CEC 2007 Forecast		19,144	19,404	19,663	19,927	20,162	20,417	20,639	20,855	21,047	21,249	21,440
		After Feasible Targets			16,867	17,486	17,433	17,449	17,470	17,567	17,523	17,543	17,561	17,638
		After All Cost-Effective			14,799	15,381	15,358	15,408	15,465	15,593	15,588	15,642	15,695	15,765
		After Technical			14,540	15,090	15,048	15,082	15,124	15,235	15,215	15,254	15,291	15,346
		10% Reduction												16,831
	Demand (MW)	**Baseline Demand Forecast**			**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**
		CEC 2007 Forecast			4	4	4	4	4	4	4	5	5	5
		After Feasible Targets			4	4	4	4	4	4	4	4	4	4
		After All Cost-Effective			4	4	4	4	4	4	4	4	4	4
		After Technical			4	4	4	4	4	4	4	4	4	4
		10% Reduction												4

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.86%
		Average Annual Cost-Effective Potential	1.63%
		Average Annual Feasible Targets	0.59%
	Demand (MW)	Average Annual Technical Potential	0.90%
		Average Annual Cost-Effective Potential	0.75%
		Average Annual Feasible Targets	0.36%

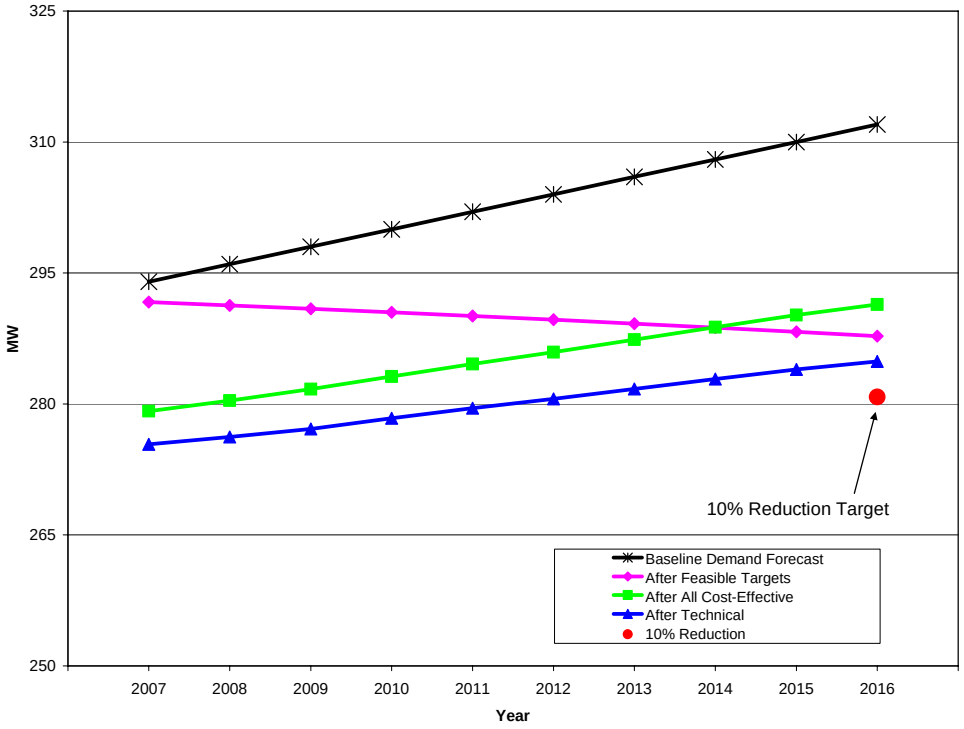
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Burbank Water & Power

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Burbank Water & Power – Energy Efficiency and Demand Reduction Potentials

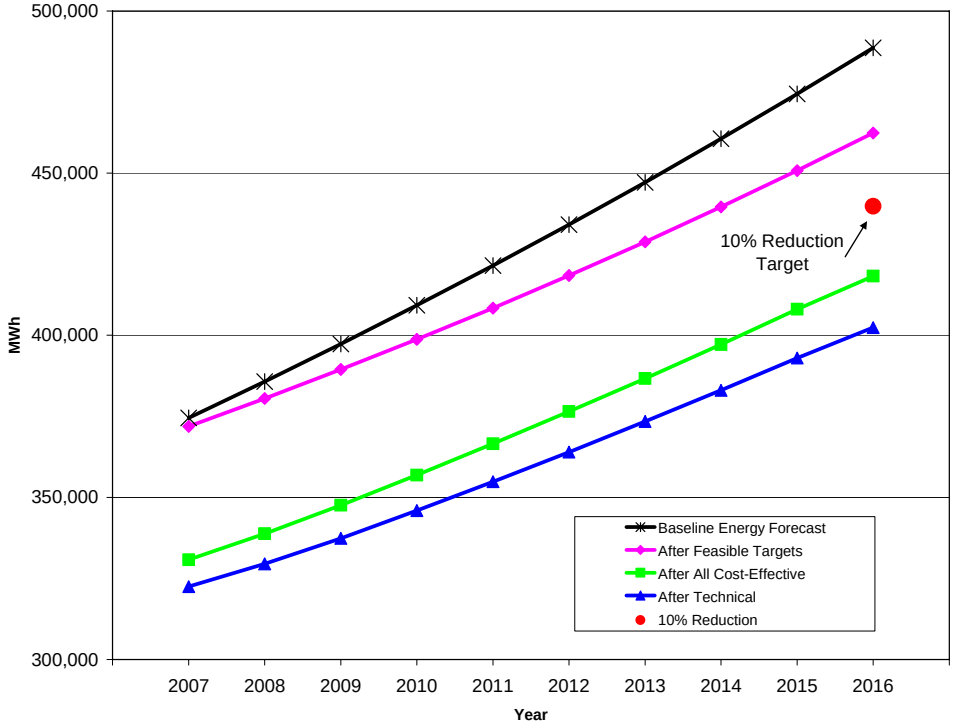
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**154,540**	**163,513**	**170,992**	**177,115**	**183,233**	**190,256**	**196,509**	**202,837**	**209,266**	**217,783**
		Residential			51,954	56,656	59,731	62,180	64,492	67,012	69,389	71,811	74,177	78,931
		Commercial			26,182	28,465	30,864	32,519	34,290	36,481	38,287	40,107	42,069	43,716
		Conventional Industrial			76,404	78,392	80,397	82,416	84,452	86,763	88,833	90,919	93,020	95,136
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**19**	**20**	**21**	**22**	**22**	**23**	**24**	**25**	**26**	**27**
		Residential			6	7	7	8	8	8	9	9	9	10
		Commercial			4	4	4	5	5	5	5	6	6	6
		Conventional Industrial			9	9	9	9	10	10	10	10	11	11
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**132,466**	**139,394**	**144,928**	**149,706**	**154,444**	**159,794**	**164,599**	**169,450**	**174,285**	**181,393**
		Residential			42,067	45,763	47,959	49,694	51,319	53,087	54,731	56,397	58,006	61,977
		Commercial			20,888	22,390	23,985	25,270	26,611	28,210	29,567	30,936	32,330	33,620
		Conventional Industrial			69,511	71,241	72,984	74,742	76,514	78,497	80,300	82,118	83,949	85,795
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**15**	**16**	**16**	**17**	**17**	**18**	**19**	**19**	**20**	**21**
		Residential			4	5	5	5	5	5	6	6	6	6
		Commercial			3	3	3	3	3	4	4	4	4	4
		Conventional Industrial			8	8	8	9	9	9	9	9	10	10
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**11,307**	**22,615**	**33,922**	**45,229**	**56,536**	**67,844**	**79,151**	**90,458**	**101,765**	**113,073**
		1st Year Savings	5,574	5,778	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307
		Annual Rate of Change		3.7%	95.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		avings as a Percent of Consumption			1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%
	Demand (MW)	**System Total**			**2.4**	**4.7**	**7.1**	**9.5**	**11.9**	**14.4**	**16.8**	**19.3**	**21.7**	**24.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-POU**			**1,130,727**	**1,142,421**	**1,154,114**	**1,165,808**	**1,177,501**	**1,195,042**	**1,206,735**	**1,218,429**	**1,230,123**	**1,241,816**
		CEC 2007 Forecast		1,168,629	1,172,183	1,178,295	1,183,946	1,187,774	1,191,857	1,193,691	1,196,636	1,198,088	1,200,739	1,201,895
		After Feasible Targets			1,119,420	1,119,806	1,120,192	1,120,579	1,120,965	1,127,198	1,127,584	1,127,971	1,128,357	1,128,743
		After All Cost-Effective			998,261	1,003,027	1,009,186	1,016,101	1,023,058	1,035,247	1,042,137	1,048,979	1,055,837	1,060,423
		After Technical			976,187	978,908	983,122	988,693	994,268	1,004,786	1,010,226	1,015,592	1,020,856	1,024,033
		10% Reduction												1,117,635
	Demand (MW)	**Baseline Demand Forecast**			**294**	**296**	**298**	**300**	**302**	**304**	**306**	**308**	**310**	**312**
		CEC 2007 Forecast			295	294	296	297	298	300	300	301	301	302
		After Feasible Targets			292	291	291	290	290	290	289	289	288	288
		After All Cost-Effective			279	280	282	283	285	286	287	289	290	291
		After Technical			275	276	277	278	280	281	282	283	284	285
		10% Reduction												281

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.84%
		rage Annual Cost-Effective Potential	1.53%
		Average Annual Feasible Targets	0.95%
	Demand (MW)	Average Annual Technical Potential	0.90%
		Average Annual Feasible Targets	0.68%
		Average Annual Feasible Targets	0.80%

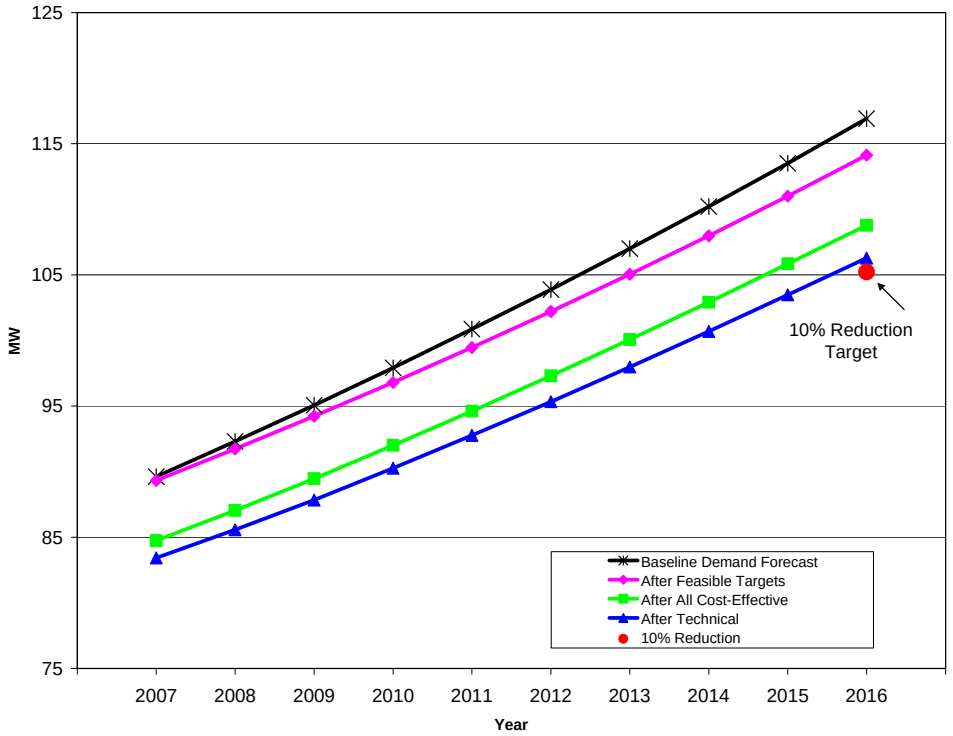
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Colton

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Colton – Energy Efficiency and Demand Reduction Potentials

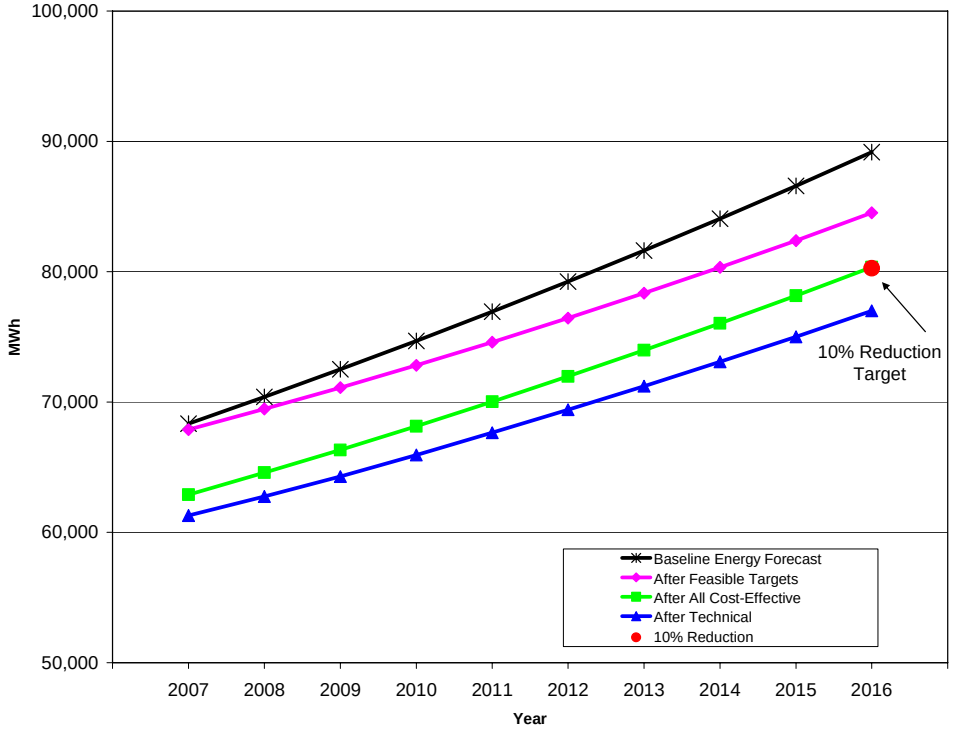
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**52,029**	**56,226**	**59,957**	**63,265**	**66,657**	**70,164**	**73,789**	**77,541**	**81,434**	**86,298**
		Residential			20,037	22,142	23,682	25,006	26,314	27,662	29,067	30,529	32,011	34,512
		Commercial			9,727	11,023	12,394	13,534	14,746	16,007	17,300	18,635	20,060	21,405
		Conventional Industrial			22,265	23,060	23,880	24,725	25,596	26,495	27,421	28,377	29,363	30,381
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**6**	**7**	**7**	**8**	**8**	**9**	**9**	**10**	**10**	**11**
		Residential			2	3	3	3	3	3	3	4	4	4
		Commercial			1	2	2	2	2	2	2	3	3	3
		Conventional Industrial			3	3	3	3	3	3	3	3	3	3
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**43,711**	**46,954**	**49,746**	**52,329**	**54,967**	**57,687**	**60,501**	**63,414**	**66,407**	**70,410**
		Residential			15,843	17,518	18,665	19,667	20,659	21,680	22,745	23,854	24,978	27,098
		Commercial			7,609	8,455	9,355	10,168	11,023	11,906	12,813	13,749	14,720	15,679
		Conventional Industrial			20,258	20,981	21,726	22,494	23,285	24,102	24,944	25,812	26,708	27,633
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**5**	**5**	**6**	**6**	**6**	**7**	**7**	**7**	**8**	**8**
		Residential			2	2	2	2	2	2	2	3	3	3
		Commercial			1	1	1	1	1	2	2	2	2	2
		Conventional Industrial			2	2	2	3	3	3	3	3	3	3
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**2,625**	**5,251**	**7,876**	**10,501**	**13,127**	**15,752**	**18,378**	**21,003**	**23,628**	**26,254**
		1st Year Savings	943	3,716	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625
		Annual Rate of Change		293.9%	-29.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		1.1%	0.8%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
	Demand (MW)	**System Total**			**0.3**	**0.6**	**0.8**	**1.1**	**1.4**	**1.7**	**2.0**	**2.2**	**2.5**	**2.8**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**374,497**	**385,732**	**397,304**	**409,223**	**421,500**	**434,145**	**447,170**	**460,585**	**474,402**	**488,634**
		CEC 2007 Forecast		342,569	346,379	351,448	356,388	360,807	365,094	369,021	372,781	376,137	379,647	382,827
		After Feasible Targets			371,872	380,482	389,428	398,722	408,373	418,393	428,792	439,582	450,774	462,381
		After All Cost-Effective			330,787	338,778	347,558	356,895	366,533	376,458	386,668	397,170	407,996	418,224
		After Technical			322,469	329,507	337,347	345,959	354,844	363,981	373,381	383,044	392,968	402,336
		10% Reduction												439,771
	Demand (MW)	**Baseline Demand Forecast**			**90**	**92**	**95**	**98**	**101**	**104**	**107**	**110**	**114**	**117**
		CEC 2007 Forecast			90	92	95	98	101	104	107	110	114	117
		After Feasible Targets			89	92	94	97	99	102	105	108	111	114
		After All Cost-Effective			85	87	89	92	95	97	100	103	106	109
		After Technical			83	86	88	90	93	95	98	101	103	106
		10% Reduction												105

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.01%
		Average Annual Cost-Effective Potential	1.64%
		Average Annual Feasible Targets	0.61%
	Demand (MW)	Average Annual Technical Potential	1.04%
		Average Annual Cost-Effective Potential	0.79%
		Average Annual Feasible Targets	0.27%

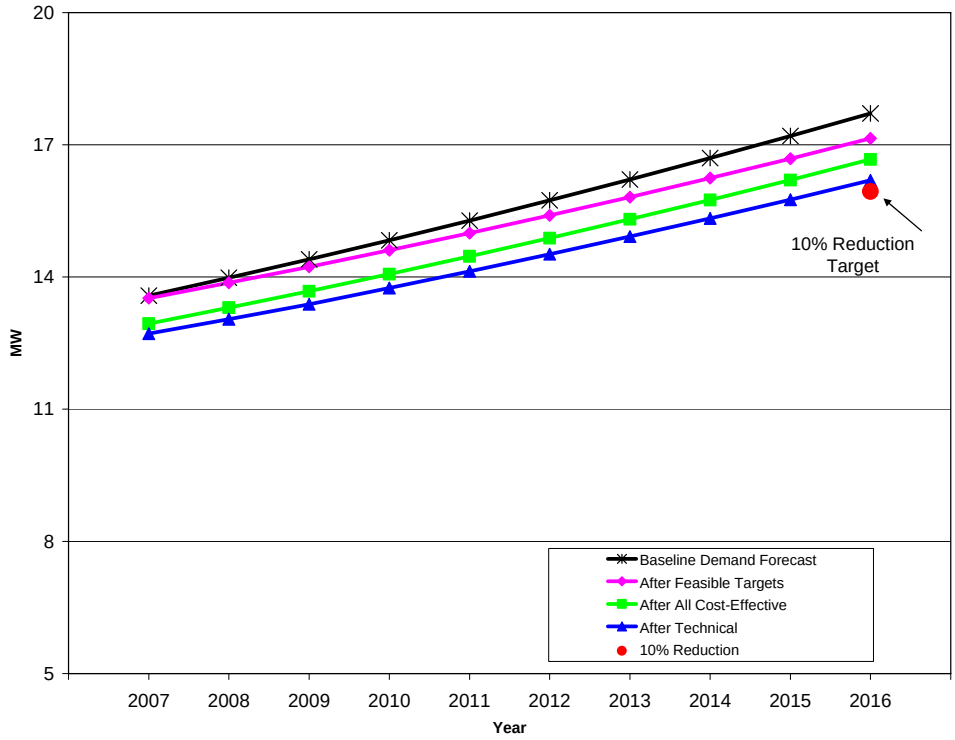
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Corona

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Corona – Energy Efficiency and Demand Reduction Potentials

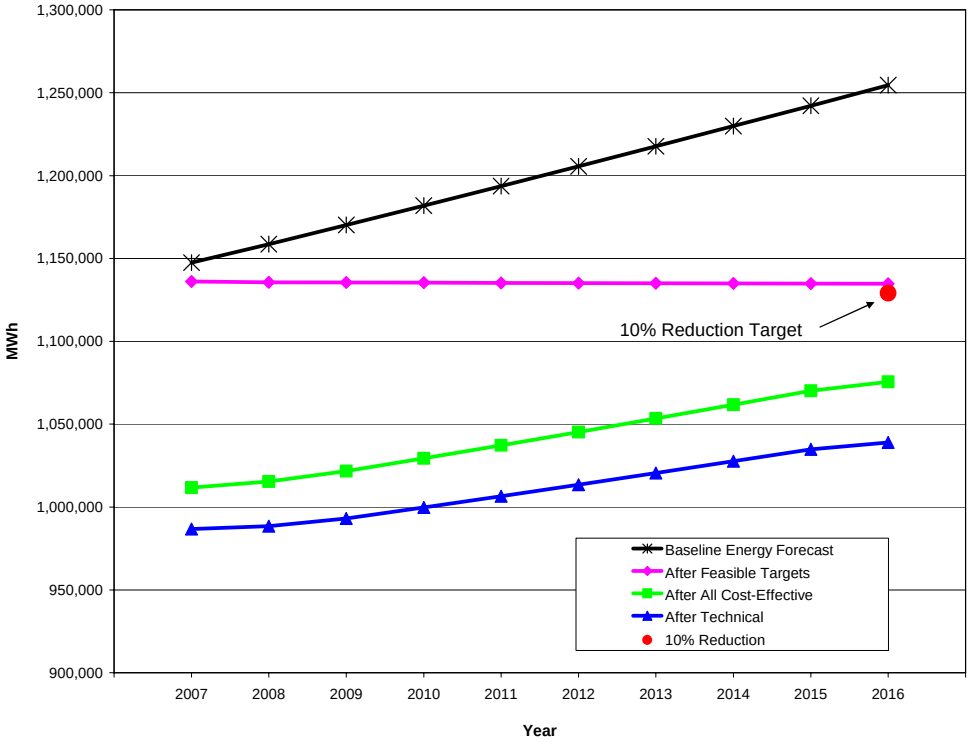
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**7,061**	**7,640**	**8,228**	**8,743**	**9,278**	**9,829**	**10,392**	**10,969**	**11,575**	**12,182**
		Residential			383	424	453	478	502	526	551	577	602	646
		Commercial			2,854	3,284	3,732	4,111	4,509	4,919	5,339	5,770	6,227	6,665
		Conventional Industrial			3,824	3,932	4,042	4,154	4,268	4,384	4,502	4,622	4,745	4,871
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	1	1	1	1	1
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**5,454**	**5,820**	**6,190**	**6,540**	**6,900**	**7,267**	**7,642**	**8,026**	**8,420**	**8,835**
		Residential			304	332	349	363	376	389	402	416	429	459
		Commercial			1,851	2,099	2,359	2,602	2,853	3,109	3,371	3,641	3,918	4,198
		Conventional Industrial			3,299	3,390	3,482	3,576	3,672	3,769	3,868	3,970	4,073	4,178
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**467**	**934**	**1,401**	**1,867**	**2,334**	**2,801**	**3,268**	**3,735**	**4,202**	**4,669**
		1st Year Savings	13	38	467	467	467	467	467	467	467	467	467	467
		Annual Rate of Change		193.9%	1137.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	Demand (MW)	**System Total**			**0.1**	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**68,348**	**70,398**	**72,510**	**74,685**	**76,926**	**79,234**	**81,611**	**84,059**	**86,581**	**89,178**
		CEC 2007 Forecast		67,664	68,417	69,418	70,394	71,267	72,113	72,889	73,632	74,295	74,988	75,616
		After Feasible Targets			67,881	69,464	71,109	72,818	74,592	76,433	78,343	80,324	82,379	84,510
		After All Cost-Effective			62,894	64,578	66,320	68,145	70,026	71,967	73,969	76,033	78,161	80,343
		After Technical			61,286	62,758	64,282	65,943	67,648	69,405	71,219	73,090	75,006	76,997
		10% Reduction												80,260
	Demand (MW)	**Baseline Demand Forecast**			**14**	**14**	**14**	**15**	**15**	**16**	**16**	**17**	**17**	**18**
		CEC 2007 Forecast			14	14	14	15	15	16	16	17	17	18
		After Feasible Targets			14	14	14	15	15	15	16	16	17	17
		After All Cost-Effective			13	13	14	14	14	15	15	16	16	17
		After Technical			13	13	13	14	14	15	15	15	16	16
		10% Reduction												16

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.55%
		Average Annual Cost-Effective Potential	1.13%
		Average Annual Feasible Targets	0.60%
	Demand (MW)	Average Annual Technical Potential	0.98%
		Average Annual Cost-Effective Potential	0.67%
		Average Annual Feasible Targets	0.36%

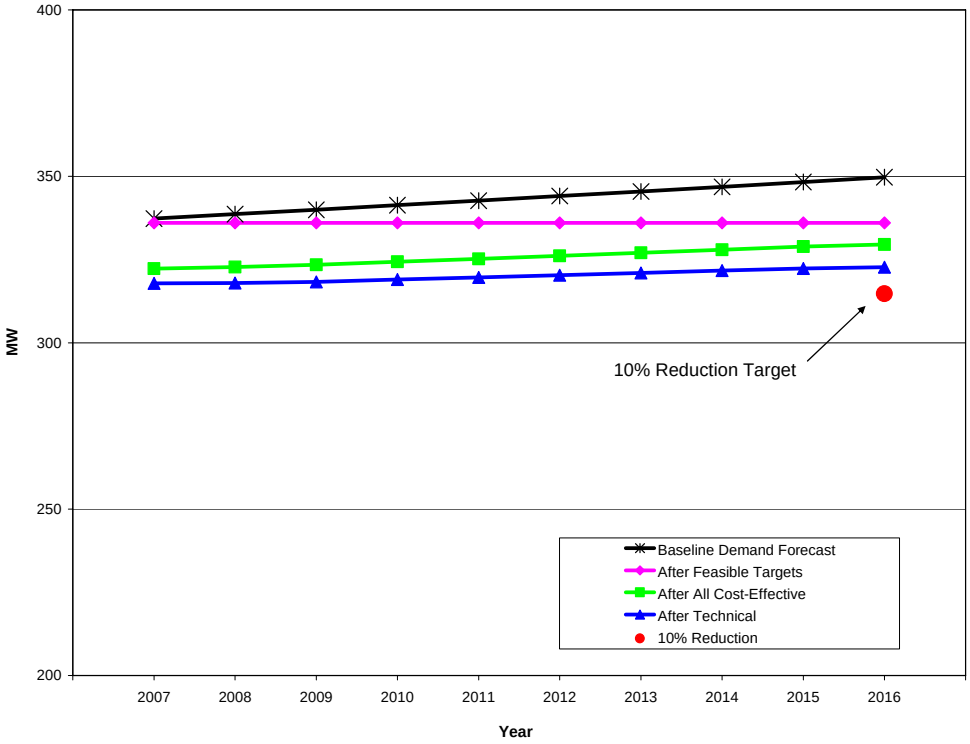
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Glendale Water & Power

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Glendale Water & Power – Energy Efficiency and Demand Reduction Potentials

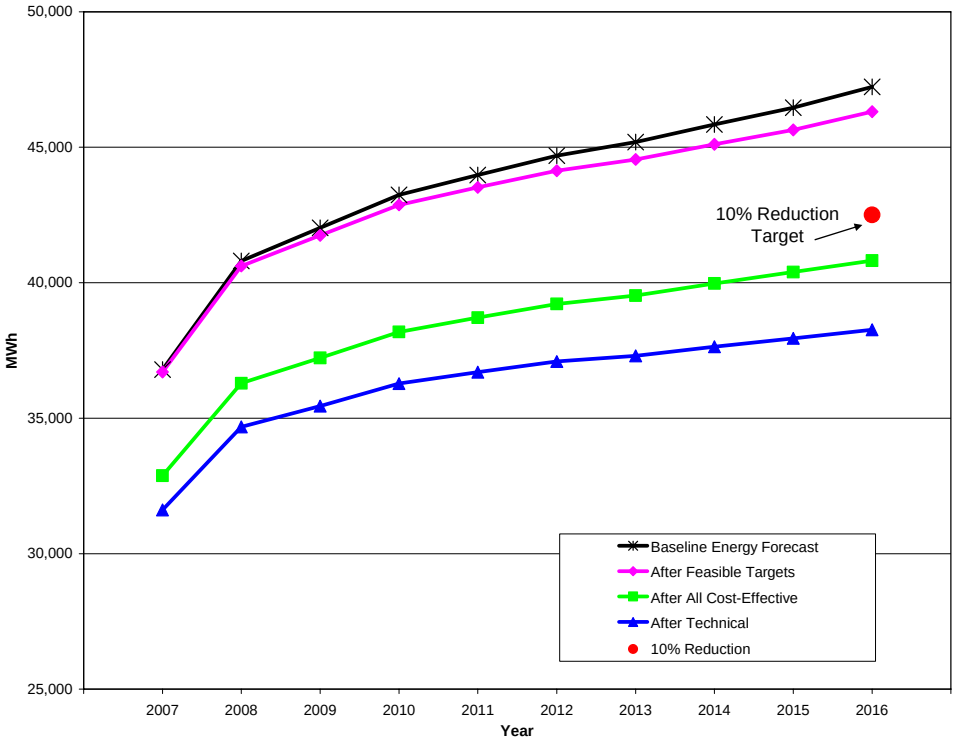
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**160,784**	**170,053**	**177,011**	**182,111**	**187,104**	**192,134**	**197,181**	**202,271**	**207,400**	**215,548**
		Residential			77,523	83,851	87,746	90,699	93,417	96,135	98,890	101,685	104,362	110,439
		Commercial			32,037	33,960	36,007	37,137	38,395	39,689	40,963	42,240	43,673	44,724
		Conventional Industrial			51,225	52,241	53,258	54,275	55,292	56,310	57,328	58,347	59,366	60,385
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**19**	**21**	**22**	**22**	**23**	**24**	**24**	**25**	**26**	**27**
		Residential			9	10	10	11	11	12	12	12	13	14
		Commercial			4	5	5	5	6	6	6	6	6	6
		Conventional Industrial			6	6	6	6	6	6	7	7	7	7
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**135,814**	**143,185**	**148,438**	**152,467**	**156,390**	**160,320**	**164,223**	**168,146**	**172,027**	**179,028**
		Residential			62,377	67,388	70,182	72,286	74,210	76,119	78,041	79,980	81,814	86,941
		Commercial			26,833	28,268	29,802	30,802	31,876	32,972	34,026	35,084	36,205	37,151
		Conventional Industrial			46,604	47,528	48,453	49,378	50,304	51,229	52,155	53,082	54,009	54,936
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**15**	**16**	**17**	**17**	**17**	**18**	**18**	**19**	**19**	**20**
		Residential			6	7	7	7	7	8	8	8	8	9
		Commercial			3	4	4	4	4	4	5	5	5	5
		Conventional Industrial			5	5	6	6	6	6	6	6	6	6
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**11,362**	**22,948**	**34,649**	**46,468**	**58,405**	**70,461**	**82,638**	**94,937**	**107,358**	**119,904**
		1st Year Savings	8,400	8,215	11,362	11,586	11,702	11,819	11,937	12,056	12,177	12,299	12,422	12,546
		Annual Rate of Change		-2.2%	38.3%	2.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
		Savings as a Percent of Consumption			1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	Demand (MW)	**System Total**			**1.3**	**2.6**	**4.0**	**5.3**	**6.7**	**8.1**	**9.5**	**10.9**	**12.3**	**13.7**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**1,147,537**	**1,158,581**	**1,170,167**	**1,181,868**	**1,193,687**	**1,205,624**	**1,217,680**	**1,229,857**	**1,242,155**	**1,254,577**
		CEC 2007 Forecast		1,122,800	1,126,215	1,132,087	1,137,517	1,141,194	1,145,118	1,146,880	1,149,709	1,151,104	1,153,651	1,154,762
		After Feasible Targets			1,136,175	1,135,633	1,135,517	1,135,400	1,135,282	1,135,162	1,135,042	1,134,920	1,134,797	1,134,673
		After All Cost-Effective			1,011,723	1,015,396	1,021,729	1,029,402	1,037,297	1,045,304	1,053,457	1,061,711	1,070,128	1,075,549
		After Technical			986,753	988,528	993,155	999,757	1,006,583	1,013,489	1,020,499	1,027,586	1,034,756	1,039,029
		10% Reduction												1,129,119
	Demand (MW)	**Baseline Demand Forecast**			**337**	**339**	**340**	**341**	**343**	**344**	**345**	**347**	**348**	**350**
		CEC 2007 Forecast			312	310	312	314	315	316	317	317	318	319
		After Feasible Targets			336	336	336	336	336	336	336	336	336	336
		After All Cost-Effective			322	323	323	324	325	326	327	328	329	330
		After Technical			318	318	318	319	320	320	321	322	322	323
		10% Reduction												315

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.80%
		Average Annual Cost-Effective Potential	1.49%
		Average Annual Feasible Targets	1.00%
	Demand (MW)	Average Annual Technical Potential	0.79%
		Average Annual Cost-Effective Potential	0.59%
		Average Annual Feasible Targets	0.40%

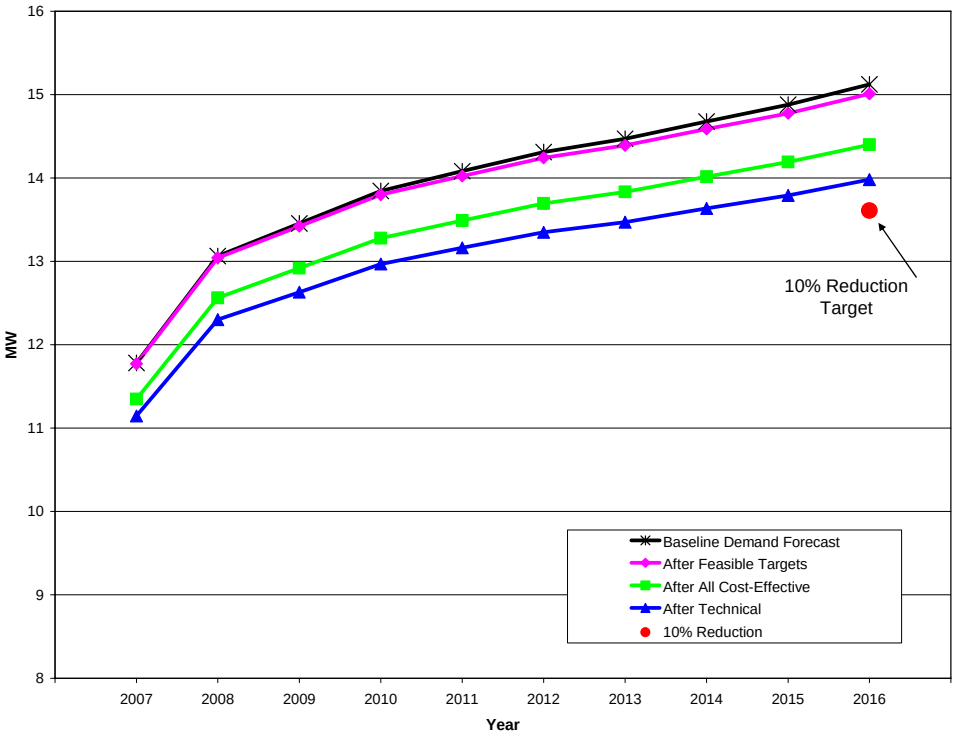
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf. Energy Commission staff interviewed Craig Kuennen on August 28, 2007. Based on this interview, Glendale asked that we adjust the 2005 savings from 8,463 to 8,400 and the 2006 savings from 8,463 to 8,215. The table reflects these changes.

City of Gridley

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Gridley – Energy Efficiency and Demand Reduction Potentials

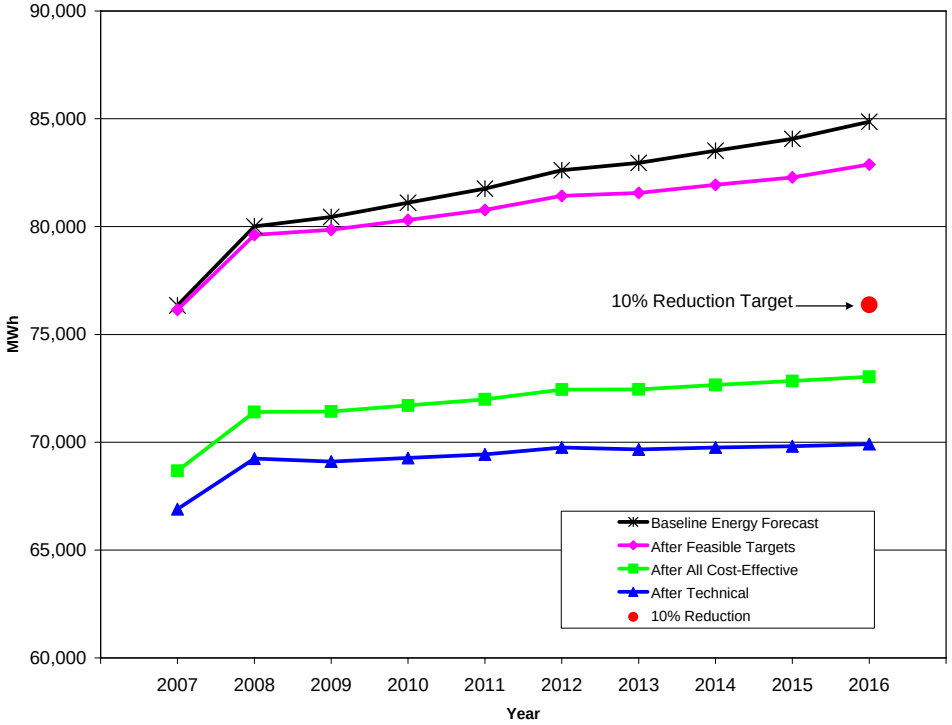
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**5,183**	**6,123**	**6,575**	**6,964**	**7,281**	**7,598**	**7,886**	**8,201**	**8,518**	**8,966**
		Residential			2,831	3,251	3,471	3,658	3,818	3,977	4,129	4,292	4,451	4,743
		Commercial			2,021	2,514	2,733	2,922	3,069	3,215	3,341	3,483	3,630	3,774
		Conventional Industrial			332	358	371	384	395	406	416	426	437	449
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			0	0	0	0	0	0	0	1	1	1
		Commercial			0	0	0	0	0	0	0	0	0	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**3,917**	**4,516**	**4,800**	**5,057**	**5,267**	**5,475**	**5,665**	**5,870**	**6,073**	**6,410**
		Residential			2,129	2,382	2,509	2,615	2,705	2,793	2,878	2,967	3,053	3,269
		Commercial			1,474	1,795	1,940	2,078	2,188	2,297	2,393	2,500	2,605	2,716
		Conventional Industrial			314	339	351	363	374	384	393	404	414	425
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**92**	**183**	**275**	**367**	**459**	**550**	**642**	**734**	**825**	**917**
		1st Year Savings	10	80	92	92	92	92	92	92	92	92	92	92
		Annual Rate of Change		732.1%	14.5%	-0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**36,798**	**40,803**	**42,022**	**43,239**	**43,976**	**44,688**	**45,191**	**45,840**	**46,463**	**47,227**
		CEC 2007 Forecast		33,318	33,771	34,222	34,682	35,091	35,533	35,920	36,296	36,631	36,981	37,313
		After Feasible Targets			36,706	40,619	41,747	42,872	43,518	44,138	44,549	45,106	45,638	46,310
		After All Cost-Effective			32,881	36,287	37,222	38,182	38,710	39,213	39,527	39,970	40,391	40,817
		After Technical			31,614	34,680	35,447	36,274	36,695	37,090	37,305	37,639	37,945	38,261
		10% Reduction												42,504
	Demand (MW)	**Baseline Demand Forecast**			**12**	**13**	**13**	**14**	**14**	**14**	**14**	**15**	**15**	**15**
		CEC 2007 Forecast			12	13	13	14	14	14	14	15	15	15
		After Feasible Targets			12	13	13	14	14	14	14	15	15	15
		After All Cost-Effective			11	13	13	13	13	14	14	14	14	14
		After Technical			11	12	13	13	13	13	13	14	14	14
		10% Reduction												14

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.06%
		Average Annual Cost-Effective Potential	1.47%
		Average Annual Feasible Targets	0.21%
	Demand (MW)	Average Annual Technical Potential	0.82%
		Average Annual Cost-Effective Potential	0.52%
		Average Annual Feasible Targets	0.08%

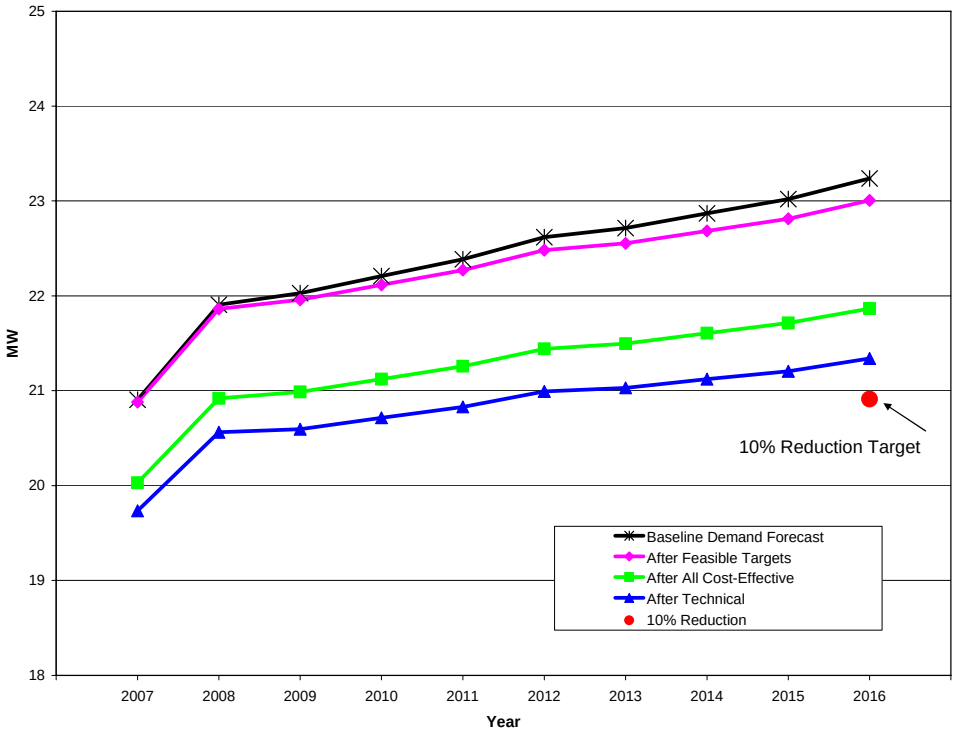
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Healdsburg

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Healdsburg – Energy Efficiency and Demand Reduction Potentials

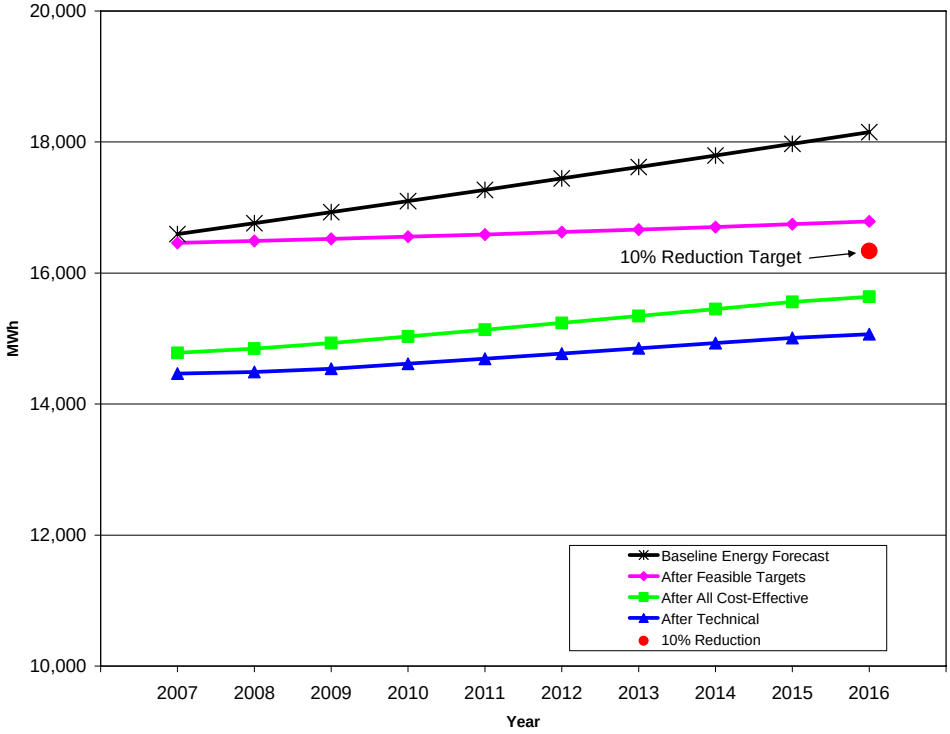
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**9,447**	**10,767**	**11,343**	**11,833**	**12,321**	**12,851**	**13,286**	**13,767**	**14,252**	**14,953**
		Residential			4,525	5,085	5,351	5,574	5,779	5,992	6,184	6,389	6,586	7,004
		Commercial			4,635	5,383	5,686	5,946	6,222	6,532	6,767	7,037	7,318	7,593
		Conventional Industrial			286	299	306	313	320	328	334	342	349	356
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			0	1	1	1	1	1	1	1	1	1
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**7,673**	**8,607**	**9,023**	**9,399**	**9,773**	**10,171**	**10,505**	**10,869**	**11,227**	**11,827**
		Residential			3,894	4,330	4,524	4,684	4,833	4,986	5,121	5,264	5,403	5,777
		Commercial			3,533	4,020	4,236	4,446	4,665	4,904	5,097	5,311	5,524	5,744
		Conventional Industrial			246	257	263	269	275	282	287	294	300	306
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			0	0	0	0	0	0	1	1	1	1
		Commercial			0	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**198**	**397**	**595**	**794**	**992**	**1,190**	**1,389**	**1,587**	**1,786**	**1,984**
		1st Year Savings	5	114	198	198	198	198	198	198	198	198	198	198
		Annual Rate of Change		2321.2%	73.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**76,345**	**80,012**	**80,446**	**81,106**	**81,760**	**82,612**	**82,956**	**83,523**	**84,068**	**84,864**
		CEC 2007 Forecast		73,680	74,682	75,678	76,696	77,600	78,579	79,435	80,266	81,006	81,781	82,516
		After Feasible Targets			76,147	79,615	79,851	80,312	80,768	81,421	81,567	81,935	82,282	82,880
		After All Cost-Effective			68,672	71,405	71,423	71,707	71,987	72,440	72,451	72,654	72,841	73,038
		After Technical			66,898	69,245	69,103	69,273	69,439	69,760	69,670	69,755	69,816	69,911
		10% Reduction												76,378
	Demand (MW)	**Baseline Demand Forecast**			**21**	**22**	**22**	**22**	**22**	**23**	**23**	**23**	**23**	**23**
		CEC 2007 Forecast			21	22	22	22	22	23	23	23	23	23
		After Feasible Targets			21	22	22	22	22	22	23	23	23	23
		After All Cost-Effective			20	21	21	21	21	21	21	22	22	22
		After Technical			20	21	21	21	21	21	21	21	21	21
		10% Reduction												21

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.83%
		Average Annual Cost-Effective Potential	1.45%
		Average Annual Feasible Targets	0.24%
	Demand (MW)	Average Annual Technical Potential	0.85%
		Average Annual Cost-Effective Potential	0.61%
		Average Annual Feasible Targets	0.10%

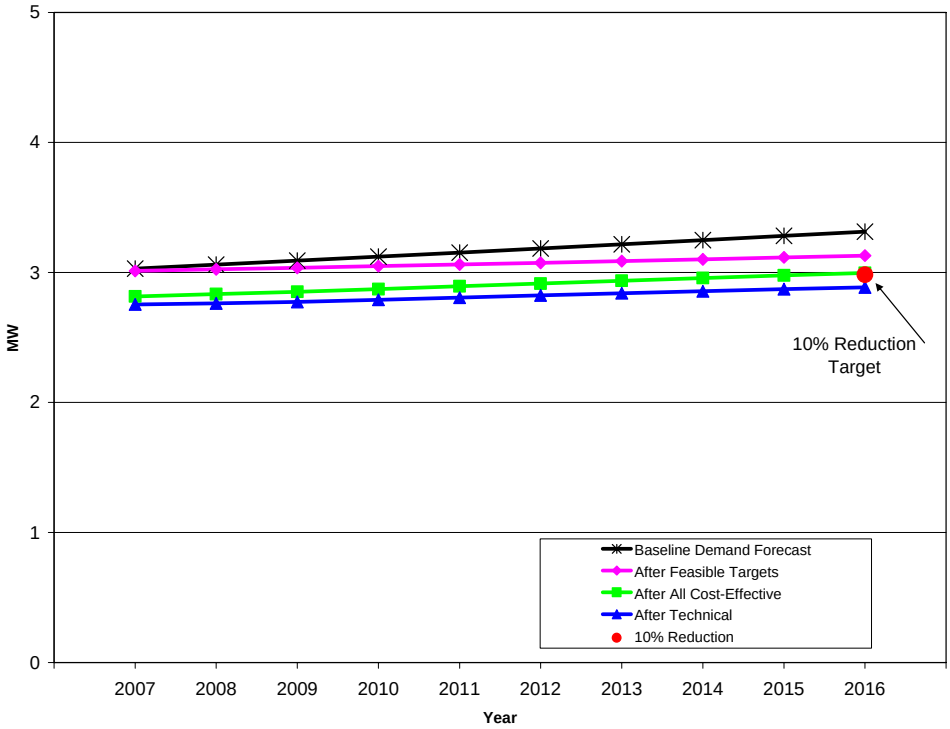
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Hercules

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Hercules – Energy Efficiency and Demand Reduction Potentials

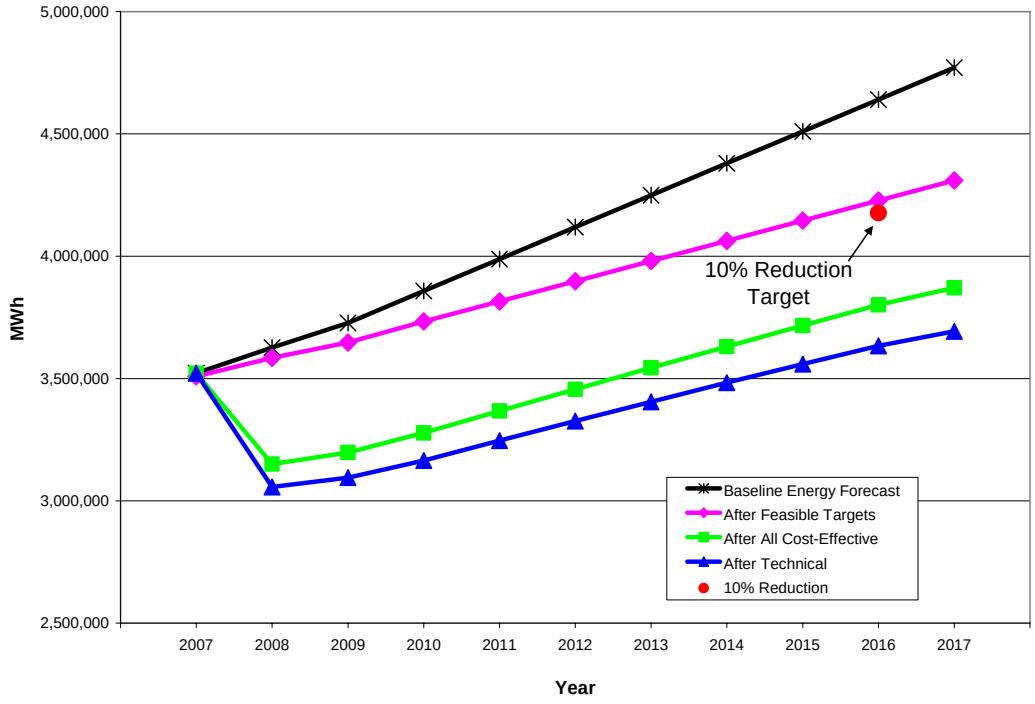
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**2,130**	**2,272**	**2,392**	**2,485**	**2,579**	**2,671**	**2,766**	**2,861**	**2,961**	**3,086**
		Residential			699	766	808	840	870	900	930	962	993	1,056
		Commercial			1,431	1,506	1,584	1,645	1,709	1,772	1,835	1,900	1,969	2,029
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**1,816**	**1,916**	**1,998**	**2,067**	**2,136**	**2,204**	**2,272**	**2,342**	**2,413**	**2,513**
		Residential			576	626	656	679	702	724	747	770	794	850
		Commercial			1,240	1,290	1,342	1,388	1,435	1,480	1,525	1,572	1,619	1,664
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**136**	**273**	**409**	**546**	**682**	**818**	**955**	**1,091**	**1,228**	**1,364**
		1st Year Savings	46	150	136	136	136	136	136	136	136	136	136	136
		Annual Rate of Change		226.1%	-9.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**16,596**	**16,762**	**16,930**	**17,099**	**17,270**	**17,443**	**17,617**	**17,793**	**17,971**	**18,151**
		CEC 2007 Forecast		16,430	16,654	16,876	17,103	17,304	17,522	17,713	17,899	18,064	18,237	18,400
		After Feasible Targets			16,460	16,489	16,521	16,553	16,588	16,624	16,662	16,702	16,744	16,787
		After All Cost-Effective			14,780	14,846	14,932	15,032	15,134	15,239	15,345	15,451	15,558	15,637
		After Technical			14,466	14,490	14,538	14,614	14,691	14,771	14,851	14,932	15,010	15,065
		10% Reduction												16,336
	Demand (MW)	**Baseline Demand Forecast**			**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
		CEC 2007 Forecast			3	3	3	3	3	3	3	3	3	3
		After Feasible Targets			3	3	3	3	3	3	3	3	3	3
		After All Cost-Effective			3	3	3	3	3	3	3	3	3	3
		After Technical			3	3	3	3	3	3	3	3	3	3
		10% Reduction												3

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.78%
		Average Annual Cost-Effective Potential	1.45%
		Average Annual Feasible Targets	0.79%
	Demand (MW)	Average Annual Technical Potential	1.35%
		Average Annual Cost-Effective Potential	1.00%
		Average Annual Feasible Targets	0.58%

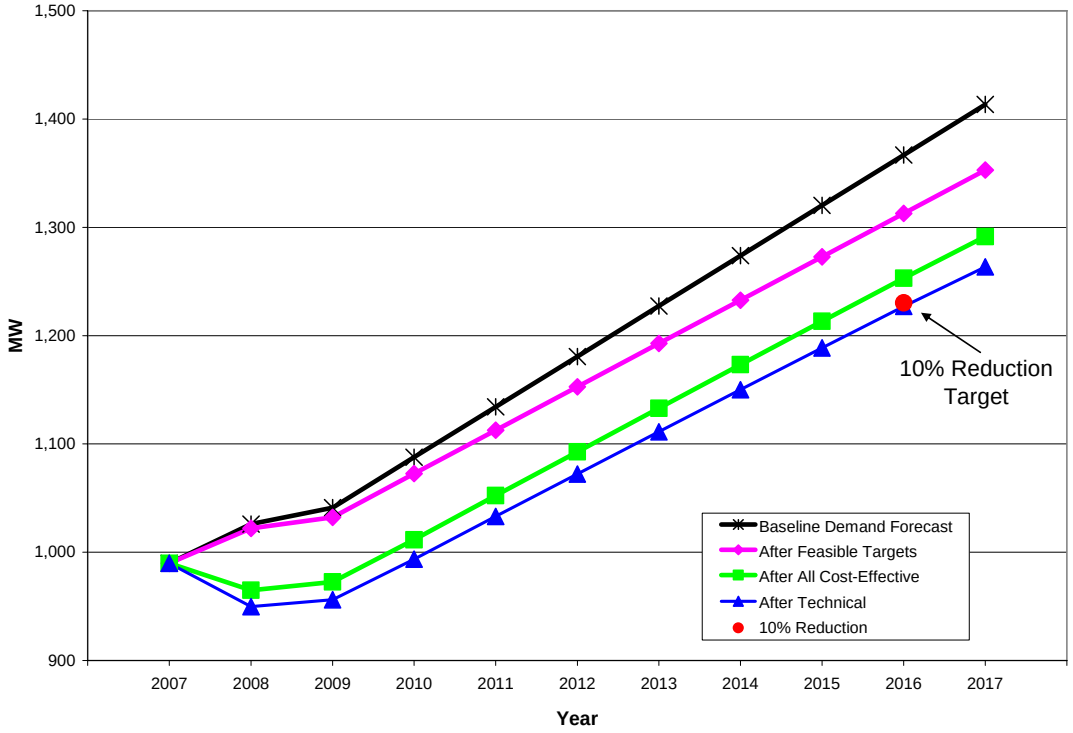
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Imperial Irrigation District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Imperial Irrigation District – Energy Efficiency and Demand Reduction Potentials

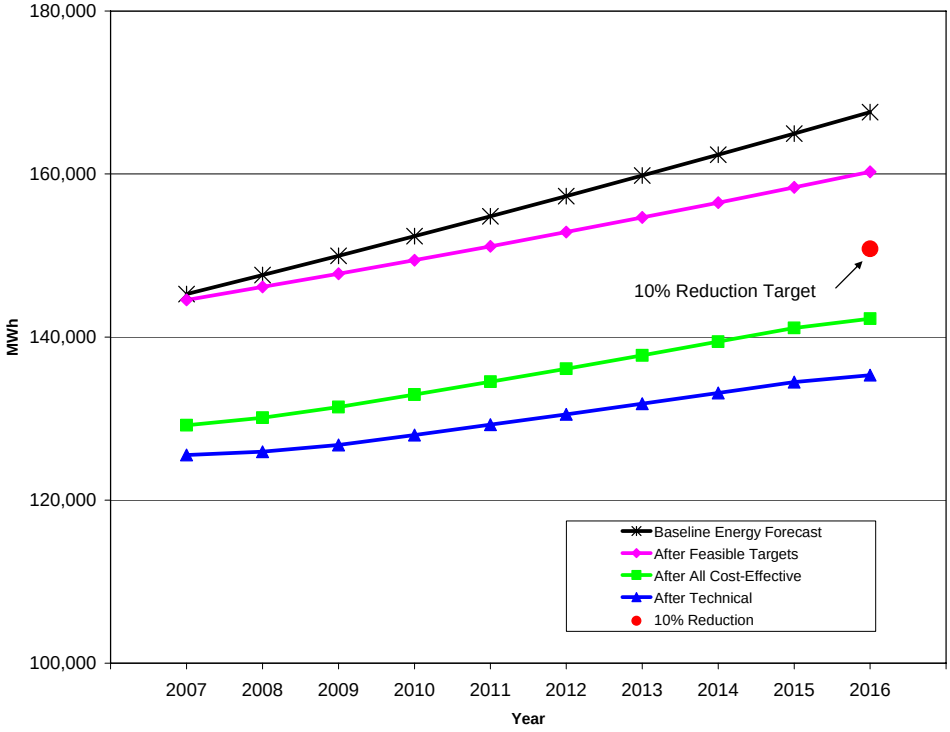
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**				**570,367**	**632,374**	**692,612**	**742,065**	**792,570**	**844,277**	**896,955**	**950,870**	**1,006,526**	**1,078,126**
		Residential				390,550	432,694	469,037	500,036	531,124	562,959	595,822	629,690	663,987	716,216
		Commercial				178,982	198,813	222,672	241,091	260,471	280,305	300,082	320,091	341,410	360,741
		Conventional Industrial				836	866	902	938	975	1,013	1,051	1,090	1,129	1,169
		Data Centers				0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers				0	0	0	0	0	0	0	0	0	0
		Labs				0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**				**76**	**85**	**94**	**101**	**108**	**116**	**124**	**132**	**140**	**150**
		Residential				50	56	61	65	70	74	79	84	89	96
		Commercial				26	29	33	36	39	41	44	47	51	53
		Conventional Industrial				0	0	0	0	0	0	0	0	0	0
		Data Centers				0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers				0	0	0	0	0	0	0	0	0	0
		Labs				0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**				**476,810**	**529,789**	**580,379**	**621,003**	**662,779**	**705,633**	**749,009**	**793,480**	**839,496**	**899,864**
		Residential				326,729	363,905	395,684	422,284	449,186	476,750	505,228	534,598	564,440	609,816
		Commercial				149,322	165,097	183,876	197,867	212,708	227,965	242,828	257,894	274,031	288,988
		Conventional Industrial				759	787	819	852	885	919	953	988	1,024	1,060
		Data Centers				0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers				0	0	0	0	0	0	0	0	0	0
		Labs				0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**				**61**	**69**	**76**	**82**	**88**	**94**	**101**	**107**	**114**	**122**
		Residential				40	45	49	53	57	61	65	69	74	80
		Commercial				21	24	27	29	31	33	35	38	40	42
		Conventional Industrial				0	0	0	0	0	0	0	0	0	0
		Data Centers				0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers				0	0	0	0	0	0	0	0	0	0
		Labs				0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**13,223**	**42,223**	**79,723**	**124,790**	**172,790**	**220,790**	**268,790**	**316,790**	**364,790**	**412,790**	**460,790**
		1st Year Savings	3,524	10,500	13,223	29,000	37,500	45,067	48,000	48,000	48,000	48,000	48,000	48,000	48,000
		Annual Rate of Change		198.0%	25.9%	119.3%	29.3%	20.2%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption			0.4%	0.8%	1.0%	1.2%	1.2%	1.2%	1.1%	1.1%	1.1%	1.0%	1.0%
	Demand (MW)	**System Total**				**3.9**	**9.0**	**15.1**	**21.6**	**28.0**	**34.5**	**41.0**	**47.5**	**54.0**	**60.5**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**3,522,049**	**3,627,022**	**3,727,314**	**3,857,769**	**3,988,224**	**4,118,678**	**4,249,133**	**4,379,588**	**4,510,042**	**4,640,497**	**4,770,952**
		CEC 2007 Forecast		3,205,120	3,270,369	3,335,114	3,394,474	3,452,432	3,512,734	3,574,140	3,635,843	3,700,055	3,766,572	3,830,081	3,892,948
		After Feasible Targets			3,508,826	3,584,799	3,647,591	3,732,979	3,815,434	3,897,888	3,980,343	4,062,798	4,145,252	4,227,707	4,310,162
		After All Cost-Effective			3,522,049	3,150,212	3,197,525	3,277,390	3,367,221	3,455,899	3,543,500	3,630,578	3,716,562	3,801,001	3,871,088
		After Technical			3,522,049	3,056,656	3,094,941	3,165,158	3,246,158	3,326,109	3,404,856	3,482,633	3,559,172	3,633,970	3,692,826
		10% Reduction												4,176,447	
	Demand (MW)	**Baseline Demand Forecast**			**990**	**1,026**	**1,041**	**1,088**	**1,134**	**1,181**	**1,227**	**1,274**	**1,320**	**1,367**	**1,413**
		CEC 2007 Forecast			917	935	951	967	983	1,000	1,017	1,034	1,052	1,070	
		After Feasible Targets			990	1,022	1,032	1,073	1,113	1,153	1,193	1,233	1,273	1,313	1,353
		After All Cost-Effective			990	965	973	1,011	1,052	1,093	1,133	1,173	1,213	1,253	1,291
		After Technical			990	950	956	993	1,033	1,072	1,111	1,150	1,189	1,227	1,264
		10% Reduction												1,230	

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.48%
		Average Annual Cost-Effective Potential	2.07%
		Average Annual Feasible Targets	1.02%
	Demand (MW)	Average Annual Technical Potential	1.20%
		Average Annual Cost-Effective Potential	0.98%
		Average Annual Feasible Targets	0.46%

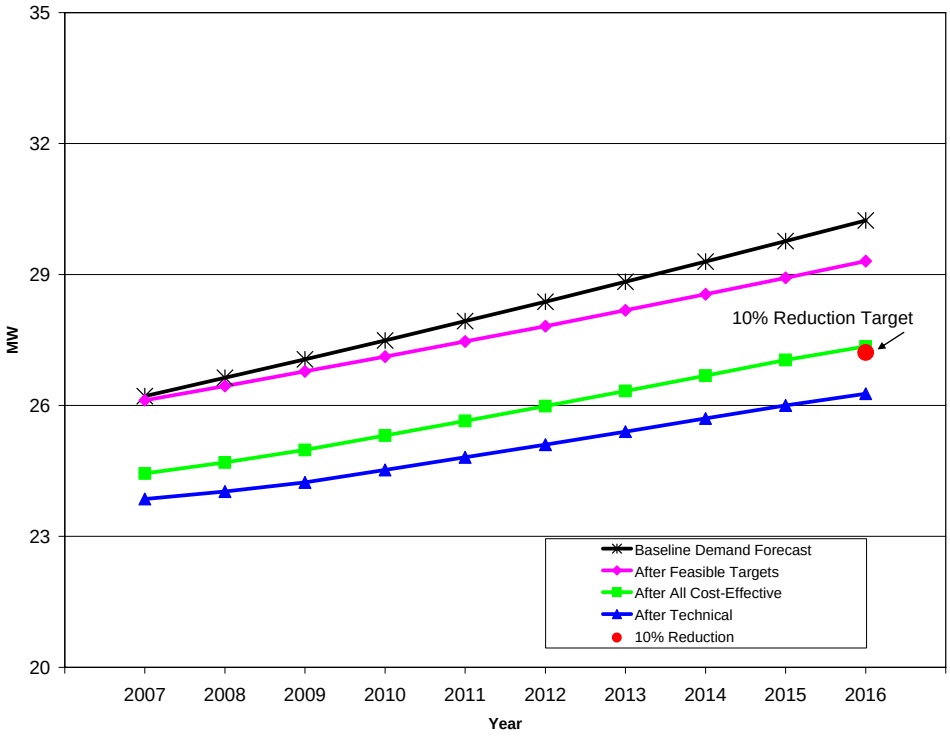
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf. Energy Commission staff interviewed Phil Falkenstein on August 28, 2007. Based on this interview, IID asked that we adjust the 2006 savings from 2,065 to 10,500 and to add 2007 projected savings of 20,000. The table reflects these changes.

Lassen Municipal Utility District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Lassen Municipal Utility District – Energy Efficiency and Demand Reduction Potentials

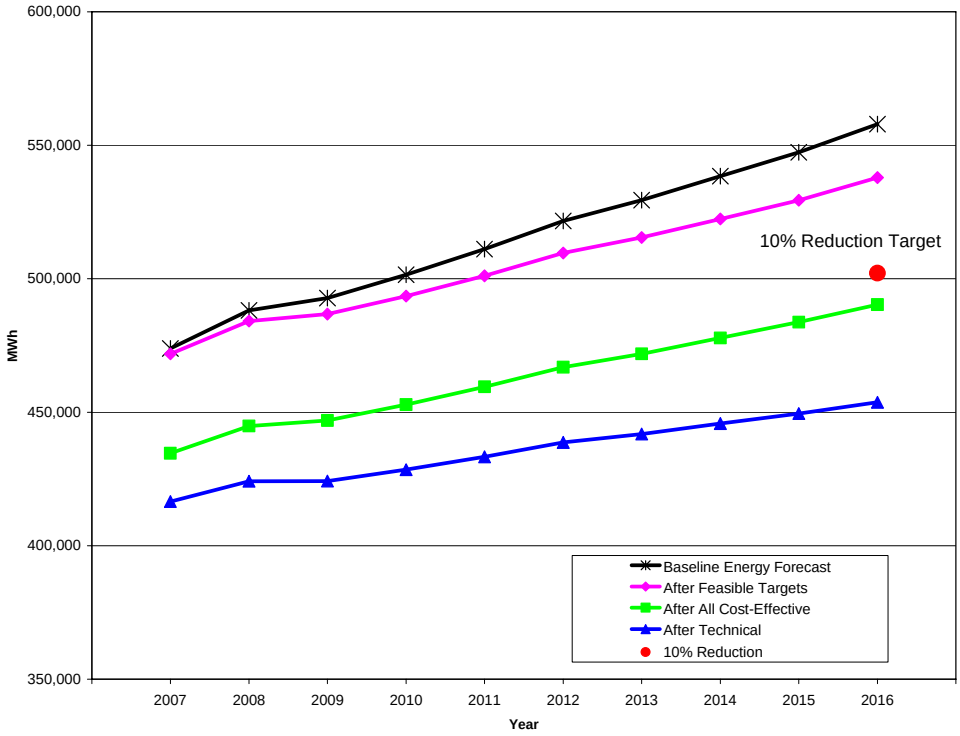
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**19,745**	**21,671**	**23,192**	**24,373**	**25,554**	**26,754**	**27,967**	**29,203**	**30,475**	**32,263**
		Residential			12,375	13,617	14,414	15,073	15,694	16,315	16,952	17,601	18,239	19,466
		Commercial			6,570	7,231	7,932	8,429	8,965	9,520	10,070	10,631	11,240	11,775
		Conventional Industrial			800	823	847	871	895	920	945	971	997	1,023
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**3**	**3**	**3**	**3**	**3**	**3**	**4**	**4**	**4**
		Residential			1	1	1	2	2	2	2	2	2	2
		Commercial			1	1	1	1	1	2	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**16,094**	**17,488**	**18,549**	**19,420**	**20,284**	**21,154**	**22,033**	**22,926**	**23,826**	**25,338**
		Residential			10,667	11,625	12,220	12,706	13,165	13,621	14,085	14,554	15,018	16,115
		Commercial			4,686	5,101	5,546	5,909	6,292	6,684	7,076	7,476	7,888	8,279
		Conventional Industrial			741	762	783	805	827	850	873	896	920	944
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**
		Residential			1	1	1	1	1	1	1	1	1	2
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**733**	**1,467**	**2,200**	**2,933**	**3,666**	**4,400**	**5,133**	**5,866**	**6,600**	**7,333**
		1st Year Savings	77	307	733	733	733	733	733	733	733	733	733	733
		Annual Rate of Change		296.4%	138.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.7**	**0.8**	**0.9**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**145,285**	**147,610**	**149,971**	**152,371**	**154,809**	**157,286**	**159,802**	**162,359**	**164,957**	**167,596**
		CEC 2007 Forecast		129,329	131,088	132,836	134,621	136,209	137,927	139,429	140,889	142,188	143,548	144,837
		After Feasible Targets			144,552	146,143	147,771	149,438	151,142	152,886	154,669	156,493	158,357	160,263
		After All Cost-Effective			129,191	130,122	131,422	132,951	134,525	136,132	137,769	139,433	141,131	142,258
		After Technical			125,540	125,938	126,779	127,998	129,255	130,531	131,835	133,156	134,482	135,333
		10% Reduction												150,837
	Demand (MW)	**Baseline Demand Forecast**			**26**	**27**	**27**	**27**	**28**	**28**	**29**	**29**	**30**	**30**
		CEC 2007 Forecast			26	27	27	27	28	28	29	29	30	30
		After Feasible Targets			26	26	27	27	27	28	28	29	29	29
		After All Cost-Effective			24	25	25	25	26	26	26	27	27	27
		After Technical			24	24	24	25	25	25	25	26	26	26
		10% Reduction												27

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.07%
		Average Annual Cost-Effective Potential	1.62%
		Average Annual Feasible Targets	0.47%
	Demand (MW)	Average Annual Technical Potential	1.41%
		Average Annual Cost-Effective Potential	1.02%
		Average Annual Feasible Targets	0.33%

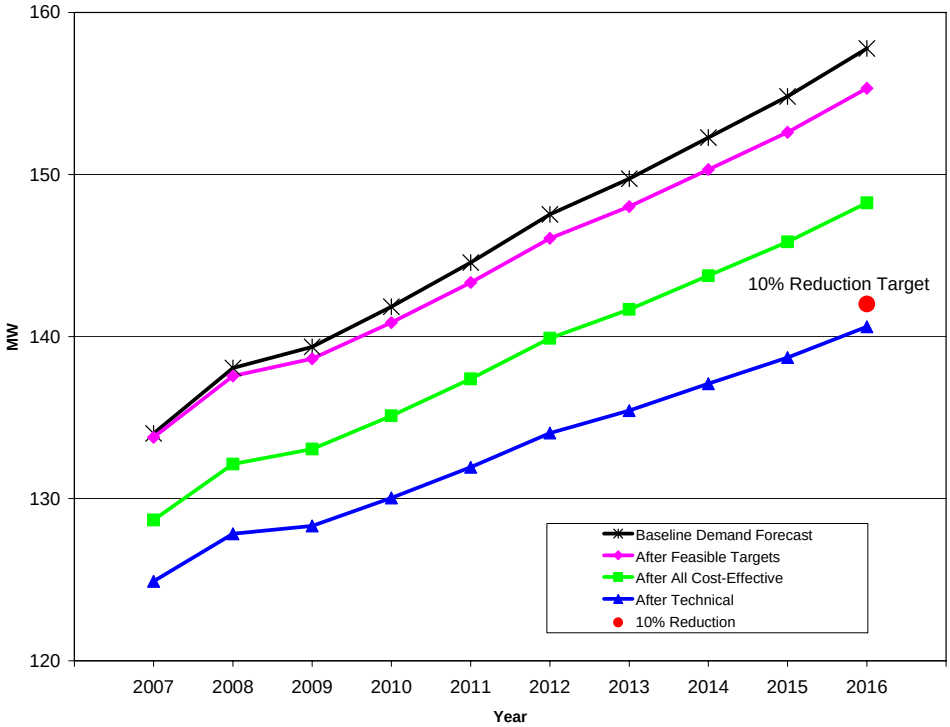
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Lodi Electric Utility

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Lodi Electric Utility – Energy Efficiency and Demand Reduction Potentials

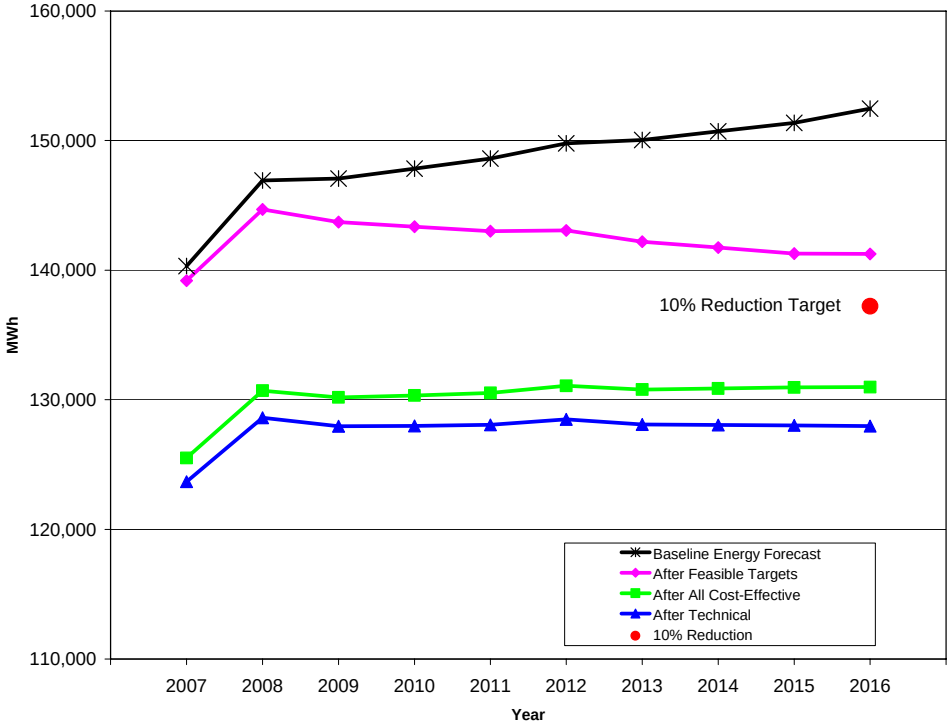
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**57,327**	**64,010**	**68,584**	**73,050**	**77,846**	**82,957**	**87,621**	**92,635**	**97,834**	**104,120**
		Residential			30,766	34,084	36,566	38,861	41,254	43,788	46,267	48,905	51,598	55,406
		Commercial			26,562	29,925	32,018	34,189	36,592	39,170	41,354	43,730	46,236	48,713
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**9**	**10**	**11**	**12**	**13**	**13**	**14**	**15**	**16**	**17**
		Residential			5	6	6	7	7	8	8	9	10	10
		Commercial			4	4	5	5	5	6	6	6	7	7
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**39,265**	**43,323**	**45,850**	**48,658**	**51,629**	**54,759**	**57,570**	**60,581**	**63,618**	**67,565**
		Residential			18,849	20,726	21,874	23,062	24,278	25,554	26,757	28,032	29,310	31,419
		Commercial			20,416	22,596	23,976	25,596	27,351	29,205	30,813	32,549	34,308	36,147
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**5**	**6**	**6**	**7**	**7**	**8**	**8**	**9**	**9**	**10**
		Residential			3	3	3	3	4	4	4	4	4	5
		Commercial			3	3	3	3	4	4	4	4	5	5
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**2,000**	**4,000**	**6,000**	**8,001**	**10,001**	**12,001**	**14,001**	**16,001**	**18,001**	**20,001**
		1st Year Savings	889	1,316	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
		Annual Rate of Change		48.0%	51.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Demand (MW)	**System Total**			**0.2**	**0.5**	**0.7**	**1.0**	**1.2**	**1.5**	**1.7**	**2.0**	**2.2**	**2.5**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**473,890**	**488,143**	**492,770**	**501,518**	**511,123**	**521,643**	**529,433**	**538,375**	**547,369**	**557,864**
		CEC 2007 Forecast		468,680	475,054	481,390	487,860	493,614	499,839	505,283	510,573	515,279	520,207	524,882
		After Feasible Targets			471,890	484,143	486,770	493,518	501,122	509,643	515,432	522,374	529,368	537,862
		After All Cost-Effective			434,625	444,821	446,920	452,860	459,494	466,884	471,863	477,794	483,752	490,298
		After Technical			416,563	424,133	424,186	428,468	433,276	438,686	441,813	445,739	449,535	453,744
		10% Reduction												502,077
	Demand (MW)	**Baseline Demand Forecast**			**134**	**138**	**139**	**142**	**145**	**148**	**150**	**152**	**155**	**158**
		CEC 2007 Forecast			134	138	139	142	145	148	150	152	155	158
		After Feasible Targets			134	138	139	141	143	146	148	150	153	155
		After All Cost-Effective			129	132	133	135	137	140	142	144	146	148
		After Technical			125	128	128	130	132	134	135	137	139	141
		10% Reduction												142

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.02%
		Average Annual Cost-Effective Potential	1.31%
		Average Annual Feasible Targets	0.39%
	Demand (MW)	Average Annual Technical Potential	1.18%
		Average Annual Cost-Effective Potential	0.65%
		Average Annual Feasible Targets	0.17%

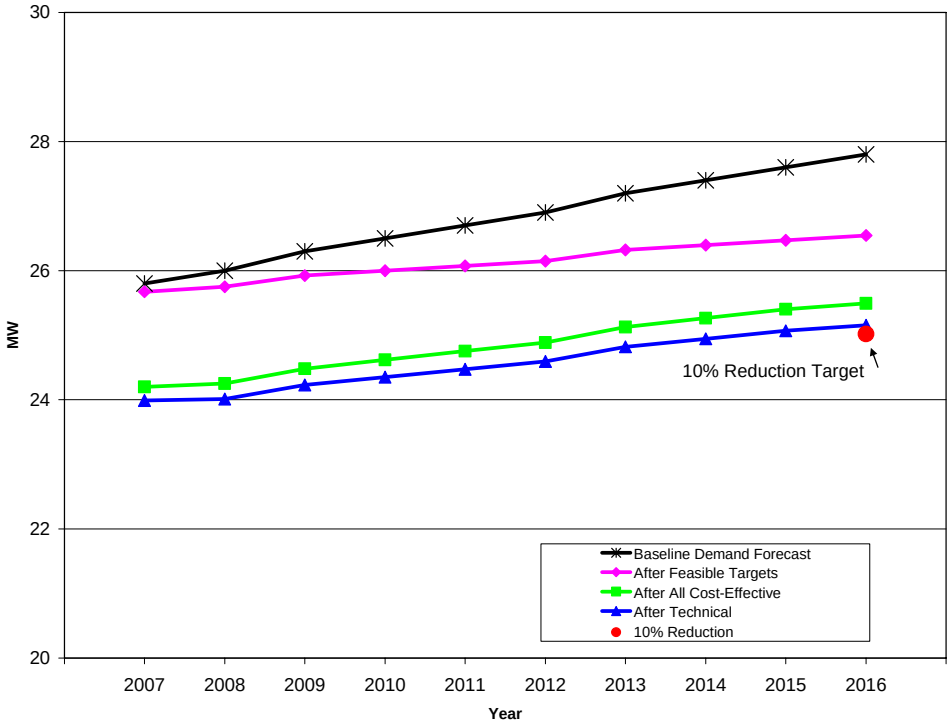
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Lompoc

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Lompoc – Energy Efficiency and Demand Reduction Potentials

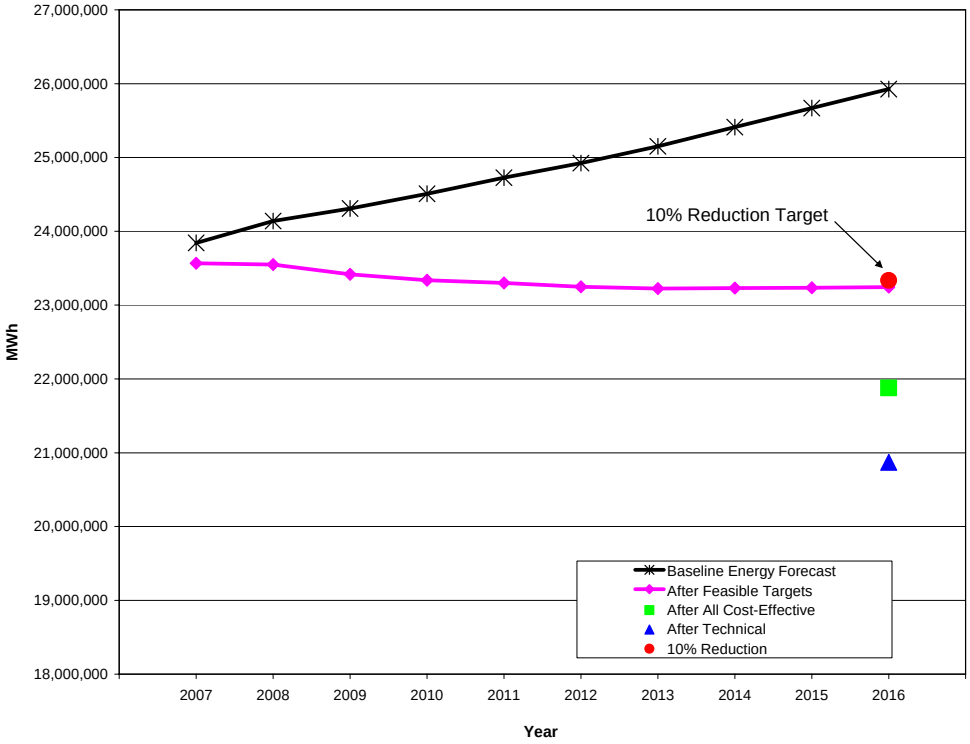
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**16,634**	**18,320**	**19,118**	**19,851**	**20,557**	**21,297**	**21,960**	**22,664**	**23,348**	**24,494**
		Residential			10,271	11,493	12,067	12,548	12,989	13,443	13,861	14,302	14,722	15,615
		Commercial			6,363	6,826	7,051	7,303	7,568	7,854	8,100	8,362	8,625	8,879
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**
		Residential			1	1	1	1	1	1	1	1	1	2
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**14,797**	**16,227**	**16,892**	**17,498**	**18,089**	**18,706**	**19,258**	**19,842**	**20,409**	**21,489**
		Residential			9,019	10,055	10,508	10,875	11,213	11,562	11,878	12,212	12,530	13,370
		Commercial			5,778	6,172	6,384	6,623	6,875	7,145	7,381	7,630	7,879	8,118
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**1,121**	**2,242**	**3,363**	**4,484**	**5,605**	**6,726**	**7,847**	**8,968**	**10,089**	**11,210**
		1st Year Savings	138	164	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121
		Annual Rate of Change		18.6%	584.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%
	Demand (MW)	**System Total**			**0.1**	**0.3**	**0.4**	**0.5**	**0.6**	**0.8**	**0.9**	**1.0**	**1.1**	**1.3**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**140,308**	**146,931**	**147,069**	**147,830**	**148,617**	**149,783**	**150,048**	**150,710**	**151,364**	**152,465**
		CEC 2007 Forecast		136,661	138,520	140,367	142,254	143,932	145,747	147,335	148,877	150,249	151,686	153,049
		After Feasible Targets			139,187	144,689	143,706	143,346	143,012	143,057	142,201	141,742	141,275	141,255
		After All Cost-Effective			125,511	130,704	130,177	130,332	130,528	131,077	130,789	130,868	130,955	130,976
		After Technical			123,674	128,611	127,951	127,980	128,060	128,487	128,088	128,046	128,016	127,971
		10% Reduction												137,218
	Demand (MW)	**Baseline Demand Forecast**			**26**	**26**	**26**	**27**	**27**	**27**	**27**	**27**	**28**	**28**
		CEC 2007 Forecast			26	26	26	27	27	27	27	27	28	28
		After Feasible Targets			26	26	26	26	26	26	26	26	26	27
		After All Cost-Effective			24	24	24	25	25	25	25	25	25	25
		After Technical			24	24	24	24	24	25	25	25	25	25
		10% Reduction												25

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.65%
		Average Annual Cost-Effective Potential	1.45%
		Average Annual Feasible Targets	0.75%
	Demand (MW)	Average Annual Technical Potential	0.99%
		Average Annual Cost-Effective Potential	0.86%
		Average Annual Feasible Targets	0.47%

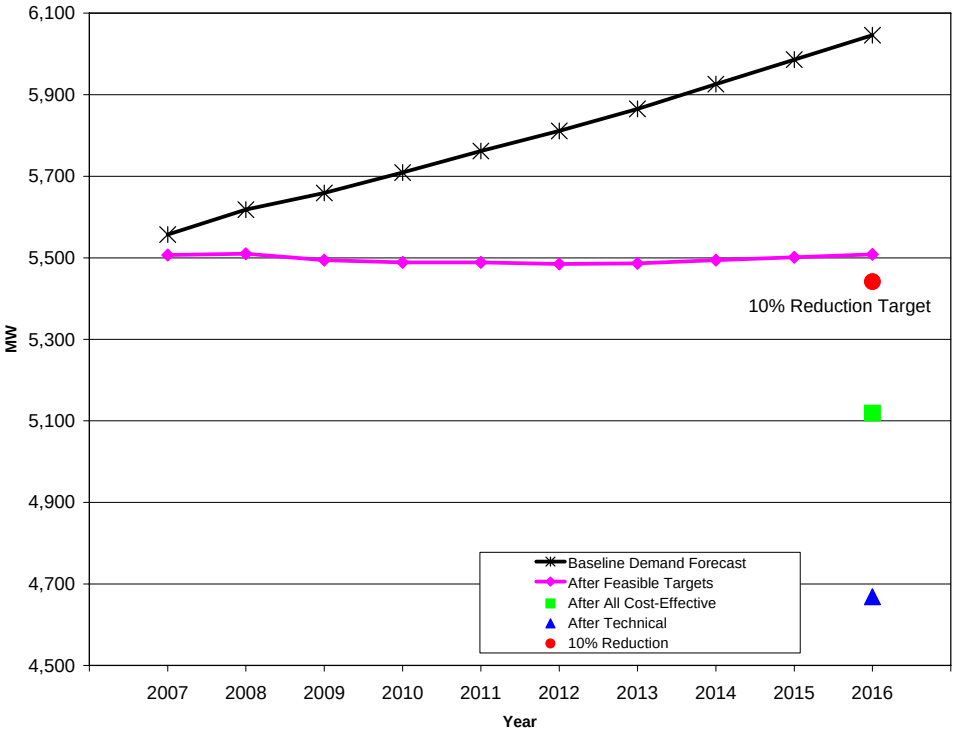
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Los Angeles Department of Water & Power

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Los Angeles Department of Water & Power – Energy Efficiency and Demand Reduction Potentials

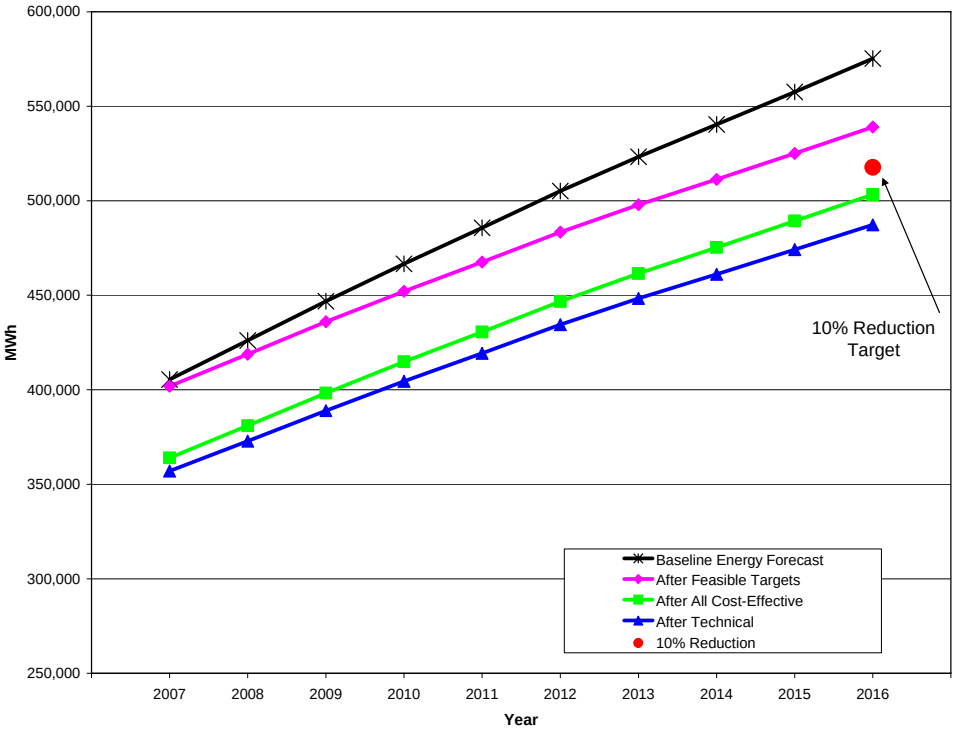
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**												**5,057,000**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**1,377**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**												**4,049,000**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**927**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Feasible Targets	Energy (MWh)	**System Total**			**275,000**	**590,000**	**890,000**	**1,170,000**	**1,425,000**	**1,677,000**	**1,929,000**	**2,181,000**	**2,433,000**	**2,685,000**
		1st Year Savings	15,000	58,000	114,000	315,000	300,000	280,000	255,000	252,000	252,000	252,000	252,000	252,000
		Annual Rate of Change		286.7%	96.6%	176.3%	-4.8%	-6.7%	-8.9%	-1.2%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption			0.5%	1.3%	1.2%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	Demand (MW)	**System Total**			**50.0**	**108.0**	**165.0**	**220.0**	**273.0**	**326.0**	**379.0**	**432.0**	**485.0**	**538.0**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**23,842,000**	**24,140,000**	**24,309,000**	**24,508,000**	**24,726,000**	**24,924,000**	**25,153,000**	**25,412,000**	**25,670,000**	**25,927,000**
		CEC 2007 Forecast		24,411,111	24,556,978	24,745,832	24,924,449	25,063,995	25,192,027	25,294,379	25,396,873	25,478,110	25,561,600	25,636,248
		After Feasible Targets			23,567,000	23,550,000	23,419,000	23,338,000	23,301,000	23,247,000	23,224,000	23,231,000	23,237,000	23,242,000
		After All Cost-Effective												21,878,000
		After Technical												20,870,000
		10% Reduction												23,334,300
	Demand (MW)	**Baseline Demand Forecast**			**5,557**	**5,618**	**5,659**	**5,709**	**5,762**	**5,811**	**5,865**	**5,926**	**5,986**	**6,046**
		CEC 2007 Forecast			5,834	5,872	5,907	5,936	5,961	5,983	6,005	6,024	6,044	6,063
		After Feasible Targets			5,507	5,510	5,494	5,489	5,489	5,485	5,486	5,494	5,501	5,508
		After All Cost-Effective												5,119
		After Technical												4,669
		10% Reduction												5,441

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.03%
		Average Annual Cost-Effective Potential	1.63%
		Average Annual Feasible Targets	1.08%
	Demand (MW)	Average Annual Technical Potential	2.38%
		Average Annual Cost-Effective Potential	1.60%
		Average Annual Feasible Targets	0.93%

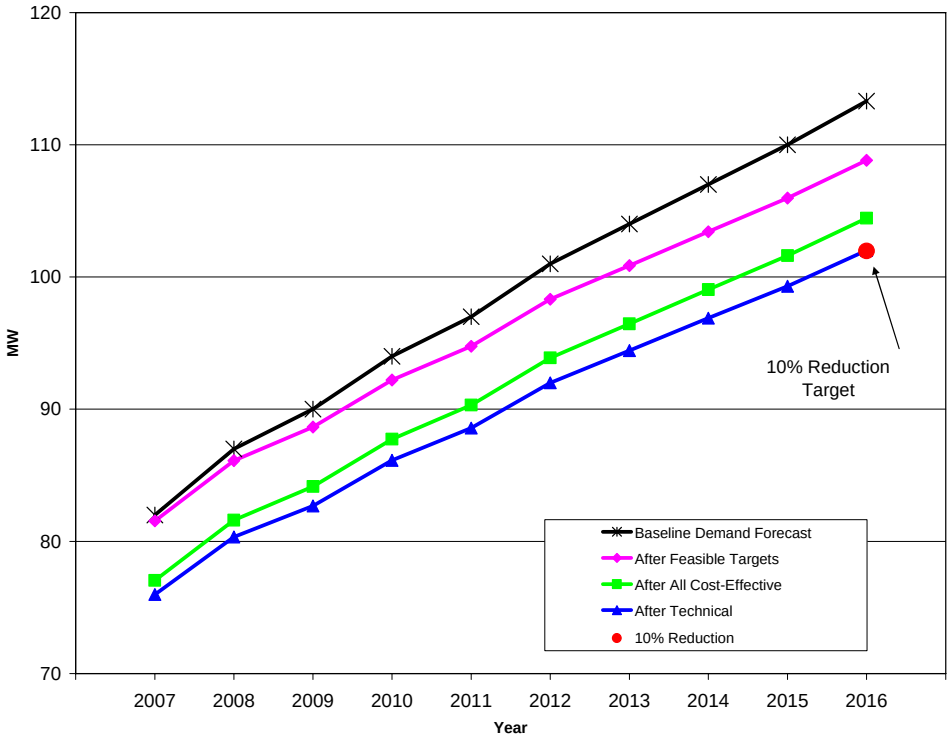
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector*. http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.;
Quantum Consulting, *Los Angeles Department of Water and Power Energy Efficiency Potential Study, Final Report*, submitted to LADWP, February 8, 2006.
Energy Commission staff interviewed Jeff Peltol on August 28, 2007. Based on this interview, LADWP asked that we adjust the 2005 savings from 16,561 to 15,000 and the 2006 savings from 153,075 to 58,000. The table reflects these changes.

Merced Irrigation District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Merced Irrigation District – Energy Efficiency and Demand Reduction Potentials

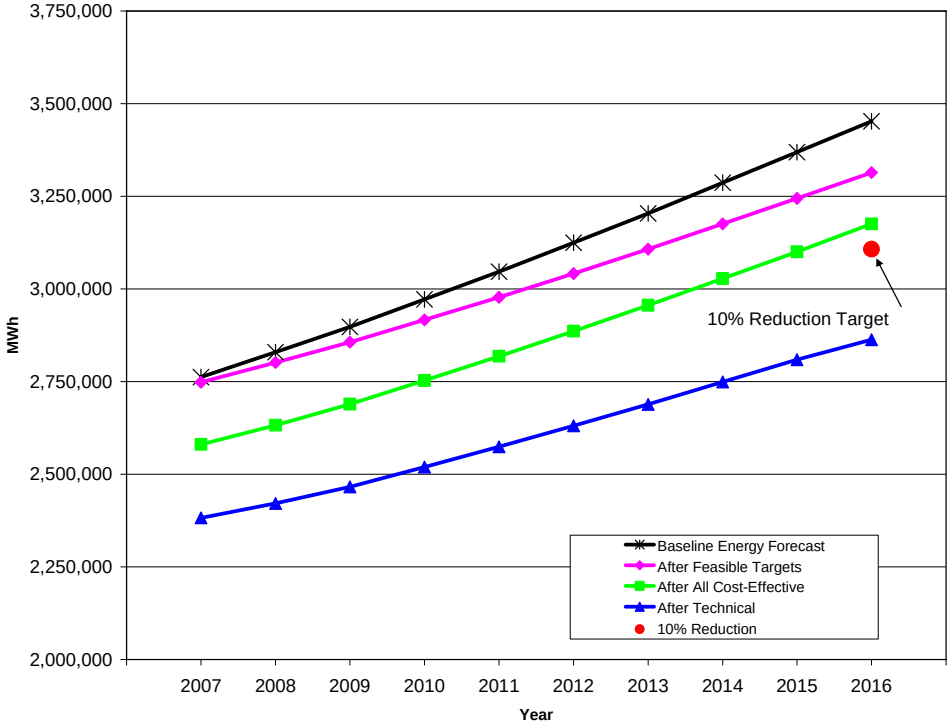
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**48,419**	**53,172**	**57,877**	**62,102**	**66,330**	**70,713**	**74,957**	**79,108**	**83,425**	**88,019**
		Residential			7,157	8,024	8,690	9,271	9,836	10,420	11,008	11,600	12,199	13,172
		Commercial			18,388	21,122	23,980	26,455	28,953	31,546	34,028	36,433	38,965	41,370
		Conventional Industrial			22,874	24,025	25,206	26,376	27,541	28,746	29,921	31,075	32,260	33,478
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**6**	**7**	**7**	**8**	**8**	**9**	**10**	**10**	**11**	**11**
		Residential			1	1	1	1	1	1	1	1	2	2
		Commercial			3	3	3	4	4	4	5	5	5	6
		Conventional Industrial			3	3	3	3	3	3	3	4	4	4
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**41,504**	**45,029**	**48,508**	**51,779**	**55,052**	**58,439**	**61,736**	**64,974**	**68,305**	**72,009**
		Residential			5,728	6,388	6,881	7,321	7,751	8,197	8,645	9,094	9,555	10,391
		Commercial			14,629	16,458	18,381	20,157	21,949	23,804	25,591	27,336	29,135	30,902
		Conventional Industrial			21,147	22,183	23,246	24,301	25,351	26,438	27,500	28,543	29,615	30,717
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**5**	**5**	**6**	**6**	**7**	**7**	**8**	**8**	**8**	**9**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			2	2	2	3	3	3	3	4	4	4
		Conventional Industrial			2	3	3	3	3	3	3	3	3	4
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**3,619**	**7,239**	**10,858**	**14,478**	**18,097**	**21,717**	**25,336**	**28,956**	**32,575**	**36,195**
		1st Year Savings	142	283	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619
		Annual Rate of Change		99.0%	1180.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Demand (MW)	**System Total**			**0.4**	**0.9**	**1.3**	**1.8**	**2.2**	**2.7**	**3.1**	**3.6**	**4.0**	**4.5**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**405,448**	**426,039**	**446,816**	**466,608**	**485,629**	**505,153**	**523,285**	**540,289**	**557,608**	**575,253**
		CEC 2007 Forecast		375,214	380,317	385,389	390,569	395,176	400,159	404,518	408,753	412,520	416,466	420,208
		After Feasible Targets			401,829	418,800	435,958	452,130	467,532	483,436	497,949	511,333	525,033	539,058
		After All Cost-Effective			363,944	381,010	398,308	414,829	430,577	446,714	461,549	475,315	489,303	503,244
		After Technical			357,029	372,867	388,939	404,506	419,299	434,440	448,328	461,181	474,183	487,234
		10% Reduction												517,728
	Demand (MW)	**Baseline Demand Forecast**			**82**	**87**	**90**	**94**	**97**	**101**	**104**	**107**	**110**	**113**
		CEC 2007 Forecast			82	87	90	94	97	101	104	107	110	113
		After Feasible Targets			82	86	89	92	95	98	101	103	106	109
		After All Cost-Effective			77	82	84	88	90	94	96	99	102	104
		After Technical			76	80	83	86	89	92	94	97	99	102
		10% Reduction												102

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.78%
		Average Annual Cost-Effective Potential	1.46%
		Average Annual Feasible Targets	0.73%
	Demand (MW)	Average Annual Technical Potential	1.15%
		Average Annual Cost-Effective Potential	0.90%
		Average Annual Feasible Targets	0.45%

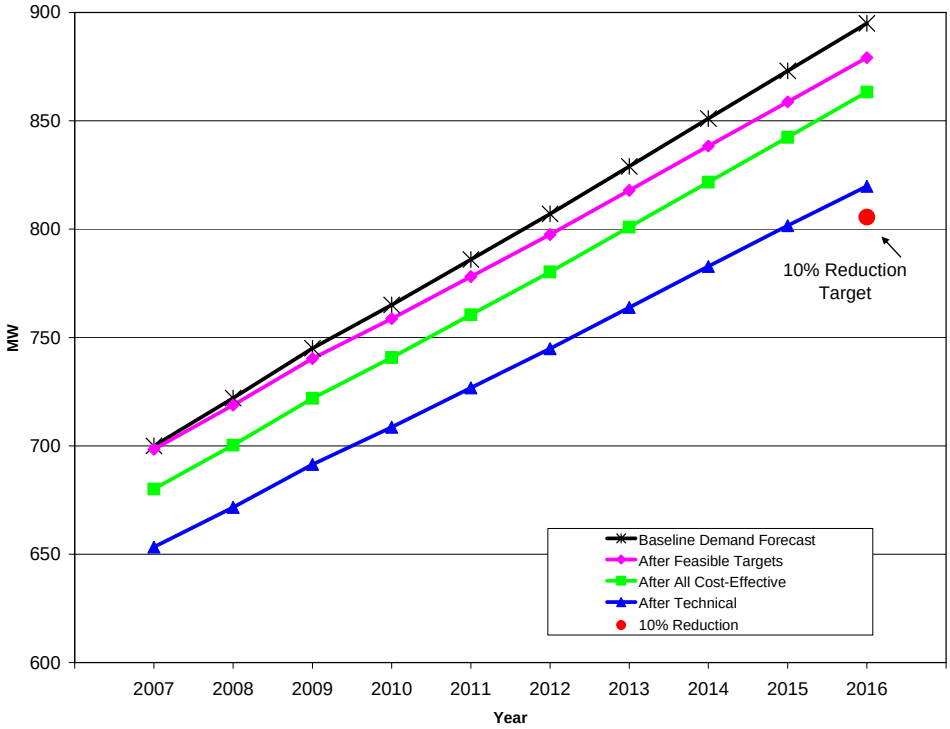
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Modesto Irrigation District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Modesto Irrigation District – Energy Efficiency and Demand Reduction Potentials

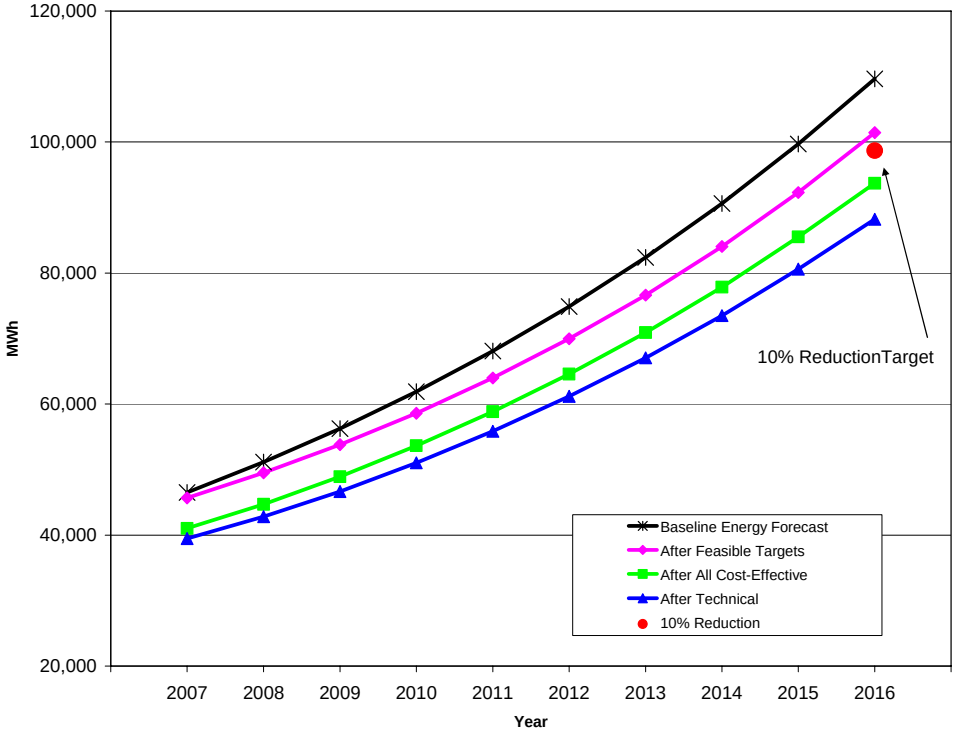
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**379,677**	**408,165**	**431,572**	**452,146**	**472,760**	**493,883**	**515,439**	**537,619**	**559,954**	**589,690**
		Residential			178,447	196,092	208,322	218,650	228,653	238,848	249,381	260,278	271,100	289,952
		Commercial			93,680	101,955	110,535	118,133	126,069	134,285	142,564	151,064	159,760	167,804
		Conventional Industrial			107,550	110,119	112,715	115,364	118,038	120,750	123,493	126,277	129,094	131,934
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**47**	**50**	**54**	**56**	**59**	**62**	**65**	**68**	**71**	**75**
		Residential			22	24	25	27	28	30	31	33	34	37
		Commercial			13	14	15	16	18	19	20	21	22	23
		Conventional Industrial			12	13	13	13	13	14	14	14	15	15
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**181,530**	**197,201**	**208,495**	**218,470**	**228,267**	**238,248**	**248,371**	**258,708**	**268,952**	**276,984**
		Residential			113,414	125,124	132,267	138,120	143,641	149,157	154,788	160,538	166,187	169,828
		Commercial			44,819	48,223	51,813	55,361	59,058	62,936	66,834	70,817	74,802	78,578
		Conventional Industrial			23,296	23,853	24,415	24,989	25,568	26,156	26,750	27,353	27,963	28,578
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**20**	**22**	**23**	**24**	**26**	**27**	**28**	**29**	**31**	**32**
		Residential			11	13	13	14	15	15	16	17	18	18
		Commercial			6	6	7	7	8	8	9	9	10	10
		Conventional Industrial			3	3	3	3	3	3	3	3	3	3
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**13,856**	**27,711**	**41,567**	**55,423**	**69,279**	**83,134**	**96,990**	**110,846**	**124,702**	**138,557**
		1st Year Savings	3,222	3,458	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856
		Annual Rate of Change		7.3%	300.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Demand (MW)	**System Total**			**1.6**	**3.2**	**4.8**	**6.3**	**7.9**	**9.5**	**11.1**	**12.7**	**14.3**	**15.9**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**2,761,835**	**2,829,220**	**2,897,663**	**2,971,574**	**3,046,657**	**3,124,462**	**3,203,968**	**3,286,481**	**3,369,146**	**3,452,432**
		CEC 2007 Forecast		2,619,344	2,659,162	2,698,742	2,739,161	2,775,110	2,814,001	2,848,011	2,881,057	2,910,458	2,941,244	2,970,446
		After Feasible Targets			2,747,979	2,801,508	2,856,096	2,916,151	2,977,379	3,041,327	3,106,978	3,175,635	3,244,445	3,313,875
		After All Cost-Effective			2,580,306	2,632,019	2,689,168	2,753,104	2,818,390	2,886,214	2,955,596	3,027,773	3,100,194	3,175,448
		After Technical			2,382,158	2,421,054	2,466,091	2,519,428	2,573,897	2,630,579	2,688,529	2,748,862	2,809,193	2,862,743
		10% Reduction												3,107,189
	Demand (MW)	**Baseline Demand Forecast**			**700**	**722**	**745**	**765**	**786**	**807**	**829**	**851**	**873**	**895**
		CEC 2007 Forecast			671	680	690	698	708	718	727	736	745	755
		After Feasible Targets			698	719	740	759	778	797	818	838	859	879
		After All Cost-Effective			680	700	722	741	760	780	801	822	842	863
		After Technical			653	672	691	709	727	745	764	783	802	820
		10% Reduction												806

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.91%
		Average Annual Cost-Effective Potential	0.90%
		Average Annual Feasible Targets	0.45%
	Demand (MW)	Average Annual Technical Potential	0.94%
		Average Annual Cost-Effective Potential	0.40%
		Average Annual Feasible Targets	0.20%

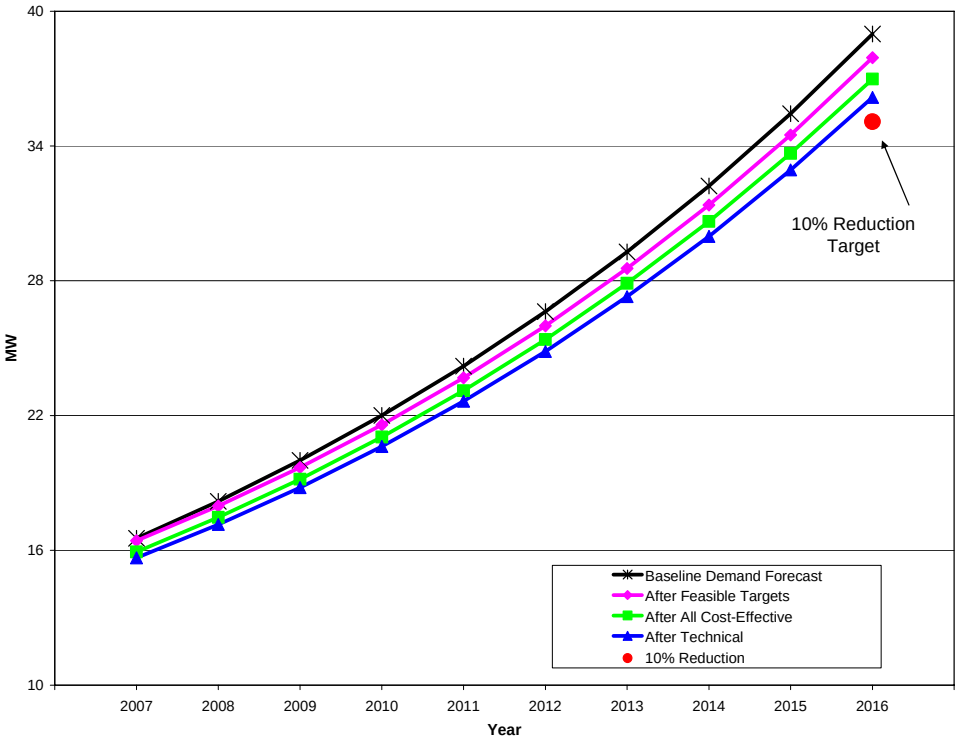
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Moreno Valley

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Moreno Valley – Energy Efficiency and Demand Reduction Potentials

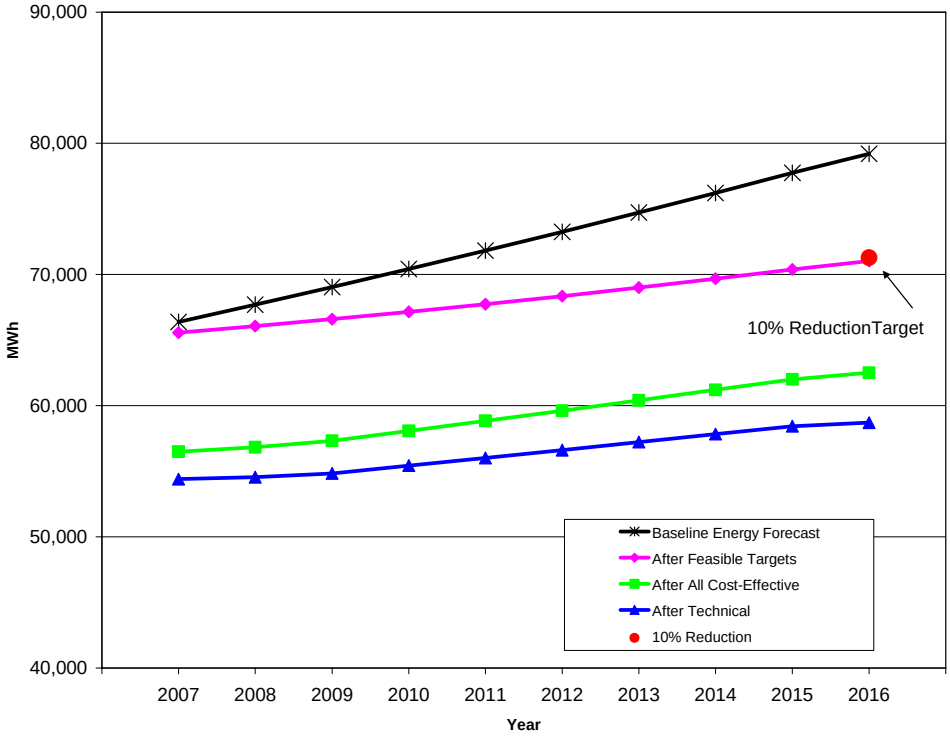
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**7,024**	**8,340**	**9,607**	**10,863**	**12,225**	**13,712**	**15,338**	**17,120**	**19,074**	**21,447**
		Residential			4,828	5,490	6,037	6,557	7,105	7,696	8,342	9,047	9,810	10,897
		Commercial			2,043	2,690	3,403	4,132	4,938	5,825	6,796	7,863	9,044	10,316
		Conventional Industrial			153	160	167	174	182	191	200	210	221	233
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**	**3**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	0	0	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**5,487**	**6,450**	**7,345**	**8,254**	**9,236**	**10,304**	**11,475**	**12,757**	**14,156**	**15,941**
		Residential			3,947	4,505	4,952	5,387	5,847	6,345	6,889	7,484	8,129	9,091
		Commercial			1,416	1,816	2,258	2,726	3,241	3,806	4,424	5,103	5,849	6,662
		Conventional Industrial			124	129	134	140	147	154	161	170	178	188
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**
		Residential			0	0	1	1	1	1	1	1	1	1
		Commercial			0	0	0	0	0	0	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**822**	**1,644**	**2,466**	**3,289**	**4,111**	**4,933**	**5,755**	**6,577**	**7,399**	**8,221**
		1st Year Savings	245	44	822	822	822	822	822	822	822	822	822	822
		Annual Rate of Change		-81.9%	1761.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%	1.7%	1.6%	1.6%	1.6%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.1**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**46,499**	**51,149**	**56,263**	**61,890**	**68,079**	**74,887**	**82,375**	**90,613**	**99,674**	**109,642**
		CEC 2007 Forecast		45,569	46,076	46,750	47,407	47,995	48,565	49,087	49,588	50,034	50,501	50,924
		After Feasible Targets			45,677	49,504	53,797	58,601	63,968	69,954	76,620	84,036	92,275	101,420
		After All Cost-Effective			41,011	44,698	48,919	53,636	58,843	64,582	70,901	77,856	85,518	93,700
		After Technical			39,475	42,809	46,657	51,027	55,854	61,175	67,037	73,493	80,600	88,195
		10% Reduction												98,677
	Demand (MW)	**Baseline Demand Forecast**			**17**	**18**	**20**	**22**	**24**	**27**	**29**	**32**	**35**	**39**
		CEC 2007 Forecast			17	18	20	22	24	27	29	32	35	39
		After Feasible Targets			16	18	20	22	24	26	29	31	34	38
		After All Cost-Effective			16	17	19	21	23	25	28	31	34	37
		After Technical			16	17	19	21	23	25	27	30	33	36
		10% Reduction												35

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.89%
		Average Annual Cost-Effective Potential	2.15%
		Average Annual Feasible Targets	1.11%
	Demand (MW)	Average Annual Technical Potential	1.07%
		Average Annual Cost-Effective Potential	0.76%
		Average Annual Feasible Targets	0.40%

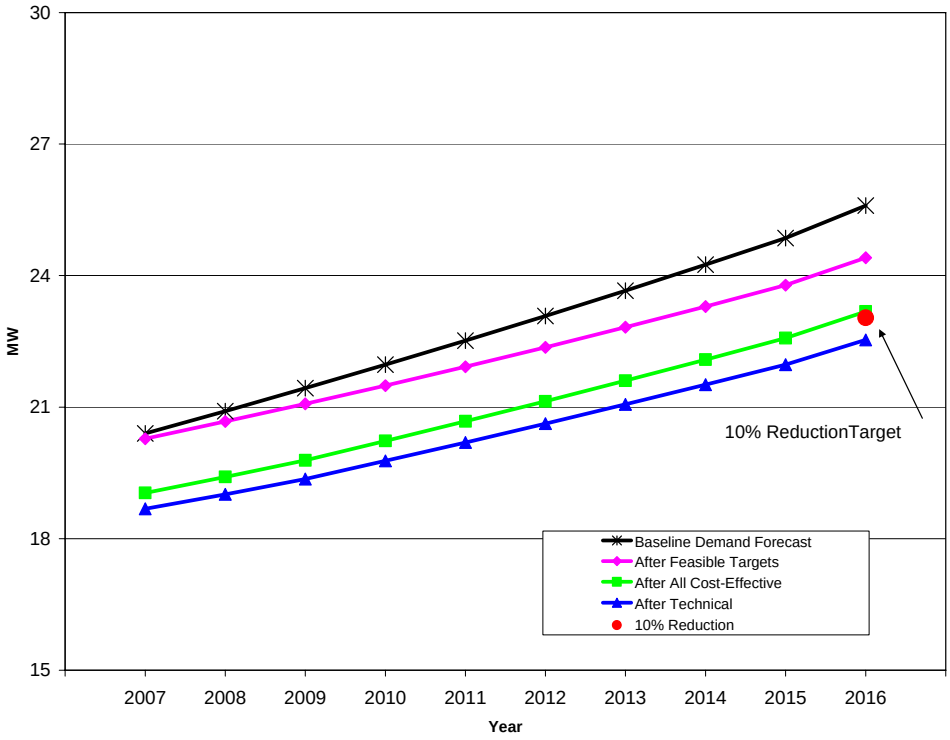
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Needles

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Needles – Energy Efficiency and Demand Reduction Potentials

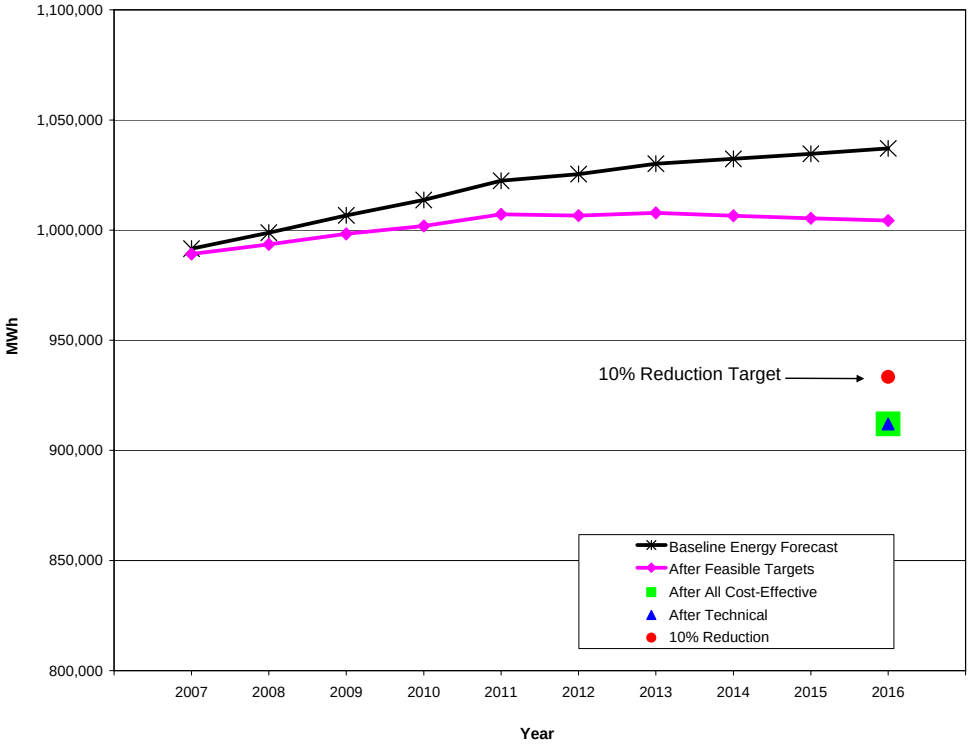
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**11,975**	**13,151**	**14,206**	**14,991**	**15,804**	**16,644**	**17,504**	**18,390**	**19,318**	**20,500**
		Residential			8,487	9,332	10,027	10,583	11,140	11,711	12,301	12,908	13,522	14,444
		Commercial			3,488	3,819	4,179	4,408	4,664	4,933	5,203	5,482	5,796	6,055
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**
		Residential			1	1	1	2	2	2	2	2	2	2
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**9,890**	**10,864**	**11,729**	**12,343**	**12,986**	**13,650**	**14,323**	**15,017**	**15,745**	**16,694**
		Residential			6,811	7,495	8,043	8,454	8,871	9,298	9,741	10,198	10,660	11,376
		Commercial			3,079	3,369	3,686	3,889	4,115	4,352	4,582	4,819	5,085	5,318
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	2	2
		Commercial			0	0	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**817**	**1,635**	**2,452**	**3,269**	**4,086**	**4,904**	**5,721**	**6,538**	**7,356**	**8,173**
		1st Year Savings	18	44	817	817	817	817	817	817	817	817	817	817
		Annual Rate of Change		148.5%	1749.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**1.0**	**1.1**	**1.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**66,377**	**67,697**	**69,044**	**70,419**	**71,824**	**73,258**	**74,723**	**76,219**	**77,747**	**79,200**
		CEC 2007 Forecast		62,277	62,277	62,277	62,277	62,277	62,277	62,277	62,277	62,277	62,277	62,277
		After Feasible Targets			65,560	66,062	66,592	67,150	67,738	68,355	69,002	69,681	70,392	71,027
		After All Cost-Effective			56,488	56,833	57,315	58,076	58,838	59,608	60,400	61,202	62,002	62,506
		After Technical			54,403	54,546	54,838	55,428	56,020	56,615	57,219	57,829	58,429	58,700
		10% Reduction												71,280
	Demand (MW)	**Baseline Demand Forecast**			**20**	**21**	**21**	**22**	**23**	**23**	**24**	**24**	**25**	**26**
		CEC 2007 Forecast			20	21	21	22	23	23	24	24	25	26
		After Feasible Targets			20	21	21	21	22	22	23	23	24	24
		After All Cost-Effective			19	19	20	20	21	21	22	22	23	23
		After Technical			19	19	19	20	20	21	21	22	22	23
		10% Reduction												23

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.82%
		Average Annual Cost-Effective Potential	2.30%
		Average Annual Feasible Targets	1.12%
	Demand (MW)	Average Annual Technical Potential	1.34%
		Average Annual Cost-Effective Potential	1.06%
		Average Annual Feasible Targets	0.52%

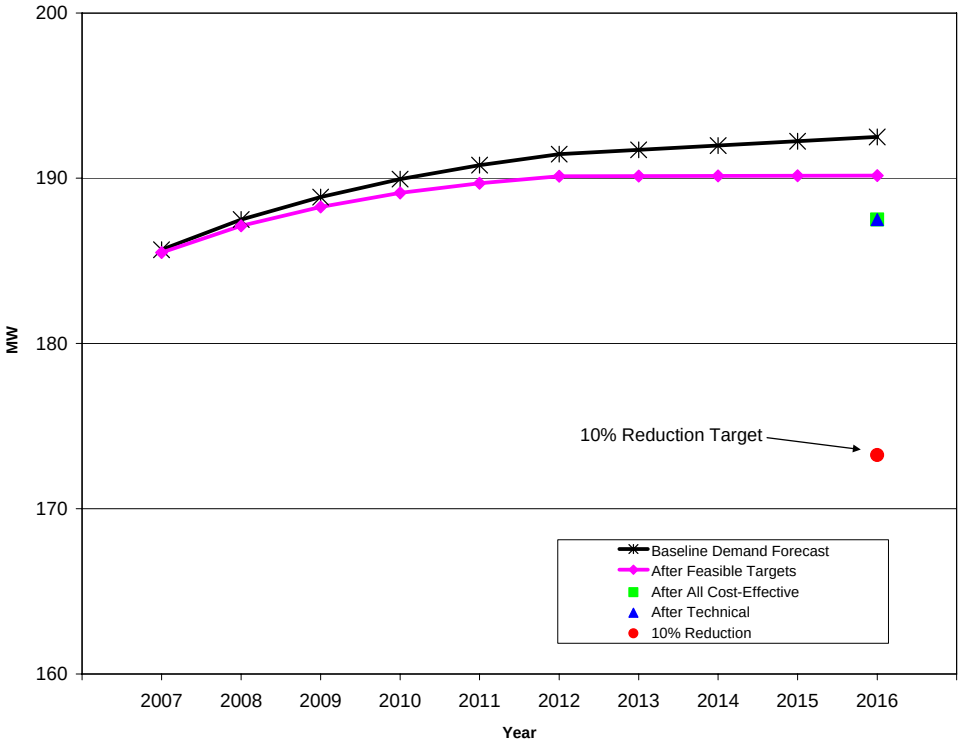
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Palo Alto Utilities

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Palo Alto Utilities – Energy Efficiency and Demand Reduction Potentials

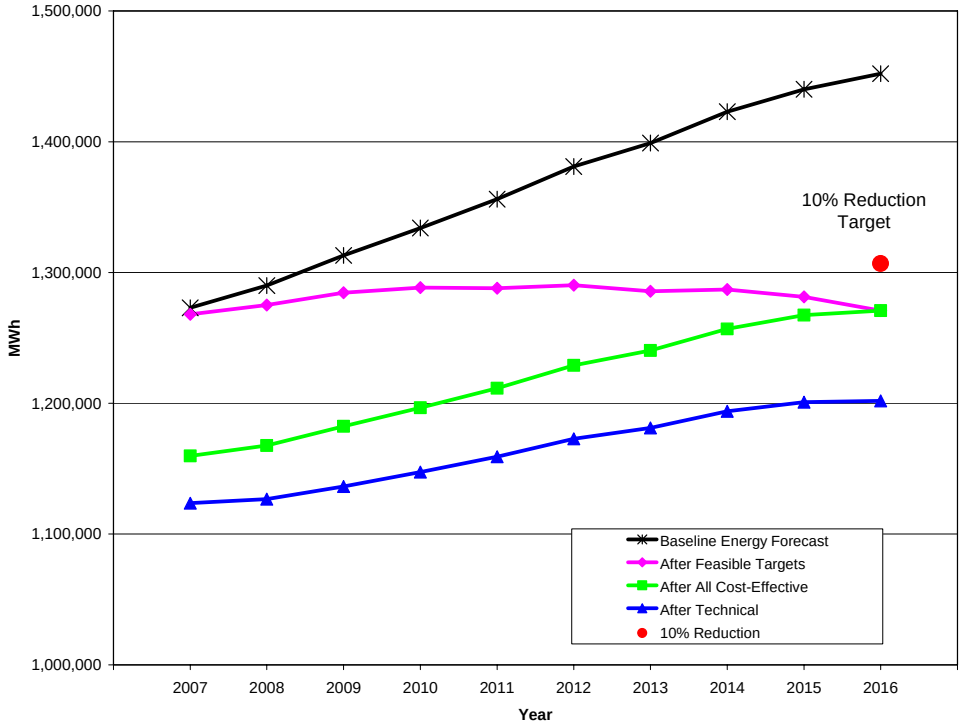
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**												**70,000**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**5**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**												**70,000**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**5**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Feasible Targets	Energy (MWh)	**System Total**			**2,500**	**5,300**	**8,400**	**11,800**	**15,300**	**18,800**	**22,300**	**25,800**	**29,300**	**32,800**
		1st Year Savings	1,877	2,129	2,500	2,800	3,100	3,400	3,500	3,500	3,500	3,500	3,500	3,500
		Annual Rate of Change		13.5%	17.4%	12.0%	10.7%	9.7%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption				0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
	Demand (MW)	**System Total**			**0.2**	**0.4**	**0.6**	**0.8**	**1.1**	**1.3**	**1.6**	**1.8**	**2.1**	**2.3**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**991,631**	**998,819**	**1,006,690**	**1,013,690**	**1,022,466**	**1,025,420**	**1,030,167**	**1,032,365**	**1,034,685**	**1,037,107**
		CEC 2007 Forecast		958,571	971,607	984,565	997,798	1,009,567	1,022,299	1,033,434	1,044,253	1,053,878	1,063,957	1,073,517
		After Feasible Targets			989,131	993,519	998,290	1,001,890	1,007,166	1,006,620	1,007,867	1,006,565	1,005,385	1,004,307
		After All Cost-Effective												911,985
		After Technical												911,985
		10% Reduction												933,396
	Demand (MW)	**Baseline Demand Forecast**			**186**	**188**	**189**	**190**	**191**	**191**	**192**	**192**	**192**	**193**
		CEC 2007 Forecast			185	185	187	188	189	190	190	190	190	190
		After Feasible Targets			185	187	188	189	190	190	190	190	190	190
		After All Cost-Effective												188
		After Technical												188
		10% Reduction												173

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	0.69%
		Average Annual Cost-Effective Potential	0.69%
		Average Annual Feasible Targets	0.32%
	Demand (MW)	Average Annual Technical Potential	0.26%
		Average Annual Cost-Effective Potential	0.26%
		Average Annual Feasible Targets	0.12%

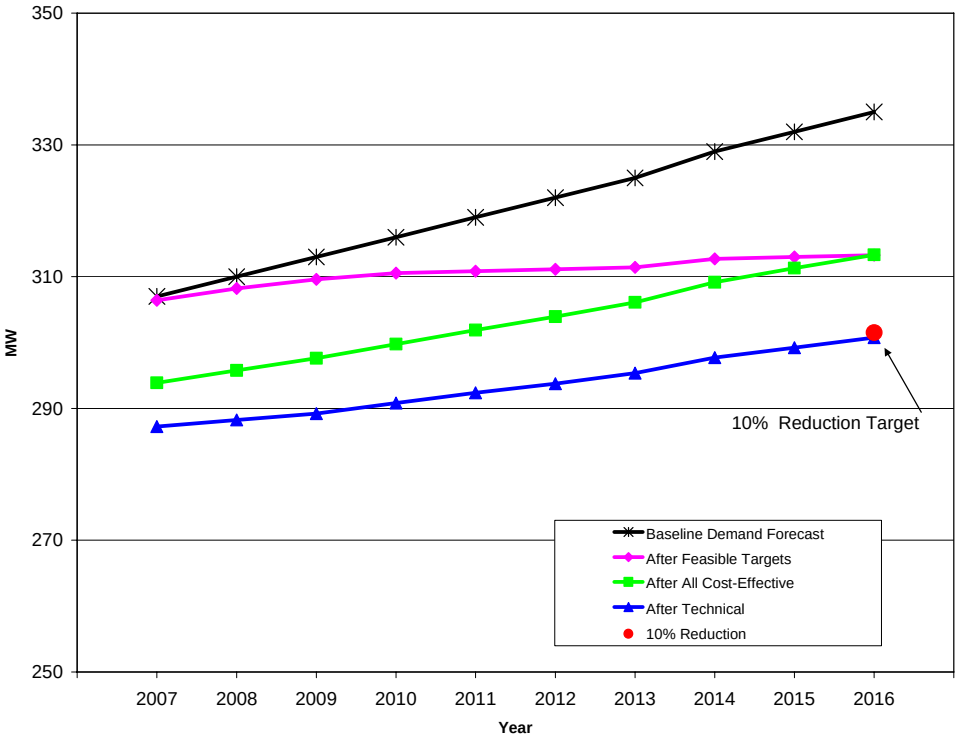
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector*. http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; Rocky Mountain Institute (RMI), *Implementation of Energy Resource Portfolio Planning for the City of Palo Alto, Final Report, Volume I*, submitted to City of Palo Alto, December 2005.

Pasadena Water & Power

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Pasadena Water & Power – Energy Efficiency and Demand Reduction Potentials

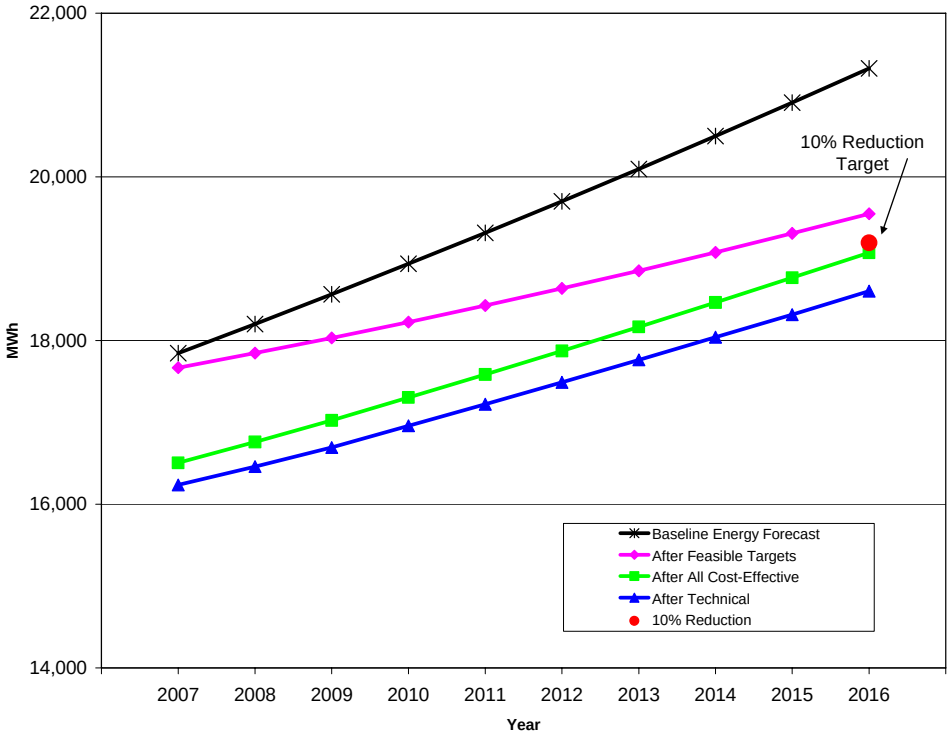
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**149,475**	**163,254**	**176,618**	**186,557**	**196,937**	**208,134**	**217,905**	**229,109**	**239,207**	**250,161**
		Residential			63,956	70,095	74,412	77,892	81,265	84,776	88,105	91,735	95,051	101,124
		Commercial			85,519	93,160	102,206	108,664	115,672	123,358	129,800	137,374	144,156	149,037
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**20**	**22**	**24**	**25**	**27**	**28**	**30**	**31**	**33**	**34**
		Residential			8	9	9	10	10	11	11	12	12	13
		Commercial			12	13	14	15	16	17	18	19	20	21
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**113,210**	**122,260**	**130,670**	**137,533**	**144,575**	**152,051**	**158,662**	**166,143**	**172,725**	**181,260**
		Residential			51,066	55,451	58,319	60,631	62,848	65,136	67,250	69,558	71,629	76,491
		Commercial			62,144	66,809	72,351	76,901	81,727	86,915	91,412	96,585	101,096	104,769
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
		Residential			5	6	6	6	7	7	7	7	8	8
		Commercial			8	9	9	10	11	11	12	13	13	14
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**5,000**	**15,000**	**28,500**	**45,500**	**68,127**	**90,753**	**113,380**	**136,006**	**158,633**	**181,260**
		1st Year Savings	4,501	5,244	5,000	10,000	13,500	17,000	22,627	22,627	22,627	22,627	22,627	22,627
		Annual Rate of Change		16.5%	-4.7%	100.0%	35.0%	25.9%	33.1%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption			0.4%	0.8%	1.0%	1.3%	1.7%	1.6%	1.6%	1.6%	1.6%	1.6%
	Demand (MW)	**System Total**			**0.6**	**1.8**	**3.4**	**5.5**	**8.2**	**10.9**	**13.6**	**16.3**	**19.0**	**21.7**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**1,273,050**	**1,290,090**	**1,313,050**	**1,334,050**	**1,356,050**	**1,381,030**	**1,399,040**	**1,423,030**	**1,440,080**	**1,452,040**
		CEC 2007 Forecast		1,228,370	1,233,344	1,242,359	1,249,130	1,254,290	1,259,165	1,262,438	1,265,203	1,268,183	1,272,378	1,273,943
		After Feasible Targets			1,268,050	1,275,090	1,284,550	1,288,550	1,287,923	1,290,277	1,285,660	1,287,024	1,281,447	1,270,780
		After All Cost-Effective			1,159,840	1,167,830	1,182,380	1,196,517	1,211,475	1,228,979	1,240,378	1,256,887	1,267,355	1,270,780
		After Technical			1,123,575	1,126,836	1,136,432	1,147,493	1,159,113	1,172,896	1,181,135	1,193,921	1,200,873	1,201,879
		10% Reduction												1,306,836
	Demand (MW)	**Baseline Demand Forecast**			**307**	**310**	**313**	**316**	**319**	**322**	**325**	**329**	**332**	**335**
		CEC 2007 Forecast			329	332	334	335	337	338	339	340	342	342
		After Feasible Targets			306	308	310	311	311	311	311	313	313	313
		After All Cost-Effective			294	296	298	300	302	304	306	309	311	313
		After Technical			287	288	289	291	292	294	295	298	299	301
		10% Reduction												302

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.83%
		Average Annual Cost-Effective Potential	1.33%
		Average Annual Feasible Targets	1.33%
	Demand (MW)	Average Annual Technical Potential	1.07%
		Average Annual Cost-Effective Potential	0.68%
		Average Annual Feasible Targets	0.68%

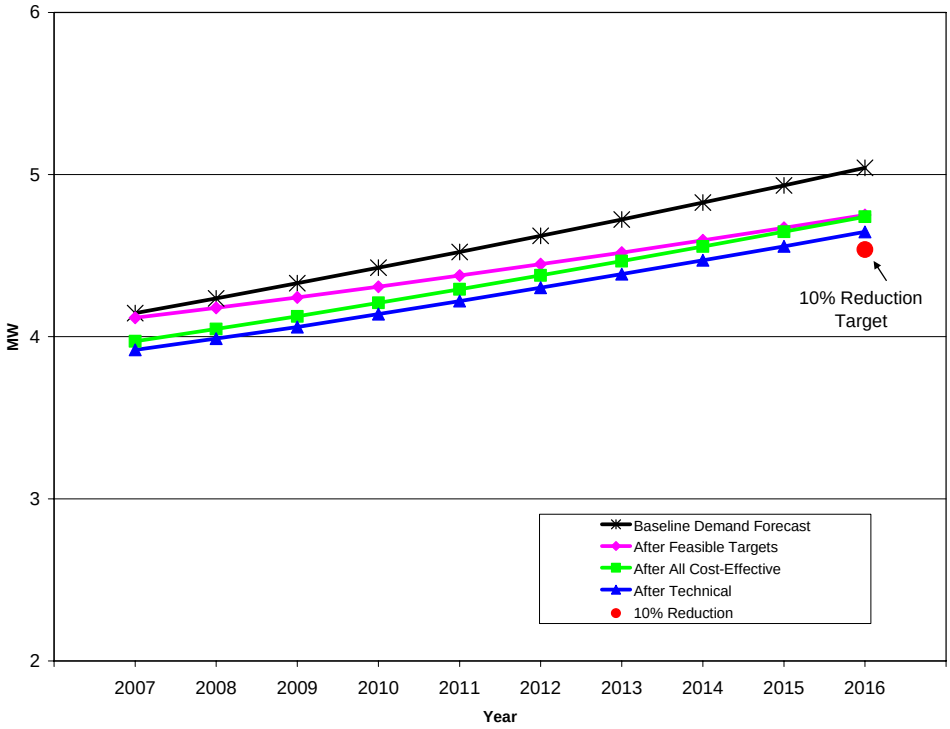
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Pittsburg Power Company/Island Energy

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Pittsburg Power Company/Island Energy – Energy Efficiency and Demand Reduction Potentials

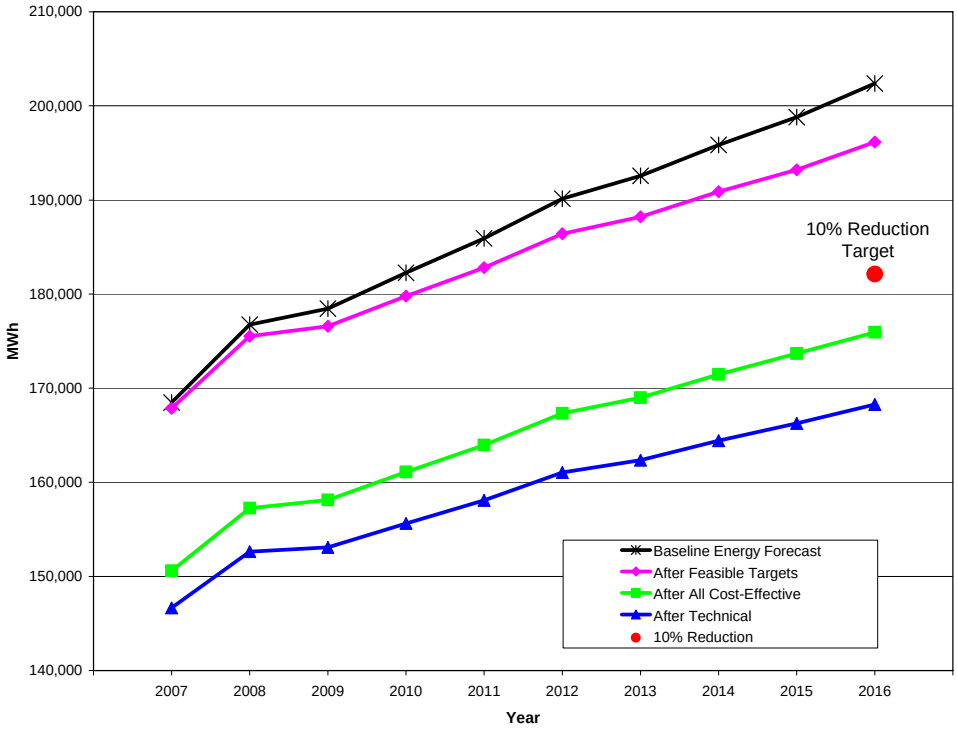
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**1,610**	**1,741**	**1,872**	**1,979**	**2,093**	**2,212**	**2,333**	**2,458**	**2,590**	**2,721**
		Residential			218	240	255	266	277	288	300	311	323	344
		Commercial			1,392	1,501	1,617	1,713	1,816	1,924	2,034	2,147	2,268	2,378
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**1,340**	**1,441**	**1,542**	**1,633**	**1,729**	**1,828**	**1,929**	**2,033**	**2,141**	**2,254**
		Residential			190	208	219	229	237	246	255	264	273	292
		Commercial			1,150	1,233	1,322	1,404	1,492	1,582	1,674	1,769	1,868	1,962
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**178**	**355**	**533**	**711**	**888**	**1,066**	**1,244**	**1,421**	**1,599**	**1,777**
		1st Year Savings			178	178	178	178	178	178	178	178	178	178
		Annual Rate of Change				-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Demand (MW)	**System Total**			**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**17,845**	**18,202**	**18,566**	**18,937**	**19,316**	**19,702**	**20,096**	**20,498**	**20,908**	**21,326**
		CEC 2007 Forecast		17,666	17,906	18,145	18,389	18,606	18,841	19,046	19,245	19,423	19,608	19,785
		After Feasible Targets			17,667	17,846	18,033	18,226	18,427	18,636	18,852	19,077	19,309	19,549
		After All Cost-Effective			16,505	16,761	17,024	17,304	17,586	17,874	18,167	18,465	18,767	19,072
		After Technical			16,235	16,461	16,694	16,958	17,222	17,490	17,763	18,040	18,318	18,605
		10% Reduction												19,193
	Demand (MW)	**Baseline Demand Forecast**			**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**
		CEC 2007 Forecast			4	4	4	4	5	5	5	5	5	5
		After Feasible Targets			4	4	4	4	4	4	5	5	5	5
		After All Cost-Effective			4	4	4	4	4	4	4	5	5	5
		After Technical			4	4	4	4	4	4	4	4	5	5
		10% Reduction												5

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.39%
		Average Annual Cost-Effective Potential	1.15%
		Average Annual Feasible Targets	0.91%
	Demand (MW)	Average Annual Technical Potential	0.86%
		Average Annual Cost-Effective Potential	0.66%
		Average Annual Feasible Targets	0.64%

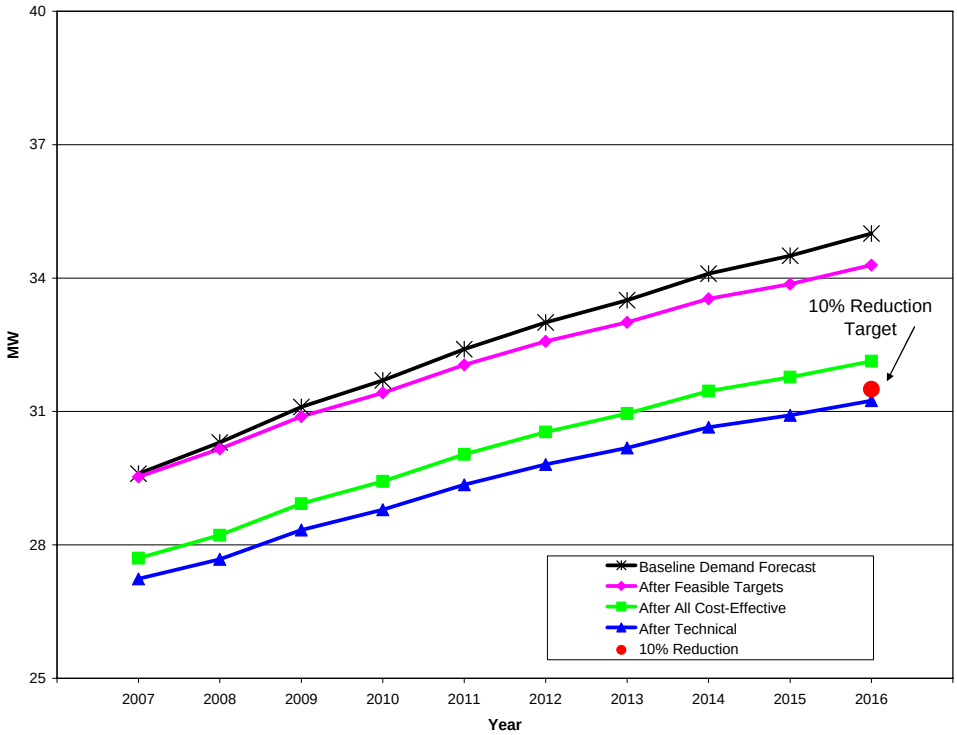
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Plumas Sierra Rural Electric Cooperative

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Plumas Sierra Rural Electric Cooperative – Energy Efficiency and Demand Reduction Potentials

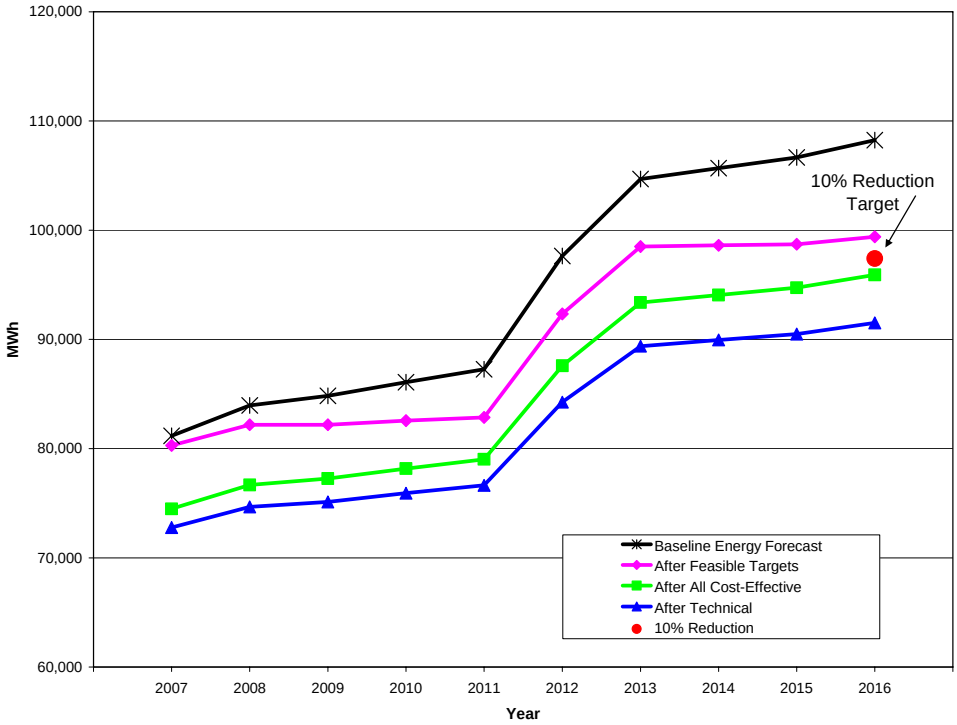
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**21,825**	**24,126**	**25,361**	**26,635**	**27,829**	**29,092**	**30,196**	**31,401**	**32,534**	**34,104**
		Residential			11,541	12,866	13,683	14,403	15,046	15,700	16,354	17,026	17,642	18,650
		Commercial			1,723	2,205	2,381	2,603	2,824	3,074	3,235	3,438	3,634	3,844
		Conventional Industrial			8,561	9,055	9,297	9,628	9,958	10,318	10,606	10,937	11,258	11,610
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**4**	**4**
		Residential			1	1	1	1	1	2	2	2	2	2
		Commercial			0	0	0	0	0	0	0	1	1	1
		Conventional Industrial			1	1	1	1	1	1	1	1	1	1
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**17,893**	**19,501**	**20,322**	**21,157**	**21,961**	**22,812**	**23,554**	**24,364**	**25,114**	**26,434**
		Residential			10,124	11,067	11,589	12,031	12,445	12,867	13,285	13,715	14,098	15,016
		Commercial			1,150	1,433	1,544	1,681	1,817	1,967	2,068	2,193	2,311	2,441
		Conventional Industrial			6,619	7,001	7,188	7,444	7,700	7,978	8,201	8,456	8,704	8,977
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			1	1	1	1	1	1	1	1	1	1
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**621**	**1,242**	**1,863**	**2,483**	**3,104**	**3,725**	**4,346**	**4,967**	**5,588**	**6,209**
		1st Year Savings	90	171	621	621	621	621	621	621	621	621	621	621
		Annual Rate of Change		89.9%	262.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Demand (MW)	**System Total**			**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.4**	**0.5**	**0.6**	**0.6**	**0.7**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**168,486**	**176,766**	**178,460**	**182,271**	**185,923**	**190,142**	**192,557**	**195,848**	**198,806**	**202,378**
		CEC 2007 Forecast		142,455	144,392	146,318	148,284	150,033	151,926	153,580	155,188	156,619	158,116	159,537
		After Feasible Targets			167,865	175,524	176,598	179,787	182,819	186,417	188,211	190,881	193,218	196,169
		After All Cost-Effective			150,592	157,264	158,139	161,114	163,962	167,330	169,003	171,483	173,692	175,944
		After Technical			146,661	152,640	153,100	155,636	158,094	161,050	162,362	164,447	166,272	168,274
		10% Reduction												182,140
	Demand (MW)	**Baseline Demand Forecast**			**30**	**30**	**31**	**32**	**32**	**33**	**34**	**34**	**35**	**35**
		CEC 2007 Forecast			30	30	31	32	32	33	34	34	35	35
		After Feasible Targets			30	30	31	31	32	33	33	34	34	34
		After All Cost-Effective			28	28	29	29	30	31	31	31	32	32
		After Technical			27	28	28	29	29	30	30	31	31	31
		10% Reduction												32

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.82%
		Average Annual Cost-Effective Potential	1.41%
		Average Annual Feasible Targets	0.33%
	Demand (MW)	Average Annual Technical Potential	1.16%
		Average Annual Cost-Effective Potential	0.88%
		Average Annual Feasible Targets	0.22%

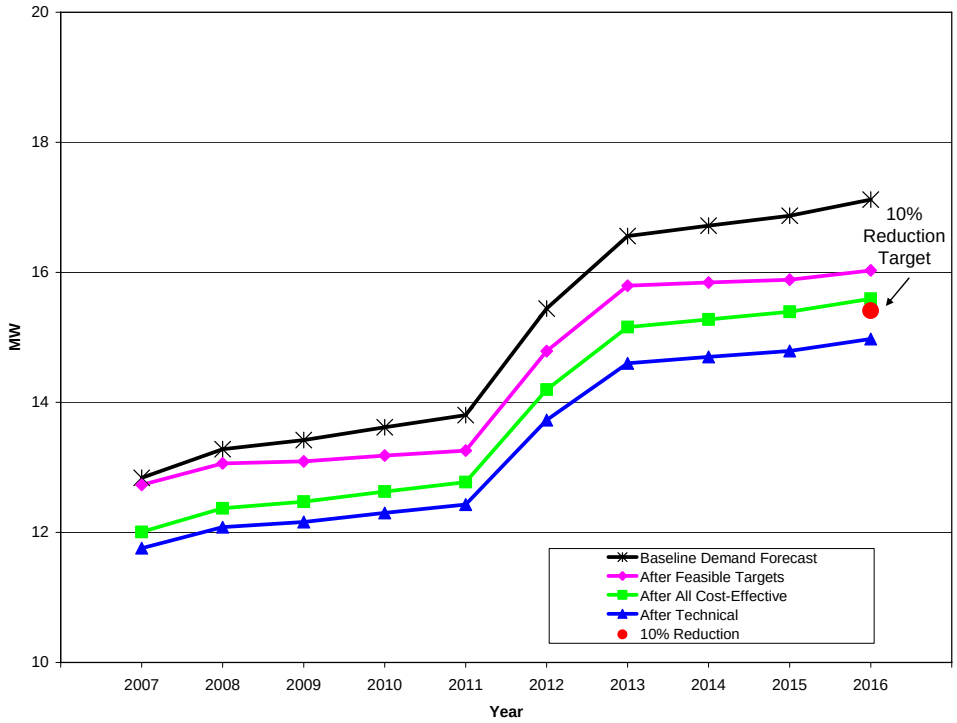
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Port of Oakland

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Port of Oakland – Energy Efficiency and Demand Reduction Potentials

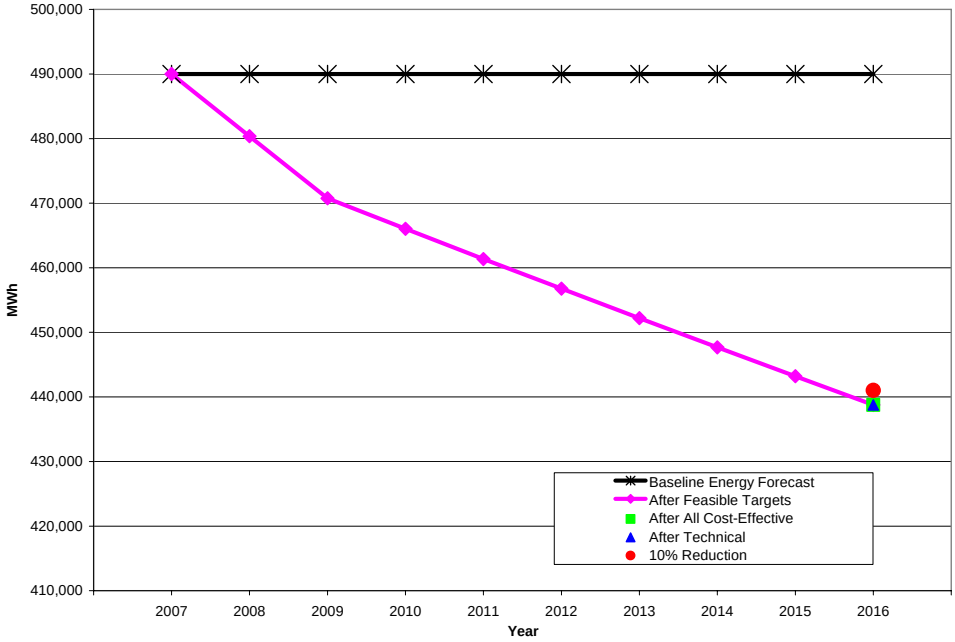
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**8,404**	**9,287**	**9,710**	**10,174**	**10,628**	**13,366**	**15,302**	**15,727**	**16,162**	**16,714**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			8,404	9,287	9,710	10,174	10,628	13,366	15,302	15,727	16,162	16,714
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			1	1	1	1	1	2	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**6,687**	**7,280**	**7,580**	**7,920**	**8,252**	**10,044**	**11,317**	**11,620**	**11,923**	**12,325**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			6,687	7,280	7,580	7,920	8,252	10,044	11,317	11,620	11,923	12,325
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			1	1	1	1	1	1	1	1	1	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**884**	**1,767**	**2,651**	**3,535**	**4,418**	**5,302**	**6,186**	**7,070**	**7,953**	**8,837**
		1st Year Savings	879	11	884	884	884	884	884	884	884	884	884	884
		Annual Rate of Change		-98.8%	8313.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.0%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.7**	**0.8**	**0.9**	**1.0**	**1.1**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**81,173**	**83,953**	**84,836**	**86,091**	**87,266**	**97,629**	**104,687**	**105,680**	**106,657**	**108,238**
		CEC 2007 Forecast		80,361	81,454	82,541	83,650	84,637	85,704	86,637	87,544	88,351	89,196	89,998
		After Feasible Targets			80,289	82,186	82,185	82,557	82,848	92,326	98,501	98,611	98,703	99,401
		After All Cost-Effective			74,486	76,673	77,256	78,171	79,014	87,584	93,370	94,060	94,734	95,913
		After Technical			72,769	74,666	75,126	75,917	76,638	84,262	89,385	89,953	90,494	91,523
		10% Reduction												97,414
	Demand (MW)	**Baseline Demand Forecast**			**13**	**13**	**13**	**14**	**14**	**15**	**17**	**17**	**17**	**17**
		CEC 2007 Forecast			13	13	13	14	14	15	17	17	17	17
		After Feasible Targets			13	13	13	13	13	15	16	16	16	16
		After All Cost-Effective			12	12	12	13	13	14	15	15	15	16
		After Technical			12	12	12	12	12	14	15	15	15	15
		10% Reduction												15

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.77%
		Average Annual Cost-Effective Potential	1.30%
		Average Annual Feasible Targets	0.93%
	Demand (MW)	Average Annual Technical Potential	1.43%
		Average Annual Cost-Effective Potential	1.02%
		Average Annual Feasible Targets	0.73%

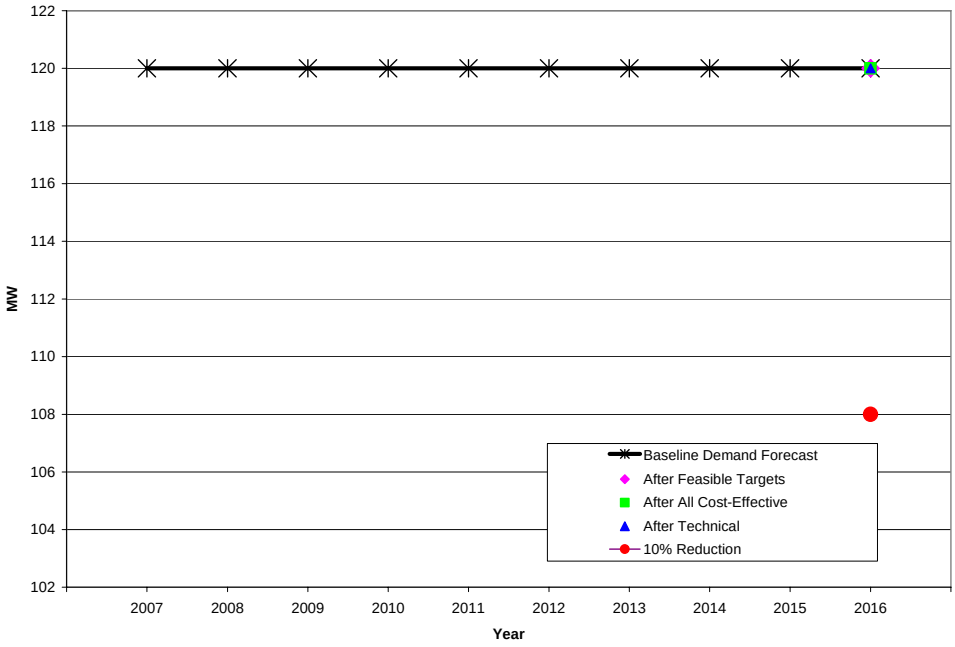
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Power & Water Resources Pooling Authority

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Power & Water Resources Pooling Authority – Energy Efficiency and Demand Reduction Potentials

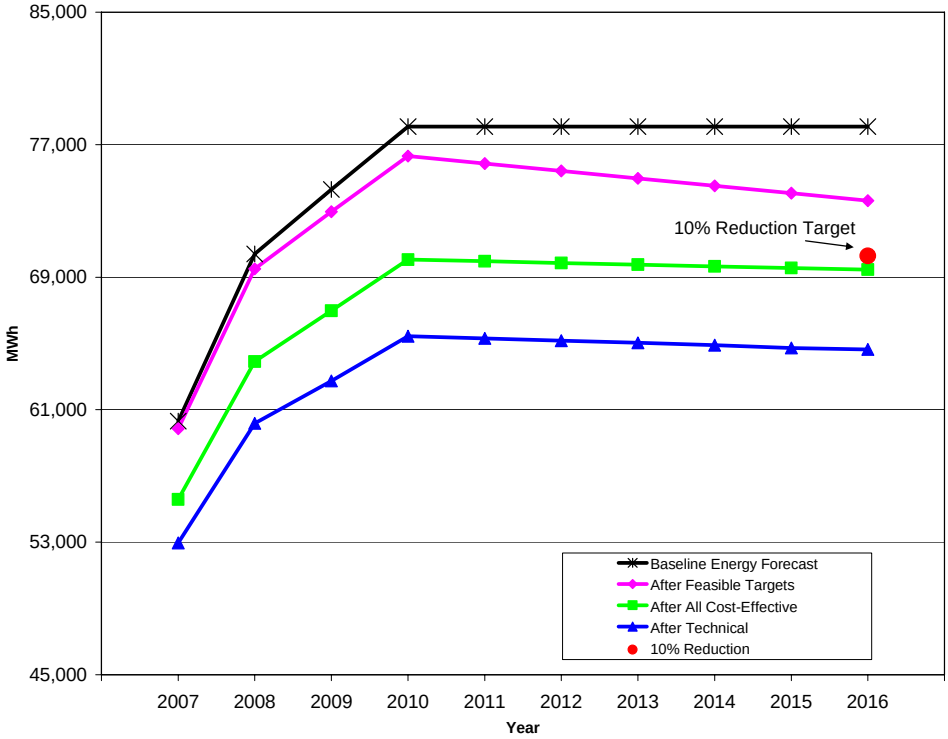
			2005 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	System Total											51,242
	Demand (MW)	System Total											
Cost-Effective Energy Efficiency Potential	Energy (MWh)	System Total											51,242
	Demand (MW)	System Total											
Feasible Targets	Energy (MWh)	System Total			9,656	19,263	23,970	28,631	33,244	37,812	42,334	46,810	51,242
		1st Year Savings			9,656	9,607	4,707	4,660	4,614	4,568	4,522	4,477	4,432
		Annual Rate of Change				-0.5%	-51.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
		Savings as a Percent of Consumption			2.0%	2.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%
	Demand (MW)	System Total											
Impact on Forecasted Consumption and Demand	Energy (MWh)	Baseline Energy Forecast		490,000	490,000	490,000	490,000	490,000	490,000	490,000	490,000	490,000	490,000
		After Feasible Targets		490,000	480,344	470,737	466,030	461,369	456,756	452,188	447,666	443,190	438,758
		After All Cost-Effective											438,758
		After Technical											438,758
		10% Reduction											441,000
	Demand (MW)	Baseline Demand Forecast		120	120	120	120	120	120	120	120	120	120
		After Feasible Targets											120
		After All Cost-Effective											120
		After Technical											120
		10% Reduction											108

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.05%
		verage Annual Cost-Effective Potential	1.05%
		Average Annual Feasible Targets	0.09%
	Demand (MW)	Average Annual Technical Potential	0.00%
		verage Annual Cost-Effective Potential	0.00%
		Average Annual Feasible Targets	0.00%

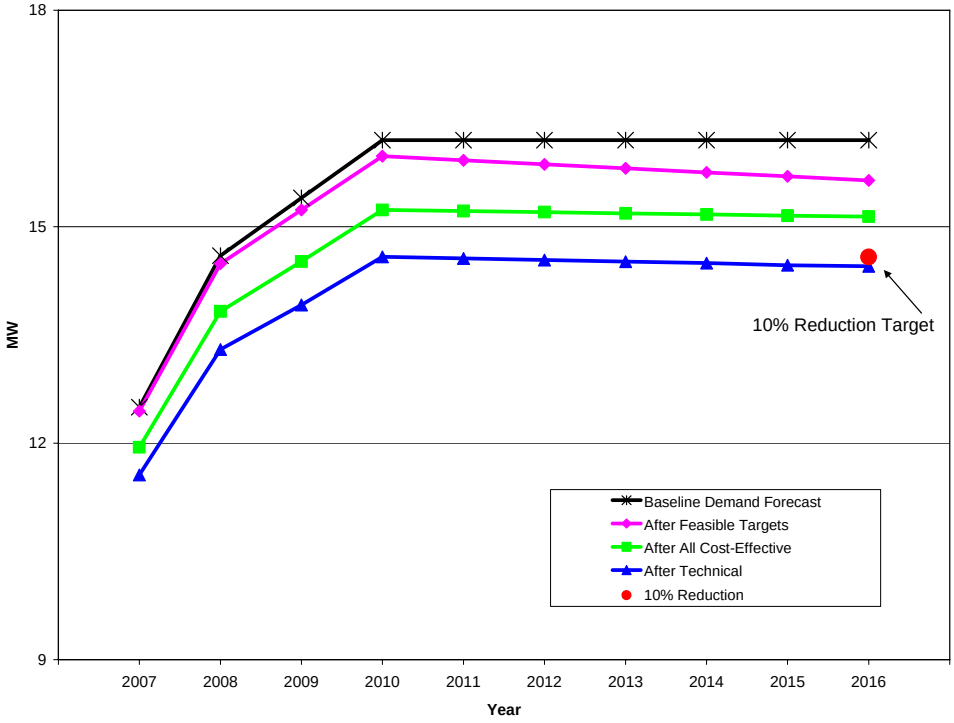
Source: Power and Water Resources Pooling Authority (PWRPA), *AB 2021 Implementation Plan (amended August 1, 2007)* , Contact Bruce McLaughlin, (916) 326-5314, mclaughlin@braunlegal.com. Additional conversations in August and September with Gary Klein clarified their data.

City of Rancho Cucamonga

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Rancho Cucamonga – Energy Efficiency and Demand Reduction Potentials

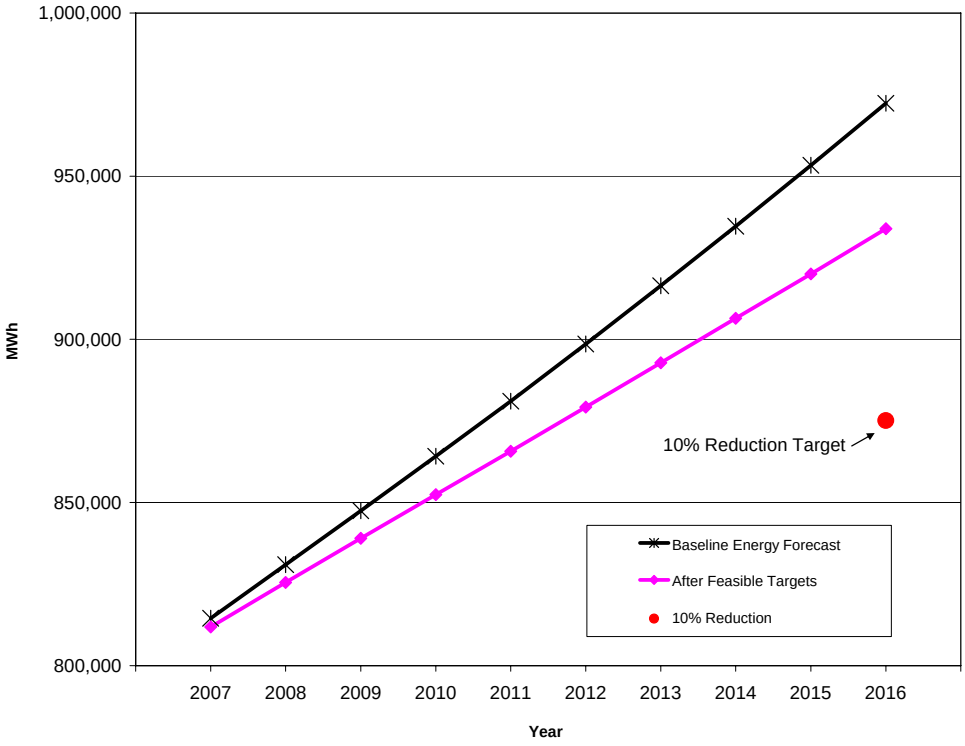
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**7,336**	**10,220**	**11,569**	**12,664**	**12,795**	**12,935**	**13,067**	**13,199**	**13,370**	**13,464**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			7,336	10,220	11,569	12,664	12,795	12,935	13,067	13,199	13,370	13,464
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			1	1	1	2	2	2	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**4,718**	**6,495**	**7,322**	**8,035**	**8,141**	**8,241**	**8,344**	**8,447**	**8,549**	**8,641**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			4,718	6,495	7,322	8,035	8,141	8,241	8,344	8,447	8,549	8,641
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**448**	**896**	**1,343**	**1,791**	**2,239**	**2,687**	**3,135**	**3,582**	**4,030**	**4,478**
		1st Year Savings	134	102	448	448	448	448	448	448	448	448	448	448
		Annual Rate of Change		-23.9%	339.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.2%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
	Demand (MW)	**System Total**			**0.1**	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.4**	**0.4**	**0.5**	**0.6**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**60,300**	**70,400**	**74,300**	**78,100**	**78,100**	**78,100**	**78,100**	**78,100**	**78,100**	**78,100**
		CEC 2007 Forecast		59,644	60,307	61,190	62,050	62,819	63,566	64,249	64,904	65,488	66,100	66,653
		After Feasible Targets			59,852	69,504	72,957	76,309	75,861	75,413	74,965	74,518	74,070	73,622
		After All Cost-Effective			55,582	63,905	66,978	70,065	69,959	69,859	69,756	69,653	69,551	69,459
		After Technical			52,964	60,180	62,731	65,436	65,305	65,165	65,033	64,901	64,730	64,636
		10% Reduction												70,290
	Demand (MW)	**Baseline Demand Forecast**			**13**	**15**	**15**	**16**	**16**	**16**	**16**	**16**	**16**	**16**
		CEC 2007 Forecast			13	15	15	16	16	16	16	16	16	16
		After Feasible Targets			12	14	15	16	16	16	16	16	16	16
		After All Cost-Effective			12	14	15	15	15	15	15	15	15	15
		After Technical			12	13	14	15	15	15	15	14	14	14
		10% Reduction												15

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.79%
		Average Annual Cost-Effective Potential	1.15%
		Average Annual Feasible Targets	0.60%
	Demand (MW)	Average Annual Technical Potential	1.12%
		Average Annual Cost-Effective Potential	0.68%
		Average Annual Feasible Targets	0.36%

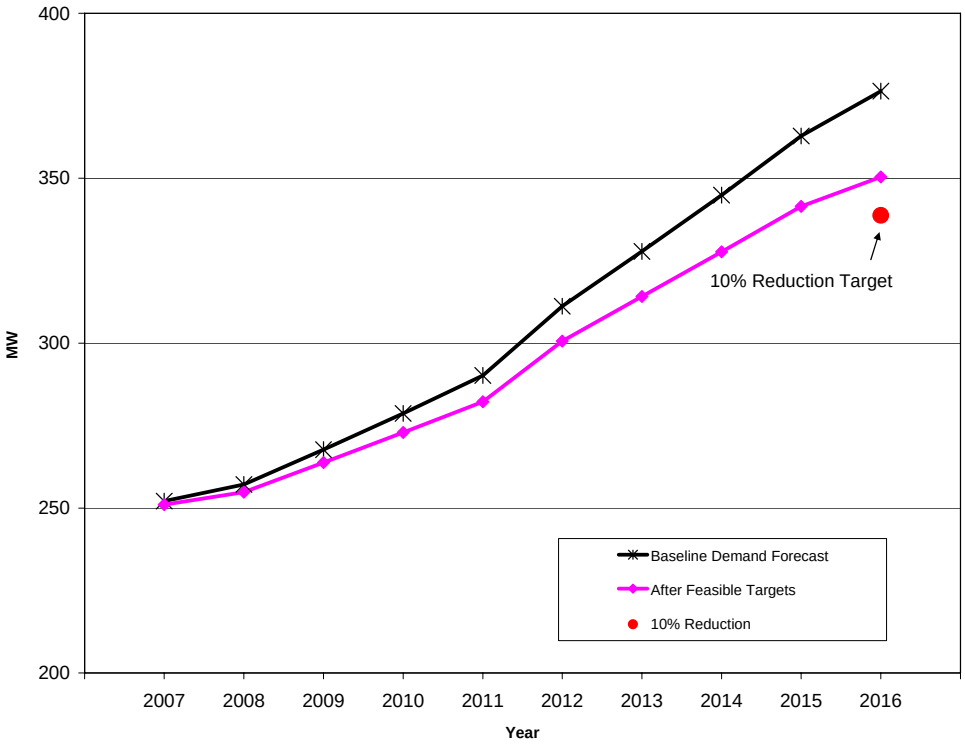
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Redding Electric Utility

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Redding Electric Utility – Energy Efficiency and Demand Reduction Potentials

			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**												**38,471**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**26**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**												**38,471**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**												**26**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Feasible Targets	Energy (MWh)	**System Total**			**2,641**	**5,444**	**8,462**	**11,747**	**15,348**	**19,301**	**23,618**	**28,289**	**33,266**	**38,471**
		1st Year Savings	3,965	7,209	2,641	2,803	3,017	3,285	3,601	3,953	4,317	4,671	4,978	5,204
		Annual Rate of Change		81.8%	-63.4%	6.1%	7.6%	8.9%	9.6%	9.8%	9.2%	8.2%	6.6%	4.6%
		Savings as a Percent of Consumption			0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%
	Demand (MW)	**System Total**			**1**	**2**	**4**	**6**	**8**	**11**	**14**	**17**	**21**	**26**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**814,516**	**830,936**	**847,457**	**864,162**	**881,035**	**898,552**	**916,434**	**934,691**	**953,329**	**972,357**
		CEC 2007 Forecast		801,534	813,718	825,830	838,198	849,199	861,099	871,507	881,619	890,616	900,037	908,973
		After Feasible Targets			811,875	825,492	838,995	852,415	865,687	879,251	892,816	906,402	920,063	933,886
		After All Cost-Effective												933,886
		After Technical												933,886
		10% Reduction												875,121
	Demand (MW)	**Baseline Demand Forecast**			**252**	**257**	**268**	**279**	**290**	**311**	**328**	**345**	**363**	**376**
		CEC 2007 Forecast			247	250	254	257	261	264	267	271	274	278
		After Feasible Targets			251	255	264	273	282	301	314	328	341	350
		After All Cost-Effective			252	257	268	279	290	311	328	345	363	350
		After Technical			252	257	268	279	290	311	328	345	363	350
		10% Reduction												339

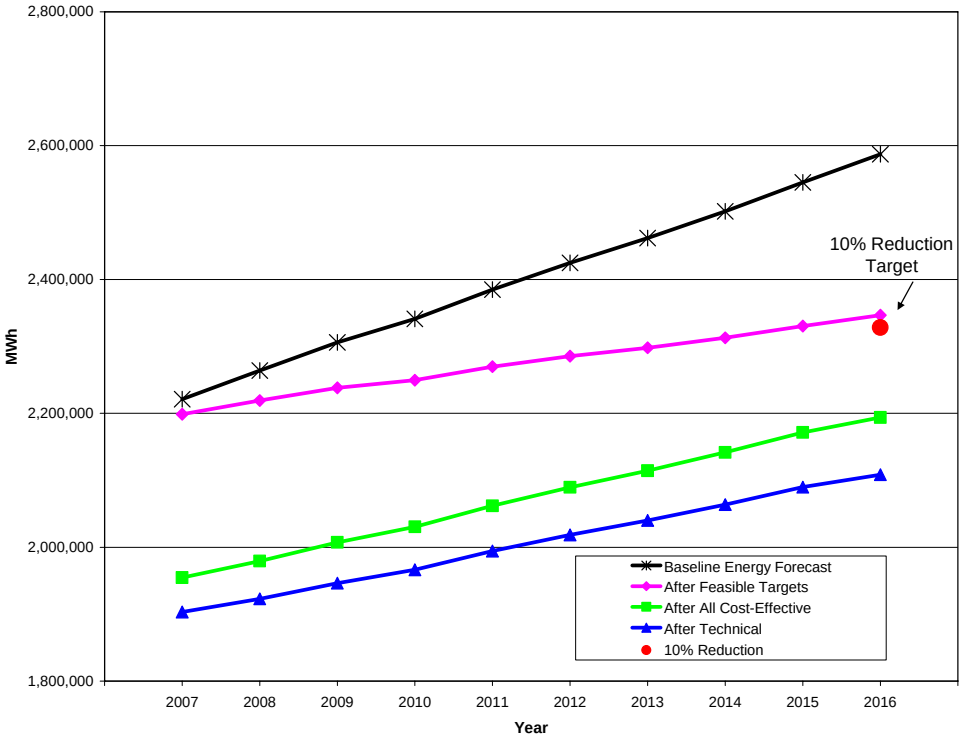
Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	0.43%
		Average Annual Cost-Effective Potential	0.43%
		Average Annual Feasible Targets	0.43%
	Demand (MW)	Average Annual Technical Potential	0.85%
		Average Annual Cost-Effective Potential	0.85%
		Average Annual Feasible Targets	0.85%

Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector*. http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; Nexant Consultants, *Achievable Potential for Energy Efficiency Report*, submitted to Redding Electric Utility, City of Redding, June 11, 2007.

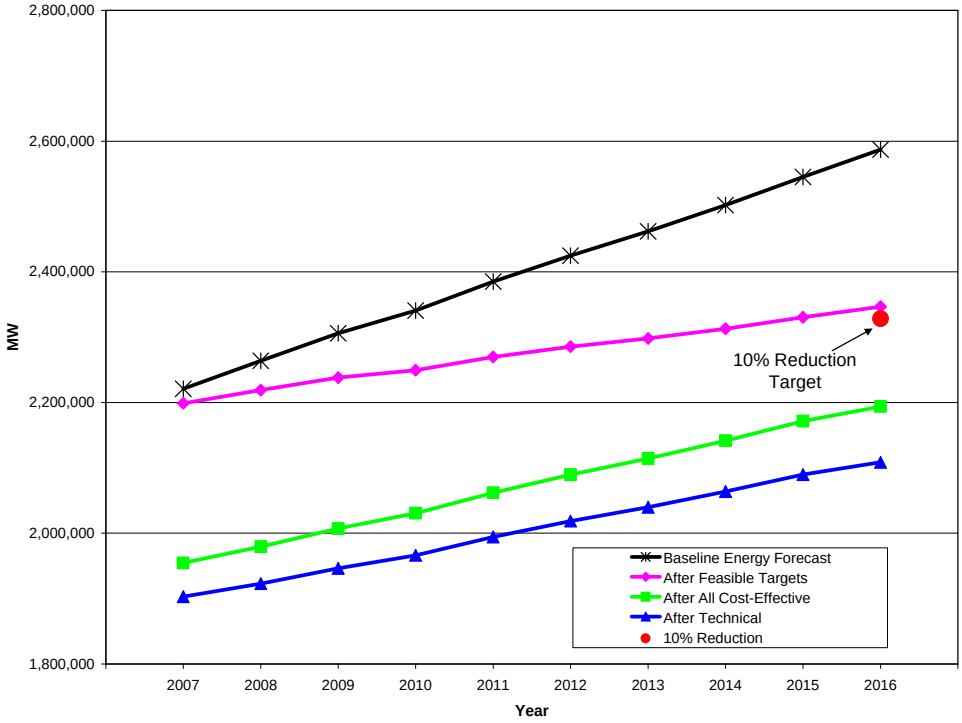
Energy Commission staff interviewed Bryan Cope on August 28, 2007. Based on this interview, Redding confirmed that their potential study did not provde technical or economic potential estimates, only what was deemed feasible. He also explained that their potential study only provided tables for the incremental savings from new porgrams and that these numbers should be added to the savings from their existing base programs. Figure 1, Cumulative Energy Savings (MWh) from Redding's potential study was used to identify base program savings for the first and last years and then to interpolate between them. The base program savings were added to the new program savings to get combined savings. The table reflects these changes.

Riverside Public Utilities

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Riverside Public Utilities – Energy Efficiency and Demand Reduction Potentials

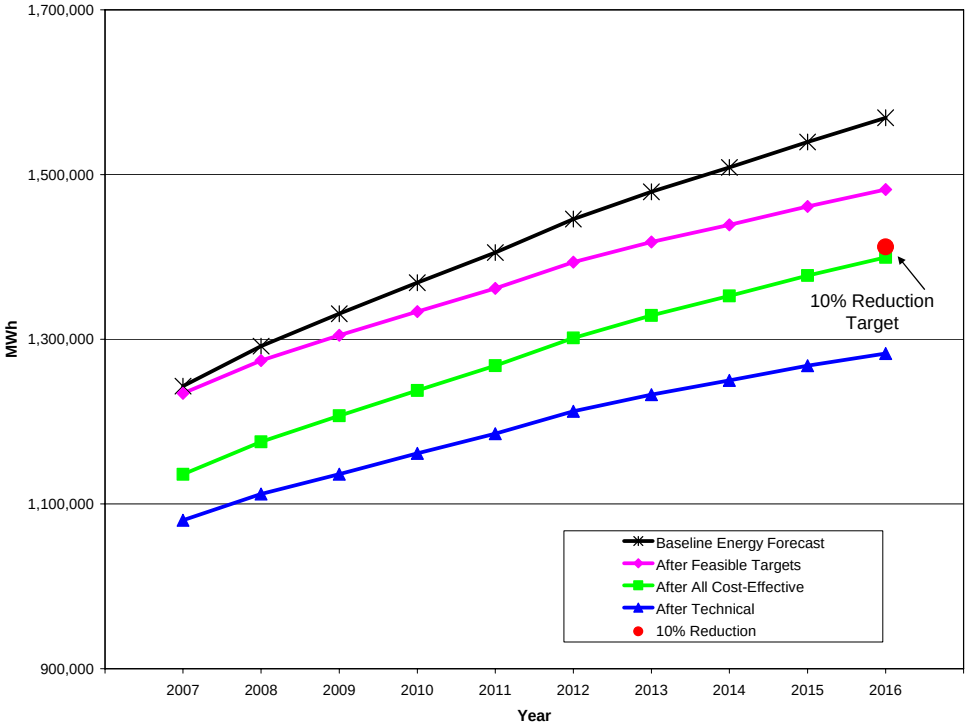
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**317,819**	**340,931**	**359,707**	**374,614**	**390,679**	**406,418**	**421,965**	**438,211**	**455,089**	**478,402**
		Residential			150,477	165,055	175,130	183,069	191,134	199,104	207,109	215,466	223,890	239,293
		Commercial			44,361	48,994	53,782	57,044	60,969	64,764	68,400	72,227	76,460	80,141
		Conventional Industrial			122,981	126,882	130,794	134,502	138,576	142,551	146,456	150,517	154,738	158,968
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**37**	**40**	**43**	**45**	**47**	**49**	**51**	**53**	**55**	**58**
		Residential			17	19	20	21	22	23	24	26	27	29
		Commercial			6	7	8	8	9	9	10	10	11	11
		Conventional Industrial			14	15	15	15	16	16	17	17	18	18
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**266,408**	**284,563**	**298,706**	**310,446**	**323,054**	**335,377**	**347,562**	**360,295**	**373,389**	**393,171**
		Residential			119,772	131,355	138,787	144,712	150,774	156,742	162,727	168,989	175,310	188,504
		Commercial			34,784	37,826	40,996	43,453	46,312	49,068	51,731	54,524	57,476	60,235
		Conventional Industrial			111,852	115,382	118,923	122,281	125,968	129,567	133,104	136,781	140,603	144,432
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**29**	**31**	**33**	**34**	**36**	**38**	**39**	**41**	**42**	**45**
		Residential			12	13	14	15	16	16	17	18	19	20
		Commercial			4	5	5	6	6	6	7	7	7	8
		Conventional Industrial			13	13	14	14	14	15	15	16	16	17
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**22,210**	**44,850**	**67,910**	**91,320**	**115,170**	**139,420**	**164,040**	**189,060**	**214,510**	**240,380**
		1st Year Savings	3,117	3,060	22,210	22,640	23,060	23,410	23,850	24,250	24,620	25,020	25,450	25,870
		Annual Rate of Change		-1.8%	625.8%	1.9%	1.9%	1.5%	1.9%	1.7%	1.5%	1.6%	1.7%	1.7%
		Savings as a Percent of Consumption		0.2%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
	Demand (MW)	**System Total**			**2.2**	**4.5**	**6.7**	**8.9**	**11.1**	**13.4**	**15.6**	**17.8**	**20.0**	**22.3**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**2,221,000**	**2,264,000**	**2,306,000**	**2,341,000**	**2,385,000**	**2,425,000**	**2,462,000**	**2,502,000**	**2,545,000**	**2,587,000**
		CEC 2007 Forecast		1,989,207	2,014,251	2,047,574	2,080,050	2,109,100	2,137,282	2,163,103	2,187,816	2,209,878	2,232,957	2,253,857
		After Feasible Targets			2,198,790	2,219,150	2,238,090	2,249,680	2,269,830	2,285,580	2,297,960	2,312,940	2,330,490	2,346,620
		After All Cost-Effective			1,954,592	1,979,437	2,007,294	2,030,554	2,061,946	2,089,623	2,114,438	2,141,705	2,171,611	2,193,829
		After Technical			1,903,181	1,923,069	1,946,293	1,966,386	1,994,321	2,018,582	2,040,035	2,063,789	2,089,911	2,108,598
		10% Reduction												2,328,300
	Demand (MW)	**Baseline Demand Forecast**			**562**	**573**	**584**	**594**	**604**	**613**	**623**	**633**	**644**	**655**
		CEC 2007 Forecast			576	584	593	600	608	616	623	630	637	644
		After Feasible Targets			560	569	577	585	593	600	607	615	624	633
		After All Cost-Effective			533	542	551	560	568	575	584	592	602	610
		After Technical			525	533	541	549	557	564	572	580	589	597
		10% Reduction												590

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.99%
		Average Annual Cost-Effective Potential	1.64%
		Average Annual Feasible Targets	1.00%
	Demand (MW)	Average Annual Technical Potential	0.95%
		Average Annual Cost-Effective Potential	0.73%
		Average Annual Feasible Targets	0.37%

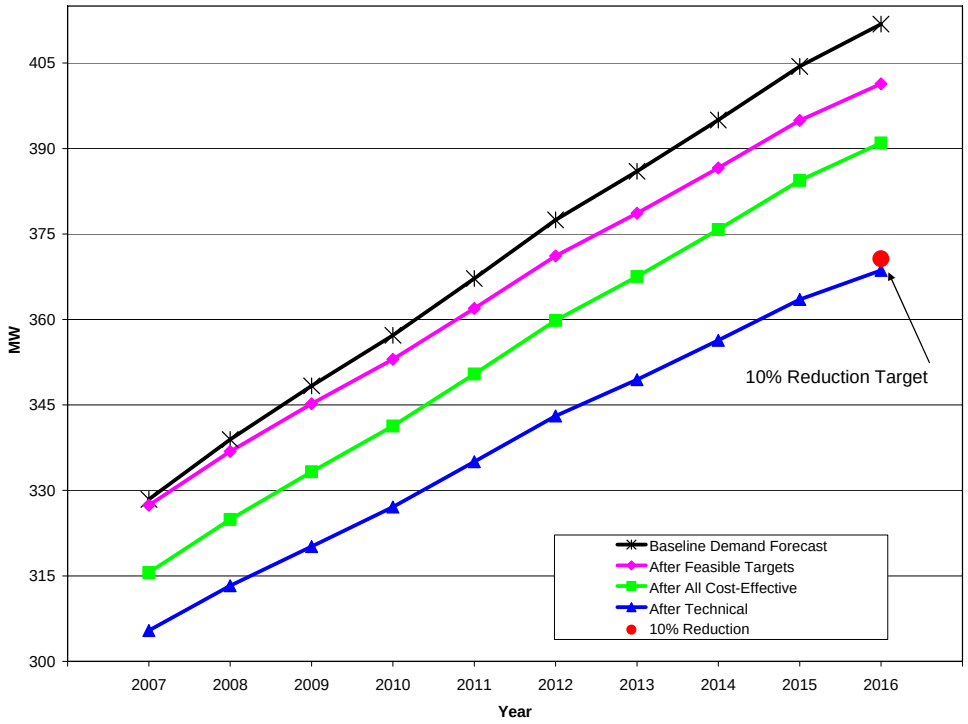
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Roseville Electric

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Roseville Electric – Energy Efficiency and Demand Reduction Potentials

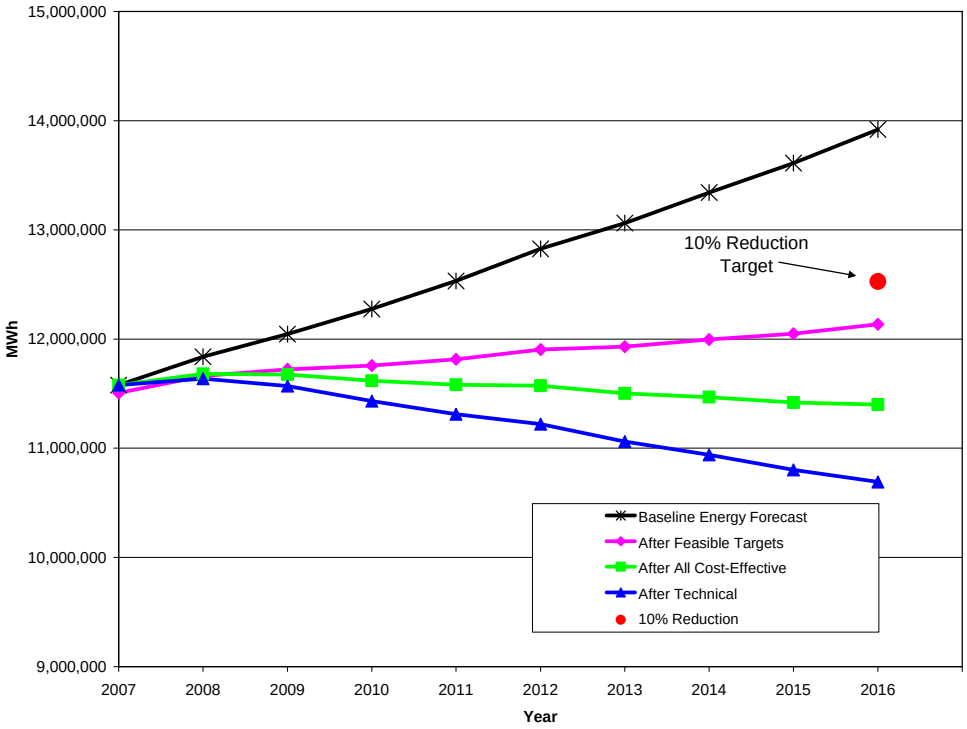
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**162,772**	**179,689**	**194,761**	**207,161**	**219,863**	**233,454**	**246,205**	**258,668**	**271,784**	**286,337**
		Residential			81,923	90,395	97,821	104,121	110,518	117,569	124,865	132,228	139,742	149,512
		Commercial			58,714	65,841	72,308	77,236	82,358	87,610	91,901	95,885	100,324	103,954
		Conventional Industrial			22,135	23,453	24,632	25,805	26,988	28,274	29,439	30,554	31,718	32,871
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**23**	**26**	**28**	**30**	**32**	**34**	**37**	**39**	**41**	**43**
		Residential			12	14	15	16	17	19	20	21	23	25
		Commercial			8	9	10	11	12	13	13	14	14	15
		Conventional Industrial			3	3	3	3	3	3	3	3	4	4
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**107,079**	**116,397**	**123,990**	**130,713**	**137,439**	**144,280**	**150,388**	**156,243**	**162,220**	**169,699**
		Residential			42,430	45,812	48,061	49,974	51,813	53,629	55,461	57,296	59,096	62,647
		Commercial			45,455	50,248	54,570	58,363	62,224	66,135	69,400	72,453	75,620	78,548
		Conventional Industrial			19,194	20,336	21,359	22,376	23,402	24,517	25,527	26,494	27,503	28,503
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**13**	**14**	**15**	**16**	**17**	**18**	**18**	**19**	**20**	**21**
		Residential			5	5	6	6	6	6	6	7	7	7
		Commercial			6	6	7	8	8	9	9	9	10	10
		Conventional Industrial			2	2	2	3	3	3	3	3	3	3
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**8,716**	**17,432**	**26,149**	**34,865**	**43,581**	**52,297**	**61,014**	**69,730**	**78,446**	**87,162**
		1st Year Savings	4,569	6,524	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716
		Annual Rate of Change		42.8%	33.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption			0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	Demand (MW)	**System Total**			**1.1**	**2.1**	**3.2**	**4.2**	**5.3**	**6.3**	**7.4**	**8.4**	**9.5**	**10.5**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**1,242,990**	**1,291,672**	**1,331,046**	**1,368,590**	**1,405,295**	**1,445,986**	**1,479,127**	**1,508,719**	**1,539,611**	**1,569,010**
		CEC 2007 Forecast		1,207,523	1,225,879	1,244,125	1,262,759	1,279,331	1,297,260	1,312,939	1,328,173	1,341,727	1,355,919	1,369,381
		After Feasible Targets			1,234,274	1,274,240	1,304,897	1,333,725	1,361,713	1,393,688	1,418,114	1,438,989	1,461,165	1,481,848
		After All Cost-Effective			1,135,912	1,175,275	1,207,055	1,237,877	1,267,856	1,301,705	1,328,740	1,352,476	1,377,392	1,399,312
		After Technical			1,080,219	1,111,983	1,136,285	1,161,429	1,185,431	1,212,532	1,232,922	1,250,051	1,267,828	1,282,673
		10% Reduction												1,412,109
	Demand (MW)	**Baseline Demand Forecast**			**328**	**339**	**348**	**357**	**367**	**377**	**386**	**395**	**404**	**412**
		CEC 2007 Forecast			335	340	344	349	354	358	363	367	372	377
		After Feasible Targets			327	337	345	353	362	371	379	387	395	401
		After All Cost-Effective			316	325	333	341	350	360	368	376	384	391
		After Technical			305	313	320	327	335	343	349	356	363	369
		10% Reduction												371

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.02%
		Average Annual Cost-Effective Potential	1.20%
		Average Annual Feasible Targets	0.61%
	Demand (MW)	Average Annual Technical Potential	1.16%
		Average Annual Cost-Effective Potential	0.56%
		Average Annual Feasible Targets	0.28%

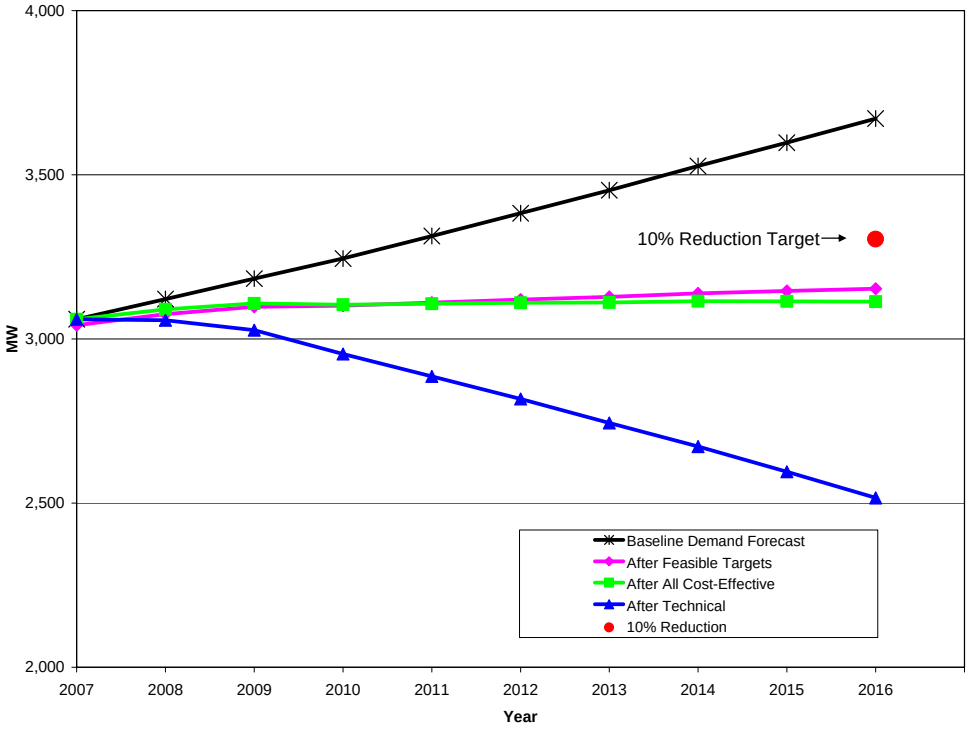
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Sacramento Municipal Utility District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Sacramento Municipal Utility District – Energy Efficiency and Demand Reduction Potentials

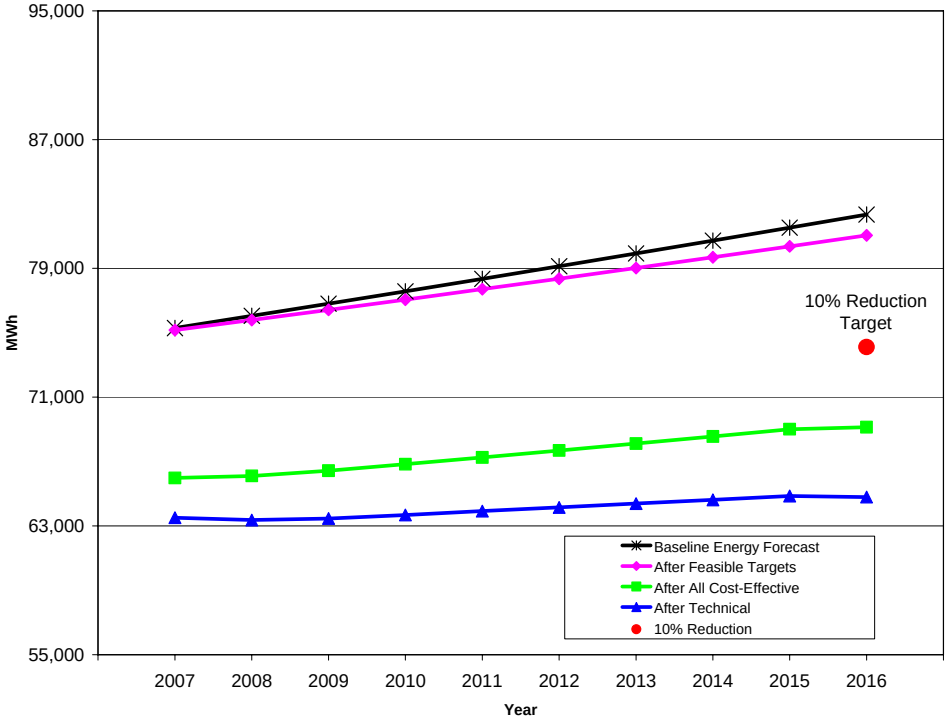
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**-**	**201,535**	**474,643**	**843,810**	**1,220,511**	**1,606,630**	**2,000,282**	**2,401,469**	**2,810,190**	**3,228,328**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**			**-**	**65**	**157**	**291**	**427**	**566**	**709**	**855**	**1,002**	**1,155**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**-**	**157,246**	**370,336**	**658,375**	**952,293**	**1,253,558**	**1,560,702**	**1,873,724**	**2,192,625**	**2,518,873**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
	Demand (MW)	**System Total**			**-**	**31**	**76**	**140**	**206**	**273**	**342**	**412**	**484**	**557**
		Residential												
		Commercial												
		Conventional Industrial												
		Data Centers												
		Semiconductor Manufacturers												
		Labs												
Feasible Targets	Energy (MWh)	**System Total**			**70,000**	**177,000**	**322,000**	**518,000**	**718,000**	**923,000**	**1,132,000**	**1,345,000**	**1,562,000**	**1,784,000**
		1st Year Savings	81,163	79,290	70,000	107,000	145,000	196,000	200,000	205,000	209,000	213,000	217,000	222,000
		Annual Rate of Change		-2.3%	-11.7%	52.9%	35.5%	35.2%	2.0%	2.5%	2.0%	1.9%	1.9%	2.3%
		Savings as a Percent of Consumption			0.6%	0.9%	1.2%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
	Demand (MW)	**System Total**			**18**	**46**	**86**	**144**	**203**	**263**	**325**	**388**	**452**	**518**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**11,578,000**	**11,838,583**	**12,044,705**	**12,275,679**	**12,532,781**	**12,827,302**	**13,062,321**	**13,341,685**	**13,610,848**	**13,919,548**
		CEC 2007 Forecast		10,943,567	11,202,547	11,471,289	11,758,026	12,041,478	12,345,432	12,651,473	12,957,870	13,261,939	13,564,912	13,858,502
		After Feasible Targets			11,508,000	11,661,583	11,722,705	11,757,679	11,814,781	11,904,302	11,930,321	11,996,685	12,048,848	12,135,548
		After All Cost-Effective			11,578,000	11,681,337	11,674,369	11,617,304	11,580,489	11,573,744	11,501,619	11,467,961	11,418,223	11,400,674
		After Technical			11,578,000	11,637,048	11,570,062	11,431,869	11,312,270	11,220,672	11,062,039	10,940,216	10,800,658	10,691,220
		10% Reduction												12,527,593
	Demand (MW)	**Baseline Demand Forecast**			**3,060**	**3,122**	**3,184**	**3,245**	**3,314**	**3,383**	**3,453**	**3,527**	**3,598**	**3,671**
		CEC 2007 Forecast			3,128	3,207	3,289	3,371	3,461	3,553	3,645	3,736	3,827	3,913
		After Feasible Targets			3,042	3,076	3,098	3,101	3,111	3,120	3,128	3,139	3,146	3,153
		After All Cost-Effective			3,060	3,091	3,108	3,105	3,107	3,110	3,111	3,115	3,115	3,114
		After Technical			3,060	3,057	3,027	2,954	2,886	2,817	2,744	2,672	2,596	2,516
		10% Reduction												3,304

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.54%
		Average Annual Cost-Effective Potential	1.98%
		Average Annual Feasible Targets	1.40%
	Demand (MW)	Average Annual Feasible Targets	3.44%
		Average Annual Cost-Effective Potential	1.66%
		Average Annual Feasible Targets	1.54%

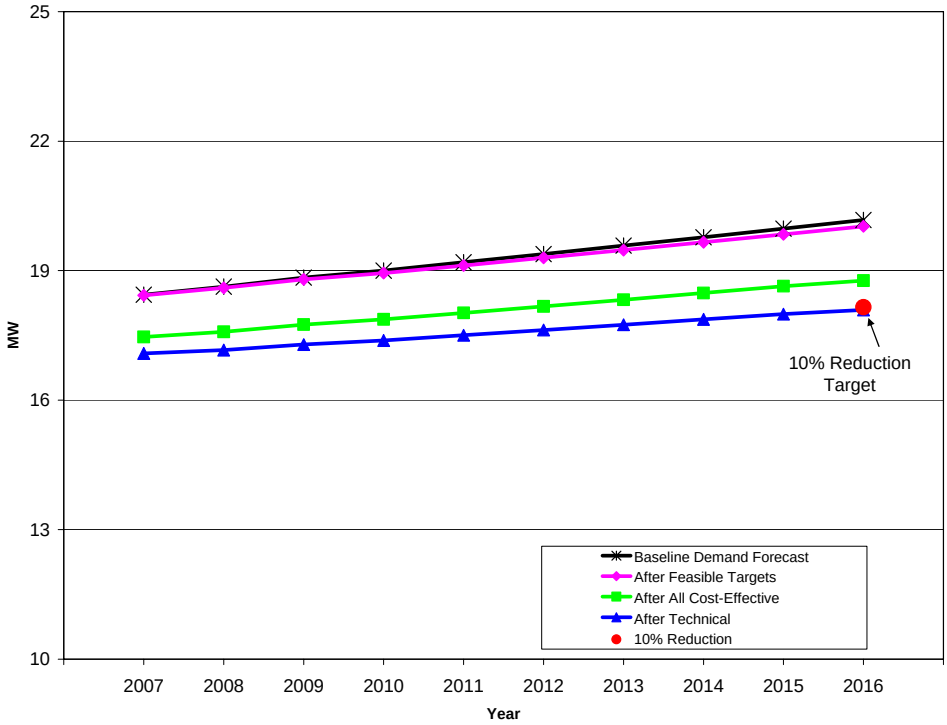
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector*. http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; Itron, Inc., *Energy Efficiency Potential Study*, submitted to SMUD, June 2, 2006. Energy Commission staff interviewed Jim Parks on August 27, 2007. Based on this interview, SMUD asked that we adjust the 2005 savings from 84,963 to 81,163 and the 2006 savings from 87,096 to 79,290, using data taken from SMUD's Public Good's Expense Report Summaries from 2005 and 2006. The table reflects these changes.

City of Shasta Lake

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Shasta Lake – Energy Efficiency and Demand Reduction Potentials

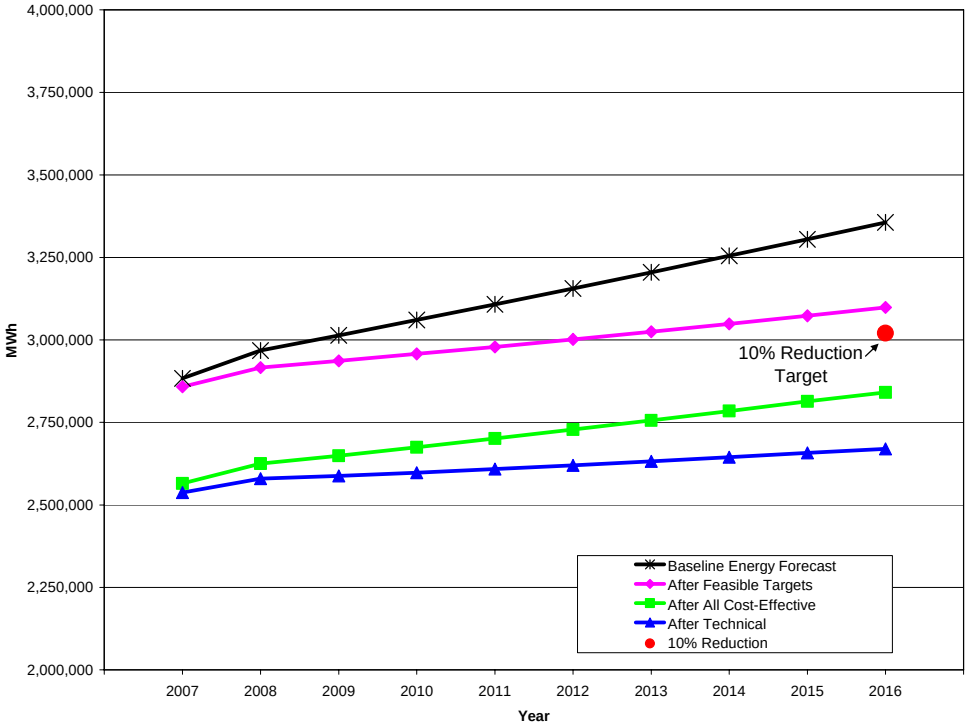
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**11,786**	**12,681**	**13,345**	**13,896**	**14,436**	**14,980**	**15,536**	**16,102**	**16,670**	**17,557**
		Residential			7,665	8,400	8,900	9,308	9,700	10,093	10,497	10,910	11,318	12,057
		Commercial			1,244	1,332	1,425	1,494	1,568	1,644	1,721	1,799	1,882	1,952
		Conventional Industrial			2,877	2,949	3,021	3,094	3,168	3,242	3,317	3,394	3,470	3,548
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**9,318**	**9,943**	**10,375**	**10,741**	**11,095**	**11,448**	**11,806**	**12,167**	**12,526**	**13,213**
		Residential			5,852	6,355	6,661	6,907	7,138	7,367	7,599	7,833	8,063	8,625
		Commercial			903	960	1,021	1,076	1,134	1,192	1,251	1,311	1,371	1,427
		Conventional Industrial			2,564	2,627	2,692	2,757	2,823	2,889	2,956	3,024	3,092	3,162
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**129**	**258**	**388**	**517**	**646**	**775**	**905**	**1,034**	**1,163**	**1,292**
		1st Year Savings	37	64	129	129	129	129	129	129	129	129	129	129
		Annual Rate of Change		72.7%	101.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**75,293**	**76,046**	**76,807**	**77,575**	**78,351**	**79,134**	**79,926**	**80,725**	**81,532**	**82,347**
		CEC 2007 Forecast		231,165	234,679	238,172	241,739	244,912	248,344	251,346	254,262	256,857	259,574	262,151
		After Feasible Targets			75,164	75,788	76,419	77,058	77,705	78,359	79,021	79,691	80,369	81,055
		After All Cost-Effective			65,976	66,104	66,432	66,834	67,256	67,686	68,120	68,558	69,006	69,134
		After Technical			63,507	63,366	63,461	63,679	63,915	64,154	64,390	64,623	64,862	64,790
		10% Reduction												74,113
	Demand (MW)	**Baseline Demand Forecast**			**18**	**19**	**19**	**19**	**19**	**19**	**20**	**20**	**20**	**20**
		CEC 2007 Forecast			18	19	19	19	19	19	20	20	20	20
		After Feasible Targets			18	19	19	19	19	19	19	20	20	20
		After All Cost-Effective			17	18	18	18	18	18	18	18	19	19
		After Technical			17	17	17	17	18	18	18	18	18	18
		10% Reduction												18

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.23%
		Average Annual Cost-Effective Potential	1.68%
		Average Annual Feasible Targets	0.16%
	Demand (MW)	Average Annual Technical Potential	1.08%
		Average Annual Cost-Effective Potential	0.73%
		Average Annual Feasible Targets	0.08%

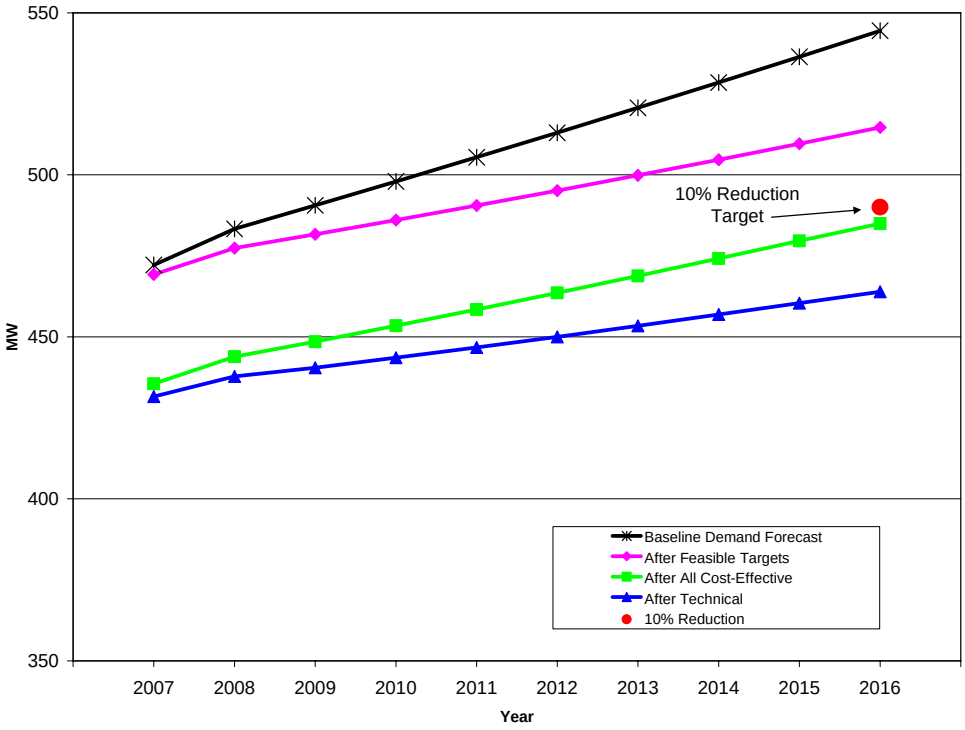
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Silicon Valley Power

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Silicon Valley Power – Energy Efficiency and Demand Reduction Potentials

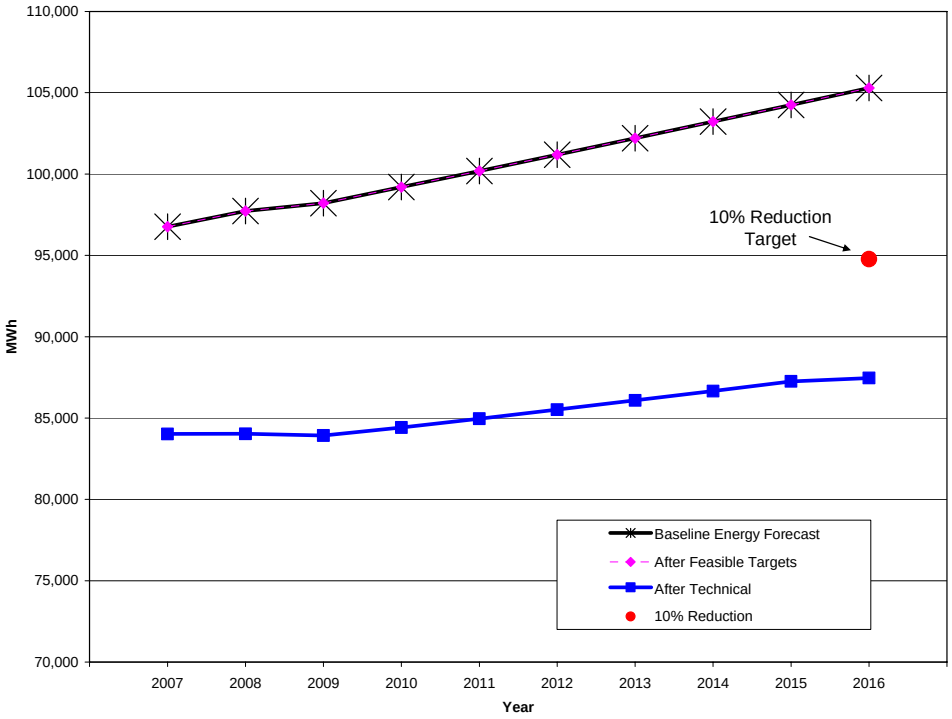
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**346,547**	**387,633**	**425,925**	**462,550**	**499,264**	**536,044**	**572,919**	**609,927**	**647,162**	**686,469**
		Residential			50,349	55,181	58,091	60,442	62,674	64,935	67,263	69,660	72,032	76,895
		Commercial			57,012	61,105	64,710	67,194	69,870	72,569	75,281	78,041	81,037	83,598
		Conventional Industrial			71,995	73,751	75,361	76,981	78,610	80,250	81,901	83,562	85,234	86,917
		Data Centers			148,817	153,514	158,210	162,907	167,604	172,301	176,998	181,695	186,392	191,089
		Semiconductor Manufacturers			774	12,345	23,906	35,466	47,027	58,588	70,149	81,710	93,271	104,833
		Labs			17,601	31,737	45,646	59,560	73,478	87,401	101,328	115,259	129,196	143,136
	Demand (MW)	**System Total**			**41**	**46**	**50**	**54**	**59**	**63**	**67**	**72**	**76**	**81**
		Residential			5	6	6	6	6	7	7	7	8	8
		Commercial			8	9	10	10	10	11	11	12	12	12
		Conventional Industrial			8	8	9	9	9	9	9	10	10	10
		Data Centers			17	18	18	19	19	20	20	21	21	22
		Semiconductor Manufacturers			0	1	3	4	5	7	8	9	11	12
		Labs			2	4	5	7	8	10	12	13	15	16
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**318,614**	**342,897**	**364,806**	**385,775**	**406,778**	**427,794**	**448,866**	**470,047**	**491,297**	**514,914**
		Residential			40,716	44,613	46,812	48,589	50,280	51,991	53,755	55,571	57,373	61,640
		Commercial			47,318	50,228	52,833	54,906	57,085	59,243	61,391	63,578	65,836	67,980
		Conventional Industrial			66,819	68,442	69,933	71,432	72,940	74,458	75,986	77,523	79,071	80,628
		Data Centers			148,817	153,514	158,210	162,907	167,604	172,301	176,998	181,695	186,392	191,089
		Semiconductor Manufacturers			0	5,940	11,869	17,798	23,728	29,657	35,587	41,517	47,448	53,378
		Labs			14,944	20,160	25,149	30,143	35,141	40,143	45,150	50,161	55,177	60,198
	Demand (MW)	**System Total**			**37**	**39**	**42**	**45**	**47**	**49**	**52**	**54**	**57**	**60**
		Residential			4	4	4	5	5	5	5	5	6	6
		Commercial			6	7	7	8	8	8	9	9	9	9
		Conventional Industrial			8	8	8	8	8	9	9	9	9	9
		Data Centers			17	18	18	19	19	20	20	21	21	22
		Semiconductor Manufacturers			0	1	1	2	3	3	4	5	5	6
		Labs			2	2	3	3	4	5	5	6	6	7
Feasible Targets	Energy (MWh)	**System Total**			**25,762**	**51,524**	**77,286**	**103,048**	**128,810**	**154,572**	**180,334**	**206,096**	**231,858**	**257,620**
		1st Year Savings	4,687	12,243	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762
		Annual Rate of Change		161.2%	110.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption			0.9%	0.9%	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
	Demand (MW)	**System Total**			**3.0**	**6.0**	**8.9**	**11.9**	**14.9**	**17.9**	**20.9**	**23.9**	**26.8**	**29.8**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**2,883,721**	**2,967,637**	**3,013,635**	**3,060,347**	**3,107,782**	**3,155,953**	**3,204,870**	**3,254,545**	**3,304,991**	**3,356,218**
		CEC 2007 Forecast		2,599,268	2,638,781	2,678,058	2,718,167	2,753,840	2,792,433	2,826,183	2,858,975	2,888,151	2,918,701	2,947,679
		After Feasible Targets			2,857,959	2,916,113	2,936,349	2,957,299	2,978,972	3,001,381	3,024,536	3,048,449	3,073,133	3,098,598
		After All Cost-Effective			2,565,107	2,624,740	2,648,829	2,674,571	2,701,004	2,728,159	2,756,003	2,784,499	2,813,694	2,841,304
		After Technical			2,537,173	2,580,004	2,587,711	2,597,797	2,608,518	2,619,909	2,631,950	2,644,618	2,657,829	2,669,749
		10% Reduction												3,020,596
	Demand (MW)	**Baseline Demand Forecast**			**472**	**483**	**491**	**498**	**505**	**513**	**521**	**529**	**536**	**544**
		CEC 2007 Forecast			470	477	483	489	496	503	509			529
		After Feasible Targets			469	477	482	486	491	495	500	505	510	515
		After All Cost-Effective			436	444	448	453	458	464	469	474	480	485
		After Technical			432	438	440	444	447	450	453	457	460	464
		10% Reduction												490

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	2.19%
		Average Annual Cost-Effective Potential	1.64%
		Average Annual Feasible Targets	0.82%
	Demand (MW)	Average Annual Technical Potential	1.58%
		Average Annual Cost-Effective Potential	1.17%
		Average Annual Feasible Targets	0.59%

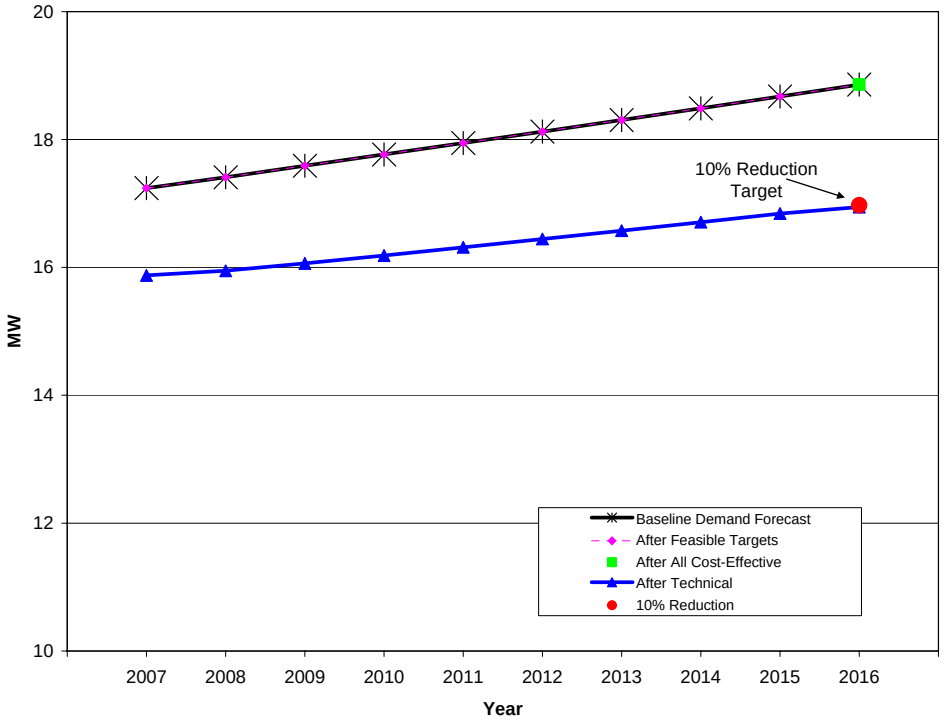
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Trinity Public Utility District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Trinity Public Utility District – Energy Efficiency and Demand Reduction Potentials

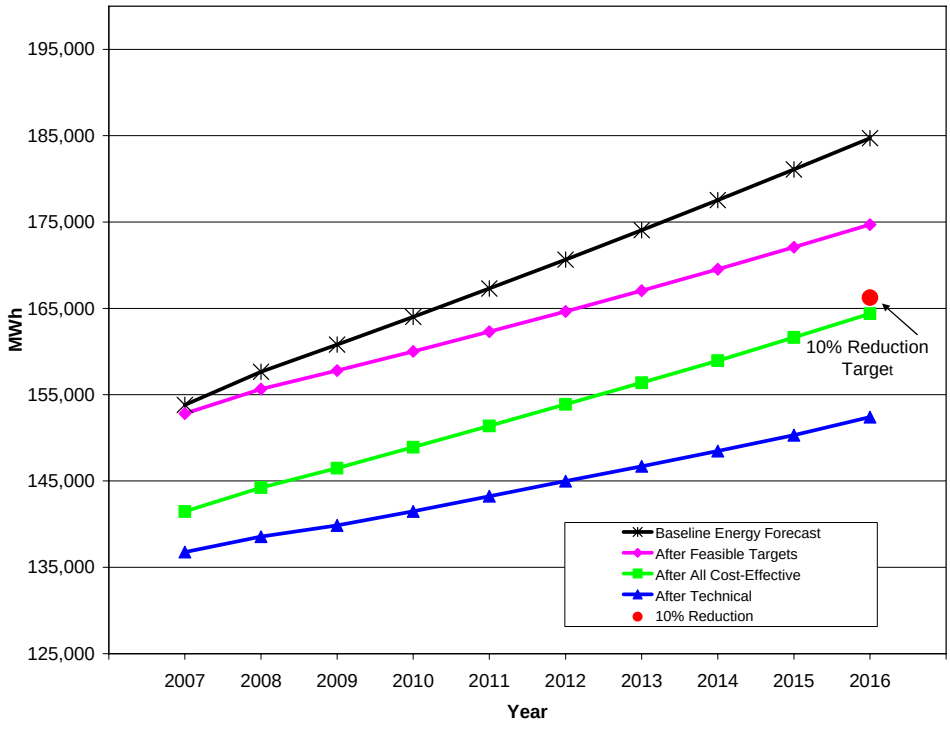
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**12,750**	**13,704**	**14,287**	**14,774**	**15,227**	**15,671**	**16,118**	**16,567**	**17,002**	**17,838**
		Residential			9,194	10,044	10,537	10,929	11,282	11,629	11,979	12,331	12,665	13,407
		Commercial			2,161	2,238	2,301	2,369	2,440	2,511	2,580	2,651	2,723	2,790
		Conventional Industrial			1,395	1,422	1,449	1,477	1,504	1,531	1,559	1,586	1,613	1,641
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Residential			0	0	0	0	0	0	0	0	0	0
		Commercial			0	0	0	0	0	0	0	0	0	0
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
		1st Year Savings	22	14	0	0	0	0	0	0	0	0	0	0
		Annual Rate of Change		-38.9%	-100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**96,768**	**97,736**	**98,216**	**99,198**	**100,190**	**101,192**	**102,204**	**103,226**	**104,258**	**105,301**
		CEC 2007 Forecast		84,235	85,381	86,519	87,682	88,716	89,835	90,814	91,764	92,610	93,496	94,336
		After Feasible Targets			96,768	97,736	98,216	99,198	100,190	101,192	102,204	103,226	104,258	105,301
		After All Cost-Effective												
		After Technical			84,018	84,032	83,929	84,424	84,964	85,521	86,086	86,659	87,256	87,463
		10% Reduction												94,771
	Demand (MW)	**Baseline Demand Forecast**			**17**	**17**	**18**	**18**	**18**	**18**	**18**	**18**	**19**	**19**
		CEC 2007 Forecast			17	17	18	18	18	18	18	18	19	19
		After Feasible Targets			17	17	18	18	18	18	18	18	19	19
		After All Cost-Effective												19
		After Technical			16	16	16	16	16	16	17	17	17	17
		10% Reduction												17

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.77%
		Average Annual Cost-Effective Potential	0.00%
		Average Annual Feasible Targets	0.00%
	Demand (MW)	Average Annual Technical Potential	1.06%
		Average Annual Cost-Effective Potential	0.00%
		Average Annual Feasible Targets	0.00%

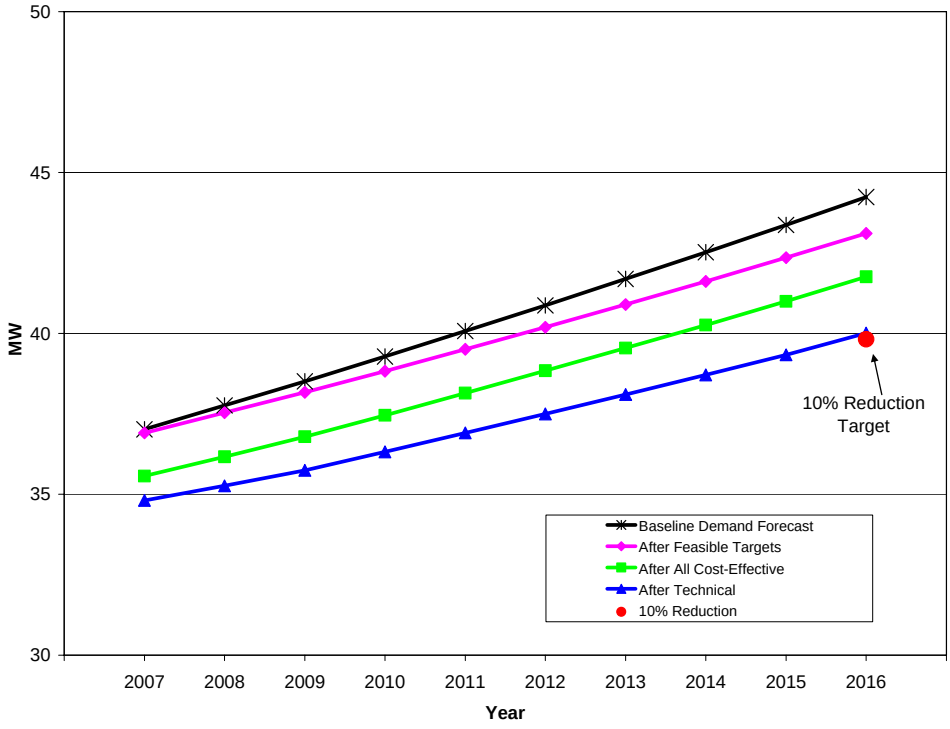
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Truckee Donner Public Utility District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Truckee Donner Public Utility District – Energy Efficiency and Demand Reduction Potentials

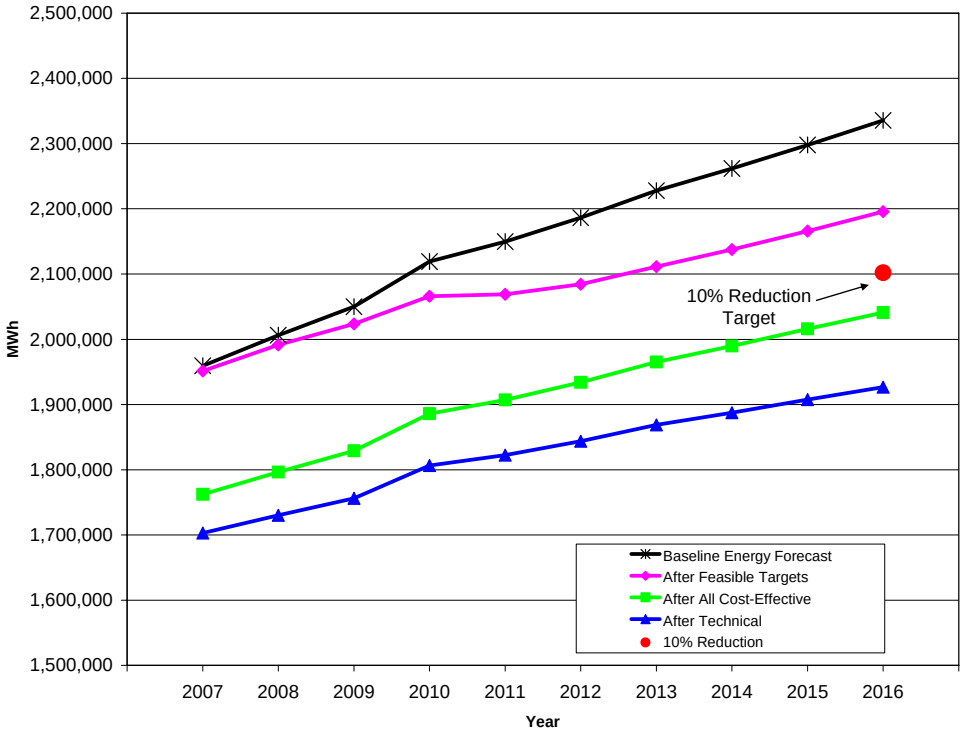
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**17,037**	**19,100**	**20,943**	**22,533**	**24,067**	**25,664**	**27,347**	**29,074**	**30,778**	**32,303**
		Residential			9,075	10,358	11,458	12,523	13,494	14,513	15,622	16,762	17,823	18,762
		Commercial			5,659	6,365	7,037	7,490	7,980	8,484	8,982	9,491	10,055	10,559
		Conventional Industrial			2,303	2,378	2,448	2,520	2,593	2,667	2,744	2,821	2,901	2,982
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**3**	**3**	**3**	**3**	**4**	**4**	**4**	**4**
		Residential			1	1	1	1	2	2	2	2	2	2
		Commercial			1	1	1	1	1	1	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**12,332**	**13,415**	**14,317**	**15,108**	**15,913**	**16,756**	**17,672**	**18,607**	**19,458**	**20,321**
		Residential			6,882	7,520	7,998	8,441	8,886	9,363	9,906	10,461	10,922	11,392
		Commercial			3,316	3,691	4,050	4,331	4,623	4,921	5,222	5,531	5,847	6,166
		Conventional Industrial			2,135	2,204	2,269	2,335	2,403	2,472	2,543	2,615	2,689	2,764
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			0	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**1,001**	**2,003**	**3,004**	**4,005**	**5,007**	**6,008**	**7,009**	**8,011**	**9,012**	**10,014**
		1st Year Savings	47	47	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001
		Annual Rate of Change		0.0%	2035.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%
	Demand (MW)	**System Total**			**0.1**	**0.2**	**0.3**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**	**1.1**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**153,803**	**157,648**	**160,801**	**164,017**	**167,297**	**170,643**	**174,056**	**177,537**	**181,088**	**184,710**
		CEC 2007 Forecast		141,386	143,309	145,220	147,172	148,908	150,786	152,428	154,024	155,444	156,930	158,341
		After Feasible Targets			152,802	155,645	157,797	160,012	162,291	164,635	167,047	169,526	172,076	174,696
		After All Cost-Effective			141,471	144,233	146,484	148,909	151,384	153,887	156,385	158,930	161,630	164,388
		After Technical			136,765	138,548	139,858	141,484	143,230	144,979	146,709	148,463	150,310	152,407
		10% Reduction												166,239
	Demand (MW)	**Baseline Demand Forecast**			**37**	**38**	**39**	**39**	**40**	**41**	**42**	**43**	**43**	**44**
		CEC 2007 Forecast			37	38	39	39	40	41	42	43	43	44
		After Feasible Targets			37	38	38	39	40	40	41	42	42	43
		After All Cost-Effective			36	36	37	37	38	39	40	40	41	42
		After Technical			35	35	36	36	37	37	38	39	39	40
		10% Reduction												40

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.91%
		Average Annual Cost-Effective Potential	1.20%
		Average Annual Feasible Targets	0.59%
	Demand (MW)	Average Annual Technical Potential	1.04%
		Average Annual Cost-Effective Potential	0.61%
		Average Annual Feasible Targets	0.28%

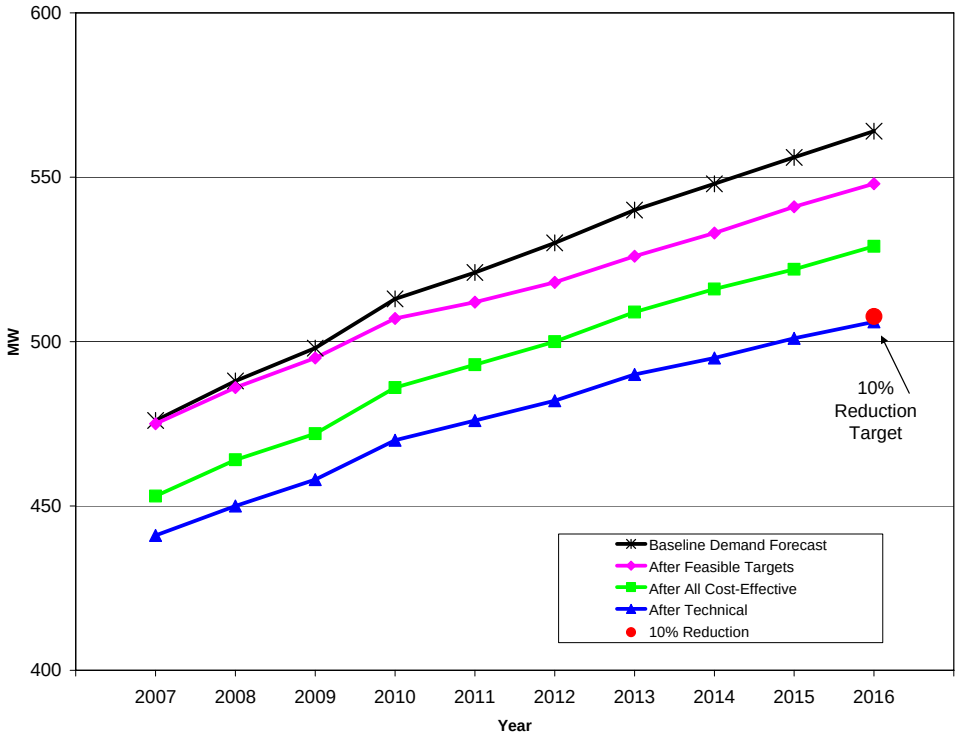
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Turlock Irrigation District

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Turlock Irrigation District – Energy Efficiency and Demand Reduction Potentials

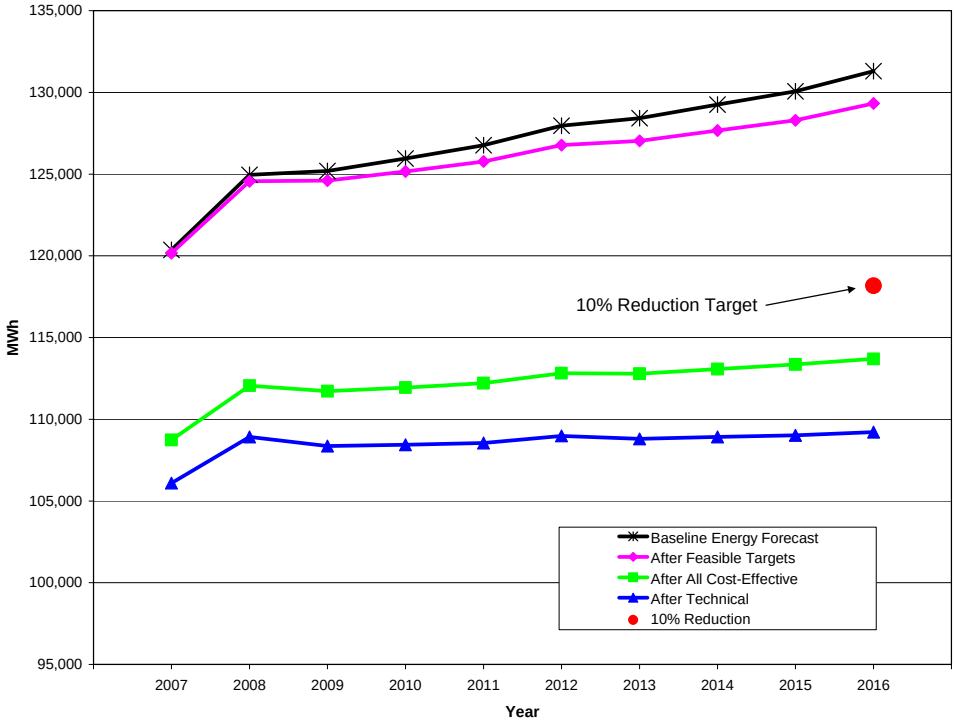
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**256,231**	**276,103**	**293,839**	**312,797**	**327,212**	**342,625**	**358,864**	**374,401**	**390,299**	**409,151**
		Residential			107,689	118,502	127,323	135,337	142,587	150,082	157,887	165,705	173,543	184,548
		Commercial			38,055	43,847	49,535	56,590	60,767	65,508	70,614	75,159	79,966	84,476
		Conventional Industrial			110,487	113,754	116,981	120,869	123,859	127,036	130,362	133,537	136,790	140,126
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**35**	**38**	**40**	**43**	**45**	**48**	**50**	**53**	**55**	**58**
		Residential			17	19	20	22	23	24	26	27	29	30
		Commercial			5	6	7	8	8	9	10	10	11	12
		Conventional Industrial			13	13	13	14	14	15	15	15	16	16
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**197,195**	**210,019**	**220,895**	**233,262**	**242,510**	**252,325**	**262,595**	**272,299**	**282,080**	**294,747**
		Residential			63,986	70,192	74,504	78,699	82,203	85,782	89,487	93,076	96,586	103,027
		Commercial			28,927	32,468	35,992	40,503	43,429	46,672	50,103	53,225	56,430	59,513
		Conventional Industrial			104,282	107,359	110,399	114,060	116,877	119,871	123,005	125,997	129,064	132,207
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**23**	**24**	**26**	**27**	**28**	**30**	**31**	**32**	**34**	**35**
		Residential			7	8	8	9	9	10	10	11	12	12
		Commercial			4	4	5	5	6	6	6	7	7	8
		Conventional Industrial			12	12	13	13	13	14	14	14	15	15
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**7,824**	**15,095**	**26,287**	**53,177**	**80,686**	**102,028**	**116,458**	**124,206**	**132,045**	**139,990**
		1st Year Savings	6,883	6,122	7,824	7,271	11,192	26,890	27,509	21,342	14,430	7,748	7,839	7,945
		Annual Rate of Change		-11.1%	27.8%	-7.1%	53.9%	140.3%	2.3%	-22.4%	-32.4%	-46.3%	1.2%	1.4%
		Savings as a Percent of Consumption			0.4%	0.4%	0.5%	1.3%	1.3%	1.0%	0.6%	0.3%	0.3%	0.3%
	Demand (MW)	**System Total**			**1.0**	**2.0**	**3.0**	**6.0**	**9.0**	**12.0**	**14.0**	**15.0**	**15.0**	**16.0**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**1,959,315**	**2,006,332**	**2,049,940**	**2,119,192**	**2,149,610**	**2,186,413**	**2,227,770**	**2,261,891**	**2,297,860**	**2,335,702**
		CEC 2007 Forecast		1,881,072	1,909,667	1,938,092	1,967,119	1,992,935	2,020,864	2,045,289	2,069,020	2,090,135	2,112,244	2,133,215
		After Feasible Targets			1,951,491	1,991,237	2,023,653	2,066,015	2,068,924	2,084,385	2,111,312	2,137,685	2,165,815	2,195,712
		After All Cost-Effective			1,762,120	1,796,313	1,829,045	1,885,930	1,907,100	1,934,088	1,965,175	1,989,592	2,015,780	2,040,955
		After Technical			1,703,084	1,730,229	1,756,101	1,806,395	1,822,398	1,843,788	1,868,906	1,887,490	1,907,561	1,926,551
		10% Reduction												2,102,132
	Demand (MW)	**Baseline Demand Forecast**			**476**	**488**	**498**	**513**	**521**	**530**	**540**	**548**	**556**	**564**
		CEC 2007 Forecast			498	504	511	517	525	532	539	545	552	559
		After Feasible Targets			475	486	495	507	512	518	526	533	541	548
		After All Cost-Effective			453	464	472	486	493	500	509	516	522	529
		After Technical			441	450	458	470	476	482	490	495	501	506
		10% Reduction												508

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.89%
		Average Annual Cost-Effective Potential	1.36%
		Average Annual Feasible Targets	0.65%
	Demand (MW)	Average Annual Technical Potential	1.11%
		Average Annual Cost-Effective Potential	0.67%
		Average Annual Feasible Targets	0.31%

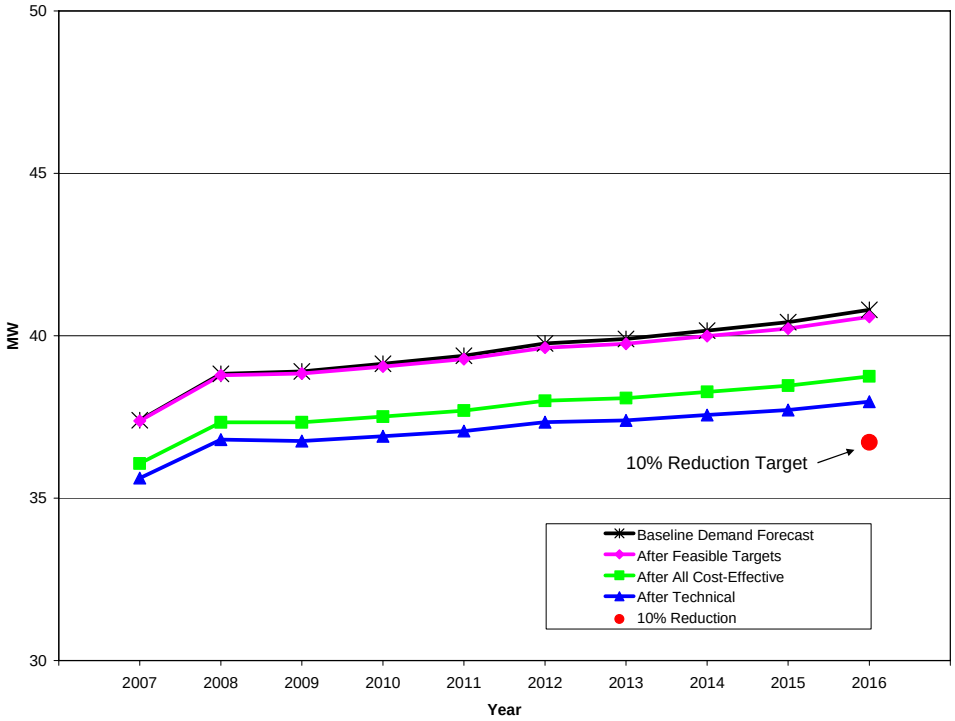
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

City of Ukiah

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



City of Ukiah – Energy Efficiency and Demand Reduction Potentials

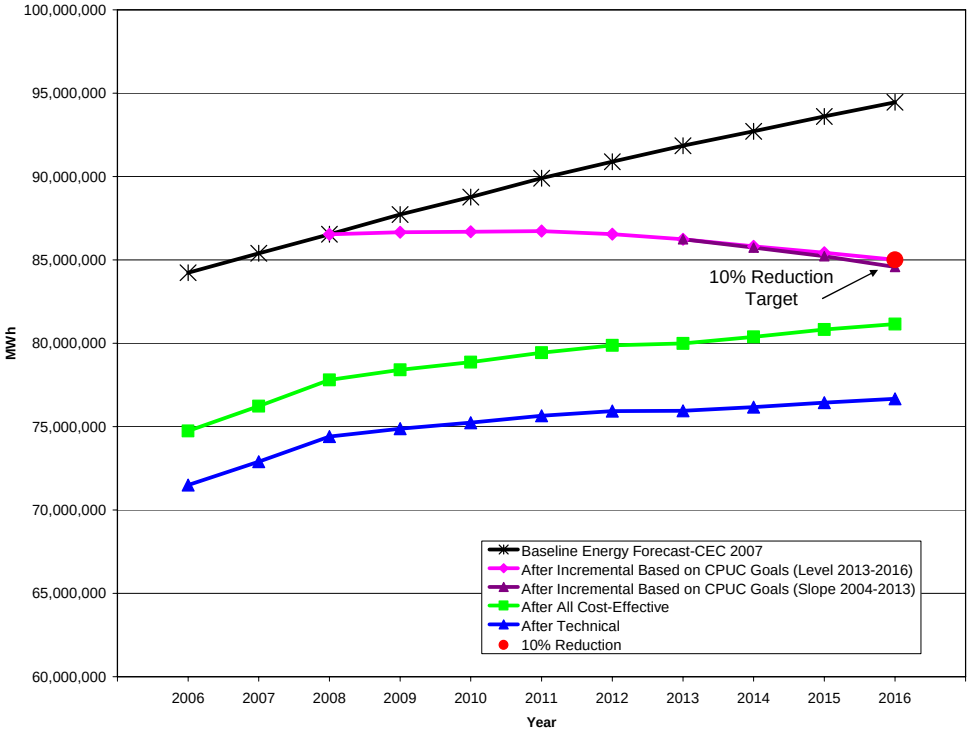
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	**System Total**			**14,266**	**16,031**	**16,828**	**17,513**	**18,207**	**18,979**	**19,617**	**20,328**	**21,052**	**22,088**
		Residential			6,646	7,422	7,794	8,108	8,398	8,702	8,979	9,274	9,559	10,167
		Commercial			7,279	8,254	8,671	9,035	9,431	9,889	10,243	10,650	11,082	11,500
		Conventional Industrial			341	355	362	370	378	387	395	403	411	421
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			1	1	1	1	1	1	2	2	2	2
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Cost-Effective Energy Efficiency Potential	Energy (MWh)	**System Total**			**11,638**	**12,900**	**13,479**	**14,014**	**14,552**	**15,138**	**15,631**	**16,173**	**16,710**	**17,599**
		Residential			5,719	6,322	6,592	6,817	7,026	7,244	7,437	7,644	7,845	8,388
		Commercial			5,631	6,278	6,580	6,885	7,207	7,567	7,860	8,188	8,517	8,856
		Conventional Industrial			289	300	306	313	320	327	334	341	348	355
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
	Demand (MW)	**System Total**			**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
		Residential			1	1	1	1	1	1	1	1	1	1
		Commercial			1	1	1	1	1	1	1	1	1	1
		Conventional Industrial			0	0	0	0	0	0	0	0	0	0
		Data Centers			0	0	0	0	0	0	0	0	0	0
		Semiconductor Manufacturers			0	0	0	0	0	0	0	0	0	0
		Labs			0	0	0	0	0	0	0	0	0	0
Feasible Targets	Energy (MWh)	**System Total**			**198**	**396**	**594**	**792**	**990**	**1,188**	**1,386**	**1,584**	**1,781**	**1,979**
		1st Year Savings	22	122	198	198	198	198	198	198	198	198	198	198
		Annual Rate of Change		468.8%	61.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Savings as a Percent of Consumption		0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
	Demand (MW)	**System Total**			**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast**			**120,366**	**124,952**	**125,194**	**125,952**	**126,758**	**127,964**	**128,419**	**129,245**	**130,068**	**131,296**
		CEC 2007 Forecast		113,137	114,676	116,205	117,767	119,156	120,659	121,973	123,250	124,386	125,576	126,704
		After Feasible Targets			120,168	124,556	124,600	125,160	125,769	126,776	127,033	127,662	128,286	129,317
		After All Cost-Effective			108,728	112,052	111,715	111,937	112,206	112,826	112,787	113,072	113,358	113,697
		After Technical			106,100	108,921	108,366	108,439	108,551	108,985	108,802	108,918	109,015	109,209
		10% Reduction												118,167
	Demand (MW)	**Baseline Demand Forecast**			**37**	**39**	**39**	**39**	**39**	**40**	**40**	**40**	**40**	**41**
		CEC 2007 Forecast			37	39	39	39	39	40	40	40	40	41
		After Feasible Targets			37	39	39	39	39	40	40	40	40	41
		After All Cost-Effective			36	37	37	38	38	38	38	38	38	39
		After Technical			36	37	37	37	37	37	37	38	38	38
		10% Reduction												37

Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential	1.74%
		Average Annual Cost-Effective Potential	1.39%
		Average Annual Feasible Targets	0.16%
	Demand (MW)	Average Annual Technical Potential	0.72%
		Average Annual Cost-Effective Potential	0.52%
		Average Annual Feasible Targets	0.05%

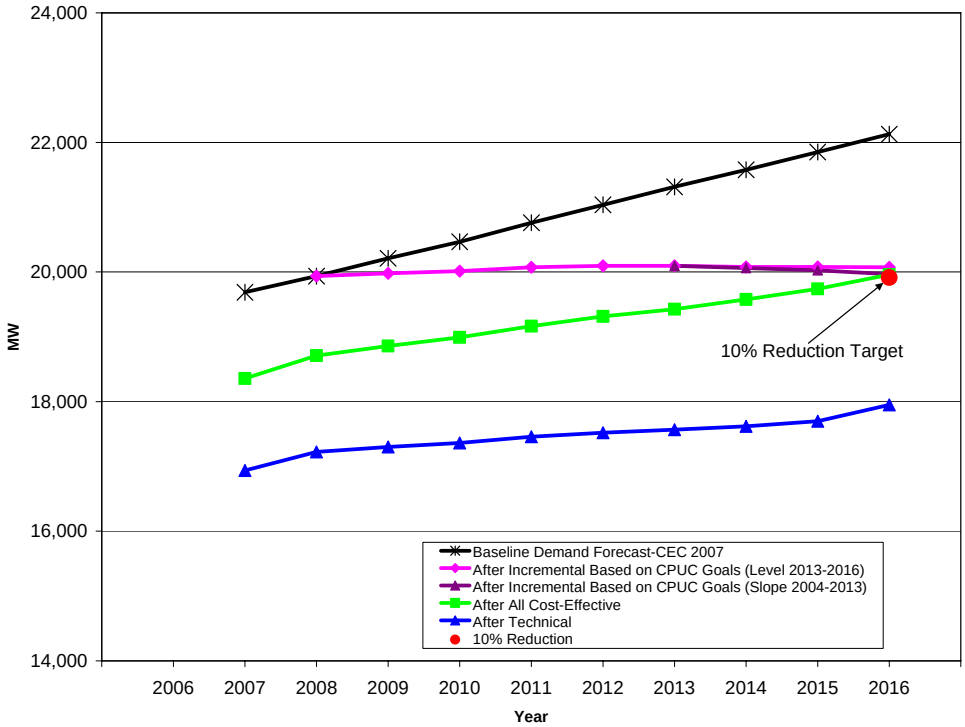
Sources: California Municipal Utilities Association, (December 2006). *Energy Efficiency in California's Public Power Sector.* http://www.ncpa.com/images/stories/SB1037%20Report%20Final%20%281206%29.pdf.; California Municipal Utilities Association, (June 2007). *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021.* http://www.ncpa.com/images/stories/AB2021%20Report%20Final.pdf.

Pacific Gas and Electric

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Pacific Gas and Electric – Energy Efficiency and Demand Reduction Potentials

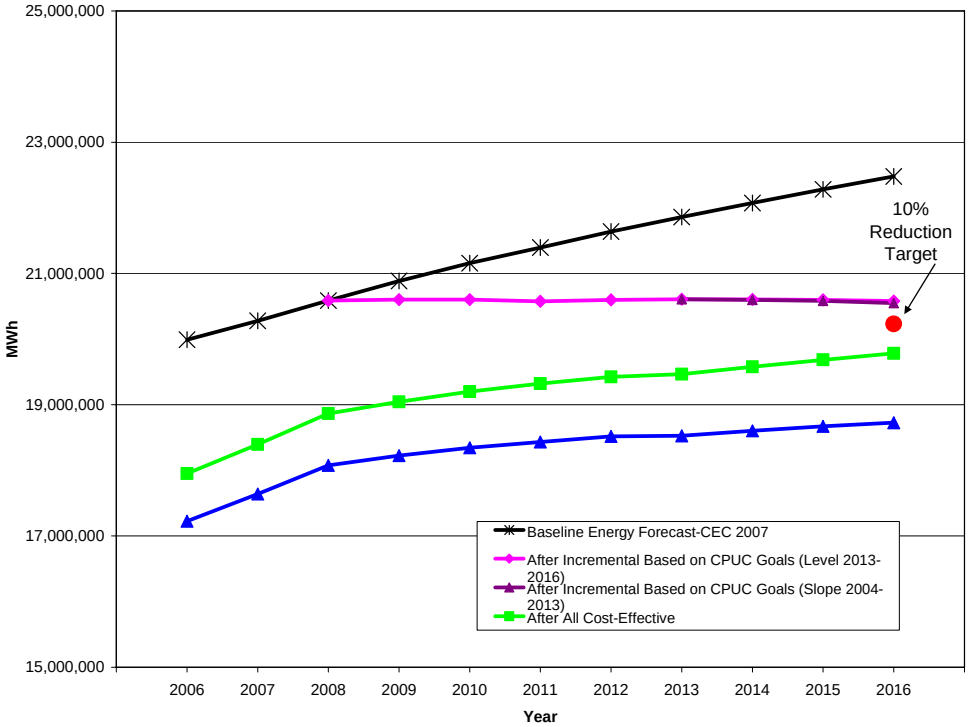
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	13,205,201	14,379,777	15,268,850	15,971,940	16,672,528	17,371,614	18,070,952	18,774,289	19,489,123	20,443,091	21,070,560	21,694,531	22,326,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	911,500	911,500	714,000	944,000	1,053,000								
		Remaining Potential	**12,293,701**	**12,556,777**	**12,731,850**	**12,490,940**	**12,138,528**	**12,837,614**	**13,536,952**	**14,240,289**	**14,955,123**	**15,909,091**	**16,536,560**	**17,160,531**	**17,792,000**
	Demand (MW)	Based on Potential Studies pre-2007	2,647	2,983	3,252	3,431	3,622	3,819	4,014	4,212	4,425	4,657	4,865	5,066	5,086
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	176	176	125	205	228								
		Remaining Potential	**2,472**	**2,632**	**2,775**	**2,750**	**2,713**	**2,910**	**3,105**	**3,302**	**3,516**	**3,748**	**3,956**	**4,156**	**4,177**
Cost-Effective Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	10,434,493	11,332,778	12,027,080	12,647,244	13,277,529	13,854,141	14,432,449	14,994,573	15,543,514	16,394,454	16,852,601	17,309,709	17,833,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	911,500	911,500	714,000	944,000	1,053,000								
		Remaining Potential	**9,522,993**	**9,509,778**	**9,490,080**	**9,166,244**	**8,743,529**	**9,320,141**	**9,898,449**	**10,460,573**	**11,009,514**	**11,860,454**	**12,318,601**	**12,775,709**	**13,299,000**
	Demand (MW)	Based on Potential Studies pre-2007	1,554	1,742	1,892	2,013	2,138	2,261	2,384	2,508	2,630	2,796	2,910	3,023	3,076
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	176	176	125	205	228								
		Remaining Potential	**1,378**	**1,391**	**1,416**	**1,331**	**1,229**	**1,352**	**1,475**	**1,599**	**1,721**	**1,887**	**2,001**	**2,114**	**2,167**
Targets	Energy (MWh)	Incremental Based on CPUC Goals (Level 2013-2016)	744,000	744,000	829,000	944,000	1,053,000	1,067,000	1,015,000	1,086,000	1,173,000	1,277,000	1,277,000	1,277,000	1,277,000
		Cumulative Based on CPUC Goals	744,000	1,488,000	2,317,000	3,261,000	4,314,000	5,381,000	6,396,000	7,482,000	8,655,000	9,932,000	11,209,000	12,486,000	13,763,000
		Incremental Based on CPUC Goals (Slope 2004-2013)	744,000	744,000	829,000	944,000	1,053,000	1,067,000	1,015,000	1,086,000	1,173,000	1,277,000	1,345,958	1,418,640	1,495,246
		maining Cumulative Savings Goals (Level 2013-2016)						**1,067,000**	**2,082,000**	**3,168,000**	**4,341,000**	**5,618,000**	**6,895,000**	**8,172,000**	**9,449,000**
		maining Cumulative Savings Goals (Slope 2004-2013)						**1,067,000**	**2,082,000**	**3,168,000**	**4,341,000**	**5,618,000**	**6,963,958**	**8,382,598**	**9,877,844**
		1st Year Savings	744,000	744,000	829,000	944,000	1,053,000	1,067,000	1,015,000	1,086,000	1,173,000	1,277,000	1,345,958	1,418,640	1,495,246
		Annual Rate of Change		0.0%	11.4%	13.9%	11.5%	1.3%	-4.9%	7.0%	8.0%	8.9%	5.4%	5.4%	5.4%
		Savings as a Percent of Consumption			1.0%	1.1%	1.2%	1.2%	1.1%	1.2%	1.3%	1.4%	1.5%	1.5%	1.6%
	Demand (MW)	Incremental Based on CPUC Goals (Level 2013-2016)	161	162	180	205	228	232	220	236	254	278	278	278	278
		Cumulative Based on CPUC Goals	161	323	503	708	936	1,168	1,388	1,624	1,878	2,156	2,434	2,712	2,990
		Incremental Based on CPUC Goals (Slope 2004-2013)						232	220	236	254	278	295	313	332
		Remaining Cumulative Savings Goals (Level 2013-2016)						**232**	**452**	**688**	**942**	**1,220**	**1,498**	**1,776**	**2,054**
		Remaining Cumulative Savings Goals (Slope 2004-2013)						**232**	**452**	**688**	**942**	**1,220**	**1,515**	**1,828**	**2,159**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-CEC 2007**			**84,234,586**	**85,393,878**	**86,546,268**	**87,723,084**	**88,769,726**	**89,902,043**	**90,892,274**	**91,854,405**	**92,710,426**	**93,606,764**	**94,456,989**
		After Incremental Based on CPUC Goals (Level 2013-2016)					86,546,268	86,656,084	86,687,726	86,734,043	86,551,274	86,236,405	85,815,426	85,434,764	85,007,989
		After Incremental Based on CPUC Goals (Slope 2004-2013)					86,546,268	86,656,084	86,687,726	86,734,043	86,551,274	86,236,405	85,746,468	85,224,166	84,579,145
		After All Cost-Effective			74,744,506	76,227,634	77,802,739	78,402,943	78,871,276	79,441,470	79,882,760	79,993,951	80,391,825	80,831,055	81,157,989
		After Technical			71,502,736	72,902,938	74,407,740	74,885,469	75,232,774	75,661,755	75,937,151	75,945,313	76,173,866	76,446,233	76,664,989
		10% Reduction													85,011,290
	Demand (MW)	**Baseline Demand Forecast-CEC 2007**				**19,687**	**19,937**	**20,210**	**20,467**	**20,761**	**21,036**	**21,314**	**21,577**	**21,853**	**22,127**
		After Incremental Based on CPUC Goals (Level 2013-2016)					19,937	19,978	20,015	20,073	20,094	20,094	20,079	20,077	20,073
		After Incremental Based on CPUC Goals (Slope 2004-2013)					19,937	19,978	20,015	20,073	20,094	20,094	20,062	20,025	19,967
		After All Cost-Effective				18,356	18,708	18,858	18,992	19,162	19,316	19,427	19,576	19,739	19,960
		After Technical				16,938	17,224	17,300	17,362	17,459	17,521	17,566	17,621	17,697	17,950
		10% Reduction													19,914
Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential				1.97%									
		Average Annual Cost-Effective Potential				1.47%									
		Average Annual Feasible Targets				1.05%									
	Demand (MW)	Average Annual Technical Potential				2.00%									
		Average Annual Cost-Effective Potential				1.04%									
		Average Annual Feasible Targets				0.98%									

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

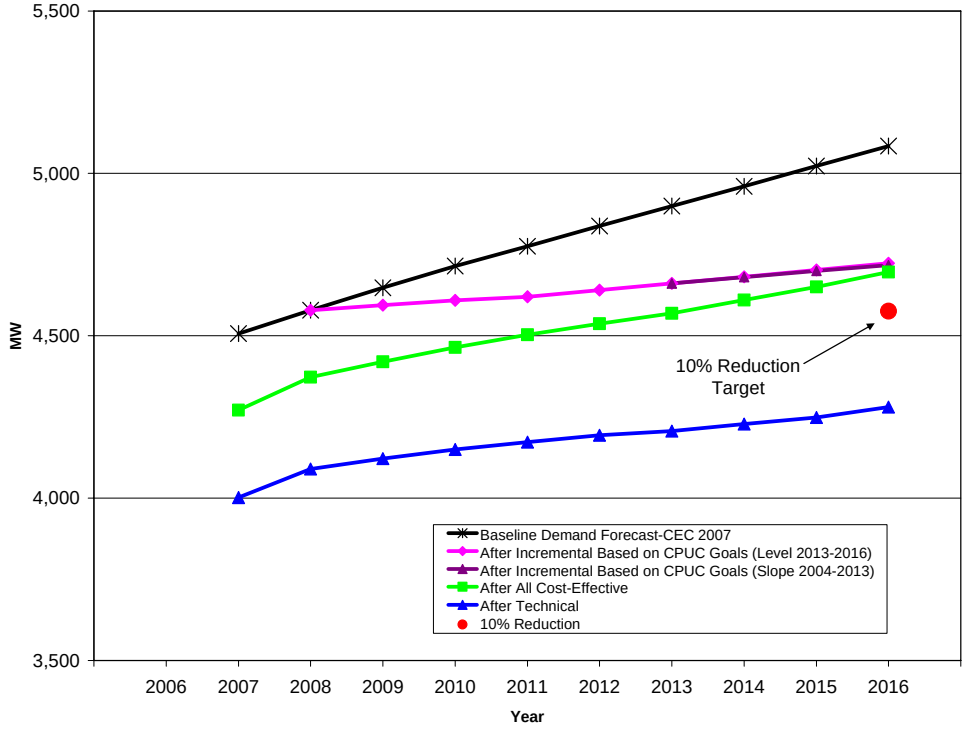
Energy Commission staff interviewed William Miller and others on August 24, 2007. Based on this interview, PG&E agreed that the numbers used in this report were consistent with their understanding of technical and economic potential and the goals set by the CPUC. They questioned the historical savings and agreed to provide staff with the most recent numbers. In particular, they noted that in 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006 and now they are only able to account for the actual savings in the year they occur. This accounting change has the effect of showing a reduction in savings between 2005 and 2006 that does not account for the rule change. After receiving updated numbers from PG&E, and finding only minor differences in reported savings, staff decided to continue using the savings numbers from the *Where Are We Now?* report due to the consistent method used by Itron to gather and report these numbers.

San Diego Gas & Electric

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



San Diego Gas & Electric – Energy Efficiency and Demand Reduction Potentials

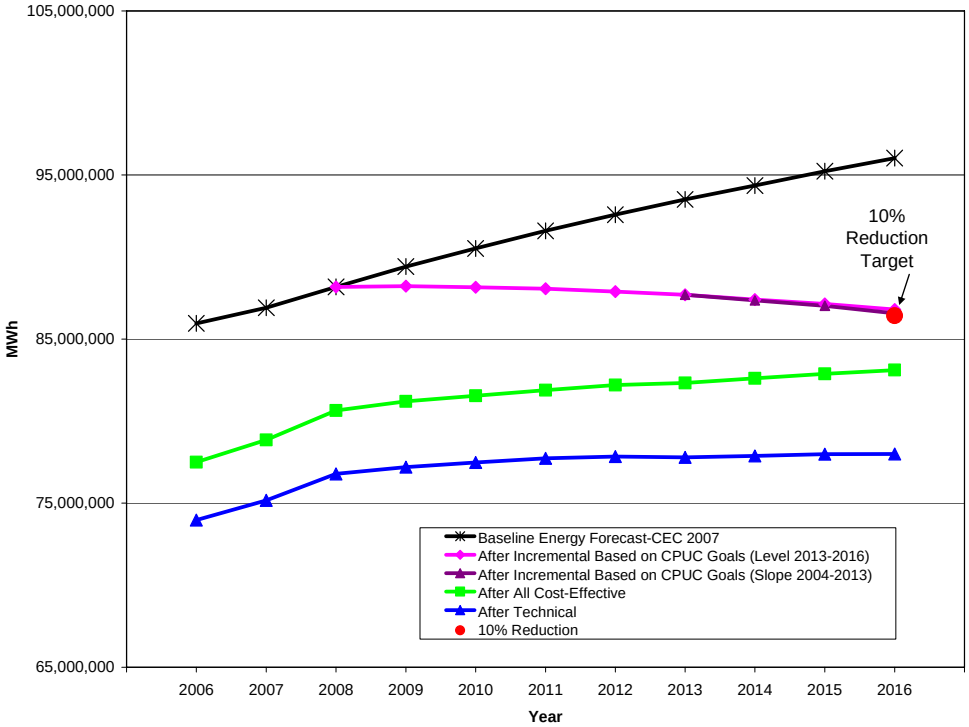
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	3,014,854	3,289,107	3,501,913	3,659,369	3,816,379	3,968,204	4,118,476	4,271,117	4,427,495	4,642,214	4,778,563	4,918,097	5,061,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	305,500	305,500	127,000	285,100	284,400								
		Remaining Potential	**2,709,354**	**2,678,107**	**2,763,913**	**2,636,269**	**2,508,879**	**2,660,704**	**2,810,976**	**2,963,617**	**3,119,995**	**3,334,714**	**3,471,063**	**3,610,597**	**3,753,500**
	Demand (MW)	Based on Potential Studies pre-2007	543	607	662	699	737	774	813	851	893	941	981	1,022	1,052
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	57	57	26	54	54								
		Remaining Potential	**486**	**493**	**522**	**505**	**488**	**526**	**564**	**603**	**645**	**693**	**733**	**774**	**804**
Cost-Effective Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	2,406,242	2,620,946	2,776,056	2,905,938	3,029,619	3,149,299	3,265,574	3,381,647	3,520,732	3,705,198	3,803,271	3,904,534	4,005,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	305,500	305,500	127,000	285,100	284,400								
		Remaining Potential	**2,100,742**	**2,009,946**	**2,038,056**	**1,882,838**	**1,722,119**	**1,841,799**	**1,958,074**	**2,074,147**	**2,213,232**	**2,397,698**	**2,495,771**	**2,597,034**	**2,697,500**
	Demand (MW)	Based on Potential Studies pre-2007	338	377	408	430	454	476	499	521	550	579	599	621	636
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	57	57	26	54	54								
		Remaining Potential	**281**	**263**	**268**	**236**	**206**	**228**	**250**	**272**	**301**	**330**	**350**	**372**	**388**
Targets	Energy (MWh)	Incremental Based on CPUC Goals (Level 2013-2016)	268,400	268,400	280,500	285,100	284,400	282,300	273,600	262,500	221,700	214,900	214,900	214,900	214,900
		Cumulative Based on CPUC Goals	268,400	536,800	817,300	1,102,400	1,386,800	1,669,100	1,942,700	2,205,200	2,426,900	2,641,800	2,856,700	3,071,600	3,286,500
		Incremental Based on CPUC Goals (Slope 2004-2013)	268,400	268,400	280,500	285,100	284,400	282,300	273,600	262,500	221,700	214,900	219,628	224,460	229,398
		maining Cumulative Savings Goals (Level 2013-2016)						**282,300**	**555,900**	**818,400**	**1,040,100**	**1,255,000**	**1,469,900**	**1,684,800**	**1,899,700**
		maining Cumulative Savings Goals (Slope 2004-2013)						**282,300**	**555,900**	**818,400**	**1,040,100**	**1,255,000**	**1,474,628**	**1,699,087**	**1,928,485**
		1st Year Savings	268,400	268,400	280,500	285,100	284,400	282,300	273,600	262,500	221,700	214,900	219,628	224,460	229,398
		Annual Rate of Change		0.0%	4.5%	1.6%	-0.2%	-0.7%	-3.1%	-4.1%	-15.5%	-3.1%	2.2%	2.2%	2.2%
		Savings as a Percent of Consumption			1.4%	1.4%	1.4%	1.4%	1.3%	1.2%	1.0%	1.0%	1.0%	1.0%	1.0%
	Demand (MW)	Incremental Based on CPUC Goals (Level 2013-2016)	50	50	55	54	54	54	52	50	42	41	41	41	41
		Cumulative Based on CPUC Goals	50	101	155	210	264	317	369	419	461	502	543	584	624
		Incremental Based on CPUC Goals (Slope 2004-2013)	50	50	55	54	54	54	52	50	42	41	42	43	44
		Remaining Cumulative Savings Goals (Level 2013-2016)						**54**	**106**	**156**	**198**	**238**	**279**	**320**	**361**
		Remaining Cumulative Savings Goals (Slope 2004-2013)						**54**	**106**	**156**	**198**	**238**	**280**	**323**	**367**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-CEC 2007**			**19,990,294**	**20,276,558**	**20,586,867**	**20,884,423**	**21,156,182**	**21,395,507**	**21,637,792**	**21,861,387**	**22,073,973**	**22,281,720**	**22,478,573**
		After Incremental Based on CPUC Goals (Level 2013-2016)					20,586,867	20,602,123	20,600,282	20,577,107	20,597,692	20,606,387	20,604,073	20,596,920	20,578,873
		After Incremental Based on CPUC Goals (Slope 2004-2013)					20,586,867	20,602,123	20,600,282	20,577,107	20,597,692	20,606,387	20,599,345	20,582,633	20,550,088
		After All Cost-Effective			17,952,238	18,393,720	18,864,748	19,042,624	19,198,107	19,321,360	19,424,560	19,463,689	19,578,202	19,684,686	19,781,073
		After Technical			17,226,381	17,640,289	18,077,988	18,223,719	18,345,206	18,431,891	18,517,797	18,526,674	18,602,910	18,671,123	18,725,073
		10% Reduction													20,230,716
	Demand (MW)	**Baseline Demand Forecast-CEC 2007**				**4,507**	**4,578**	**4,648**	**4,714**	**4,775**	**4,838**	**4,899**	**4,960**	**5,023**	**5,084**
		After Incremental Based on CPUC Goals (Level 2013-2016)					4,578	4,594	4,609	4,620	4,641	4,661	4,681	4,703	4,723
		After Incremental Based on CPUC Goals (Slope 2004-2013)					4,578	4,594	4,609	4,620	4,641	4,661	4,680	4,700	4,718
		After All Cost-Effective				4,271	4,372	4,420	4,464	4,503	4,537	4,569	4,610	4,650	4,697
		After Technical				4,002	4,090	4,122	4,150	4,173	4,194	4,207	4,228	4,249	4,281
		10% Reduction													4,576
Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential				1.60%									
		Average Annual Cost-Effective Potential				1.26%									
		Average Annual Feasible Targets				0.89%									
	Demand (MW)	Average Annual Technical Potential				1.67%									
		Average Annual Cost-Effective Potential				0.81%									
		Average Annual Feasible Targets				0.75%									

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

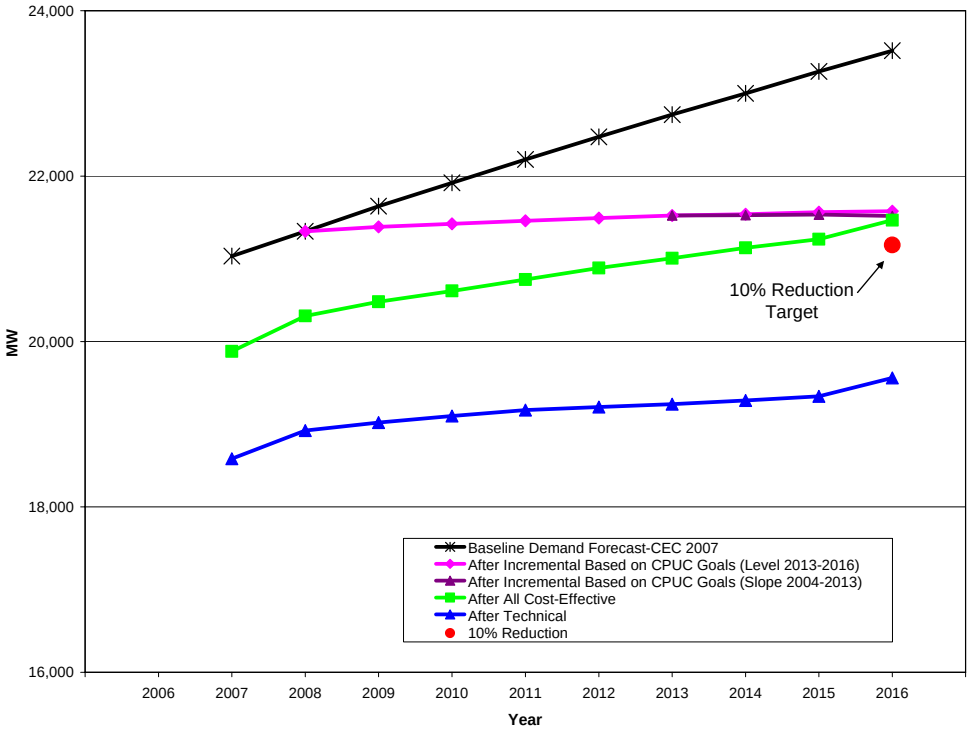
Energy Commission staff interviewed Athena Besa and several others on August 24, 2007. Based on this interview, SDG&E agreed that the numbers used in this report were consistent with their understanding of technical and economic potential and the goals set by the CPUC. They questioned the historical savings and agreed to provide staff with the most recent numbers. In particular, they noted that in 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006 and now they are only able to account for the actual savings in the year they occur. This accounting change has the effect of showing a reduction in savings between 2005 and 2006 that does not account for the rule change. After receiving updated numbers from SDG&E, and finding only minor differences in reported savings, staff decided to continue using the savings numbers from the *Where Are We Now?* report due to the consistent method used by Itron to gather and report these numbers.

Southern California Edison

Impact of Energy Efficiency on Forecasted Energy Consumption



Impact of Energy Efficiency on Forecasted Peak Demand



Southern California Edison – Energy Efficiency and Demand Reduction Potentials

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	12,712,774	13,997,397	15,053,075	15,851,537	16,671,582	17,494,265	18,311,422	19,141,022	20,015,259	21,005,917	21,757,324	22,524,815	23,315,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	1,151,500	1,151,500	761,000	1,046,000	1,167,000								
		Remaining Potential	**11,561,274**	**11,694,397**	**11,989,075**	**11,741,537**	**11,394,582**	**12,217,265**	**13,034,422**	**13,864,022**	**14,738,259**	**15,728,917**	**16,480,324**	**17,247,815**	**18,038,000**
	Demand (MW)	Based on Potential Studies pre-2007	2,421	2,757	3,049	3,235	3,441	3,649	3,852	4,061	4,297	4,533	4,745	4,962	4,989
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	222	222	121	219	246								
		Remaining Potential	**2,198**	**2,312**	**2,483**	**2,450**	**2,410**	**2,618**	**2,821**	**3,030**	**3,266**	**3,502**	**3,714**	**3,931**	**3,958**
Cost-Effective Energy Efficiency Potential	Energy (MWh)	Based on Potential Studies pre-2007	9,805,163	10,781,529	11,532,131	12,166,999	12,804,880	13,489,025	14,254,128	14,984,480	15,650,362	16,474,216	17,031,459	17,638,784	18,199,000
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	1,151,500	1,151,500	761,000	1,046,000	1,167,000								
		Remaining Potential	**8,653,663**	**8,478,529**	**8,468,131**	**8,056,999**	**7,527,880**	**8,212,025**	**8,977,128**	**9,707,480**	**10,373,362**	**11,197,216**	**11,754,459**	**12,361,784**	**12,922,000**
	Demand (MW)	Based on Potential Studies pre-2007	1,459	1,671	1,822	1,937	2,055	2,187	2,340	2,482	2,618	2,769	2,900	3,061	3,082
		Savings Estimated by Itron (04-06) and CPUC Goals(07-08)	222	222	121	219	246								
		Remaining Potential	**1,237**	**1,226**	**1,256**	**1,152**	**1,024**	**1,156**	**1,309**	**1,451**	**1,586**	**1,738**	**1,868**	**2,030**	**2,051**
Targets	Energy (MWh)	Incremental Based on CPUC Goals (Level 2013-2016)	826,000	826,000	922,000	1,046,000	1,167,000	1,189,000	1,176,000	1,164,000	1,151,000	1,139,000	1,139,000	1,139,000	1,139,000
		Cumulative Based on CPUC Goals	826,000	1,652,000	2,574,000	3,620,000	4,787,000	5,976,000	7,152,000	8,316,000	9,467,000	10,606,000	11,745,000	12,884,000	14,023,000
		Incremental Based on CPUC Goals (Slope 2004-2013)	826,000	826,000	922,000	1,046,000	1,167,000	1,189,000	1,176,000	1,164,000	1,151,000	1,139,000	1,175,448	1,213,062	1,251,880
		Remaining Cumulative Savings Goals (Level 2013-2016)						**1,189,000**	**2,365,000**	**3,529,000**	**4,680,000**	**5,819,000**	**6,958,000**	**8,097,000**	**9,236,000**
		Remaining Cumulative Savings Goals (Slope 2004-2013)						**1,189,000**	**2,365,000**	**3,529,000**	**4,680,000**	**5,819,000**	**6,994,448**	**8,207,510**	**9,459,391**
		1st Year Savings	826,000	826,000	922,000	1,046,000	1,167,000	1,189,000	1,176,000	1,164,000	1,151,000	1,139,000	1,175,448	1,213,062	1,251,880
		Annual Rate of Change		0.0%	11.6%	13.4%	11.6%	1.9%	-1.1%	-1.0%	-1.1%	-1.0%	3.2%	3.2%	3.2%
		Savings as a Percent of Consumption			1.1%	1.2%	1.3%	1.3%	1.3%	1.3%	1.2%	1.2%	1.2%	1.3%	1.3%
	Demand (MW)	Incremental Based on CPUC Goals (Level 2013-2016)	167	167	207	219	246	249	247	245	241	240	240	240	240
		Cumulative Based on CPUC Goals	167	334	541	760	1,006	1,255	1,502	1,747	1,988	2,228	2,468	2,708	2,948
		Incremental Based on CPUC Goals (Slope 2004-2013)	167	167	207	219	246	249	247	245	241	240	250	260	270
		Remaining Cumulative Savings Goals (Level 2013-2016)						**249**	**496**	**741**	**982**	**1,222**	**1,462**	**1,702**	**1,942**
		Remaining Cumulative Savings Goals (Slope 2004-2013)						**249**	**496**	**741**	**982**	**1,222**	**1,472**	**1,731**	**2,002**
Impact on Forecasted Consumption and Demand	Energy (MWh)	**Baseline Energy Forecast-CEC 2007**			**85,957,695**	**86,911,146**	**88,179,816**	**89,416,194**	**90,522,180**	**91,595,083**	**92,578,140**	**93,518,983**	**94,358,924**	**95,237,568**	**96,033,274**
		After Incremental Based on CPUC Goals (Level 2013-2016)					88,179,816	88,227,194	88,157,180	88,066,083	87,898,140	87,699,983	87,400,924	87,140,568	86,797,274
		After Incremental Based on CPUC Goals (Slope 2004-2013)					88,179,816	88,227,194	88,157,180	88,066,083	87,898,140	87,699,983	87,364,476	87,030,057	86,573,884
		After All Cost-Effective			77,489,564	78,854,147	80,651,936	81,204,170	81,545,052	81,887,603	82,204,779	82,321,767	82,604,465	82,875,783	83,111,274
		After Technical			73,968,620	75,169,609	76,785,235	77,198,929	77,487,758	77,731,061	77,839,881	77,790,067	77,878,600	77,989,752	77,995,274
		10% Reduction													86,429,947
	Demand (MW)	**Baseline Demand Forecast-CEC 2007**				**21,033**	**21,333**	**21,637**	**21,920**	**22,202**	**22,475**	**22,745**	**23,001**	**23,267**	**23,519**
		After Incremental Based on CPUC Goals (Level 2013-2016)					21,333	21,388	21,424	21,461	21,493	21,523	21,539	21,565	21,577
		After Incremental Based on CPUC Goals (Slope 2004-2013)					21,333	21,388	21,424	21,461	21,493	21,523	21,529	21,535	21,517
		After All Cost-Effective				19,882	20,309	20,481	20,610	20,751	20,888	21,007	21,132	21,237	21,468
		After Technical				18,583	18,923	19,019	19,099	19,172	19,209	19,243	19,287	19,336	19,561
		10% Reduction													21,167
Average Annual Impact on Forecasted Consumption and Demand	Energy (MWh)	Average Annual Technical Potential				1.96%									
		Average Annual Cost-Effective Potential				1.41%									
		Average Annual Feasible Targets				0.13%									
	Demand (MW)	Average Annual Technical Potential				1.77%									
		Average Annual Cost-Effective Potential				0.92%									
		Average Annual Feasible Targets				0.87%									

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

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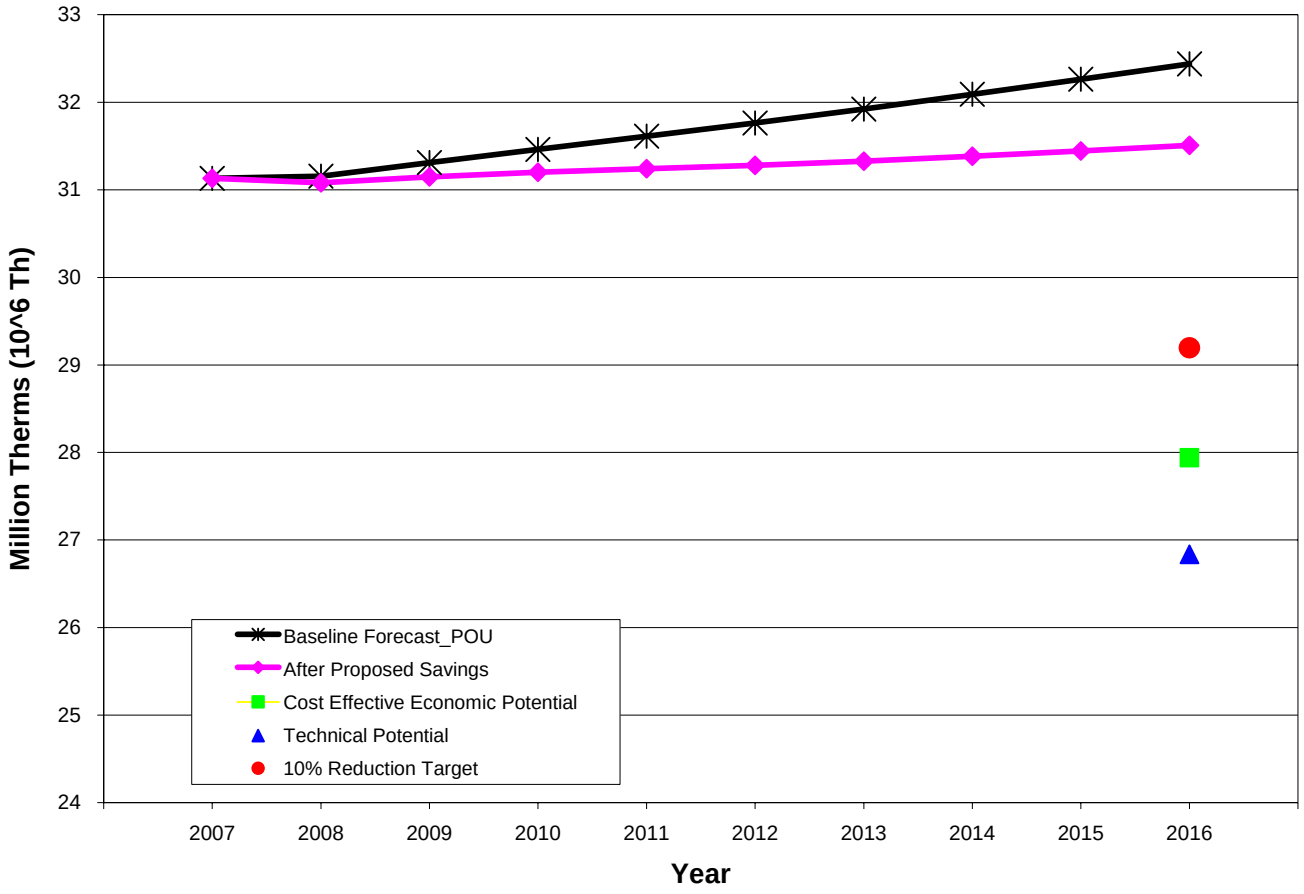
City of Palo Alto Utilities

Impact of Energy Efficiency on Forecasted Natural Gas Consumption



City of Palo Alto Utilities – Energy Efficiency Potentials

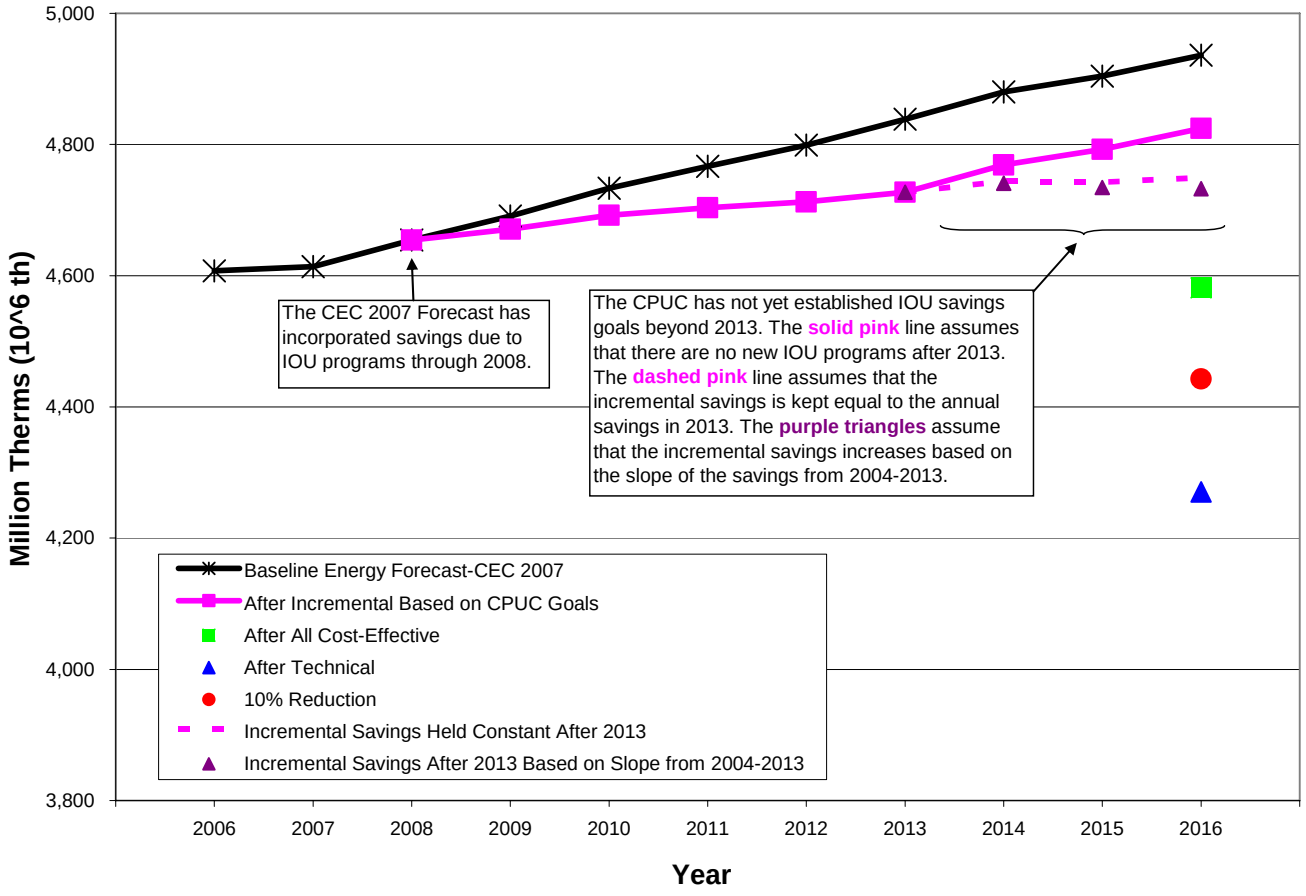
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	**Energy (MMth)**	**System Total**	**5.37**	**5.38**	**5.41**	**5.43**	**5.46**	**5.48**	**5.51**	**5.54**	**5.57**	**5.60**
Cost-Effective Energy Efficiency Potential	**Energy (MMth)**	**System Total**	**4.32**	**4.32**	**4.34**	**4.36**	**4.39**	**4.41**	**4.43**	**4.45**	**4.48**	**4.50**
Feasible Targets	**Energy (MMth)**	**System Total**	**0.00**	**0.08**	**0.16**	**0.26**	**0.37**	**0.48**	**0.60**	**0.71**	**0.82**	**0.93**
		1st Year Savings	0.00	0.08	0.09	0.10	0.11	0.11	0.11	0.11	0.11	0.11
		Annual Rate of Change			13%	15%	10%	3%	0%	0%	0%	0%
		Savings as a Percent of Consumption	0%	0%	1%	1%	1%	2%	2%	2%	3%	3%
Impact on Forecasted Consumption	**Energy (MMth)**	**Baseline Forecast**	**31.13**	**31.16**	**31.31**	**31.46**	**31.61**	**31.76**	**31.92**	**32.09**	**32.26**	**32.44**
		After Feasible Targets	31.13	31.08	31.15	31.20	31.24	31.28	31.33	31.38	31.44	31.51
		After All Cost-Effective										27.94
		After Technical										26.84
		10% Reduction										29.19

Average Annual Impact on Forecasted Consumption	**Energy (MMth)**	Average Annual Technical Potential	1.77%
		Average Annual Cost-Effective Potential	1.42%
		Average Annual Feasible Targets	0.29%

Source: City of Palo Alto Utilities 10-year Efficiency Plan Summary

Pacific Gas & Electric

Impact of Energy Efficiency on Forecasted Natural Gas Consumption



Pacific Gas & Electric – Energy Efficiency Potentials

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													750
		ıvings Estimated by Itron (04-06) and CPUC Goals(07-08)	22	22	8	15	17								
		Remaining Potential													**666**
Cost-Effective Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													439
		ıvings Estimated by Itron (04-06) and CPUC Goals(07-08)	22	22	8	15	17								
		Remaining Potential													**355**
Targets		Incremental Based on CPUC Goals (Level 2013-2016)	10	10	13	15	17	20	21	22	23	25	25	25	25
		Cumulative Based on CPUC Goals (Level 2013-2016)	10	20	32	47	65	85	106	128	151	176	201	226	251
		Incremental Based on CPUC Goals (Slope 2004-2013)	10	10	13	15	17	20	21	22	23	25	28	31	34
		evised Cumulative Savings Goals (Level 2013-2016)						**20**	**41**	**63**	**86**	**112**	**137**	**162**	**187**
		evised Cumulative Savings Goals (Slope 2004-2013)						**20**	**41**	**63**	**86**	**112**	**139**	**170**	**204**
		1st Year Savings (Slope 2004-2013)	10	10	13	15	17	20	21	22	23	25	28	31	34
		Annual Rate of Change		0%	29%	18%	17%	17%	4%	4%	5%	9%	10%	10%	10%
		Savings as a Percent of Consumption		0.2%	0.3%	0.3%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%
Impact on Forecasted Consumption	**Energy (Million Therms)**	**Baseline Energy Forecast-CEC 2007**		4,433	4,608	4,614	4,654	4,691	4,733	4,767	4,799	4,839	4,880	4,904	4,936
		ter Incremental Based on CPUC Goals (Level 2013-2016)					4,654	4,671	4,692	4,703	4,713	4,727	4,744	4,743	4,749
		ter Incremental Based on CPUC Goals (Slope 2004-2013)					4,654	4,671	4,692	4,703	4,713	4,727	4,741	4,734	4,732
		After All Cost-Effective													4,582
		After Technical													4,271
		10% Reduction													4,443

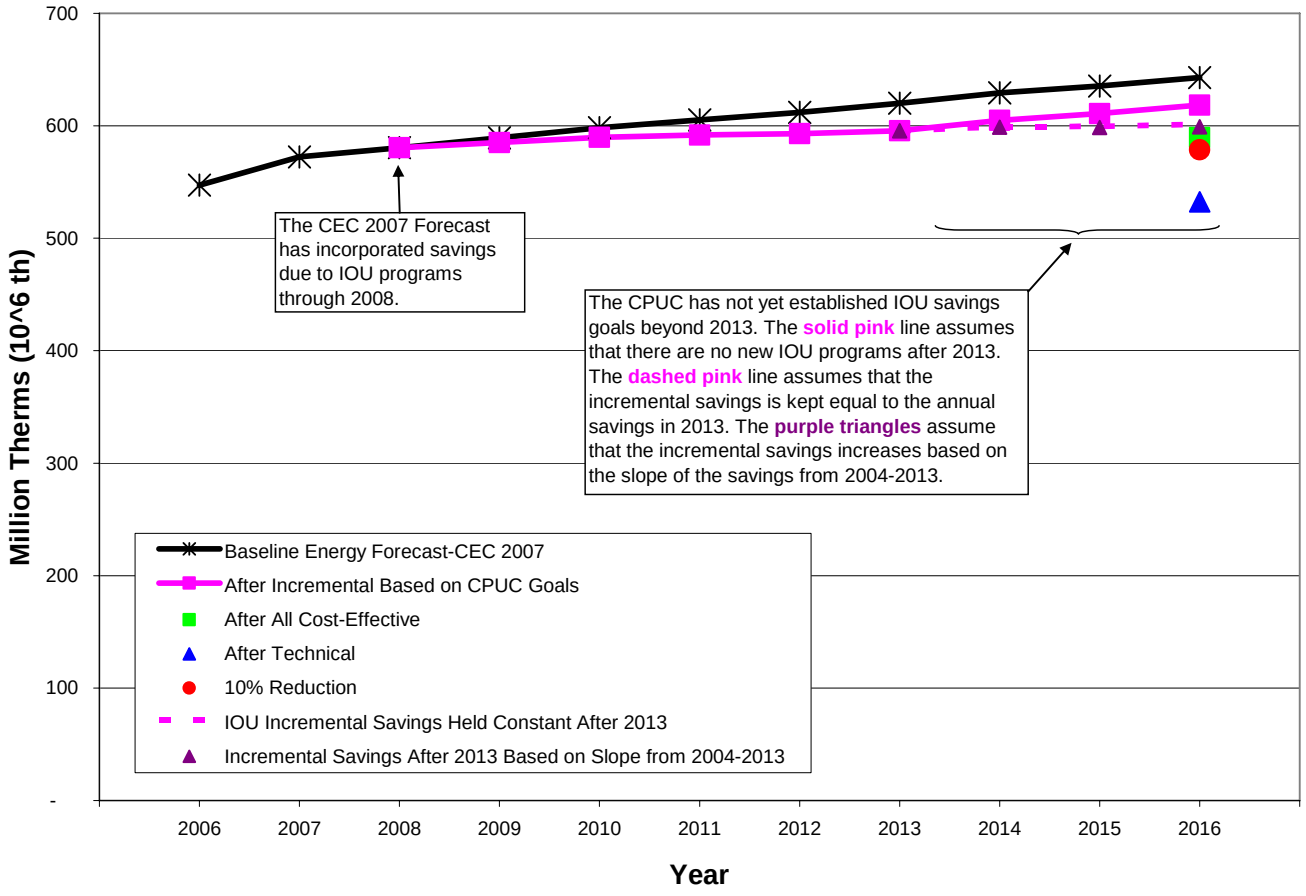
Average Annual Impact on Forecasted Consumption	**Energy (Million Therms)**	Average Annual Technical Potential	1.39%
		Average Annual Cost-Effective Potential	0.74%
		Average Annual Feasible Targets	0.39%

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

Energy Commission staff interviewed William Miller and others on August 24, 2007. Based on this interview, PG&E agreed that the numbers used in this report were consistent with their understanding of technical and economic potential and the goals set by the CPUC. They questioned the historical savings and agreed to provide staff with the most recent numbers. In particular, they noted that in 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006 and now they are only able to account for the actual savings in the year they occur. This accounting change has the effect of showing a reduction in savings between 2005 and 2006 that does not account for the rule change. After receiving updated numbers from PG&E, and finding only minor differences in reported savings, staff decided to continue using the savings numbers from the *Where Are We Now?* report due to the consistent method used by Itron to gather and report these numbers.

San Diego Gas & Electric

Impact of Energy Efficiency on Forecasted Natural Gas Consumption



San Diego Gas & Electric – Energy Efficiency Potentials

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													125
		avings Estimated by Itron (04-06) and CPUC Goals(07-08)	3	3	2	3	4								
		Remaining Potential													**110**
Cost-Effective Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													68
		avings Estimated by Itron (04-06) and CPUC Goals(07-08)	3	3	2	3	4								
		Remaining Potential													**53**
Targets	**Energy (Million Therms)**	Incremental Based on CPUC Goals (Level 2013-2016)	2	2	3	3	4	4	5	5	5	6	6	6	6
		Cumulative Based on CPUC Goals (Level 2013-2016)	2	4	6	9	13	17	22	27	32	38			
		Incremental Based on CPUC Goals (Slope 2004-2013)	2	2	3	3	4	4	5	5	5	6	6	6	7
		evised Cumulative Savings Goals (Level 2013-2016)						**4**	**9**	**14**	**19**	**25**	**30**	**36**	**42**
		evised Cumulative Savings Goals (Slope 2004-2013)						**4**	**9**	**14**	**19**	**25**	**31**	**37**	**44**
		1st Year Savings (Slope 2004-2013)	2	2	3	3	4	4	5	5	5	6	6	6	7
		Annual Rate of Change		0%	50%	15%	19%	11%	10%	9%	8%	8%	6%	6%	6%
		Savings as a Percent of Consumption		0.3%	0.5%	0.5%	0.6%	0.7%	0.8%	0.8%	0.9%	0.9%	1.0%	1.0%	1.1%
Impact on Forecasted Consumption	**Energy (Million Therms)**	**Baseline Energy Forecast-CEC 2007**		530	547	572	581	589	598	605	612	620	629	635	643
		fter Incremental Based on CPUC Goals (Level 2013-2016)					581	585	590	592	593	595	599	599	601
		fter Incremental Based on CPUC Goals (Slope 2004-2013)					581	585	590	592	593	595	599	598	599
		After All Cost-Effective													589
		After Technical													532
		10% Reduction													579

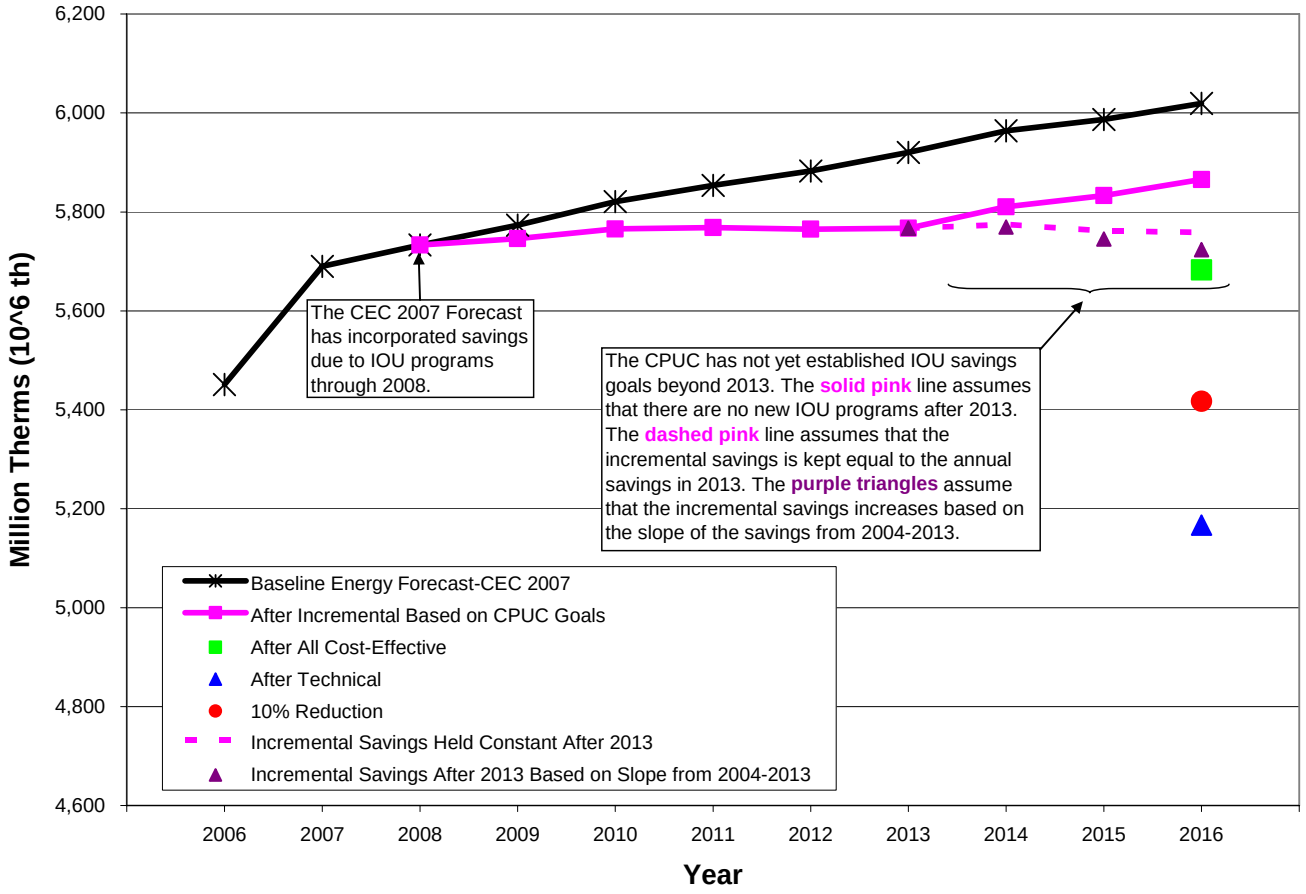
Average Annual Impact on Forecasted Consumption	**Energy (Million Therms)**	Average Annual Technical Potential	1.81%
		Average Annual Cost-Effective Potential	0.88%
		Average Annual Feasible Targets	0.68%

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

Energy Commission staff interviewed Athena Besa and several others on August 24, 2007. Based on this interview, SDG&E agreed that the numbers used in this report were consistent with their understanding of technical and economic potential and the goals set by the CPUC. They questioned the historical savings and agreed to provide staff with the most recent numbers. In particular, they noted that in 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006 and now they are only able to account for the actual savings in the year they occur. This accounting change has the effect of showing a reduction in savings between 2005 and 2006 that does not account for the rule change. After receiving updated numbers from SDG&E, and finding only minor differences in reported savings, staff decided to continue using the savings numbers from the *Where Are We Now?* report due to the consistent method used by Itron to gather and report these numbers.

Southern California Gas

Impact of Energy Efficiency on Forecasted Natural Gas Consumption



Southern California Gas – Energy Efficiency Potentials

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Technical Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													932
		avings Estimated by Itron (04-06) and CPUC Goals(07-08)	13	13	11	19	23								
		Remaining Potential													**852**
Cost-Effective Energy Efficiency Potential	**Energy (Million Therms)**	Based on Potential Studies pre-2007													416
		avings Estimated by Itron (04-06) and CPUC Goals(07-08)	13	13	11	19	23								
		Remaining Potential													**336**
Targets	**Energy (Million Therms)**	Incremental Based on CPUC Goals (Level 2013-2016)	10	10	15	19	23	27	28	30	32	36	36	36	36
		Cumulative Based on CPUC Goals (Level 2013-2016)	10	19	34	53	77	104	132	162	194	230			
		Incremental Based on CPUC Goals (Slope 2004-2013)	10	10	15	19	23	27	28	30	32	36	41	47	54
		evised Cumulative Savings Goals (Level 2013-2016)						**27**	**56**	**85**	**118**	**154**	**189**	**225**	**261**
		evised Cumulative Savings Goals (Slope 2004-2013)						**27**	**56**	**85**	**118**	**154**	**195**	**242**	**295**
		1st Year Savings (Slope 2004-2013)	10	10	15	19	23	27	28	30	32	36	41	47	54
		Annual Rate of Change		0%	53%	31%	21%	17%	4%	6%	8%	11%	15%	15%	15%
		Savings as a Percent of Consumption		0.2%	0.3%	0.3%	0.4%	0.5%	0.5%	0.5%	0.5%	0.6%	0.7%	0.8%	0.9%
Impact on Forecasted Consumption	**Energy (Million Therms)**	**Baseline Energy Forecast-CEC 2007**		5,532	5,451	5,690	5,733	5,773	5,821	5,854	5,883	5,920	5,964	5,987	6,019
		fter Incremental Based on CPUC Goals (Level 2013-2016)					5,733	5,746	5,765	5,768	5,765	5,767	5,775	5,761	5,758
		fter Incremental Based on CPUC Goals (Slope 2004-2013)					5,733	5,746	5,765	5,768	5,765	5,767	5,769	5,745	5,724
		After All Cost-Effective													5,683
		After Technical													5,167
		10% Reduction													5,417

Average Annual Impact on Forecasted Consumption	**Energy (Million Therms)**	Average Annual Technical Potential	1.45%
		Average Annual Cost-Effective Potential	0.57%
		Average Annual Feasible Targets	0.44%

Sources: California Public Utilities Commission(CPUC), Decision 04-09-060, September 24, 2004, *Interim Opinion: Energy Savings Goals for 2004 and Beyond*; Itron, Inc., *California Energy Efficiency Potential Study, Volumes 1-2*, submitted to Pacific Gas and Electric Co., May 24, 2006; Itron report, *Where Are We Now?*, April 30, 2007; California Energy Commission, *California Energy Demand 2008-2018 Staff Draft Forecast*, CEC-200-2007-015SD, July 2007; California Energy Commission, *Staff Forecast of 2008 Peak Demand, Staff Final Report*, CEC-200-2007-006-SF, June 18, 2007.

Energy Commission staff interviewed Athena Besa and several others on August 24, 2007. Based on this interview, SDG&E agreed that the numbers used in this report were consistent with their understanding of technical and economic potential and the goals set by the CPUC. They questioned the historical savings and agreed to provide staff with the most recent numbers. In particular, they noted that in 2004 and 2005 the CPUC allowed the utilities to include committed savings in their totals. This rule changed in 2006 and now they are only able to account for the actual savings in the year they occur. This accounting change has the effect of showing a reduction in savings between 2005 and 2006 that does not account for the rule change. After receiving updated numbers from SDG&E, and finding only minor differences in reported savings, staff decided to continue using the savings numbers from the *Where Are We Now?* report due to the consistent method used by Itron to gather and report these numbers.

APPENDIX C

Supporting Figures and Tables

Sources: Data for the tables and graphs in this appendix were aggregated from the individual utility tables contained in Appendix B.

Table C-1 Annual Utility Savings Targets

	Annual Savings Targets (MWh)												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Publicly Owned Utilities													
Alameda		279	611	760	760	760	760	760	760	760	760	760	760
Anaheim*		12,766	13,849	15,897	16,117	16,233	16,593	16,675	16,956	17,092	17,161	17,230	17,730
Azusa		1,897	1,897	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084
Banning		96	253	873	873	873	873	873	873	873	873	873	873
Biggs		35	131	106	106	106	106	106	106	106	106	106	106
Burbank*		5,574	5,778	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307	11,307
Colton		943	3,716	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,625
Corona		13	38	467	467	467	467	467	467	467	467	467	467
Glendale*		8,400	8,215	11,362	11,586	11,702	11,819	11,937	12,056	12,177	12,299	12,422	12,546
Gridley		10	80	92	92	92	92	92	92	92	92	92	92
Healdsburg		5	114	198	198	198	198	198	198	198	198	198	198
Hercules		46	150	136	136	136	136	136	136	136	136	136	136
Imperial Irrigation District*		3,524	10,500	13,223	29,000	37,500	45,067	48,000	48,000	48,000	48,000	48,000	48,000
Industry		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lassen Municipal Utility District		77	307	733	733	733	733	733	733	733	733	733	733
Lodi		889	1,316	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Lompoc		138	164	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121
Los Angeles DWP*		15,000	58,000	114,000	315,000	300,000	280,000	255,000	252,000	252,000	252,000	252,000	252,000
Merced		142	283	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619	3,619
Modesto Irrigation District*		3,222	3,458	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856	13,856
Moreno Valley		245	44	822	822	822	822	822	822	822	822	822	822
Needles		18	44	817	817	817	817	817	817	817	817	817	817
Palo Alto		1,877	2,129	2,500	2,800	3,100	3,400	3,500	3,500	3,500	3,500	3,500	3,500
Pasadena*		4,501	5,244	5,000	10,000	13,500	17,000	22,627	22,627	22,627	22,627	22,627	22,627
Pittsburg Power/ Island Energy		0	0	178	178	178	178	178	178	178	178	178	178
Plumas Sierra		90	171	621	621	621	621	621	621	621	621	621	621
Port of Oakland		879	11	884	884	884	884	884	884	884	884	884	884
PWRPA**		n/a	n/a	0	9,656	9,607	4,707	4,660	4,614	4,568	4,522	4,477	4,432
Rancho Cucamonga		134	102	448	448	448	448	448	448	448	448	448	448
Redding*		3,965	7,209	2,641	2,803	3,017	3,285	3,601	3,953	4,317	4,671	4,978	5,204
Riverside*		3,117	3,060	22,210	22,640	23,060	23,410	23,850	24,250	24,620	25,020	25,450	25,870
Roseville*		4,569	6,524	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716	8,716
Sacramento Municipal Utility District*		81,163	79,290	70,000	107,000	145,000	196,000	200,000	205,000	209,000	213,000	217,000	222,000
Shasta Lake		37	64	129	129	129	129	129	129	129	129	129	129
Silicon Valley Power*		4,687	12,243	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762	25,762
Trinity		22	14	0	0	0	0	0	0	0	0	0	0
Truckee Donner		47	47	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001
Turlock Irrigation District*		6,883	6,122	7,824	7,271	11,192	26,890	27,509	21,342	14,430	7,748	7,839	7,945
Ukiah		22	122	198	198	198	198	198	198	198	198	198	198
Vernon		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotals		**165,312**	**231,299**	**344,210**	**613,429**	**653,467**	**707,727**	**696,914**	**693,853**	**691,886**	**690,103**	**695,078**	**701,410**
Investor-Owned Utilities													
Pacific Gas & Electric	744,000	744,000	829,000	944,000	1,053,000	1,067,000	1,015,000	1,086,000	1,173,000	1,277,000	1,345,958	1,418,640	1,495,246
San Diego Gas & Electric	268,400	268,400	280,500	285,100	284,400	282,300	273,600	262,500	221,700	214,900	219,628	224,460	229,398
Southern California Edison	826,000	826,000	922,000	1,046,000	1,167,000	1,189,000	1,176,000	1,164,000	1,151,000	1,139,000	1,175,448	1,213,062	1,251,880
Subotals	**1,838,400**	**1,838,400**	**2,031,500**	**2,275,100**	**2,504,400**	**2,538,300**	**2,464,600**	**2,512,500**	**2,545,700**	**2,630,900**	**2,741,034**	**2,856,162**	**2,976,524**
IOU and POU	**1,838,400**	**2,003,712**	**2,262,799**	**2,619,310**	**3,117,829**	**3,191,767**	**3,172,327**	**3,209,414**	**3,239,553**	**3,322,786**	**3,431,136**	**3,551,240**	**3,677,934**
Big 13 POU*		157,372	219,491	321,798	581,058	620,845	679,705	668,839	665,825	663,903	662,166	667,186	673,563
Small 27 POU		7,940	11,808	22,412	32,371	32,622	28,022	28,075	28,029	27,982	27,937	27,891	27,847
Big 13 POU as % of POU*		95%	95%	93%	95%	95%	96%	96%	96%	96%	96%	96%	96%
Small 27 POU as % of POU		5%	5%	7%	5%	5%	4%	4%	4%	4%	4%	4%	4%
Big 13 POU as % of IOU*		9%	11%	14%	23%	24%	28%	27%	26%	25%	24%	23%	23%
Small 27 POU as % of IOU		0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

* Identifies the Big 13 POUs.

**PWRPA does not forecast any growth from 2007-2016.

City of Industry and Vernon did not submit data during the AB 2021 process.

This table supports Figures 22, 23, and 25.

Table C-2: Electricity Savings Estimated by Itron

	Electricity Savings (GWh)		
	2004	2005	2006
Pacific Gas & Electric	911,500	911,500	714,000
San Diego Gas & Electric	305,500	305,500	127,000
Southern California Edison	1,151,500	1,151,500	761,000
Combined	2,368,500	2,368,500	1,602,000

This table supports Figure 25.

Table C-3: Utility Electricity Savings Goals Compared to 2016 Consumption

	Cumulative Proposed Energy Savings Goals (MWh)		Forecasted Electrical Consumption (MWh)		10-yr Total Proposed Savings Goals (MWh)	Savings as % of Growth	Savings as % of Consumption in 2016	Reduction Needed to Meet 10% Target (MWh)	Difference between Proposed Savings Goals and 10% Target	
	2007	2016	2007	2016					MWh	%
Publicly Owned Utilities										
Alameda	760	7,605	407,300	469,700	7,605	12%	2%	46,970	(39,365)	-84%
Anaheim*	15,897	167,682	2,636,957	2,941,017	167,682	55%	6%	294,102	(126,420)	-43%
Azusa	2,084	20,840	255,000	291,564	20,840	57%	7%	29,156	(8,316)	-29%
Banning	873	8,734	156,164	197,618	8,734	21%	4%	19,762	(11,028)	-56%
Biggs	106	1,063	16,974	18,701	1,063	62%	6%	1,870	(807)	-43%
Burbank*	11,307	113,073	1,130,727	1,241,816	113,073	102%	9%	124,182	(11,109)	-9%
Colton	2,625	26,254	374,497	488,634	26,254	23%	5%	48,863	(22,610)	-46%
Corona	467	4,669	68,348	89,178	4,669	22%	5%	8,918	(4,249)	-48%
Glendale*	11,362	119,904	1,147,537	1,254,577	119,904	112%	10%	125,458	(5,554)	-4%
Gridley	92	917	36,798	47,227	917	9%	2%	4,723	(3,806)	-81%
Healdsburg	198	1,984	76,345	84,864	1,984	23%	2%	8,486	(6,502)	-77%
Hercules	136	1,364	16,596	18,151	1,364	88%	8%	1,815	(451)	-25%
Imperial Irrigation District*	-	405,600	3,517,000	4,640,497	405,600	36%	9%	464,050	(58,450)	-13%
Industry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lassen Municipal Utility District	733	7,333	145,285	167,596	7,333	33%	4%	16,760	(9,427)	-56%
Lodi	2,000	20,001	473,890	557,864	20,001	24%	4%	55,786	(35,785)	-64%
Lompoc	1,121	11,210	140,308	152,465	11,210	92%	7%	15,246	(4,037)	-26%
Los Angeles DWP*	275,000	2,685,000	23,842,000	25,927,000	2,685,000	129%	10%	2,592,700	92,300	4%
Merced	3,619	36,195	405,448	575,253	36,195	21%	6%	57,525	(21,331)	-37%
Modesto Irrigation District*	13,856	138,557	2,761,835	3,452,432	138,557	20%	4%	345,243	(206,686)	-60%
Moreno Valley	822	8,221	46,499	109,642	8,221	13%	7%	10,964	(2,743)	-25%
Needles	817	8,173	66,377	79,200	8,173	64%	10%	7,920	253	3%
Palo Alto	2,500	32,800	991,631	1,037,107	32,800	72%	3%	103,711	(70,911)	-68%
Pasadena*	5,000	181,260	1,273,050	1,452,040	181,260	101%	12%	145,204	36,056	25%
Pittsburg Power/ Island Energy	178	1,777	17,845	21,326	1,777	51%	8%	2,133	(356)	-17%
Plumas Sierra	621	6,209	168,486	202,378	6,209	18%	3%	20,238	(14,029)	-69%
Port of Oakland	884	8,837	81,173	108,238	8,837	33%	8%	10,824	(1,987)	-18%
PWRPA	-	51,242	490,000	490,000	51,242	**	10%	49,000	2,242	5%
Rancho Cucamonga	448	4,478	60,300	78,100	4,478	25%	6%	7,810	(3,332)	-43%
Redding*	2,641	38,471	814,516	972,357	38,471	24%	4%	97,236	(58,765)	-60%
Riverside*	22,210	240,380	2,221,000	2,587,000	240,380	66%	9%	258,700	(18,320)	-7%
Roseville*	8,716	87,162	1,242,990	1,569,010	87,162	27%	6%	156,901	(69,739)	-44%
Sacramento Municipal Utility District	70,000	1,784,000	11,578,000	13,919,548	1,784,000	76%	13%	1,391,955	392,045	28%
Shasta Lake	129	1,292	75,293	82,347	1,292	18%	2%	8,235	(6,942)	-84%
Silicon Valley Power*	25,762	257,620	2,883,721	3,356,218	257,620	55%	8%	335,622	(78,002)	-23%
Trinity	-	-	96,768	105,301	-	0%	0%	10,530	(10,530)	-100%
Truckee Donner	1,001	10,014	153,803	184,710	10,014	32%	5%	18,471	(8,457)	-46%
Turlock Irrigation District*	7,824	139,990	1,959,315	2,335,702	139,990	37%	6%	233,570	(93,580)	-40%
Ukiah	198	1,979	120,366	131,296	1,979	18%	2%	13,130	(11,150)	-85%
Vernon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotals	**491,990**	**6,641,889**	**61,950,142**	**71,437,674**	**6,641,889**	**70%**	9%	**7,143,767**	**(501,878)**	**-7%**
Investor-Owned Utilities										
Pacific Gas & Electric	-	9,877,844	85,393,878	94,456,989	9,877,844	109%	10%	9,445,699	432,145	5%
San Diego Gas & Electric	-	1,928,485	20,276,558	22,478,573	1,928,485	88%	9%	2,247,857	(319,372)	-14%
Southern California Edison	-	9,459,391	86,911,146	96,033,274	9,459,391	104%	10%	9,603,327	(143,937)	-1%
Subtotals	**-**	**21,265,720**	**192,581,583**	**212,968,836**	**21,265,720**	**104%**	10%	**21,296,884**	**(31,164)**	**0%**
IOU and POU	**491,990**	**27,907,609**	**254,531,725**	**284,406,510**	**27,907,609**	**93%**	10%	**28,440,651**	**(533,042)**	**-2%**
Big 13 POU*	469,575	6,358,699	57,008,648	65,649,214	6,358,699	74%	10%	6,564,921	(206,223)	-3%
Small 27 POU	22,415	283,190	4,941,494	5,788,460	283,190	33%	5%	578,846	(295,656)	-51%
Big 13 POU as % of POU*	95%	96%	92%	92%	96%			92%	41%	
Small 27 POU as % of POU	5%	4%	8%	8%	4%			8%	59%	
Big 13 POU as % of IOU*		30%	30%	31%	30%			31%	662%	
Small 27 POU as % of IOU		1%	3%	3%	1%			3%	949%	

* Identifies the Big 13 POUs.

**PWRPA does not forecast any growth from 2007-2016.

City of Industry and Vernon did not submit data during the AB 2021 process.

This table supports Figures 26, 27, and 28.

Table C-4: Proposed Peak Demand Goals by Utility

	Cumulative Proposed Demand Reduction Goals (MW)		Forecasted Electrical Demand (MW)		10-yr Total Proposed Demand Savings Goals (MW)	Savings as % of Growth	Savings as a % of Peak Demand in 2016	Reduction Needed to Meet 10% Target (MW)	Difference Between Proposed Savings and 10% Target	
	2007	2016	2007	2016					MW	%
Publicly Owned Utilities										
Alameda	0	1	70	80	1	9%	1%	8	(7.1)	-89%
Anaheim*	3	35	554	611	35	62%	6%	61	(25.8)	-42%
Azusa	0	2	64	73	2	26%	3%	7	(4.9)	-67%
Banning	0	1	49	64	1	8%	2%	6	(5.2)	-81%
Biggs	0	0	4	5	0	38%	3%	0	(0.3)	-65%
Burbank*	2	24	294	312	24	135%	8%	31	(7.0)	-22%
Colton	0	3	90	117	3	10%	2%	12	(8.9)	-76%
Corona	0	1	14	18	1	14%	3%	2	(1.2)	-68%
Glendale*	1	14	337	350	14	n/a	4%	35	(21.3)	-61%
Gridley	0	0	12	15	0	3%	1%	2	(1.4)	-92%
Healdsburg	0	0	21	23	0	10%	1%	2	(2.1)	-90%
Hercules	0	0	3	3	0	65%	6%	0	(0.1)	-44%
Imperial Irrigation District*	-	55	990	1,367	55	15%	4%	137	(81.7)	-60%
Industry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lassen Municipal Utility District	0	1	26	30	1	23%	3%	3	(2.1)	-69%
Lodi	0	2	134	158	2	10%	2%	16	(13.3)	-84%
Lompoc	0	1	26	28	1	63%	5%	3	(1.5)	-55%
Los Angeles DWP*	50	538	5,557	6,046	538	110%	9%	605	(66.6)	-11%
Merced	0	4	82	113	4	14%	4%	11	(6.9)	-61%
Modesto Irrigation District*	2	16	700	895	16	8%	2%	90	(73.6)	-82%
Moreno Valley	0	1	17	39	1	5%	3%	4	(2.8)	-73%
Needles	0	1	20	26	1	23%	5%	3	(1.4)	-53%
Palo Alto	0	2	186	193	2	34%	1%	19	(16.9)	-88%
Pasadena*	1	22	307	335	22	78%	6%	34	(11.8)	-35%
Pittsburg Power/ Island Energy	0	0	4	5	0	33%	6%	1	(0.2)	-42%
Plumas Sierra	0	1	30	35	1	13%	2%	4	(2.8)	-80%
Port of Oakland	0	1	13	17	1	26%	6%	2	(0.6)	-36%
PWRPA	-	-	120	120	-	**	0%	12	(12.0)	-100%
Rancho Cucamonga	0	1	13	16	1	15%	3%	2	(1.1)	-66%
Redding*	1	26	252	376	26	21%	7%	38	(11.6)	-31%
Riverside*	2	22	562	655	22	24%	3%	66	(43.2)	-66%
Roseville*	1	11	328	412	11	13%	3%	41	(30.7)	-74%
Sacramento Municipal Utility District	18	518	3,060	3,671	518	85%	14%	367	150.9	41%
Shasta Lake	0	0	18	20	0	8%	1%	2	(1.9)	-93%
Silicon Valley Power*	3	30	472	544	30	41%	5%	54	(24.6)	-45%
Trinity	-	-	17	19	-	0%	0%	2	(1.9)	-100%
Truckee Donner	0	1	37	44	1	16%	3%	4	(3.3)	-74%
Turlock Irrigation District*	1	16	476	564	16	18%	3%	56	(40.4)	-72%
Ukiah	0	0	37	41	0	6%	1%	4	(3.9)	-95%
Vernon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotals	**88**	**1,353**	**14,875**	**17,320**	**1,353**	**55%**	**8%**	**1,732**	**(379.2)**	**-22%**
Investor-Owned Utilities										
Pacific Gas & Electric	-	2,159	19,687	22,127	2,159	89%	10%	2,213	(53.3)	-2%
San Diego Gas & Electric	-	367	4,507	5,084	367	63%	7%	508	(141.8)	-28%
Southern California Edison	-	2,002	21,033	23,519	2,002	81%	9%	2,352	(350.3)	-15%
Subtotals	**-**	**4,528**	**45,227**	**50,730**	**4,528**	**82%**	**9%**	**5,073**	**(545.3)**	**-11%**
IOU and POU	**88**	**5,880**	**60,102**	**68,050**	**5,880**	**74%**	**9%**	**6,805**	**(924.6)**	**-14%**
Big 13 POU*	85	1,326	13,889	16,138	1,326	59%	8%	1,614	(287)	-18%
Small 27 POU	3	26	986	1,182	26	13%	2%	118	(92)	-78%
Big 13 POU as % of POU*	97%	98%	93%	93%	98%			93%	76%	
Small 27 POU as % of POU	3%	2%	7%	7%	2%			7%	24%	
Big 13 POU as % of IOU*		29%	31%	32%	29%			32%	53%	
Small 27 POU as % of IOU		0.58%	2.18%	2.33%	0.58%			2.33%	16.83%	

* Identifies the Big 13 POUs.

**PWRPA does not forecast any growth from 2007-2016.

City of Industry and Vernon did not submit data during the AB 2021 process.

This table supports Figures 29, 30, and 31.

APPENDIX D

Public Comments and Staff Responses

These are comments received after the September 17 workshop. Staff responses to each point are presented below.

Southern California Edison (SCE)

1. Staff should not have used the May 2006 Itron study's "theoretical values" of technical and economic potential for target setting. Should have used the "market average" level of potential (incentives half way between current and full incremental cost) to determine what is achievable because it takes real world constraints, and market and program conditions into account.

2. SCE believes that energy efficiency targets should be "consistent with AB 2021" and therefore should be cost-effective, reliable and feasible. Use of 80 percent of economic potential as a target from voluntary programs is unsupportable. Itron 2006 says that "market full" scenario is 45 percent of economic potential; "market average" would be less (38 percent).

3. Technical and economic potential are gross savings. Program targets should be based on "net" savings, i.e., adjusted for naturally occurring efficiency adoption.

4. Estimates of emerging technologies should reflect reality, not "blue sky" visions.

5. Bottom line: SCE recommends that targets be revised based on the most current data regarding achievable potential from market scenarios in Itron 2006 study.

Staff Response: Staff used each utility's estimate of achievable savings as the base and then added additional savings from non-utility organizations, such as the Energy Commission's standards or local governments, to derive an overall statewide goal. We also provided specific interpretations of the words "feasible" and "reliable" for assessing utility forecasts of savings. We clarified that our proposed targets are net savings, exclusive of free riders and have not included savings from emerging technologies. Bottom line: Staff has revised targets but has not relied on a single source, *Itron 2006*, to develop the final numbers.

Silicon Valley Power (City of Santa Clara)

1. RMI identified a stretch, but potentially achievable, energy efficiency target for Silicon Valley Power (SVP) at 50 percent of the cost-effective potential. SVP does not believe it can do as well as 50 percent because of climate (little AC needed), type of load (must-run industrial loads), and their load forecast (little new construction).

2. SVP has adopted this 50 percent target, but thinks that staff's estimate of something greater is not reasonable at all. Even under mandatory statewide codes and standards, program penetration would likely not reach 80 percent until substantially all of the residential and commercial stock turned over, taking much longer than 10 years.

3. Bottom line: SVP recommends that staff revise its target from a recommended 80 percent to 50 percent of economic potential. Also, that staff consider the implementation of additional statewide efficiency mandates through Title 20 and 24.

Staff Response: Staff has revised its estimate of feasible targets to coincide with SVP's filing and considered additional savings as recommended by SVP.

Redding Electric Utility (REU):

1. The staff's approach is inconsistent with the AB 2021 legislation which stated that the POUs are supposed to establish their own targets.

2. Staff has not taken specific utility characteristics into account. Some utilities may be able to achieve 80 percent, but it is nearly impossible for most.

3. The staff's analysis shows a dramatic decrease in savings between 2006 and 2007; this is incorrect. A technical change in inputs should have revised both historical and forecasted savings. REU has never advocated reducing existing programs.

4. Staff has incorrectly characterized the timing of savings 2005-2007; the proper first year for historical savings should be 2006, not 2005. For REU this would create a "starting point" for efficiency savings equal to 7K mWh/year in 2007, which is higher than the staff's estimate. This error may be reflected in the estimates for other POUs.

Staff Response: REU provided revised savings estimates due to errors they found in their AB 1037 report. We also clarified that our definition of historical savings includes fiscal year 2006-07 which ended on June 30, 2007 and received REU's estimate of savings for this time period. The dramatic decrease in savings referred to in REU's comments is based on the numbers they originally provided, which they have now corrected. The revised numbers will be in the final staff report. Staff tried to take utility characteristics into account in its original analysis, but this analysis of feasible savings ramp-up rates has now been removed from the analysis.

Natural Resources Defense Council (NRDC)

1. These comments dated September 21, 2007 complement comments submitted on September 4, 2007 which also contain recommendations.

2. NRDC believes that most targets submitted by POUs are reasonable; however, there is insufficient data to judge this fully.

3. Set a statewide energy saving target based on the sum of the IOU and POU targets, not based on 80 percent of economic potential. Adjust target if the submitted POU target is less than 50 percent of economic potential over the 10 year period or a one percent savings/sales ratio.

4. Staff does not explain how the 80 percent target would be used or how it would be monitored.

5. In their submittals, POUs did not explain their development of targets in sufficient detail; it is, therefore, not possible to judge if they have met their legislative mandate.

6. Eliminate the margin of error criteria from the evaluation of targets. Utilities should include a “margin of error” in designing their program portfolios; it should not be in the target.

7. Set statewide *savings* targets as the primary target, not *consumption* targets. There are too many factors to control for in consumption data. However, consumption reductions would be useful as a secondary target.

8. Percentages of offset growth by estimated savings seem excessive. Clarify how much energy efficiency is embedded in the CEC's draft demand forecasts and adjust the impact of the energy saving targets on demand growth accordingly.

9. Propose adjustments to the POUs' savings targets to allow for a reasonable ramp-up rate, but do not to apply a rigid ramp-up constraint to all POUs. Do not set target *lower* than those submitted by POUs. Where appropriate, recommend a more realistic ramp-up rate in the early years and higher annual targets in the later years.

10. Where necessary, urge POUs to ramp up energy efficiency investments to enable them to achieve their savings targets. They are required by law to invest in all cost-effective efficiency that is reliable and feasible. Do not assume that funding is an obstacle and lower targets in anticipation of insufficient investment.

11. Encourage the IOUs and POUs to collaborate on statewide program offerings. Encourage POUs to participate in the CPUC’s recently announced statewide strategic planning for energy efficiency.

12. CEC should provide clear guidance to POUs on how to implement their SB 1037 reporting due March 2008 and prepare for the next AB 2021 cycle (many specifics in the September 4, 2007 letter). Next time, POUs should conduct a more rigorous assessment of the feasible potential.

13. CEC should require POUs to identify how they are treating investments in efficiency as procurement investments as required by AB 2021.

14. CEC needs to help POUs (from the onset) with designing their independent evaluation, tracking and quality control procedures, future potential studies, and related EM&V efforts.

Staff Response:

Points 1, 2, and 3 - Staff has accepted NRDC's recommendation to accept all POU targets as reasonable and feasible for the time being. We have not increased the savings targets for POUs who proposed to achieve less than 50 percent of economic potential for their service territory because these utilities have not provided any evidence on what levels might be feasible or reliable to use in achieving a 50 percent goal. Even assuming that all small POUs could meet the 50 percent goal, this would have a small and indistinguishable effect on state goals and would require staff to construct its own trajectories for annual energy savings, which many POUs (and the Committee) resisted at the hearing.

Point 4 - Staff covers how it expects to monitor savings in its next steps section of the final report.

Point 5 - Staff agrees that the POUs have not provided sufficient information to conclude their targets are feasible and reliable, but opted to use these targets rather than create our own and consider this initial effort a learning process.

Point 6 - Staff eliminated margin of error from goals per NRDC recommendation.

Point 7 - Staff revised our recommendation into the form of savings goals rather than consumption.

Point 8 - Staff removed its recommendations for more reasonable ramp-up rates based on Committee direction. We followed NRDC recommendation to never lower proposed savings goals based on the presumption that POUs have more information than staff.

Point 9 - Staff has added a recommendation in Chapter 3 on how to increase the reliability of energy savings reporting to meet a procurement standard.

Points 10 and 11 - Staff plans to encourage IOUs and POUs to collaborate in the revised staff report. We plan to provide clear guidance on reporting forms and definition of independent verification of savings in staff workshops. Staff plans to offer to help POUs on securing effective independent verification of measures, designing evaluation plans, tracking and quality control procedures, and EM&V planning.

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Northern California Power Agency (NCPA)

1. NCPA disagrees with the staff report's recommendation of Option 2-80 percent of economic potential and does not think the report supports this choice. CEC should adopt the targets proposed by the utilities and approved by their boards.

   Staff Response: Staff adopted recommendations from POUs and as adopted by their boards despite the fact they may fail to meet staff's interpretation of feasible and reliable levels.

2. Staff says that Option 1 does not fulfill the AB 2021 mandate. Since there are no peak demand mandates (i.e., 10 percent) in the legislation, the utilities' proposed reductions cannot "fall short" on peak savings.

   Staff Response: Staff is no longer recommending Option 1- 80% and has clarified that the reference to falling short of goal is with respect to energy savings, not peak savings.

3. AB 2021 states that the CEC is to develop statewide targets in consultation with utilities. It does not state that the Commission is to set utility targets.

   Staff Response: Staff discussed its approach to setting statewide targets in a public meeting and listened to the comments in revising its goals. There is no evidence yet that the POU have listened to or collaborated with staff in setting their individual saving targets.

4. The CEC should include all cost-effective, reliable and feasible energy efficiency, not just demand side savings. AB 2021's intent to reduce consumption of electricity does not specifically limit savings to "customer" savings.

   Staff Response: This issue was discussed at a previous workshop and staff received Committee direction to only include the impacts from energy efficiency programs in its reports, not the larger definition of savings that includes transmission and distribution improvements as advocated by NCPA.

5. The staff's approach precludes types of savings that should be included in a "statewide estimate": codes and standards, customer behavior (conservation), customer action outside of energy efficiency programs, load shifting, demand response, and savings from T&D improvements.

   Staff Response: Staff has modified its statewide goal estimate to include potential savings from codes and standards adopted at the local level, but have not included other standards, demand response and T&D improvements.

6. Demand response is noted in the report background section to be included in the 2003 Energy Action Plan, but is not included in the report. The demand reported

is associated with efficiency programs only and not those of demand response or load shifting programs. If peak reductions are a state priority, then demand response impacts should be included in the targets.

Staff Response: No information on the projected impacts of demand response programs was provided by POUs; thus, staff sees this as a moot point.

7. NCPA agrees that there is insufficient data to determine ramp up rate and suggests holding off performing any analysis on this until after a first year of program performance.

Staff Response: Staff believes there is relevant data available (including each utilities' previous or historical ramp-up rates), but has not used this information to modify the utilities proposed savings targets because this is the first year of the process, and our definitions of feasible and reliable were not available to POU analysts to guide any analysis of ramp-up rates.

8. The reporting requirements of SB 1037 and AB 2021 are sufficient for the CEC to track POU energy efficiency performance. In asking for additional information there must be some balance between the amount of information needed and the desire to implement energy efficiency programs.

Staff Response: Staff disagrees that the POUs have provided sufficient information to evaluate the reliability and feasibility of the savings targets as documented in the staff report. However, we do recognize that there may be insufficient staff resources available at each utility to respond to our information requests. We hope to work on this problem in the coming staff workshops to set up a reporting process for March 2008.

9. The report states that the 2006 Itron study uses 2004 as its base year and that the estimates were adjusted for program savings already realized. The same adjustment needs to be made for the POU's potential estimate; if not, the potential is overestimated by 10 percent.

Staff Response: Staff made the appropriate adjustments to the economic potential estimates for both the IOU and POU potential estimates to account for previous program savings estimates referred to in this comment. Our adjustments were based on our conversations with the Energy Commission's demand forecast staff and are documented in the staff report.

10. The report fails to mention lower retail rates as a barrier to increased efficiency. The report asserts that avoided capacity costs were not used in the POU cost effectiveness calculations. This is not true; RMI used E3 developed costs and included both energy and capacity costs.

Staff Response: RMI used investor-owned utility estimates of avoided cost for some POUs, not the avoided cost for the local POU. We agree that lower POU retail rates will be a barrier for some customers and list these utilities in the final report

11. The assertion that actual program savings may be 20-30 percent less than estimated is insufficiently substantiated; the data is from a very small sample of IOU programs.

Staff Response: There are 20 years of reported savings from IOUs and POUs across the country that support this view. Staff does not believe this data is from a very small sample. However, staff agrees with the implicit comment from NCPA that the best source of data should come from the POUs themselves, who could and should report program realization rates in their annual program reports.

12. The utility estimated savings for CFLs was noted to be highly inflated. The E3 calculations for CFLs uses updated DEER and recent CPUC evaluations with lower operating hours than previously reported in IOU programs. No significant "margin of error" in CFL savings should be assumed.

Staff Response: Staff has removed margin of error comments and agrees that the updated E3 calculator uses the correct savings per CFL. The problem comes when estimating the saturation of CFLs in the data base.

Roseville Electric, City of Roseville

1. Roseville disagrees with staff that Option 2-80 percent of economic potential would be "relatively easy" for some utilities. These programs are voluntary and dependent on customer behavior. Roseville supports Option 1 which is based on the evaluation of individual utility nuances rather than a one-size-fits-all approach such as Option 2. Roseville supports Option 1 and thinks the submitted POU data supports this option. They do not support revising the targets adopted by their City Council.

Staff Response: Staff has developed a new option which includes using POU estimates of achievable savings.

2. The staff report asserts that avoided capacity costs were not used in the POU cost effectiveness calcs, which is incorrect. Roseville specific data was used in the avoided costs and included both energy and capacity. Roseville's assumptions were virtually identical to the CPUC adopted avoided costs developed by E3 for the IOUs and included as default assumptions by RMI.

Staff Response: This error for Roseville was corrected.

3. Staff stated that some POUs simply used RMI's "50 percent". Roseville's 52 percent of economic potential was thoughtfully developed using utility specific data.

   Staff Response: No need to change any words in the final report based on this comment.

4. The reporting requirements of SB 1037 and AB 2021 are sufficient for the CEC to track POU energy efficiency performance. We will provide necessary additional information; however, we believe the emphasis going forward should be on implementing programs.

   Staff Response: Staff agrees that the emphasis should be on tracking savings from implemented programs.

5. Staff's assessment in Chapter 4 is somewhat inconsistent referring to data as forecasted at times and actual at others. Using correct historical data has a significant impact on Roseville's projected targets.

6. The trajectory of savings developed by CEC staff was accomplished by applying a "plausible" ramp up methodology developed by the CEC staff without evaluation of the Roseville service area and its characteristics. Roseville assumed an average ramp-up rate over ten years and thinks that is adequate for now. At the time targets were set, expected housing starts and commercial square footage had slowed significantly in comparison to the energy forecast used in the analysis. Early evaluation of 2007 program performance shows a decline of 40 percent in 2006.

   Staff Response: Staff has removed its suggested annual savings target and ramp-up rates based on comments received and the lack of data from Roseville on historical savings rates.

Pacific Gas and Electricity Company (received 10/5/07)

1. Staff's current forecast (reference is to staff's draft forecast of July 2007) is about 50 percent of what it was in the 2005 IEPR, and about 50 percent below what PG&E currently projects for its service area. We believe this error lies at least in part in the double counting of customer energy efficiency in the CEC load forecast.

   Staff Response: In this report, staff assumed that no uncommitted (post-2008) savings were in the demand forecast. The staff is currently unable to definitively state how much uncommitted energy efficiency may be embedded in the CEC's draft demand forecasts. This issue is under investigation and is explained in the staff's revised forecast report *California Energy Demand 2008-2018* (October 2007).

2. Recent studies published by the California Climate Change Center suggest that incorporating the impacts of global climate change into load forecasting models will result in projected load increases significantly higher than current projection that do not incorporate these effects.

3. Several problems arise including 1) combining the values from the 2006 Itron study with older targets of a different vintage and 2) the broad and optimistic assumptions about new cost-effective technologies that will emerge.

   Staff's Response: Staff realizes that points 2-3 may be true and worth pursuing for future work. The short time frame for preparing this first AB 2021 report confined staff to analytical tools in their current state.

4. The report recommends even higher goals for the IOUs to make up for the lower goals of the POUs toward meeting the 80 percent economic potential. The 80 percent stretch goals are unrealistic as are higher goals for the IOUs. The Commission should consider that unrealistic high targets have an adverse impact on reliability since resources are not built to cover the shortfall.

   Staff's Response: Staff realizes that unrealistically high efficiency goals are detrimental to resource planning and may result in expensive short term procurement. That is why the focus for the Commission's AB 2021 efforts will center on tracking and measurement. In this report, the staff recognizes that the IOUs do not believe that they can achieve higher goals (see Chapter 4).