



*Public Power's Energy Efficiency Progress:
An Evaluation of California's Publicly Owned Utility Energy
Efficiency Achievements and Targets*

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I. Executive Summary

California's publicly owned utilities (POUs) have made enormous strides over the past five years at helping customers lower their utility bills by using energy more efficiently. Energy efficiency provides consumers with the same or better energy services (such as light and heat) while using less energy and offers enormous benefits by saving customers money, creating jobs, stimulating the economy, and cutting pollution. In short, energy efficiency is California's cheapest, cleanest, and fastest resource available to meet the state's energy needs.

The POUs provide about 25% of the electricity consumed in California,¹ and play an important role in meeting the state's energy efficiency goal of achieving all cost-effective energy efficiency. The POUs provide power to millions of customers, and supply the same amount of electricity consumed in the entire state of Colorado every year.² Utility customers benefit greatly from energy efficiency improvements, but face significant barriers to capture those savings (such as inadequate information or capital). POU energy efficiency programs help customers overcome those barriers so they can take advantage of the benefits from energy efficiency. Additionally, energy efficiency benefits utilities by delaying expensive capital investments, providing a flexible resource, and mitigating risks.

Five years ago, a new law requiring POUs to make cost-effective energy efficiency their first priority when meeting customers' needs went into effect.³ The following year, another law began requiring POUs to set ten-year energy saving targets to ensure that they continue to help their customers take advantage of the enormous untapped opportunities to save energy more cheaply than it could be produced.⁴

This report assesses the POUs' progress on energy efficiency since 2006, analyzes their recently adopted annual energy saving targets through 2020, and offers recommendations to further expand POU efforts to help customers save energy. This analysis is based on the POUs' annual reports, and NRDC did not independently verify the POUs' self-reported data or the potential studies underlying their energy saving targets.⁵

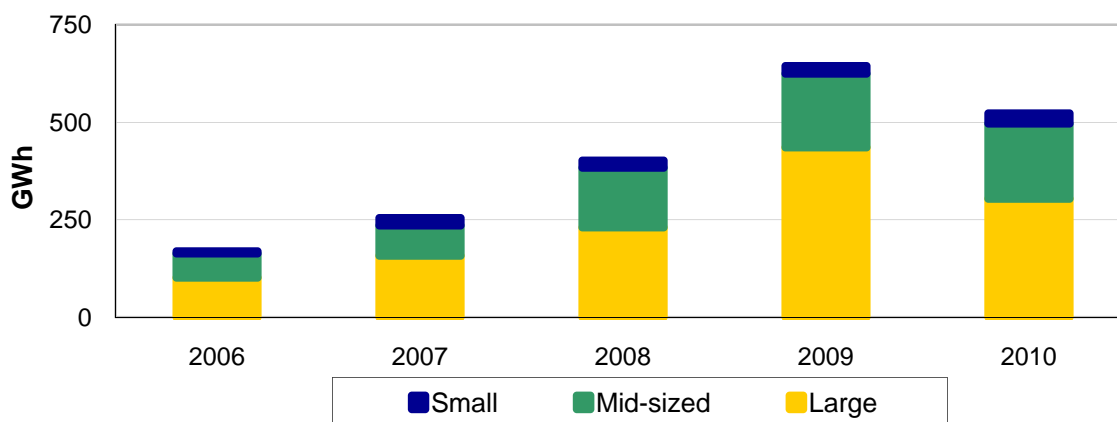
A. POUs Have Significantly Increased Energy and Bill Savings for Customers

California's POUs reported considerable progress in expanding their energy efficiency programs and providing benefits to customers and the state since their first annual report in 2006.

- POU efficiency programs since 2006 will **save customers over \$1 billion** (after accounting for the cost of the programs) by helping them become more efficient instead of paying for more costly and polluting power.⁶
- POUs in aggregate **increased their reported annual energy savings over three-fold** from 2006 to 2010.⁷ While utilities of all sizes reduced their savings in 2010 relative to the prior year (see Figure 1), POUs in aggregate saved more electricity than that consumed by all the households in Yolo County each year.⁸

- Since 2006, POU demand cut by about 400 MW, **avoiding the need to build a medium-sized power plant** (or nearly one Rosenfeld).^{9,10}
- The POU efficiency programs from 2006 through 2010 **cut annual pollution by more than 900,000 tons of carbon dioxide (the primary climate change pollutant)**, equivalent to the emissions from over 200,000 cars.¹¹
- The **energy efficiency programs provide the cheapest resource** available to meet the POU's energy needs, costing a little over 2 cents/kWh, or less than *one quarter* the cost of procuring electricity from a conventional source.^{12,13}
- **Investments in energy efficiency programs more than doubled**, starting at \$54 million in 2006 and reaching about \$125 million in 2010 (more than all utilities in the entire state of Texas invested in efficiency that year).¹⁴
- **Every \$1 invested by the POU in efficiency provided approximately \$3 in benefits for customers.**¹⁵
- The POU's annual report on energy efficiency, the result of an unprecedented collaboration among POU on efficiency led by the Northern California Power Authority (NCPA), now provides a **single source of comprehensive information on the POU's efficiency investments and savings** achievements.

Figure 1: POU Electricity Savings Since 2006, Grouped by Utility Size



Source: 2006-2011 Status Reports

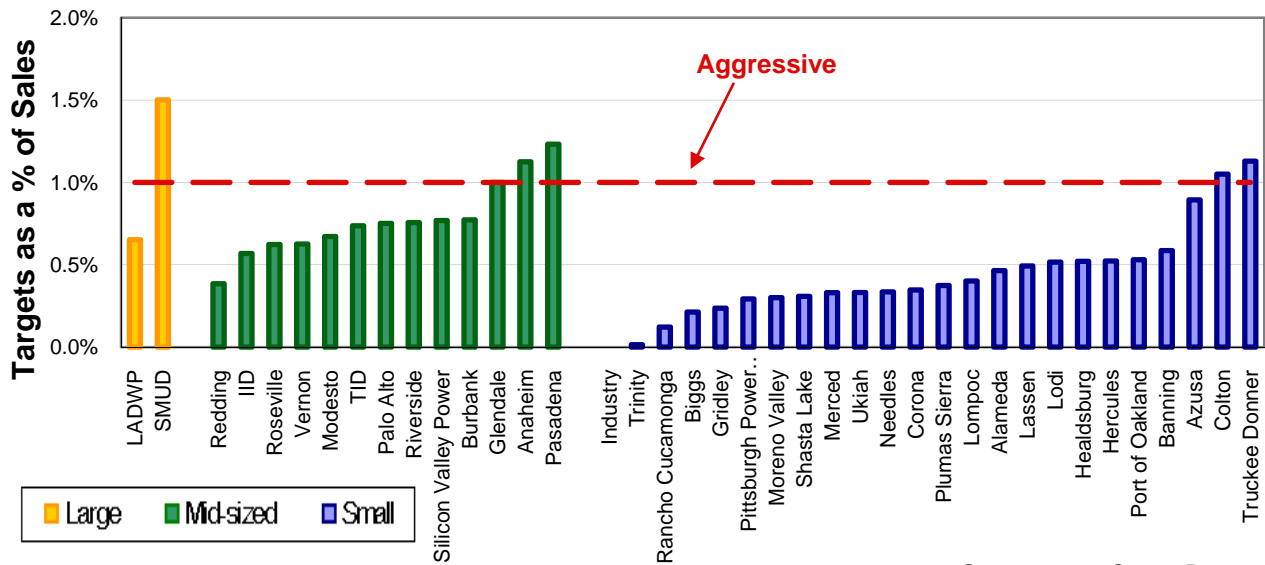
The California POU's efficiency programs, in aggregate, reported savings approaching 1% of sales in 2010, which is a level considered to be **aggressive compared to national benchmarks** (see Figure 11).^{16,17} However, there remains significant variation in the level of aggressiveness of individual POU. (see Appendix Figure B1)

B. Most Individual Utilities Aim to Increase Savings

In 2010, most POU set new energy efficiency targets for the next ten years, as required under California law. These targets show that 28 utilities intend to continue ramping up energy efficiency savings, while 11 POU intend to reduce their savings levels on average over the next ten years. (see Figure 19)¹⁸ Furthermore, most utilities do not plan to achieve aggressive levels of savings compared to national benchmarks in

the coming years (see Figure 2). Only six utilities (**Anaheim, Colton, Glendale, Pasadena, Sacramento Municipal Utility District (SMUD), and Truckee Donner**) set energy saving targets that reach 1% of sales at one point over the next ten years. **Los Angeles Department of Water and Power (LADWP)** has not yet set energy saving targets, but included energy saving estimates in their resource plan that reach 1% of sales at some point.¹⁹ In addition, the following six utilities nearly doubled or more than doubled their new targets compared to the targets they set in 2007, even though not all set aggressive targets: **Alameda, Healdsburg, Modesto, Palo Alto, Shasta, and Truckee Donner.**²⁰

Figure 2: 2010-2020 Average Annual Energy Saving Targets as a Percent of Projected Retail Electricity Sales



Source: 2010 Status Report

In aggregate, the POU's targets will:

- Provide energy savings of over 5,600 GWh and demand savings of 1,000 MW by 2020 (equivalent to two Rosenfelds), **which will avoid the need to build two large power plants.**^{21,22}
- Cut annual pollution by approximately 2.6 million tons of carbon dioxide per year by 2020, **equivalent to the emissions from about 570,000 cars.**²³
- Provide POU customers with more than **\$2.6 billion in estimated net benefits** due to energy savings.²⁴

While the projected savings will provide significant benefits to POU customers and reduce emissions, the POU's 2010 aggregate annual targets are *lower* than the targets they set in 2007. In 2007, POU's planned to save 6,389 GWh over 10 years, while current targets are projected to save about 5,600 GWh over the next 10 years, a 12% decrease. However, without LADWP (the largest POU), the POU's aggregate targets increased by almost 3%.²⁵

Twenty POU decreased average annual targets relative to their 2007 targets or failed to set a target at all.²⁶ (see Figure 21) The biggest reductions (i.e., those POU that set 2010 energy saving targets that project less than half of the savings of their 2007 targets) came from **Moreno Valley, Needles, Pittsburgh Power, and Rancho Cucamonga**. The lowest targets were set by **Biggs, Gridley, Pittsburgh Power, Rancho Cucamonga, and Trinity**, all averaging annual energy savings that reached less than one-third of one percent of annual electricity sales. Notably, LADWP – the state’s largest POU – projected in its Integrated Resource Plan (IRP) average energy savings over the ten-year period that amount to 36% less than their 2007 target and averages 0.65% of sales.²⁷

C. Recommendations to Further Increase Savings

The POU have achieved impressive gains in recent years, but there are still enormous reserves of cost-effective energy efficiency that remain. NRDC provides the following recommendations to help ensure that the POU capture all energy savings that are cheaper and cleaner than conventional generation and continually improve program design to help customers lower their utility bills.

- **POUs should set higher targets and continue to expand energy saving programs to capture all cost-effective energy efficiency.** The most effective way to determine whether and how each POU can increase savings is to analyze each utility’s remaining potential. However, three simple metrics also provide an indication of whether a POU should consider approaches to expand its efficiency efforts. Any POU that is (i) currently saving or planning to save less than 1% of its annual retail sales, (ii) planning to decrease savings, or (iii) achieving energy savings at a very high benefit-cost ratio should re-examine opportunities to set higher targets and expand programs to achieve aggressive levels of cost-effective savings. All POU, except SMUD, fall into at least one of these categories and should consider expanding their efficiency efforts.²⁸ NRDC commends SMUD for its aggressive pursuit of efficiency savings.
- **Every POU should have independent evaluations of its energy savings.** While more than half of the POU have conducted at least one independent evaluation, extremely few have done a comprehensive review of their program portfolios. Independent evaluations (i) provide critical feedback on program design and achievements, (ii) give utility resource planners confidence in relying on efficiency as a resource in place of conventional generation, and (iii) provide important feedback to efficiency program managers to continually improve program designs to more effectively help customers. The California Energy Commission (CEC) should build on recent collaborative efforts with the POU to continue to provide guidance on conducting independent evaluations and address any barriers that challenge the POU in pursuing independent evaluations.

- **POUs should treat efficiency as their top priority energy resource**, as the law requires. Although the POUs have clearly made progress increasing efficiency investments and savings, it is unclear if or how most of the POUs are complying with this requirement. Every POU should ensure that it is: (i) fully integrating energy efficiency into resource planning and procurement, and (ii) investing in efficiency beyond the minimum public-benefits charge requirements by using funds that would have gone to purchase conventional energy sources for efficiency programs first. In addition, increases in efficiency investments should *not* come at the expense of other valuable public-benefits programs including low-income assistance and renewable energy. The CEC should provide further guidance to the POUs on how they can demonstrate compliance with the state's legal requirements.
- **POUs should further increase transparency through more detailed reporting.** In March of this year, the POUs completed their fifth comprehensive report on energy efficiency, which provides a significant amount of information about each POU's efficiency efforts in a consistent manner. To enable the POUs to more easily benchmark their progress against one another and to better describe the benefits that the efficiency programs are providing to POU customers, future reports should also include: (i) the industry-standard metric of savings as a percent of retail electricity sales, (ii) the net economic benefits of each utility's programs, and (iii) the average levelized cost of energy efficiency for each utility's portfolio.²⁹ The CEC should continue working with the POUs to provide guidance on the content of the annual reports. In addition, for future target setting reports, the POUs should report any adjustments to the base potential model assumptions and include a rationale to support the modifications.
- **POUs that have not yet completed a potential study nor set energy or demand targets should do so immediately.** LADWP, Victorville, and Industry did not set targets by the June 2010 deadline, as is required by law.³⁰ In addition, only SMUD adopted demand targets. All other POUs should adopt demand targets to ensure they are capturing all cost-effective energy efficiency.

The POUs' significant progress over the past few years puts them well on their way to becoming a national model for POU energy efficiency collaboration and success. Further progress over the coming years could cement the POUs' leadership, but most POUs' targets for the next decade fall short of achieving aggressive levels of savings. Every POU should strive to capture all cost-effective savings in order to save their customers money, help reinvigorate the economy, and cut pollution.

II. Introduction

California's publicly owned utilities play a critical role in achieving the state's goals of revitalizing the economy and curbing climate change. The POU's provide nearly 25% of California's electricity, and can directly help their customers save energy through energy efficiency programs. The POU's investments in energy efficiency provide enormous benefits to their customers and the state by lowering utility bills, stimulating the economy, creating jobs, and cutting greenhouse gas and other air pollution emissions.

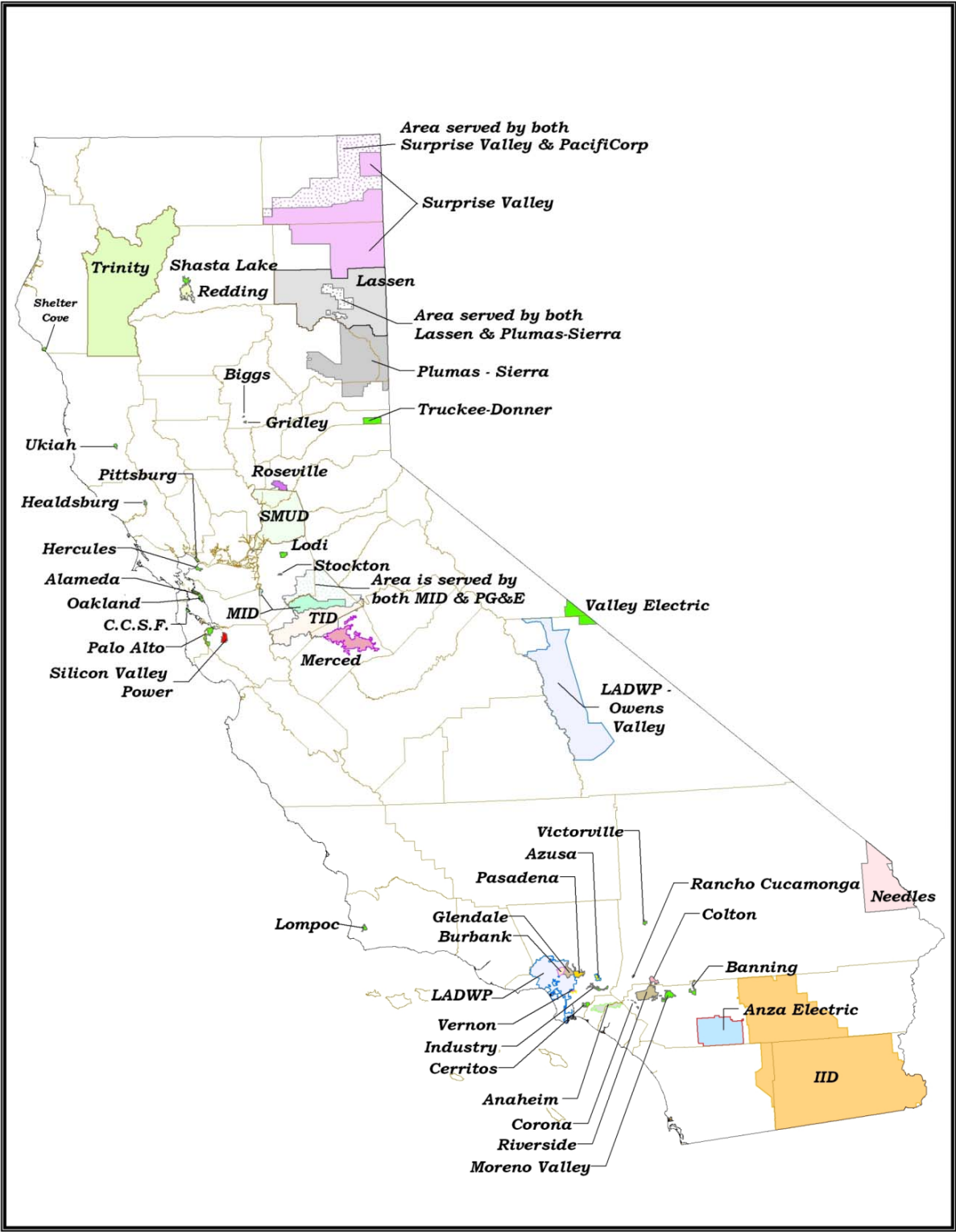
This paper highlights the POU's progress on energy efficiency over the past five years, examines the future targets adopted by the POU's, and offers recommendations for how the POU's can further expand their efforts to help customers save energy and lower their utility bills. This analysis is based on the POU's self-reported data from their annual reports submitted to the CEC in compliance with SB 1037 every year since 2006, and their ten-year targets provided to the CEC in compliance with AB 2021 every three years.^{31, 32} In March of 2010, the POU's combined these two reports in *Energy Efficiency in California's Public Power Sector: A Status Report* (2010 Status Report).³³ Additional information for this paper was also provided by the CEC and NCPA upon request by NRDC. NRDC did not independently verify the POU's self-reported data or potential studies.

Nearly all of the POU's developed their energy saving targets based on one potential study conducted by Navigant Consulting. However, LADWP, SMUD, and Industry have not yet conducted updated potential studies. In addition, LADWP and Industry have not yet submitted 2010 energy saving targets as required by law. This analysis is based on the targets most POU's submitted to the CEC in their 2010 Status Report. For SMUD, this analysis uses the targets submitted separately to the CEC, which are based on its energy saving potential study completed for the 2007 target setting process.³⁴ For LADWP, this analysis uses its final Integrated Resource Plan (IRP), which published estimates of energy savings due to energy efficiency over the next ten years, but does not fulfill the legal requirement to adopt energy saving targets.³⁵ Since LADWP has not submitted targets – over one year past the deadline - their final IRP is the most recent data that is publicly available and therefore the best source of data for this analysis.

A. California's Publicly Owned Utilities

The POU's in California span the entire geography of the state and vary significantly in size and customer base (see Figure 3). There are about 40 POU's in California that serve over 3 million customers and provide more than 62,000 GWh of electricity every year (equivalent to the electricity consumed in the state of Colorado each year).^{36, 37}

Figure 3: California Electric Public Utility Service Areas³⁸



Source: California Energy Commission

The POU's work together through three associations. The California Municipal Utilities Association (CMUA) represents member POU's across the entire state and advocates on their behalf at the Legislature and regulatory agencies.³⁹ The Northern California Power Agency (NCPA) consists of 15 member POU's located in the northern portion of the state that serve over 300,000 customers.⁴⁰ The Southern California Public Power Authority (SCPPA) is composed of 12 member POU's⁴¹ located in the southern portion of the state that serve 2 million customers.⁴² NCPA and SCPPA own and finance generation that provides power to their members, in addition to providing other services such as coordinating energy efficiency efforts and offering advocacy support at both the state and federal levels.

CMUA submits one comprehensive report describing all of the POU's' energy efficiency achievements and plans to the CEC each year, working in close collaboration with both NCPA and SCPPA and their member utilities. NCPA, in particular, has been a leader on energy efficiency among the POU's, both as an early supporter of California's laws to encourage increased energy efficiency and as a key leader in coordinating POU energy efficiency efforts and the annual status report.

This paper separates the utilities into three groups based on their annual retail electricity sales, in order to better account for the differences among the numerous POU's in this analysis.

- **Large POU's:** There are two "Large" POU's that have annual retail sales of over 10,000 GWh: LADWP and SMUD.⁴³ LADWP is the largest municipal utility in the nation and provides more electricity than San Diego Gas & Electric (one of the state's large investor-owned utilities).^{44,45} SMUD is also one of the largest POU's in the nation, and provides more than three times as much power as the next largest POU in California. These two POU's comprise 56% of total POU sales in California, and 14% of retail electricity sales statewide.^{46,47}
- **Mid-sized POU's:** There are 13 "Mid-sized" POU's that have annual retail sales over 500 GWh, but less than 10,000 GWh. These utilities are: Anaheim, Burbank, Glendale, Palo Alto, Pasadena, Redding, Riverside, Roseville, Silicon Valley Power (SVP), Vernon, Imperial Irrigation District (IID), Modesto Irrigation District (MID), and Turlock Irrigation District (TID). These 13 POU's comprise 39% of POU sales and over 9% of retail electricity sales statewide.⁴⁸
- **Small POU's:** There are 25 "Small" POU's that have annual retail sales of less than 500 GWh. These utilities are: Alameda, Azusa, Banning, Biggs, Colton, Corona, Gridley, Healdsburg, Hercules, Industry, Lassen, Lodi, Lompoc, Merced Irrigation District, Moreno Valley, Needles, Pittsburgh/Island, Plumas Sierra, Port of Oakland, Rancho Cucamonga, Shasta Lake, Trinity, Truckee Donner, Ukiah, and Victorville. These 25 POU's comprise 5% of POU sales and 1% of statewide electricity sales.⁴⁹

B. POU Energy Efficiency Legal Requirements

In order to encourage POUs to help their customers take advantage of the enormous energy saving opportunities that remain untapped, the California legislature enacted several important laws over the past fifteen years.⁵⁰ While many POUs have offered energy efficiency programs to their customers for many years, these laws spurred the POUs to undertake more aggressive and comprehensive efforts than ever before.

1. Public-Benefits Investment Requirement

California law requires all utilities to collect a public-benefits charge to invest in cost-effective energy efficiency and conservation, renewable energy, public interest research, development and demonstration, and low-income assistance programs. This requirement, first enacted in Assembly Bill (AB) 1890 (Brulte, 1996) and extended in Senate Bill (SB) 1194 (Sher, 2000) and AB 995 (Wright, 2000), sets a minimum investment level for the POUs, based on the lowest level of investment by an investor-owned utility as a percent of its revenue.^{51, 52} Since the investor-owned utilities' investments have been increasing, the POUs' requirement has been increasing as well. Each POU has the flexibility to allocate its public-benefit investments among the four program areas to best meet the needs of its customers.

2. Requirement To Make Efficiency the Top Priority Resource and To Report Progress Annually

SB 1037 (Kehoe), enacted in 2005, requires all utilities, both public and private, to "first acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible" when procuring energy.^{53,54} This mandate codified the state's Energy Action Plan, making cost-effective energy efficiency the state's top priority resource.⁵⁵ This means that utilities are required to help customers become more efficient whenever it is cheaper than investing in dirtier and more expensive conventional sources of energy. In addition, the law requires that all POUs provide annual reports to their customers and the CEC describing their efficiency programs, investments, actual energy savings achieved, and projected energy savings for the following year.⁵⁶ This year, the POUs submitted their fifth annual report to the CEC.⁵⁷

3. Energy Saving Targets Requirement

In 2006, the Legislature adopted AB 2021 (Levine), requiring the POUs to set ten-year energy saving targets, to contribute to meeting a statewide goal of reducing forecasted electrical consumption by 10 percent over 10 years.^{58,59} In addition, AB 2021 expanded on SB 1037's reporting requirements and also required the CEC to analyze and provide guidance to the POUs on their targets and accomplishments. Last year, the POUs adopted ten-year energy saving targets for the second time since AB 2021 became law.

Specifically, AB 2021 requires each POU to:

- Identify the potential for cost-effective energy savings and set targets for the next ten year period, every three years,
- Treat energy efficiency investments in the same manner as they treat investments for other resources they procure,
- Provide additional information in the annual reports required by SB 1037, including the source of funding for efficiency investments and the methodologies and input assumptions used to determine cost-effectiveness, and
- Provide the results of an independent evaluation that measures and verifies its efficiency savings.

In addition, AB 2021 requires the CEC to:

- Analyze and summarize the POUs' progress at saving energy, and compare each POUs' annual targets and actual savings,
- Offer recommendations to each POU on improvements in its targets or achievement of savings, if the CEC determines that improvements could be made, and
- Adopt statewide targets for energy efficiency based on an analysis of the statewide potential to save energy cost-effectively, the POUs' energy saving targets, and the Public Utilities Commission's targets for the investor-owned utilities.

4. California's Global Warming Solutions Act

California's Global Warming Solutions Act of 2006 (AB 32) requires the state to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020.⁶⁰ The California Air Resources Board (CARB) is the lead agency responsibility for designing and implementing a comprehensive suite of policies to ensure the state achieves its emissions limit. In 2008, CARB adopted the Scoping Plan, which outlines the package of policies California will pursue to cost-effectively comply with AB 32.⁶¹ One of the key reduction strategies CARB is relying on in the Scoping Plan is energy efficiency, which accounts for nearly 20 million metric tons (or roughly 11%) of the total GHG reductions California will need to make by 2020 to meet the AB 32 limit.⁶² A significant portion of that reduction opportunity lies in the public power sector.

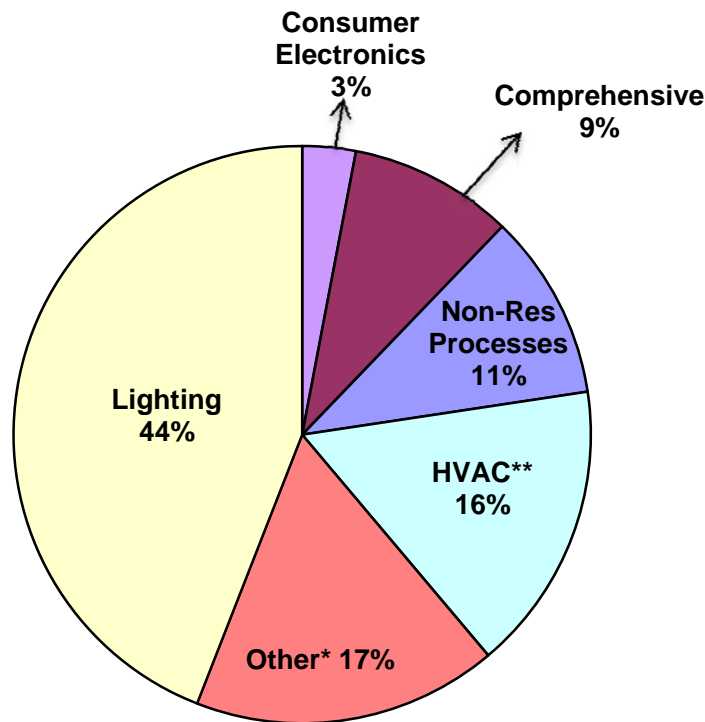
To help facilitate the uptake of energy efficiency in the utility sector, and mitigate any bill impacts that may result from complying with AB 32, CARB has allocated allowance value under its cap-and-trade program to local distribution utilities.⁶³ The regulation requires utilities to invest allowance value for the exclusive benefit of customers, consistent with the goals of AB 32.⁶⁴ This provides another opportunity for POUs to increase investments in energy efficiency programs that simultaneously lower customer bills and cut GHG emissions.

C. POU Energy Efficiency Programs

Energy efficiency upgrades offer customers the opportunity to save money on their monthly energy bill. However, despite the potential savings, utility customers face numerous market barriers that prevent them from taking advantage of the benefits offered by energy efficiency. For example, consumers may have inadequate information or limited time to evaluate efficiency opportunities, local stores may lack efficient product options, and residential, business, and industrial customers may lack access to capital or face competing demands for the capital necessary to make structural improvements or replace major pieces of equipment. Furthermore, decisions about efficiency levels are often made by people who do not pay utility bills (such as the situation of landlords and renters). These are just a few of the numerous and pervasive market barriers that customers face in adopting cost-effective energy efficiency.

Utility energy efficiency programs are designed to help customers overcome these barriers to become more energy efficient by addressing the numerous ways customers use energy, including everything from lighting, heating, cooling, and appliances, to motors and industrial processes. Figure 4 illustrates the major end uses that provided energy savings for POU customers in 2010.

Figure 4: 2010 POU Programs Savings by End Use⁶⁵



*Other: e.g., pool pumps and appliances
**HVAC: Heating, Ventilation, & Air Conditioning
Source: 2011 Status Report

Energy efficiency programs use a variety of strategies to help customers increase efficiency, including but not limited to:

- energy audits of customers' buildings to provide recommendations for cost-effective upgrade opportunities,
- rebates to customers for purchasing and installing energy efficient products (e.g. compact fluorescent lamps, air conditioners, and appliances),
- rebates for retiring inefficient products (e.g., refrigerators),
- incentives and information for property managers and owners of multi-family rental properties,
- directly installing energy efficient products in customers' buildings (e.g., upgrades to refrigeration equipment in small businesses), and
- public awareness programs.⁶⁶

The set of programs that a utility offers helps customers lower their energy bills, and provides the cheapest way for the utility to meet customers' energy needs, since it costs less for the utility to help customers save energy than it would to provide power to serve inefficient uses of electricity.

The following sections of this report present an overview of the POU's energy efficiency program accomplishments to date and their plans for achieving energy efficiency for the next ten years. Section III analyzes the utilities' performance-to-date based on a variety of metrics such as net benefits to customers, cost-effectiveness, and trends in energy savings and investments. In addition, it provides recommendations for how the POU's can capture more energy savings moving forward. Section IV examines the POU's ten-year energy saving targets, assesses the target setting process, and offers recommendations on how to improve the next target setting process in 2013 to ensure sufficient planning to conduct a robust potential study and set aggressive targets. Section V concludes by highlighting the POU's progress while urging additional action so that the POU's capture all cost-effective energy efficiency savings.

III. POU Energy Efficiency Achievements-To-Date

Over the past five years, the California POUs made significant progress toward capturing all cost-effective energy efficiency savings. This section analyzes the utilities' performance based on a variety of metrics, including: (1) the benefits the efficiency programs are providing to customers, (2) benefit-cost ratios that determine how cost-effective the energy efficiency portfolios are, and (3) trends in energy savings and investments over time. This section concludes by highlighting opportunities for improvements and offering recommendations to achieve greater energy savings.

This analysis finds that POU customers have received enormous benefits from the highly cost-effective efficiency programs since 2006, but also that significant savings remain untapped. In aggregate, the POUs showed strong gains over the first four years in energy savings, declining somewhat in 2010, yet approaching aggressive levels of savings. POU efficiency investments in aggregate followed a similar pattern, peaking in 2009 with a drop in 2010, but still within reach of aggressive levels.

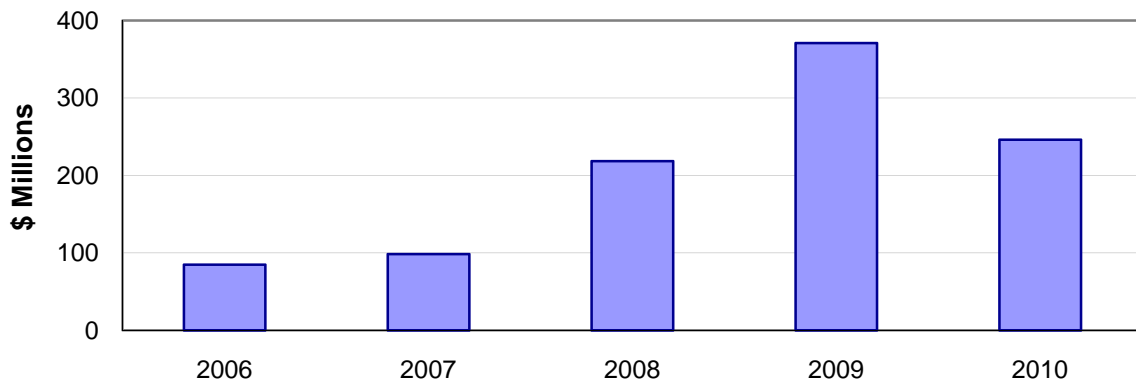
A. Energy Efficiency Provides Customers with Significant Benefits

The 2010 Status Report confirms once again that energy efficiency is the cheapest and cleanest resource available to meet the public utilities' energy needs. Energy savings from POU programs in 2010 cost approximately 2 cents/kWh, or less than *one quarter* the cost of procuring electricity from a conventional generation source.^{67, 68} The POUs' experience since 2006 shows that efficiency continued to get cheaper the more a utility saved.⁶⁹ (see Appendix Figure A1) Further, utilities of all sizes, including Small and Mid-sized utilities, have achieved significant efficiency savings at very low cost.⁷⁰ On average, for each \$1 that a POU invested in energy efficiency, customers received about \$3 in benefits in 2010.⁷¹ The POU energy efficiency programs are delivering substantial benefits for customers.

1. POU Customers Receive Significant Net Benefits

Since the enactment of SB 1037 and AB 2021, the net benefits from the POU's efficiency programs have increased substantially. Net benefits are the benefits to customers (from avoiding the purchase of more expensive and dirtier supply-side sources of energy) *after* accounting for all the costs associated with delivering the programs. Net benefits from POU programs reached an all-time high of approximately \$370 million in 2009, decreasing to \$246 million in 2010 as savings decreased, yet still representing a significant amount of net benefits for customers.⁷² The cumulative net benefits of the programs since 2006 is more than \$1 billion (see Figure 5).

Figure 5: Annual Net Benefits From POU Energy Efficiency Programs⁷³



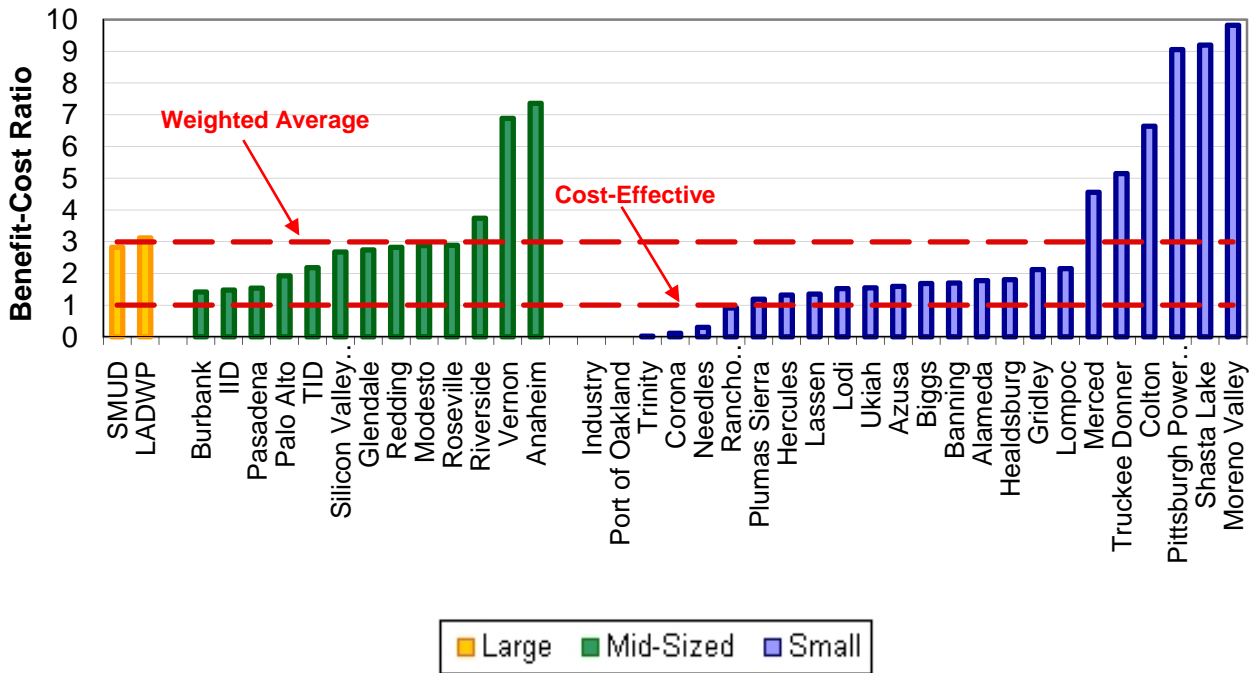
Source: 2006-2011 Status Reports

2. Programs are Highly Cost-Effective Yet Significant Savings Remain Untapped

One measure of the cost-effectiveness of the energy efficiency programs is the ratio of the total benefits they provide (i.e., avoiding investments in costlier power plants and wires) to the costs to the utility to run the programs plus the incremental cost to the participating customer to purchase the more efficient equipment or service. This benefit-cost ratio, also called the Total Resource Cost (TRC) ratio, aims to represent the total benefits and costs to society for the efficiency programs. A TRC ratio greater than 1 indicates a cost-effective program or portfolio of programs. In 2010, the POUs reported a total TRC ratio of 3, which represents an extremely cost-effective portfolio.⁷⁴ In other words, for every \$1 invested in POU energy efficiency programs, customers received about \$3 in benefits.

While the highly cost-effective programs are providing large benefits for customers, such high TRC ratios also indicate that there are significant cost-effective efficiency savings still remaining. In 2010, the vast majority of utilities had TRC ratios above 1, but there is considerable variation in TRC ratios among the individual utilities (see Figure 6). Four POUs indicated that their portfolios of programs were not cost-effective (i.e., had a TRC less than 1), and ten POUs reported TRC ratios over 3 (indicating that these POUs could capture significantly more savings while their portfolios remain cost-effective).

Figure 6: 2010 Benefit-Cost Ratio by Utility



Source: 2011 Status Report

Note: Port of Oakland and Industry did not report data for 2010

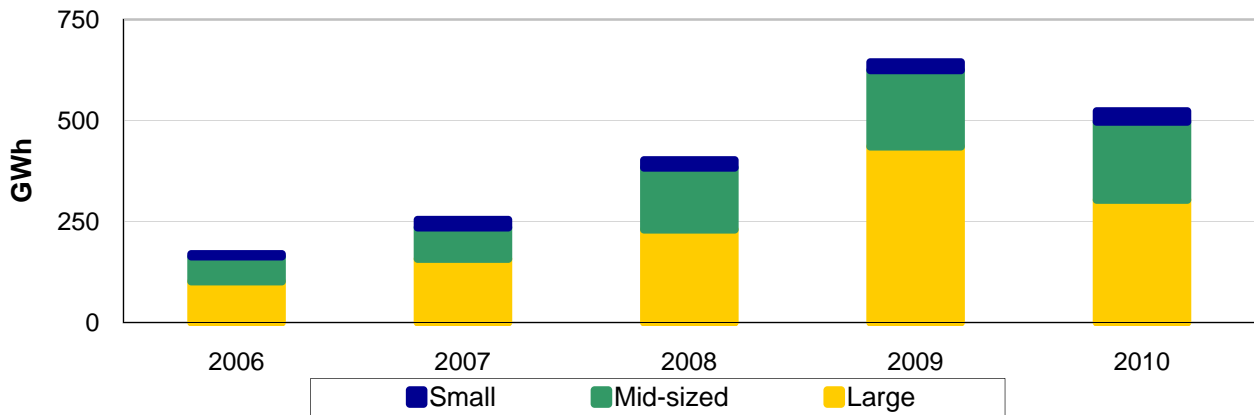
B. POU Energy Savings Increased Significantly From 2006 to 2010

The POUs reported over a three-fold increase in energy savings from 2006 to 2010. In 2010 alone, savings reached 523 GWh, which is the equivalent of saving all the energy that was consumed by all the households in Yolo County.⁷⁵ This remarkable increase in savings has outpaced electricity sales growth so that efficiency now composes a significantly larger portion of how the POUs are meeting their customers' energy needs. The large increase in savings has also enabled the POUs to approach the energy saving targets they set in 2007.⁷⁶

1. POUs, in Aggregate, Show Strong Gains in Energy Savings

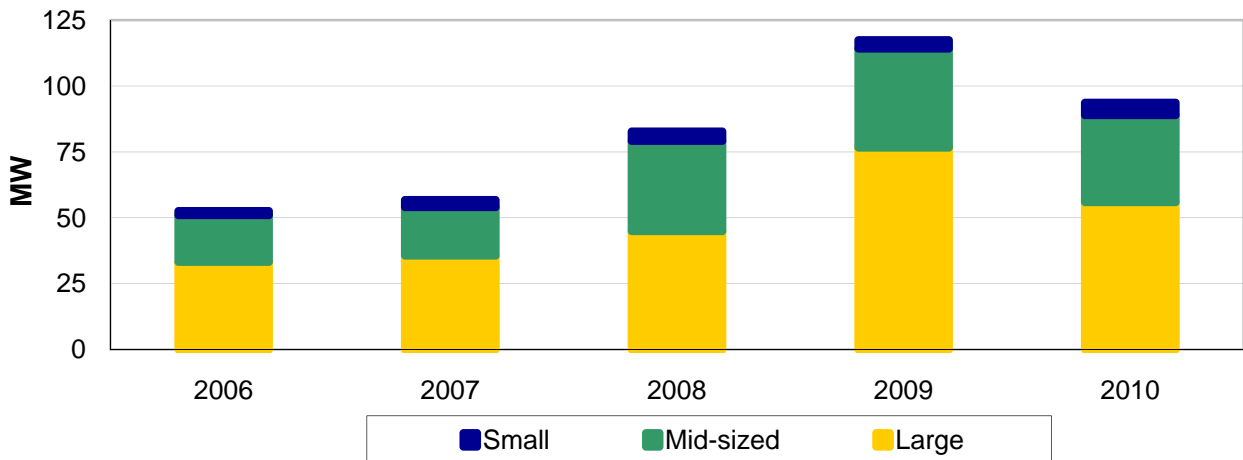
From 2006 (when comprehensive POU efficiency program savings data became available) to 2010, reported electricity savings in the public power sector increased to 309% of 2006 levels. (see Figure 7) Demand savings followed a similar path, increasing to 178% of 2006 reported demand savings (see Figure 8). These efforts between 2006 and 2010 saved about 400 MW, avoiding the need for a medium-sized power plant.⁷⁷ The energy savings are also reducing pollution: programs from 2006 to 2010 cut annual pollution by more than 900,000 tons of carbon dioxide (the primary climate change pollutant), equivalent to the emissions from over 200,000 cars.⁷⁸

Figure 7: Annual Electricity Savings



Source: 2006-2011 Status Reports

Figure 8: Annual Demand Savings



Source: 2006-2011 Status Reports

2. POUs, in Aggregate, Decreased Savings in 2010, Yet Many Individual POUs Continued Significant Upward Trends

In aggregate, POUs reported lower savings in 2010 relative to 2009, but savings were still higher than in earlier years. As shown by Figure 9, the POUs' reported growth in savings has fluctuated over the years and among group size. In 2010, however, POUs reported decreased savings in the aggregate for the first time, with 17 POUs (spread evenly across group sizes) decreasing their savings relative to 2009.⁷⁹ (see Figure 10)

Figure 9: Annual Growth in Reported Electricity Savings

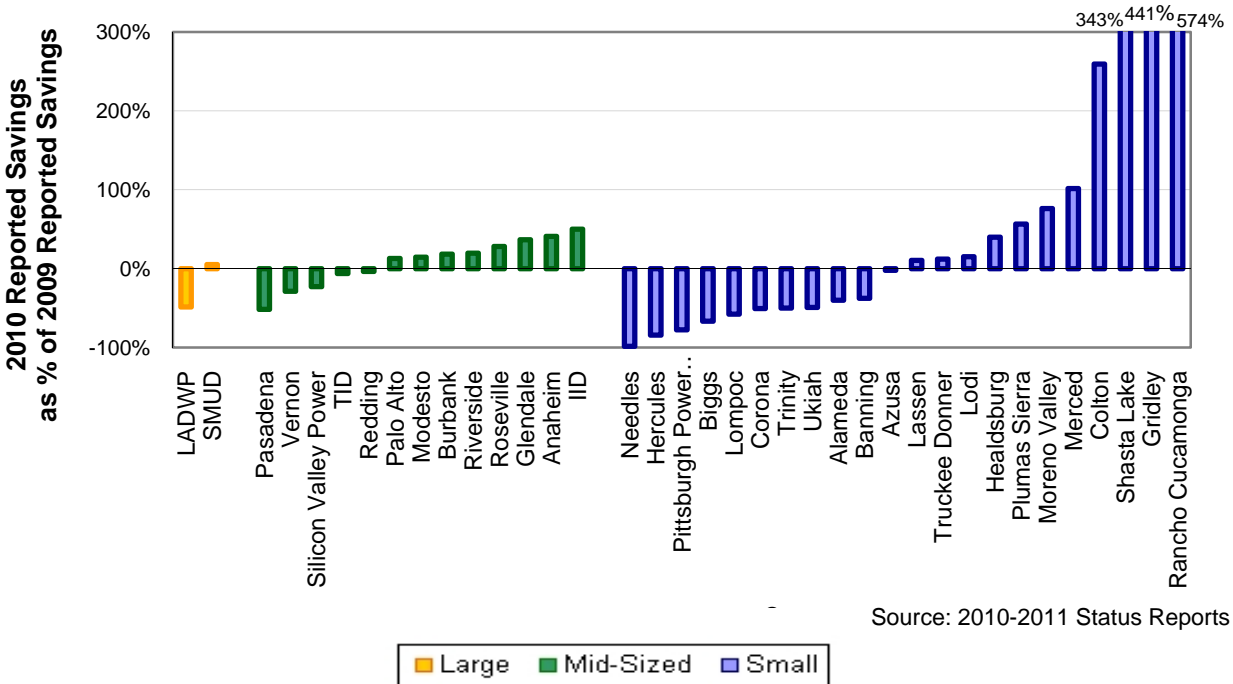


Source: 2006-2011 Status Reports

While the POUs in aggregate reduced savings in 2010, 20 individual POUs exceeded their performance from 2009.⁸⁰ Furthermore, a number of Small utilities increased savings substantially, led by Colton, Gridley, and Truckee-Donner. Although SMUD slightly increased savings, LADWP decreased savings, which brought down the average significantly for the Large utilities, due to LADWP’s size.

Of course, utilities that already had aggressive programs would not be expected to continue to show significant increases in savings, whereas utilities that are just starting out would be expected to have larger increases. Therefore, while examining the annual change in savings for each utility provides one useful metric to understand how each POU is progressing, it should not be viewed in isolation.

Figure 10: Annual Growth in Reported Electricity Savings, by Utility⁸¹



Source: 2010-2011 Status Reports

3. In Aggregate, POU's Are Approaching Aggressive Levels of Savings

Since 2006, aggregate POU energy savings as a percent of electricity sales has increased significantly, reaching an unprecedented level of over 1% of sales in 2009 and nearly that high in 2010. (see Figures 11 and 12) Energy savings due to efficiency programs as a percent of retail electricity sales is a useful metric to compare utilities of different sizes because it accounts for the variations in the size of the utilities (i.e., enabling a comparison across the Small, Mid-sized, and Large utilities). Nationally, savings of 1% of sales is considered the minimum to reach an aggressive level of savings.⁸² In 2010, eight POU's exceeded the 1% benchmark: one Large (SMUD), three Mid-sized (Glendale, Pasadena, and Silicon Valley Power) and four Small utilities (Banning, Colton, Gridley, and Truckee-Donner).⁸³

Figure 11: Electricity Savings as a Percent of Retail Electricity Sales⁸⁴

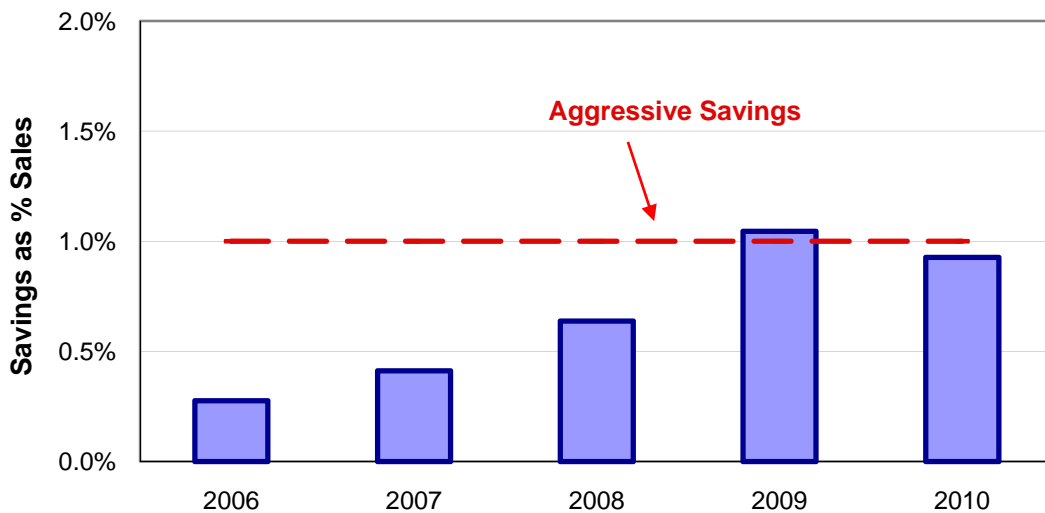
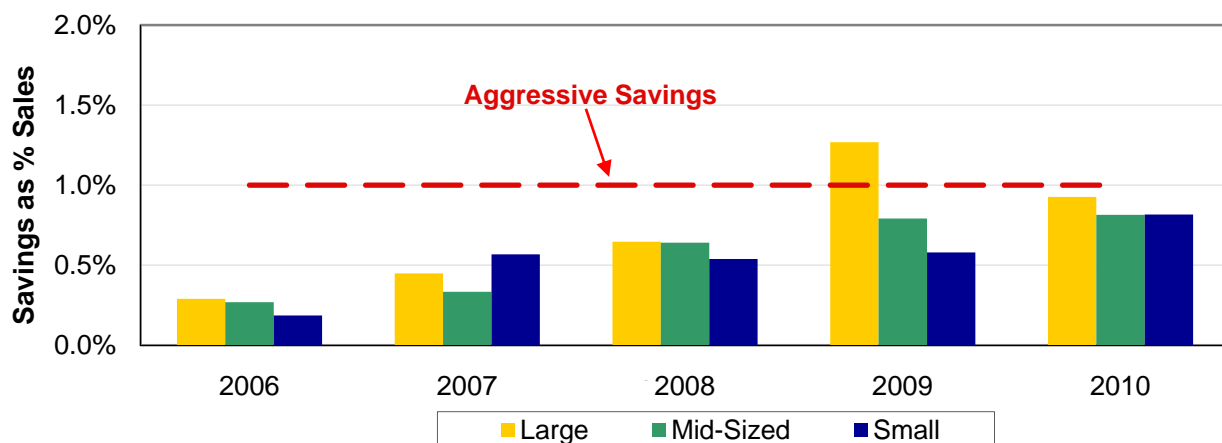


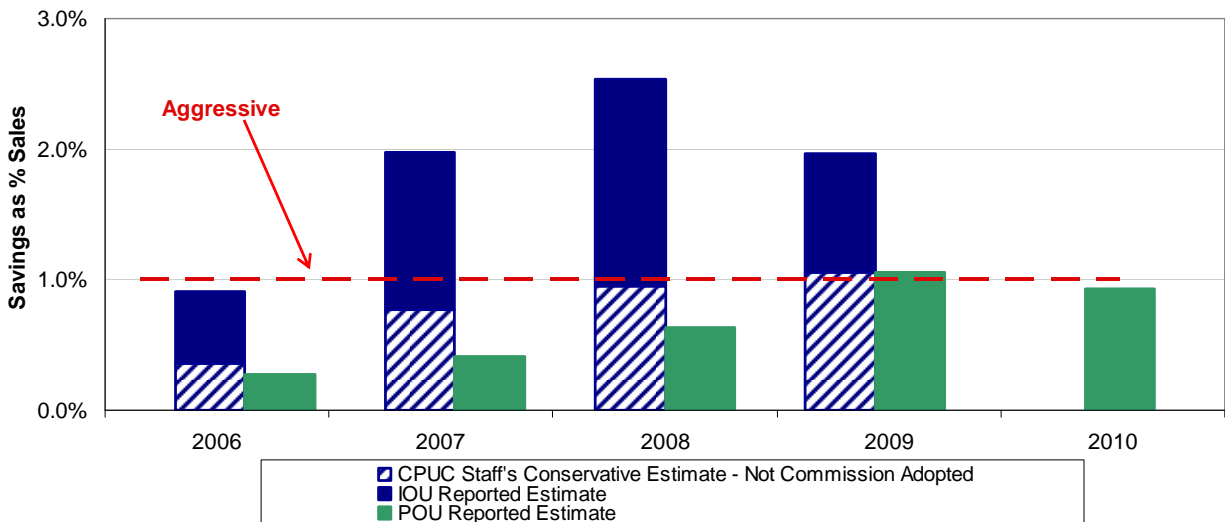
Figure 12: Electricity Savings as a Percent of Sales, Grouped by Utility Size⁸⁵



California’s investor-owned utilities’ (IOUs) energy efficiency accomplishments provide another useful benchmark for the POU (see Figure 13). However, accurate comparisons between IOU savings and POU savings are currently difficult to make because of significant differences in their approaches to evaluate and verify energy savings.⁸⁶ Most POU’s savings do not undergo the same rigorous evaluation, measurement and verification (EM&V) process as the IOUs’ savings. Therefore, currently the most “apples-to-apples” comparison of IOU and POU savings is based on reported savings using the energy saving assumptions used during program planning (also known as ex-ante assumptions).

The California Public Utilities Commission (CPUC) conducts EM&V of the IOUs’ savings to determine final verified savings (also known as ex-post results), but the CPUC staff’s various estimates are still under consideration by the Commission. Since there are still outstanding questions and disputes over the final evaluated savings for the IOUs’ 2006-2008 programs, Figure 13 provides a range of estimates for the IOUs’ energy savings. This includes the CPUC staff’s most discounted savings estimates and the IOUs’ reported savings based on the same assumptions used for planning the 2006-2008 program portfolio. Most POU’s savings estimates are self-reported, so they are noted as “reported” estimates similar to the IOUs’ reported estimates.

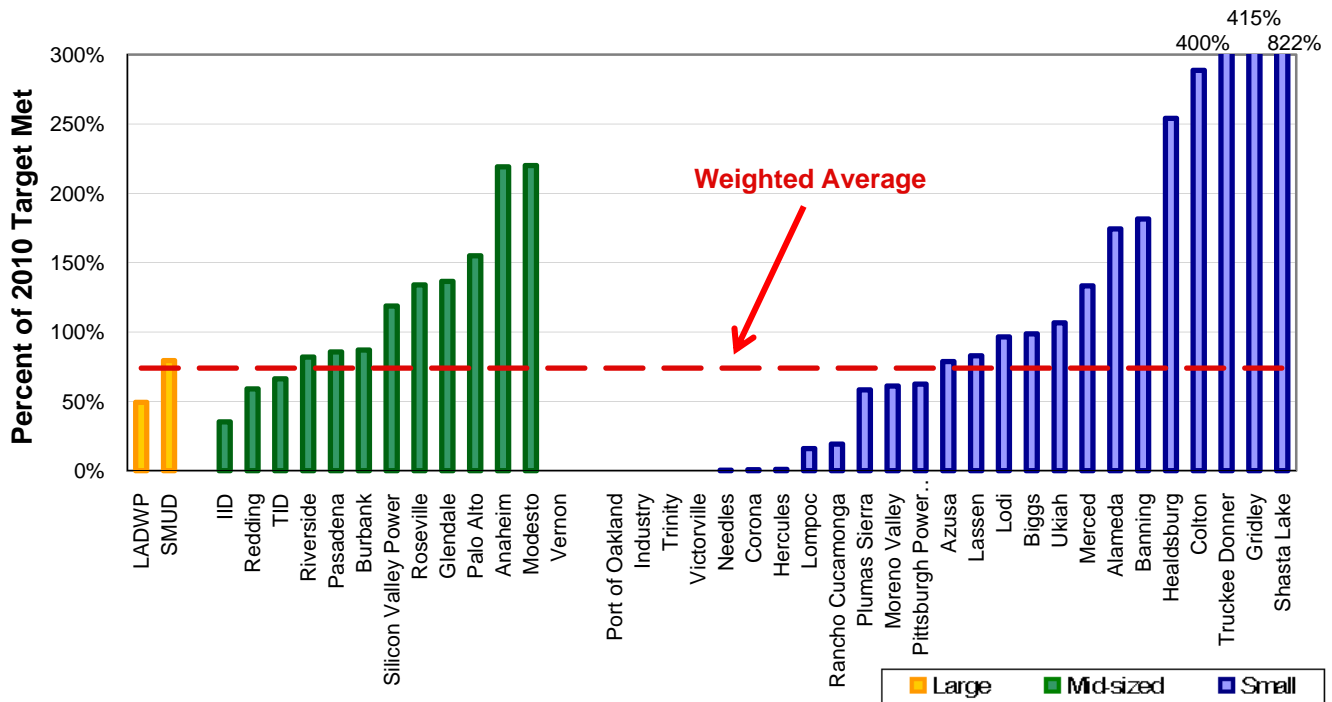
Figure 13: POU and IOU Electricity Savings as a Percent of Sales⁸⁷



4. Reported Savings Are Approaching the POU’s Ten-Year Targets

In 2007, most of the POU’s set ten-year energy saving targets for 2007-2016, as required by AB 2021. In aggregate, POU 2010 reported savings met 74% of their 2010 targets, with less than half of the POU’s nearly meeting or exceeding their targets and a similar amount falling short.⁸⁸ (see Figure 14)

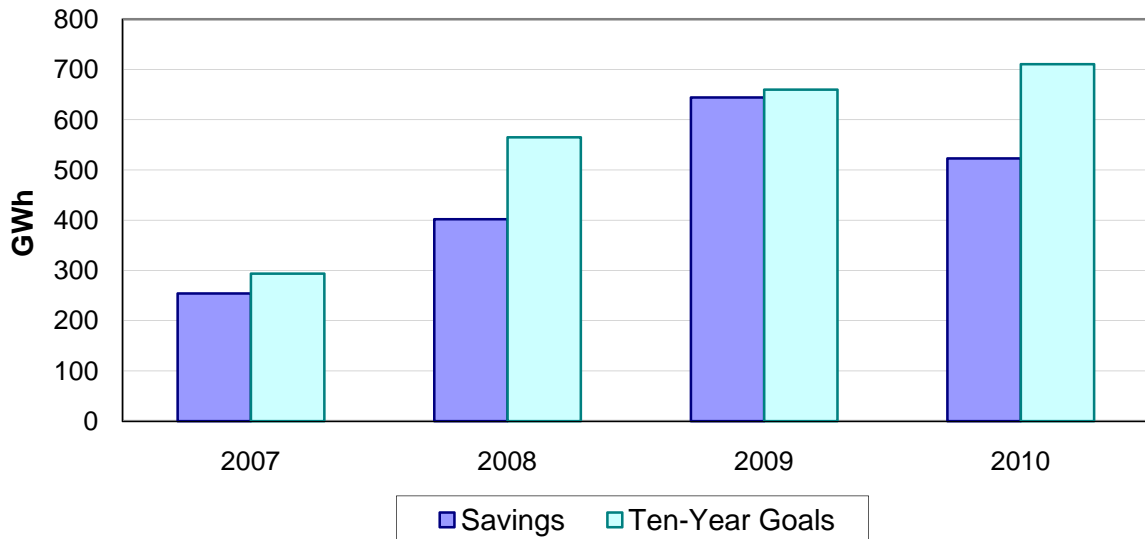
Figure 14: 2010 Reported Electricity Savings as a Percent of Target⁸⁹



Note: Port of Oakland and Industry did not report data for 2010; Trinity and Victorville did not set 2007 targets

Since the POUs started measuring progress against their ten-year targets in 2007, the public power sector in aggregate has achieved 82% of its *cumulative* target through 2010 (see Figure 15).⁹⁰ However, as shown in Figures 7 through 9, the POUs (in aggregate) decreased their savings in 2010, which reversed the positive trend and made them fall further behind their cumulative goal.

Figure 15: Aggregate Reported Savings Compared to Annual Targets⁹¹



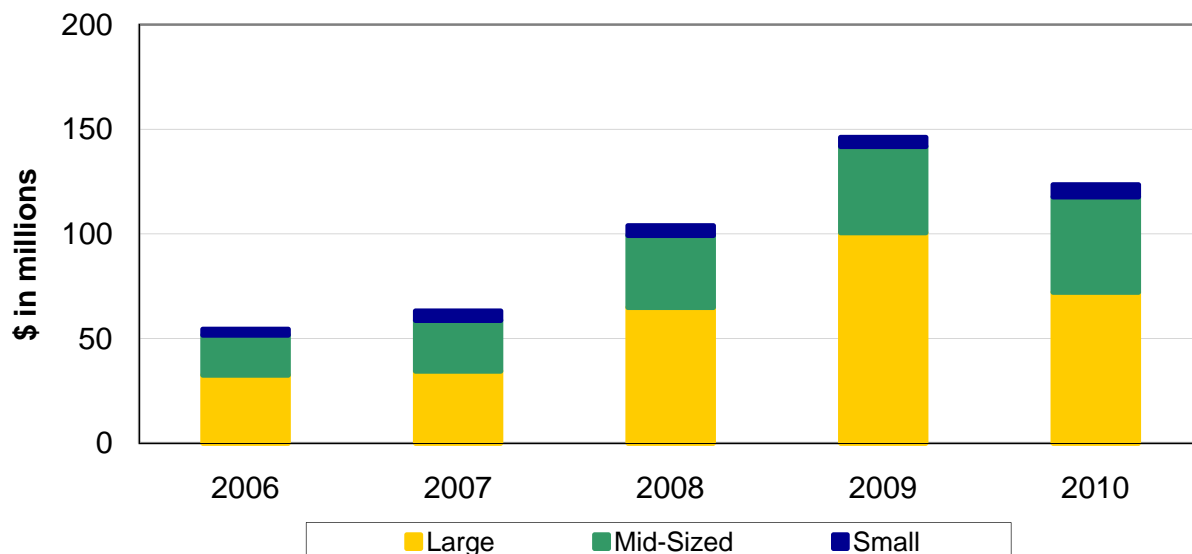
C. POU's Have Significantly Increased Investments in Energy Saving Programs

Sustained investments in efficiency programs provide long lasting economic benefits. The POU's have significantly increased efficiency investments over the past five years, with some utilities reaching aggressive levels of savings.

1. Increasing Investments Drove Increased Savings

In 2010, POU's invested \$123 million in their energy efficiency portfolios, a nearly 260% increase since 2006, but a decrease relative to 2009. The POU's' investments are now quite significant, exceeding investments in energy efficiency programs made by all utilities in states such as Texas, Arizona, or Colorado in 2010.⁹² Over the years, the increase in investments has led to significant increases in electricity savings.

Figure 16: Annual Energy Efficiency Investments

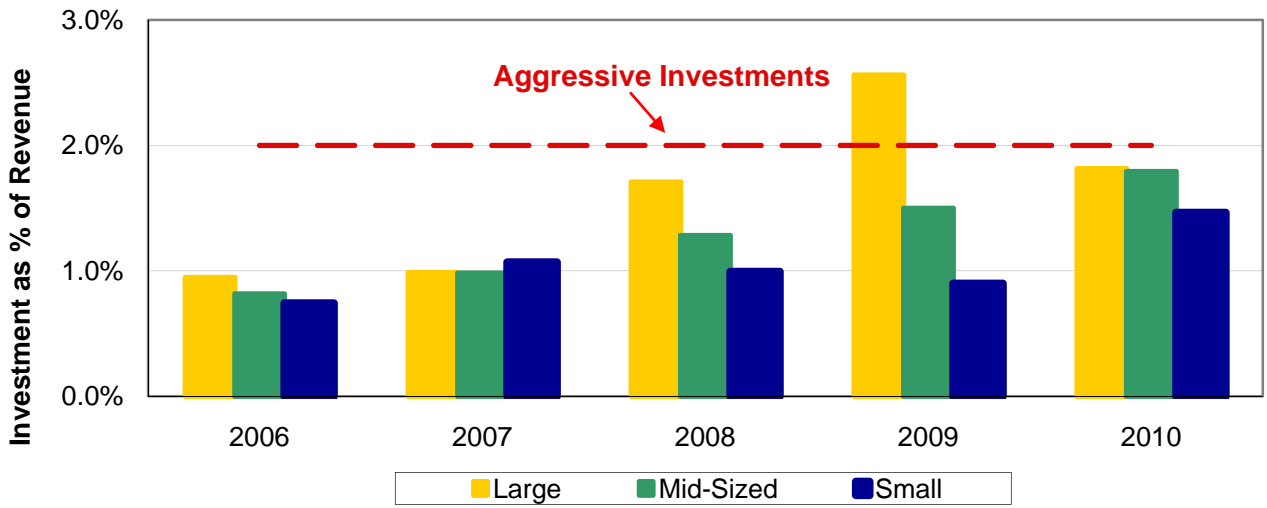


Source: 2006-2011 Status Reports

2. Several POU's Are Investing in Energy Efficiency at Aggressive Levels

In 2010, after a steady trend upward, the POU's in aggregate invested in energy efficiency at just under 2% of electric retail revenues, reaching aggressive investments by industry standards.^{93, 94} The metric of investments as a percent of retail revenue is useful to compare investments for utilities of different sizes because it accounts for variations in revenues.⁹⁵ The POU's' aggregate achievement of this aggressive level is driven by only ten POU's that invested more than 2% of their revenues: **SMUD, Burbank, Glendale, Palo Alto Pasadena, Riverside, Silicon Valley Power, Azusa, Needles, and Truckee-Donner.** (see Appendix Figure B2)

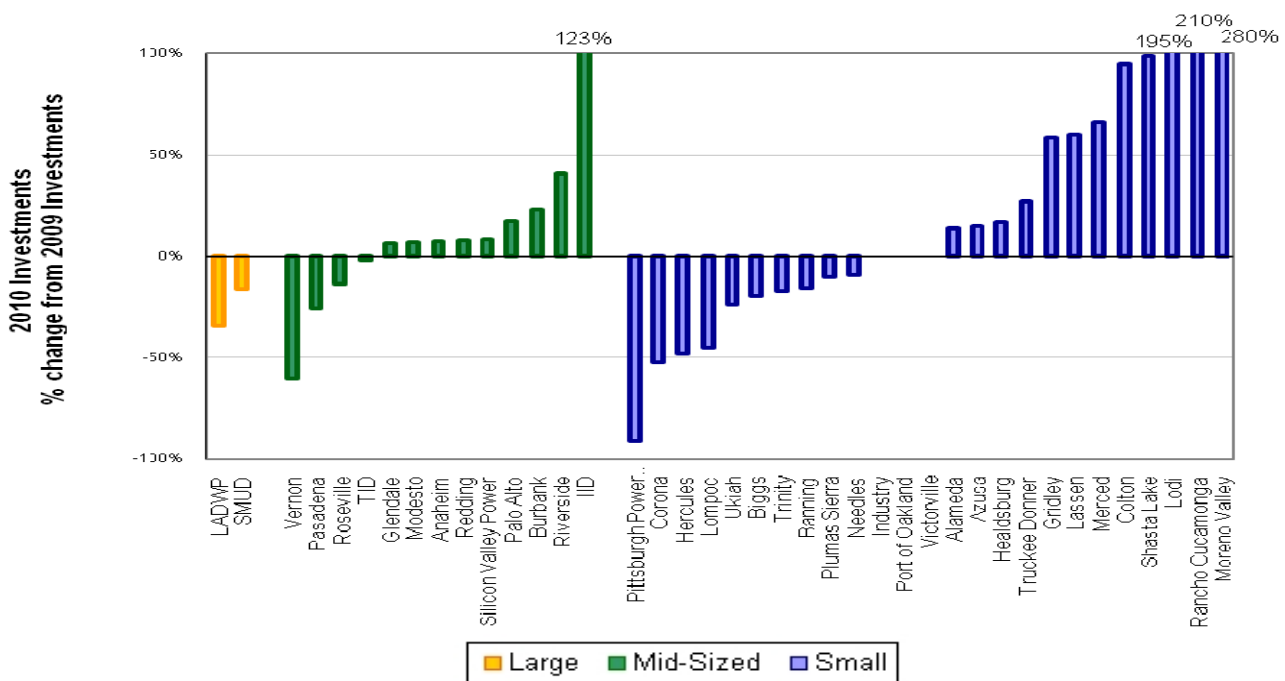
Figure 17: Energy Efficiency Investments as a Percent of Retail Revenue⁹⁶



3. Annual Investments Continue To Drive Savings

The majority of POU's increased their investments in 2010, but sixteen POU's (four Mid-sized, ten Small utilities, and both Large utilities) reduced investments. Analyzing how each utility's investments in efficiency changes over time provides a useful metric to gauge its progress. However, utilities that already had aggressive programs would not be expected to have significant increases in investments, whereas utilities that are ramping up their programs would be expected to have large increases. Therefore, while this metric is useful, it should not be viewed in isolation.

Figure 18: Percent Change in Efficiency Investments from 2009 to 2010⁹⁷



Experience shows that utilities that have increased savings have also generally increased investments to achieve additional energy efficiency.⁹⁸ In most cases, as investments decrease, so will savings.⁹⁹

D. Only Half of the POU's Completed Evaluation Reports

Independent evaluation, measurement, and verification (EM&V) of energy efficiency program savings is an essential component of an effective energy efficiency portfolio. EM&V enables utility managers to confidently rely on efficiency as a resource to displace power plants and results from independent reports provide critical feedback on program implementation and design, which can be used to improve programs as needed and expand programs that prove to be successful. As noted in Section II.B above, AB 2021 requires the POU's to conduct independent EM&V of their energy savings and to report the results in their annual status reports required by SB 1037.¹⁰⁰

Since AB 2021's requirement for independent EM&V went into effect in 2007, 23 POU's have completed at least one study and fewer have filed these reports with the CEC.¹⁰¹ However, many of these were only limited evaluations that covered one or a few programs, and only a few POU's have made significant headway on comprehensive evaluations of their efficiency portfolios. Furthermore, many POU's have not developed a plan for how they intend to do evaluations of their programs. The numerous utilities that have not conducted significant EM&V are missing out on valuable information for their resources planners and feedback on program design that would help improve interaction with customers, maximize cost-effective savings, and prioritize funding for the most effective programs.¹⁰²

In addition, while the POU's and CEC have made great progress working together to improve program evaluation, they have not yet agreed on a common framework for conducting evaluations and reporting verified savings results. A common framework is essential to enable accurate comparisons among POU's, and between POU's and other utilities around the state and nation.

E. Recommendations for Further Improvements

The POU's have made significant progress at increasing energy savings since the enactment of California's energy efficiency laws. The POU's' efficiency programs are saving money for customers, providing large environmental benefits, and reinvigorating the economy. However, considerable opportunities remain to save energy more cheaply than it can be produced. The POU's should continue to expand their efforts to take advantage of all cost-effective saving opportunities that will provide significant benefits for their customers. NRDC offers the following suggestions to further increase the POU's' efficiency efforts and to comply with the requirements of SB 1037 and AB 2021.

1. POU's Should Continue To Expand Energy Saving Programs To Capture All Cost-Effective Energy Efficiency

The POU's have made laudable progress expanding energy savings over the past several years, increasing savings over three-fold since 2006. Even with this swift progress, the POU's' analyses of the additional potential to save energy cost-effectively, and the experience around the state and nation, show that significant opportunities remain. Consequently, the POU's should continue to expand their program portfolios to increase savings for customers.

The best way to determine whether and how each POU can increase savings is based on a detailed analysis of remaining potential. In addition, there are also three simple metrics that can indicate whether a POU should consider expanding its efforts. Any POU that is: (i) saving less than 1% of its annual retail sales, (ii) planning to decrease savings, or (iii) achieving energy savings at a very high benefit-cost ratio should re-examine opportunities to expand programs to achieve aggressive levels of savings while still remaining cost-effective. All POU's, except SMUD, fall into at least one of these categories and should consider expanding their efficiency efforts.¹⁰³ NRDC commends SMUD on its aggressive pursuit of energy efficiency.

Utilities with aggressive efficiency programs around the country generally achieve annual energy savings of at least 1% of retail electricity sales, as discussed above. Although the POU's in aggregate reached this threshold in 2009 for the first time, most POU's have never reached that level and should consider increasing savings.

Another simple indicator of whether a POU can increase savings cost-effectively is to examine its program portfolio's benefit-cost ratio (TRC). A TRC that is much higher than 1 indicates that there are additional savings that could be captured even while the portfolio remains cost-effective. As shown in Figure 6, ten POU's reported TRCs above 3 in 2010, and many more reported TRCs above 2.

NRDC urges the POU's to ensure that their portfolios reach both the highly cost-effective and easier to achieve savings such as lighting, as well as the savings that require longer planning horizons and more comprehensive approaches such as whole building retrofits and new construction programs, to ensure they are reaching all cost-effective savings opportunities.

2. Every POU Should Have Independent Evaluations of Energy Savings

Each POU is required to annually report on the results of independent evaluations to measure and verify the energy savings from its efficiency programs. However, as discussed above, many POU's have not done any evaluations, and while a number of POU's developed EM&V plans and completed studies, only a few completed at least one comprehensive evaluation of its efficiency portfolio. In addition, the program reports completed to date vary in their level of detail and comprehensiveness, and the POU's and CEC have yet to agree on a common framework for reporting savings results. NRDC offers the following recommendations to address these issues.¹⁰⁴

a. Every POU Should Conduct Comprehensive Independent Evaluations of Energy Savings, Individually or in Collaboration with Other Utilities

Independent and thorough EM&V is not only required by law, but is also necessary to ensure that utility planners can rely on efficiency as a resource and to continuously improve efficiency programs. While there has been recent progress by many POUs in developing evaluation plans and carrying out studies, more progress must be made in the coming years to ensure that all POUs are sufficiently measuring and reporting their program savings. Each POU should either develop its own plan for independent evaluation, or coordinate with other utilities on a joint plan to evaluate their programs.

Funding for independent evaluations should only be a small portion of the overall efficiency budget; experience in other jurisdictions shows that generally less than 5% of the efficiency budget is required to conduct EM&V.¹⁰⁵ Developing an evaluation plan upfront can maximize the benefits of ongoing EM&V investments by identifying which saving estimates are most uncertain or have the largest impact on overall savings, and creating a strategy for which measures and programs to evaluate each year. Since many POUs offer similar efficiency programs, they can leverage their resources by collaborating on evaluations. This could also help reduce the financial and administrative burden on smaller POUs.

NRDC recommends that each POU take the following approach to ensure adequate independent EM&V:

- Dedicate a portion (e.g., 4-5%) of the energy efficiency budget to EM&V.
- Either individually or with other POUs, establish EM&V plans to comprehensively review the efficiency portfolios. Utilities do not need to evaluate every single program every year, but should follow the evaluation plan to reduce the uncertainty in final savings results as much as possible. The EM&V plan should prioritize evaluations over time to ensure more frequent review of the largest programs and periodic review of all programs.
- Utilize the most up-to-date version of the Database for Energy Efficient Resources (DEER) for program planning and reporting, unless there is justification for use of a different deemed savings database. POUs should set aside a portion of their EM&V resources to contribute to maintaining the DEER database and ensuring quality control of deemed savings assessments.
- Collaborate with other POUs and the CEC to develop a common framework for reporting ex-ante (planning) and ex-post (evaluated) savings consistently.

b. The CEC Should Continue To Work with the POUs To Provide Guidance on Methodologies for Independent EM&V

The CEC has initiated a process to work with the POUs to provide guidance on how to conduct independent evaluations. A consistent framework and methodologies for EM&V will be extremely useful to ensure that the final saving results can be meaningfully compared across the state. In addition, the CEC should work with the POUs to develop

reporting guidelines for the annual Status Reports to ensure that they clearly indicate which data is self-reported and which data has been independently verified.

The POU and CEC can look to other jurisdictions to inform how best to collaborate and develop consistent methodologies on EM&V. For example, the CPUC has protocols for conducting independent evaluations of the IOUs' efficiency programs. The Northwest Energy Efficiency Alliance and the Northwest Power and Conservation Council's Regional Technical Forum both conduct EM&V activities that significantly advance the objectives of the various efficiency administrators in the region. The Northeast Energy Efficiency Partnership is working to coordinate EM&V activities in the northeast, and the U.S. Department of Energy is in the process of developing common national protocols and databases for deemed energy savings. The CEC and POU should coordinate statewide and engage with the growing national effort to coordinate protocols and savings estimates.

3. POU Should Treat Efficiency as the Top Priority Procurement Resource

One of the key requirements of AB 2021 is that POU "shall treat investments made to achieve energy efficiency savings . . . as procurement investments."¹⁰⁶ This builds upon the earlier requirement under SB 1037 that utilities must invest *first* in all cost-effective energy efficiency before investing in alternative supply-side resources.¹⁰⁷ These requirements aim to ensure that the POU (i) consider all available cost-effective energy savings in planning processes, (ii) do not over-purchase conventional resources or miss opportunities to capture the available cheaper efficiency potential, and (iii) do not limit efficiency investments to the public-benefits charge. Failing to treat efficiency as the top priority procurement resource leaves substantial energy savings on the table, and misses the opportunity to save customers money and reinvigorate the economy.¹⁰⁸

Although the POU have increased their efficiency investments and savings significantly since AB 2021 first went into effect, it is unclear if or how most of the POU are complying with the law to treat efficiency investments as procurement investments since most do not report the specific source for funds invested.¹⁰⁹ In order to comply with the law, every POU should ensure that it is: (1) fully integrating energy efficiency into resource planning and procurement, and (2) using funds that would have gone to purchase conventional energy sources for efficiency programs first.¹¹⁰

a. Integrate Energy Efficiency into Resource Planning and Procurement

As the POU determine what investments they need to make over the next 10 or 20 years to meet projected demand, they should plan to invest in energy efficiency whenever the cost of efficiency is equal to or less than the alternative energy supply. The projected energy savings from achieving all cost-effective energy efficiency opportunities should be subtracted from the demand forecast before determining the amount of additional resources the utility needs to build or purchase to ensure customers maintain reliable service. NRDC recommends that the CEC provide clear guidance to the POU in advance of their demand forecasting and procurement

planning processes to ensure that the POU's are treating energy efficiency as a resource and fully integrating energy savings into their procurement planning process.

b. Efficiency Investments Should Be Treated as Procurement Investments and Not Limited to the Public-Benefits Charge

The POU's should use funding that would have gone to procure supply-side resources to invest in energy efficiency instead whenever it is cheaper than the alternative.¹¹¹ Efficiency investments should not be limited to the amount collected through the public-benefits charge, but should be driven by the amount of cost-effective energy efficiency that is available. The CEC noted in the 2008 Integrated Energy Policy Report that limiting investments to the public-benefits funds would be "insufficient to achieve the savings needed to meet all cost-effective energy efficiency."¹¹² In addition, increases in energy efficiency investments should not come at the expense of the other valuable programs the public-benefits charge was designed to support, including low-income assistance and renewable energy.

The CEC should provide further guidance to the POU's on how they should demonstrate compliance with the law. NRDC recommends that the POU's provide more information about their efficiency investments in future SB 1037 reports. In particular, every POU should include an explicit breakdown of the amount of public-benefit funds allocated to energy efficiency and the amount of procurement investments in energy efficiency programs, in accordance with AB 2021's requirement for each POU to include "the sources of funding for its investments in energy efficiency and demand reduction program investments."¹¹³ In addition, we recommend that every POU provide a breakdown of the public-benefits fund investments that are allocated to (1) energy efficiency, (2) renewable energy, (3) low income, and (4) research development and deployment over time. Only Anaheim reported investments in this manner.¹¹⁴ Along with this additional information in the annual reports, the POU's should demonstrate that efficiency investments are being made in the same manner as other procurement investments and not at the expense of other public-benefit programs.

4. POU's Should Further Increase Transparency Through Expanded Reporting

This year's Status Report marks the fifth comprehensive report on POU energy efficiency program investments and savings compiled by CMUA. These reports are the product of extensive collaboration among the POU's, facilitated by CMUA, NCPA and SCPPA. The detailed common reporting template that forms the basis for the annual reports allows for comparisons and compilations of the POU's' efficiency information. For the first time, POU's now have the basic information necessary to benchmark their progress against one another over time, and see their progress overall relative to other utilities around the country.

While the POU's have provided a significant amount of information in each report over the past five years, some additional information would help the POU's, CEC, other policy makers, and stakeholders to better understand the POU's' progress, determine which

areas require further attention, and allow for a more targeted approach to overcoming barriers to expanding efficiency efforts.

Over the past few years, the POU's have incorporated some of the additional metrics NRDC recommended into their annual reports.¹¹⁵ This information provides a better understanding of the POU's' progress with energy efficiency. NRDC continues to recommend that the POU's include the following additional metrics and information in future reports to enable POU's to more easily benchmark their progress against one another and to more fully describe the benefits that the efficiency programs are providing to POU customers.

- The POU's should report the industry-standard metric of savings as a percent of sales (kWh).¹¹⁶ As noted above, this metric normalizes utility efficiency program savings based on annual utility retail electricity sales, which allows for direct comparisons of utilities of different sizes. This metric is especially useful for POU's in California because there is wide variation in the size of the utilities. It also enables each POU to benchmark its success with efficiency against utilities and best practices around the nation.
- The POU's should report the net economic benefits each utility's programs are providing to its customers. The calculation of net benefits should include all the benefits and costs to customers (using the TRC methodology) and should include the full benefits that the programs provide, including avoided transmission and distribution costs.
- The POU's should report the average levelized cost of energy efficiency on a portfolio basis. This would provide a cost per kWh that can be compared to supply-side procurement cost, unlike the current cost calculation included in the Status Report, which addresses only the cost of first-year savings.¹¹⁷

IV. POU Energy Efficiency Targets Through 2020

In aggregate, the POU's proposed targets project energy savings of over 5,600 GWh by 2020.¹¹⁸ These energy savings will cut climate change pollution by approximately 2.6 million tons of carbon dioxide per year, equivalent to the emissions from nearly 570,000 cars.¹¹⁹ Meeting the proposed targets will also provide POU customers an estimated \$2.6 billion in net benefits.¹²⁰

The following utilities, listed in alphabetical order, show leadership for a second time by having strong targets that reach 1% of sales at some point over the next ten years; these utilities also reached 1% of sales with their 2007 adopted targets: **Colton, Glendale, Pasadena, SMUD, and Truckee Donner. Anaheim** joined these leading utilities by adopting targets in 2010 that also reach 1% of sales during the next ten years. While **LADWP** has yet to set energy saving targets, the estimated energy savings included in their resource plan does reach 1% of sales at some point. In addition, the following six utilities nearly doubled or more than doubled their 2010 targets relative to the targets they adopted in 2007, even though not all of these utilities set aggressive targets: **Alameda, Healdsburg, Modesto, Palo Alto, Shasta, and Truckee Donner.**¹²¹

Twenty POU's decreased their average annual targets relative to the targets they adopted in 2007 or failed to set a target.¹²² The biggest reductions (i.e., those POU's that set 2010 energy saving targets at half or fewer savings than in their 2007 targets) came from **Moreno Valley, Needles, Pittsburgh Power, and Rancho Cucamonga.** The lowest saving targets were set by **Biggs, Gridley, Pittsburgh Power, Rancho Cucamonga, and Trinity**, all averaging annual energy savings that reached less than one-third of one percent of electricity sales. Notably, LADWP –the state's largest POU–projected in its final IRP average energy savings over the ten-year period that amounts to 36% less than their 2007 target and averages 0.65% of sales.¹²³

The following section presents an overview of the POU's energy saving targets over the next ten years, assesses the target setting process, and provides recommendations to the POU's and CEC to improve the process for setting targets in 2013.

A. POU Energy Saving Targets

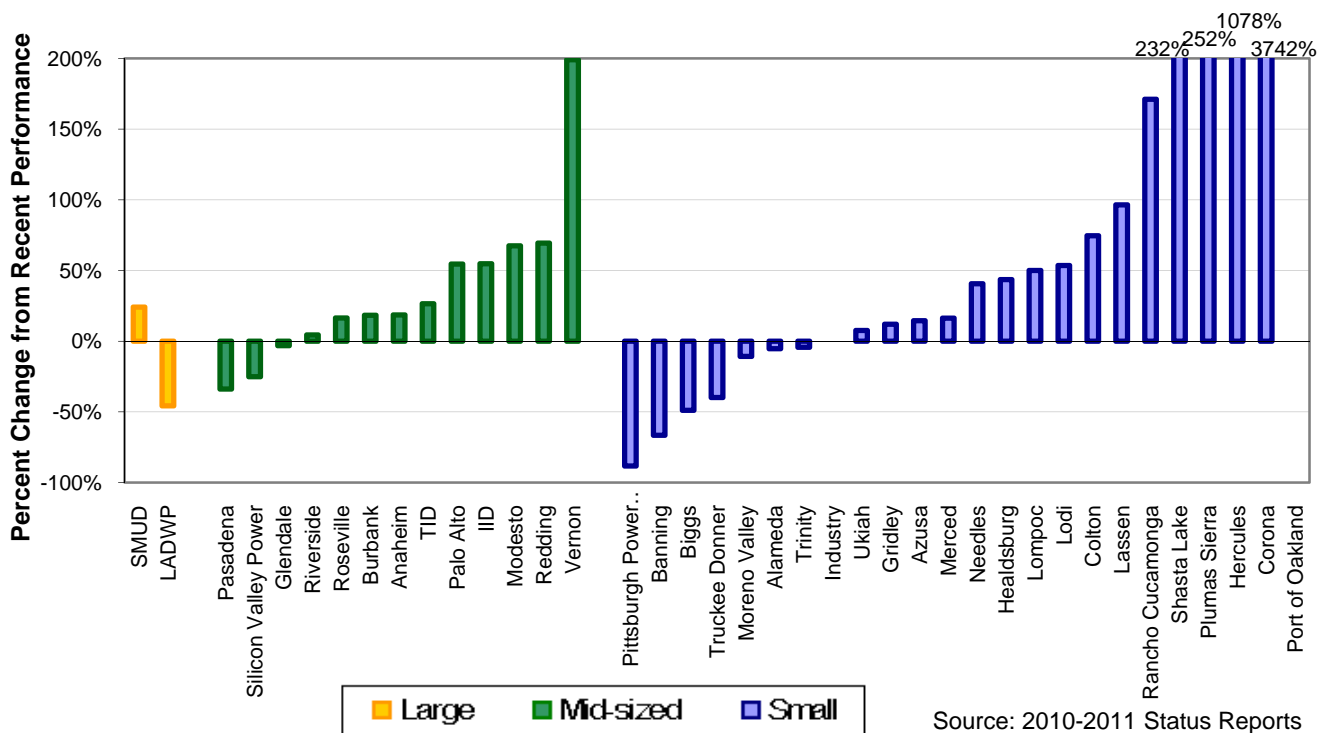
As discussed in Section III, the POU's made significant progress achieving energy savings over the last several years. However, the energy saving targets proposed last year by most POU's do not represent targets that are sufficiently aggressive to meet the intent of AB 2021 or show that all POU's are truly using energy efficiency *first* as a resource before purchasing more expensive and dirtier conventional energy.

To assess the aggressiveness of the POU's energy saving targets, the analysis below examines the POU's proposed targets based on four main metrics: (1) POU ten-year targets set in 2010 compared to recently reported savings, (2) energy saving targets as a percent of retail electricity sales, (3) change in annual energy saving targets relative to the targets adopted in 2007, and (4) ten-year targets as a percent of economic potential.

1. Most Individual Targets Are Higher Than Recently Reported Savings

The first metric compares the new savings targets against the POU's recently reported performance. In aggregate, the POU's annual average energy saving targets through 2020 is 12% *lower* than the average reported savings from 2009 and 2010 (Figure 19). However, without LADWP the POU's annual average targets are *higher* than the average reported savings from 2009 and 2010.¹²⁴ In addition, while many individual utility targets are higher than the most recently reported savings, the average increase is still insufficient in most cases to reach a level considered aggressive by industry standards. (see Figure 20)

Figure 19: Average Annual Target Compared to Average Two Year Savings



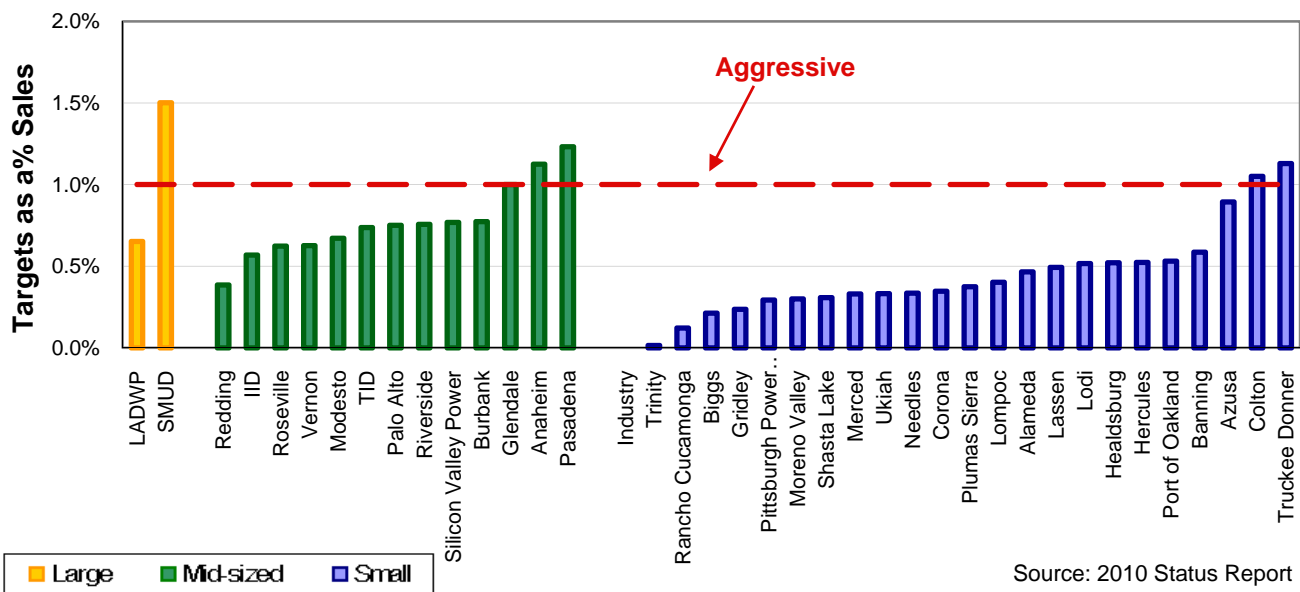
2. Most Targets Do Not Reach Aggressive Levels of Savings

The second comparative metric used in this analysis examines each POU's targeted annual average energy savings through 2020 as a percent of the POU's average annual retail electricity sales through 2020. As noted in Section III above, energy savings due to efficiency programs as a percent of retail electricity sales is a useful metric to compare utilities of different sizes because it accounts for the variations in the size of the utilities. Nationally, savings of 1% of sales is considered the minimum to reach an aggressive level of savings.¹²⁵

In aggregate, POUs set an average energy saving targets at 0.8% of annual sales over the next ten years. The two Large POUs set targets at a weighted average annual energy savings of retail electricity sales of 0.9%; Mid-sized POUs averaged 0.8%, and Small POUs averaged 0.5%.¹²⁶ According to the most recent data compiled by the American Council for an Energy Efficient Economy, the five states with the highest energy efficiency savings as a percent of sales have annual savings ranging from 1.1% to 2.6% of sales.¹²⁷

Furthermore, AB 2021 stated the Legislature’s 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.”¹²⁸ In order to reach the Legislature’s intended goal, the utilities would need to reach annual energy savings of 1% compared to retail electricity sales consistently for the next ten years. Figure 20 shows the average annual energy saving target as a percent of projected retail electricity sales. (see Appendix Tables A1 and A2 for more detail on the utilities with the highest and lowest targets as a percent of sales)

Figure 20: Average Annual Saving Targets as a Percent of Retail Electricity Sales



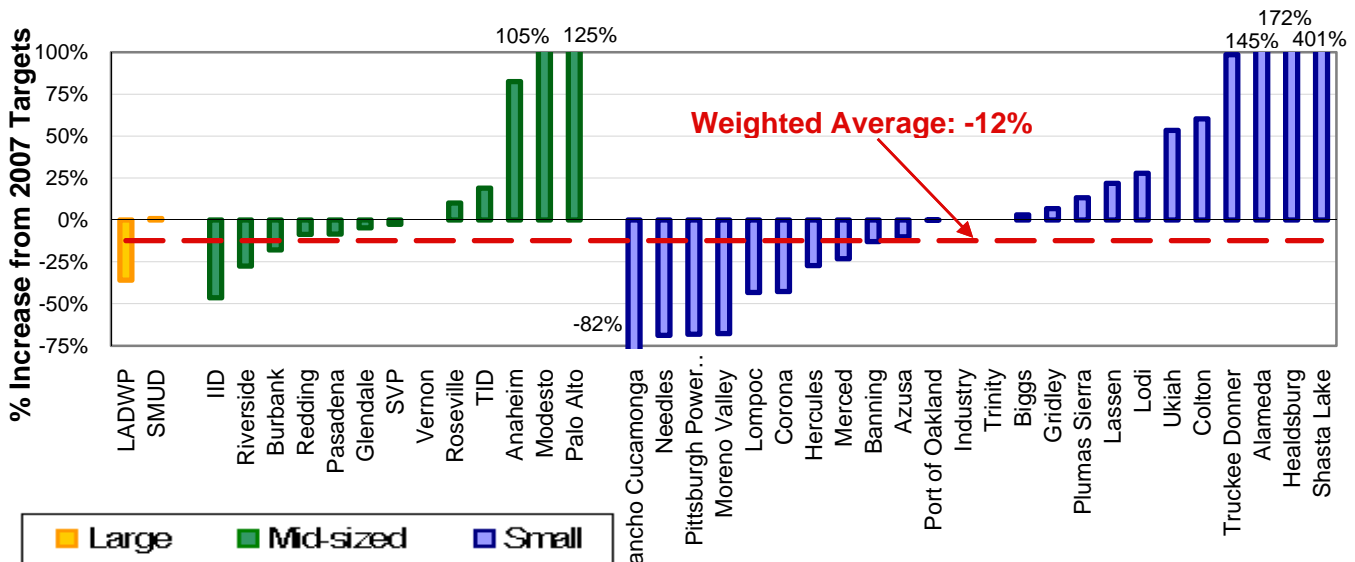
3. New Targets Are Lower Than the Targets Adopted in 2007

The third comparative metric analyzes the average annual energy efficiency targets set in 2010 compared to the previous targets set in 2007. This metric provides an indication of how much a utility is planning to “ramp up” or “ramp down” its energy efficiency efforts compared to its previous targets. While this metric is useful for highlighting those utilities that are planning to “most improve” (or reduce) their efforts, it does not illuminate, in an absolute sense, the most aggressive utility targets. In particular, a utility that already had aggressive targets may not need to significantly increase its savings and therefore would not rank highly using this metric. Conversely, a utility that had previously not been planning or investing in significant energy efficiency could rank high

using this metric with only modest absolute savings targets. Still, it is useful to see how the targets compare to the previously adopted targets on an aggregate and individual level.

The POU aggregate targets are 12% lower than previous targets set in 2007. However, when LADWP is excluded, the POUs in aggregate adopted a 3% *increase* in targets relative to their 2007 targets. Figure 21 below shows the percent change in average 2010 annual targets from the 2007 targets. On average, the Mid-sized and Small utilities increased their targets. However, half of the POUs *decreased* their targets as compared to 2007, without a rationale to support the reduction.¹²⁹ (see Appendix Tables A3 and A4 for more detail on the utilities with the highest and lowest targets relative to targets adopted in 2007)

Figure 21: Percent Change in 2010 Targets Relative to Targets Adopted in 2007



Sources: 2007 Targets and CEC AB 2021 Reports; 2010 Status Report

Note: Trinity set an annual average energy saving target of 0% of sales in 2007 and 0.01% of sales in 2010; Industry has never set a target; Vernon did not set a target in 2007, so no comparison is available.

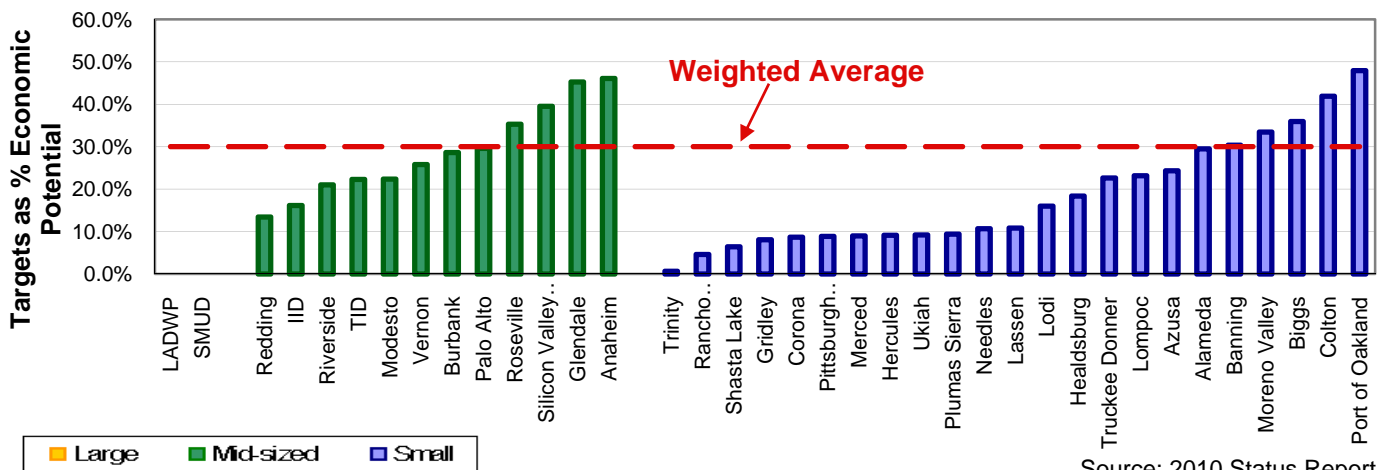
4. POUs Have Significant Untapped Cost-Effective Efficiency Available

The fourth metric, target as a percent of economic potential, is another means to assess how aggressive the POUs' targets are. The "economic potential" identifies the savings that are cost-effective; the target is intended to represent a subset of those savings that that are considered "reasonable and feasible." (Public Utilities Code Section 9615) Determining the amount of the economic potential that is feasible requires modeling based on a combination of program experience-to-date, potential measure penetration and market uptake rates, as well as expert judgment. While determining the achievable potential is a mixture of a science and an art, the 2010 Status Report does not provide a complete explanation of how the POUs determined what portion of the economic potential would be feasible to achieve.

Since LADWP and SMUD have not yet conducted potential studies, this analysis is restricted to the Mid-sized and Small POU. The economic potential estimates generated for the Mid and Small utilities from the 2010 Navigant potential study are considerably higher than the last potential estimates developed for the 2007 target setting process (the total ten-year economic potential for all of the Mid-sized and Small utilities from the 2007 potential studies was about 4,000 GWh whereas the 2010 potential study found 9,054 GWh).¹³⁰ The potential for cost-effective energy savings as a percent of electricity sales approaches a cumulative 30% by 2020 in the current potential study. These results show that there is significant remaining cost-effective energy efficiency available for POU. However, despite the significant cost-effective energy efficiency available, the POU set targets at approximately 30% of the economic potential, well below the norm for the ratio of market potential to economic potential in many studies.^{131,132}

As noted above, because the 2010 Status Report does not indicate which metrics were modified by the POU, it is hard to determine whether the targets are reasonable. Furthermore, there is significant variation among the POU, with one POU setting market potential at less than 1% of economic potential, while others reach nearly 50%. (see Figure 22)

Figure 22: Targets as a Percent of Economic Potential



Source: 2010 Status Report

Note: LADWP and SMUD did not submit a 2010 potential study and are therefore not included in this graph. Pasadena did not provide an economic potential and is therefore not included in this graph.

B. Assessment of the POU Target Setting Process

Since the enactment of AB 2021, most of the POU have now gone through at least two target setting processes. For the second process in 2010, Navigant created a model for use by 36 POU (most of the POU in the state except for LADWP, SMUD, Industry and Victorville), with the ability for each POU to modify assumptions based on their local jurisdiction.

Although the 2010 potential model incorporated a few of the recommendations made by NRDC following the 2007 target setting process, including use of the Total Resource Cost test (TRC) and avoided cost values in line with the most comparable investor-owned utility, assessing the 2010 potential model and the POU's process for setting targets reveals that many of the concerns raised with respect to the 2007 target setting process remain. The following concerns with the potential model assumptions and transparency of any modifications highlight the need for further improvements well in advance of the next target setting process.

First, the consultant tasked with producing the potential study did not have access to sufficiently up-to-date information regarding commercial buildings. The California Commercial End Use Survey (CEUS), which provides baseline building and equipment characteristics in the commercial sector, has not been updated since 2006, and some of its information is from even older studies.¹³³ Furthermore, the default assumptions used by the consultant for modeling could be changed by each POU. It is not clear in the Status Report whether all the POU's maintained the defaults provided by Navigant or modified parts or all of the various assumptions. POU responses to a data request by NRDC illuminated that a number of utilities modified various portions of the defaults, but these changes and associated rationales were not identified in the report or submitted to the CEC for review and public comment.¹³⁴ As stated in NRDC's assessment of the 2007 POU target setting process, there are certainly legitimate reasons for utilities to change default assumptions. However, such information should be submitted to the CEC for review to improve transparency and allow the CEC to sufficiently analyze the POU targets and provide recommendations if needed.¹³⁵

In most or all of the areas below, the model set reasonable default values. However, because the POU's were able to change very significant inputs (such as those listed below) but did not provide information as to what was changed or why, it is impossible to know how each POU's potential was ultimately determined.

- **Measure savings:** The measure savings used in the Navigant study are largely drawn from the most recent residential and commercial surveys available in California, along with additional surveys completed by Navigant in sample POU territories. Individual POU's could remove measures from the savings model, but they did not indicate whether they did so or not in the report. It is therefore unclear whether all targets are in fact based on the full range of cost-effective measures available or a modified version due to POU changes.
- **Adoption and Saturation rates:** The Navigant model set default adoption and saturation rates, but allowed each utility to shift these assumptions based on their specific utility territory data. While each utility may be able to provide valuable lessons on the probable adoption and saturation rates in their territory, no POU indicated whether or not they changed the rates or what information any changes were based on if changes were made. Furthermore, without better local information, POU's should base these assumptions on best practice of what is

achievable, not necessarily historical experience, budget limitations, or other factors which may unreasonably hinder the possibility for future improvement. Given the variety of potential curve shapes in the 2010 Status Report, it appears that a number of POU's did in fact modify the adoption and saturation rates.

- **Discount rate and Net-to-gross ratios:** Navigant used a reasonable default discount rate of 4.5% to calculate cost-effectiveness. As in 2007, POU's had the option of specifying a different discount rate. Furthermore, the 2010 potential study appeared to use net-to-gross ratios in line with the values the investor-owned utilities used to plan their 2006-08 portfolios (i.e., the 2005 DEER database). Again, it is uncertain if the POU's modified these assumptions.

Changes in inputs to the model may be appropriate when a POU has additional information on its customer base or energy consumption data within its service territory. However, no information was provided to the CEC as to if, when, or for what reason the model was adjusted by individual POU's. Knowing if, how, and why these assumptions were modified is critical to understand the potential study and to effectively analyze the targets. Without this information, it is not possible to determine whether or not the POU's used a robust potential study, which could undermine how reasonable and aggressive their energy saving targets are.

C. Recommendations to Improve the Target Setting Process

NRDC commends the POU's who worked with an expert consultant to build a model to establish energy efficiency targets. While we note that the 2010 potential study model incorporated a few of NRDC's previous recommendations, many of the shortcomings we identified in our review of the 2007 POU energy saving targets remain.

In advance of the CEC's adoption of energy efficiency targets for the state this year and in preparation for the next target setting process in 2013, NRDC offers the following suggestions to the POU's and the CEC to help achieve the state's goal of capturing all cost-effective energy savings. NRDC looks forward to continuing to work with the POU's and the CEC to ensure the POU's set robust and aggressive targets that save energy, cut pollution, and provide significant benefits to customers.

1. Many POU's Should Set Higher Targets

A number of POU's set targets that are too low to meet the state's objective to achieve all cost-effective energy efficiency and reduce greenhouse gas emissions. Without sufficient information on the POU's' potential model, benchmarking targets against national industry standards is one way to gauge the aggressiveness of the POU's' targets. As noted above, achieving annual energy savings of 1% of retail sales is the minimum to be considered aggressive by national standards. The 2010 Status Report also noted that the median energy savings as a percent of sales for the "best practice organizations" surveyed by the consultant outside California was 0.96% for commercial and industrial customers and 0.93% for residential customers.¹³⁶ Since many of the POU's' targets do not reach these aggressive levels and the target setting process is still not fully transparent, NRDC is concerned that many targets are too low. Of particular

concern are those POUs that significantly reduced their targets from 2007 without a rationale.

2. All POUs Should Set Targets, Including Demand Targets

The law clearly states “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.”¹³⁷ **LADWP, Industry, and Victorville have failed to establish targets in accordance with the law and no POU (except SMUD) adopted demand savings.**¹³⁸ These utilities should promptly set energy targets to reach all cost-effective energy efficiency savings, as required by AB 2021 and all utilities should set demand saving targets. The CEC should work to ensure LADWP’s compliance in particular, since it is the largest POU in the state.

3. The CEC Should Require POUs to Provide Additional Information and Rationales for Modified Assumptions

NRDC commends most POUs for working together to set targets based on a shared potential model. The model developed by Navigant had some improvements from the model used to set 2007 targets and these improvements should be maintained moving forward.

However, as noted above, there were a number of critical assumptions in the potential model that the utilities could modify. Any number of modifications to inputs could significantly alter the amount of energy savings calculated by the potential model. Therefore, it is critical that all POUs that changed Navigant’s default assumptions submit the actual input assumptions used and their rationale for modifying the model assumption. For example, information should be provided to the CEC for modifications to measure savings, adoption and saturation rates, discount rates, net-to-gross ratios, and any other changes made. This information is important for the CEC to know in advance of setting the statewide target, as these assumption modifications could significantly alter the amount of energy efficiency potential available in California.

In addition, NRDC recommends that the CEC request that each POU report an estimate of the total net economic benefits (calculated using the TRC framework) from meeting their targets. This information is important to understand the amount of direct benefits from energy efficiency (after accounting for the cost of the programs) that customers will receive.

The CEC should also continue to work with the POUs to ensure that the next target setting process is more transparent and that each utility sets targets that will capture all cost-effective energy efficiency savings.

4. The CEC Should Further Analyze POU Targets in Advance of Setting a Statewide Energy Saving Target

Pursuant to AB 2021, the CEC is required to analyze the POUs' targets to determine if "improvements can be made in 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 provide recommendations on those improvements to the POU, the Legislature and the Governor. (Public Utilities Code Section 9615(f)) The CEC is also required to adopt a statewide energy saving target. It is imperative that the CEC provide such an analysis to the utilities as soon as possible so they can incorporate modifications well in advance of the next target setting process and to ensure the utilities are capturing all cost-effective energy efficiency savings.

In particular, the CEC should evaluate a number of the utilities' targets to ensure that every utility sets targets that are sufficiently aggressive and comply with the state's "loading order" of resources. While NRDC recognizes that the relatively smaller utilities understandably have different challenges that may make it more difficult to capture energy efficiency, there is still energy saving potential in their territories that can reduce greenhouse gas emissions and save their customers money. Furthermore, while a number of these utilities may have legitimate reasons for their comparatively low energy saving targets, they have not presented sufficient information to fully determine the reasonableness of the targets or to develop solutions to any challenges that they face in capturing the available potential.

Therefore, NRDC recommends that the CEC work with these utilities to better understand the rationale behind their targets and to determine whether they meet the law's requirement to "identify all potentially achievable cost-effective" savings, to "acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible," (Public Utilities Code Section 9615). Furthermore, the CEC should help identify ways that the utilities can overcome barriers to capturing savings so the benefits that accrue from energy efficiency will reach their customers.

NRDC would welcome the opportunity to work with the POUs and the CEC to better understand the factors used to set the POU targets and to help fill in the information gaps identified above. We strongly urge the POUs and CEC to improve the target setting process so that all parties can be confident that the proposed targets comply with California law, reduce greenhouse gas emissions to meet the state's aggressive greenhouse gas emissions limit, and save customers money on their energy bills.

V. Conclusion

California's publicly owned utilities have made enormous strides over the past few years at helping their customers lower their energy bills and cut pollution through energy efficiency improvements. In just the five years since SB 1037 made efficiency the state's top priority resource, the POU's have increased reported energy savings over three-fold by more than doubling their annual investments. This significant progress puts California's POU's well on their way to becoming a national model for POU energy efficiency collaboration and success. Further progress over the next five years could cement the POU's leadership.

However, NRDC's analysis of the POU's energy saving targets for the next ten years shows that most utilities are not planning to achieve aggressive levels of savings according to national benchmarks. Furthermore, in light of uncertainty surrounding modifications to the POU's analysis of the remaining potential for cost-effective savings, many POU's may not meet the requirement to set targets to capture all energy efficiency savings that are "cost-effective, reliable, and feasible." More transparency in the target setting process is needed for the state to be certain that POU's are in fact following the "loading order" by appropriately planning for and investing in cost-effective energy efficiency before purchasing more costly supply-side electricity.

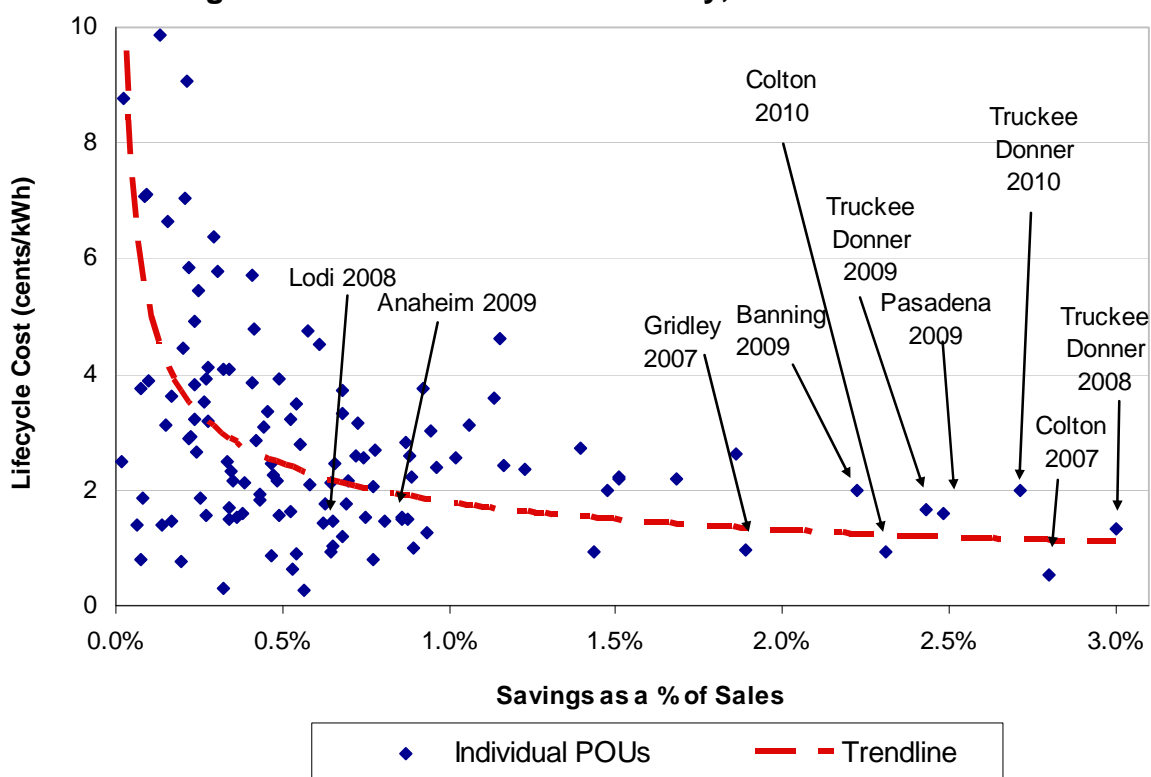
NRDC encourages the CEC, California Air Resources Board, and Legislature to work with the POU's and stakeholders to ensure that achieving all cost-effective energy efficiency is a high priority going forward. The reserves of untapped efficiency opportunities that are cheaper than generating power remain enormous. Continuing to expand efforts to capture those efficiency opportunities will provide billions of savings to POU customers over the next decade, and play a critical role in enabling California to meet its goals of reinvigorating the economy, providing healthier and cleaner air, and meeting the state's aggressive plan to reduce climate change pollution.

Appendix

A. Energy Efficiency Has Become Cheaper at Aggressive Levels of Savings

Data from the POU's five Status Reports on the cost of energy savings shows that efficiency got cheaper the more aggressive utilities became at capturing energy savings. Several factors could explain this correlation, including: (i) the existence of fixed program delivery costs, (ii) economies of scale associated with ramping up administrative infrastructure, and (iii) economies of scale associated with increasing delivery infrastructure.¹³⁹ Energy efficiency savings cost POU's on average 2.2 cents/kWh in 2010. However, there has been wide variation in the cost of each POU's portfolio of energy savings since 2006, ranging from less than 1 cent/kWh to over 10 cents/kWh. As Figure A1 illustrates, the more savings a utility achieved (relative to its own sales level), the cheaper efficiency became. Utilities of all sizes have achieved aggressive levels of savings at low cost; in fact, Small and Mid-sized POU's have achieved most of the cheap savings at aggressive levels (Figure A1).

Figure A1: Actual Cost of Efficiency, Individual POU's¹⁴⁰



Source: 2006-2011 Status Reports

B. Additional Savings and Investment Graphs By Individual Utility

Figure B1: 2010 Savings as a Percent of Sales¹⁴¹

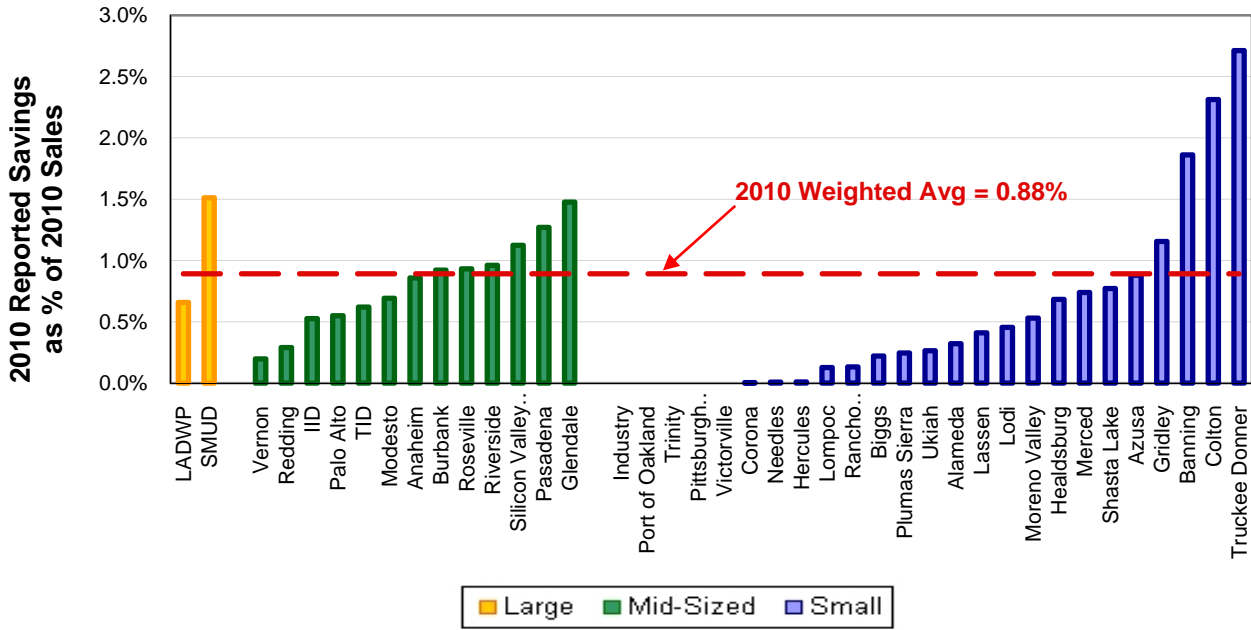
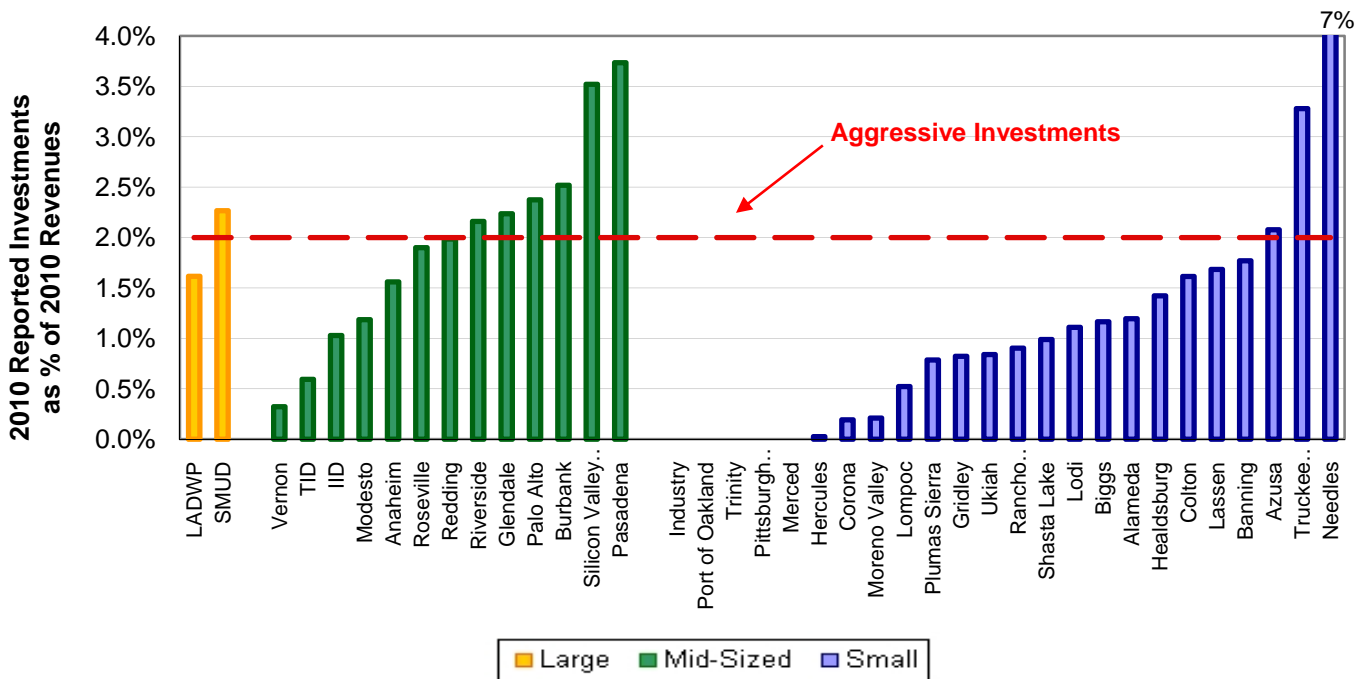


Figure B2: 2010 Investments as a Percent of Revenue¹⁴²



C. POU Target Rankings

Table A1: POU with Highest Target Savings as Percent of Sales

Utility	Average Annual Savings as a Percent of Sales
1. SMUD	1.50%
2. Pasadena	1.23%
3. Truckee Donner	1.13%
4. Anaheim	1.12%
5. Colton	1.05%
6. Glendale	1.00%
7. Azusa	0.89%
8. Tie: Burbank & Silicon Valley Power	0.77%
9. Riverside	0.76%
10. Palo Alto	0.75%

Table A2: POU with Lowest Target Savings as Percent of Sales

Utility	Average Annual Savings as a Percent of Sales
1. Trinity	0.01%
2. Rancho Cucamonga	0.12%
3. Biggs	0.21%
4. Gridley	0.24%
5. Pittsburgh Power	0.29%
6. Moreno Valley	0.30%
7. Shasta Lake	0.31%
8. Tie: Merced and Ukiah	0.33%
9. Needles	0.34%
10. Corona	0.35%

Table A3: POU's with Greatest Increase in Target Relative to 2007 Targets

Utility	Percent Change in Average Annual Target Savings from 2007 Targets
1. Shasta Lake	401%
2. Healdsburg	172%
3. Alameda	145%
4. Palo Alto	125%
5. Modesto	104%
6. Truckee Donner	99%
7. Anaheim	83%
8. Tie: Colton and Ukiah	60%
9. Lodi	27%
10. Lassen	22%

Table A4: POU's with Greatest Decrease in Target Relative to 2007 Targets

Utility	Percent Change in Average Annual Target Savings from 2007 Targets
1. Rancho Cucamonga	- 82%
2. Needles	- 69%
3. Tie: Pittsburgh Power & Moreno Valley	- 68%
4. IID	- 46%
5. Tie: Lompoc & Corona	- 43%
6. LADWP	- 36%
7. Tie: Riverside & Hercules	- 27%
8. Merced	- 23%
9. Burbank	- 18 %
10. Banning	- 13%

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- ¹ In 2009, the statewide total for retail deliveries was 264,794 GWh, of which POU's accounted for 62,570 GWh. See: California Energy Commission (CEC), *California Energy Demand 2010-2020 Adopted Forecast*, Form 1.1c (December 2009). [Hereinafter "California Energy Demand."] Available at: www.energy.ca.gov/2009publications/CEC-200-2009-012/CEC-200-2009-012-CMF.PDF.
- ² California POU's serve over 3 million customers: Energy Information Administration (EIA), Form 861, Annual Electric Power Industry Database. [Hereinafter "EIA Database."] Available at: <http://www.eia.doe.gov/cneaf/electricity/page/eia861.html>. CA POU's provide more than 62,000 GWh of electricity every year. Source: California Energy Demand. Colorado used 51,036 GWh in 2009. Source: EIA, State Energy Data System (SEDS), Data File: Consumption, Electricity Retail Sales Through 2009, ESTCP (April 21, 2011). Available at: <http://www.eia.gov/state/seds/>.
- ³ Senate Bill 1037, Ch. 366 (2005) authored by Senator Kehoe is available at: http://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_1001-1050/sb_1037_bill_20050929_chaptered.pdf.
- ⁴ Assembly Bill 2021, Ch. 734 (2006) authored by Assemblymember Levine is available at: http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_2001-2050/ab_2021_bill_20060929_chaptered.pdf.
- ⁵ California Municipal Utilities Association (CMUA), Northern California Power Agency (NCPA), Southern California Public Power Authority (SCPPA), *Energy Efficiency in California's Public Power Sector, A Status Report* (March 2011, March 2010, March 2009, March 2008, December 2006). [Hereinafter "Status Reports."] 2007 Target Source: CMUA issued its first status report on ten year energy efficiency targets in compliance with AB 2021 in 2007. CMUA, *Establishing Energy Efficiency Targets: A Public Power Response to AB 2021*, Final Update, p.26 (October 2007) (for most POU targets). CEC, *Achieving All Cost-Effective Energy Efficiency for California*, Final Staff Report, CEC-200-2007-019-SF, p.C-1 (December 2007) (for LADWP, SMUD, Palo Alto, and Redding targets). [Hereinafter "2007 Targets Report & CEC AB 2021 Reports."] All POU reports and the 2007 POU Target Report are available at: <http://www.ncpa.com/energy-efficiency-reports.html>.
- ⁶ The 2011 CMUA, NCPA, SCPPA, *Energy Efficiency in California's Public Power Sector, A Status Report* [Hereinafter "2011 Status Report."] does not provide Total Resource Cost (TRC) Total Benefits or TRC Total Costs. NRDC uses the Utility Cost provided in the Status Report as the nearest approximation to derive Total Benefits and aggregate TRC ratios. The Utility Cost is then subtracted from the Total Benefits to derive Net Benefits. *Note: the true TRC costs would be somewhat higher than the derived value included in this analysis as Utility Costs exclude customer costs. Similarly, the TRC benefits would also be somewhat higher as the Status Report does not account for avoided costs of transmission and distribution.* Given these counterbalancing factors, the estimate above is the most reasonable estimate available. In 2010, TRC Total Benefits equaled \$369,580,367 (based on Utility Costs of \$123,433,250), the aggregate TRC ratio is 2.99, and the Net Benefits are \$246,147,116. Source: 2011 Status Report.
- ⁷ POU savings in 2010 equaled 523 GWh versus 170 GWh in 2006. In addition, POU savings in 2009 represented a 60% increase over savings in 2008. Source: 2010-2011 Status Reports.
- ⁸ POU's saved 523 GWh in 2010. Source: 2011 Status Report. Yolo County residential sector consumed 517 GWh in 2009. Source: CEC, ECDMS Database, Electricity Consumption by Entity. [Hereinafter "ECDMS Database."] Available at: <http://ecdms.energy.ca.gov/elecbyutil.aspx>.
- ⁹ Since 2006, POU's saved 403 MW. Source: 2006-2011 Status Reports.
- ¹⁰ Koomey, J. et al. *Defining a Standard Metric for Electricity Savings*. IOP Science, Environmental Research Letters, March 9, 2010. Accessed at: http://iopscience.iop.org/1748-9326/5/1/014017/pdf/1748-9326_5_1_014017.pdf
- ¹¹ In 2010, the cumulative reported annual energy savings since 2006 reached 1,993 GWh, which is equivalent to 2,148 GWh adding on a 7.8% line loss factor that is not accounted for in the Status Reports. Savings data from: 2006-2011 Status Reports. Line loss factor from: CEC, *Proposed Method To Calculate the Amount of Renewable Generation Required To Comply with Policy Goals*, CEC-200-2011-001-SD, p.14 (March 2011). Available at: <http://www.energy.ca.gov/2011publications/CEC-200-2011-001/CEC-200-2011-001-SD.PDF>. With the additional savings associated with avoided line loss, 2010 energy efficiency programs cut emissions by 939,000 metric tons of CO₂. The avoided emission rate for electric savings is 4.37x10⁻⁷ MMTCO₂E/MWh, from the California Air Resources Board, *Climate Change Scoping Plan Appendices*, Vol 2: Analysis and Documentation, p I-23 (December 2008).

Available at: <http://www.arb.ca.gov/cc/scopingplan/document/appendix2.pdf>. 939,000 metric tons of CO₂ is equivalent to the emissions from 200,000 passenger cars driven for one year, using a conversion factor of 216,000 passenger cars driven for one year/MMTCO₂e. CARB, Conversion of 1MMTCO₂ to Familiar Equivalents, October 2007. Available at:

<http://www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf>.

- ¹² In 2010, the POU's spent \$123 million on efficiency programs, which will deliver over 5,586 GWh of lifecycle energy savings, yielding savings at a lifecycle cost of 2.21 cents/kWh. (The lifecycle cost of EE for POU's on average was 2.06 cents/kWh in 2007, 2.32 cents/kWh in 2008, 2.15 cents/kWh in 2009, and 2.2 cents/kWh in 2010.) Cost and lifecycle savings are from the 2011 Status Report, Table 4, p.18.
- ¹³ In 2010, electricity from a conventional combined cycle power plant cost approximately \$0.10/kWh. Source: CEC, *Comparative Costs of California Central Station Electricity Generation*, CEC-200-2009-07SF, p.3, (January 2010). Available at: www.energy.ca.gov/2009publications/CEC-200-2009-017/CEC-200-2009-017-SF.PDF.
- ¹⁴ CA POU investment information from 2011 Status Report. Texas invested \$122.2 million in energy efficiency programs in 2010: Consortium for Energy Efficiency, *The State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts*, Appendix A: State Tables (December 10, 2010). Available at: <http://www.cee1.org/ee-pe/2010AIR.php3>.
- ¹⁵ Average benefit-cost ratio, or Total Resource Cost (TRC) ratio, for 2010 programs was 2.99. Source: 2011 Status Report.
- ¹⁶ POU savings in aggregate were 0.88% of sales in 2010. Source: 2011 Status Report. For reference, 1% of sales is the industry-wide minimum standard for aggressive savings: See Martin Kushler, Dan York and Patti Witte, *Meeting Aggressive New State Goals for Utility Sector Energy Efficiency: Examining Key Factors Associated with High Savings*, ACEEE, p. 1 (March 2009). See also: American Council for an Energy Efficient Economy (ACEEE), *The 2009 State Energy Efficiency Scorecard*, Report Number E097, p. 11 (October 2009). ACEEE's Scorecard awards top tier status to those utilities that exceed 1% of sales. Additionally, the POU's own benchmark for best practices of POU's is approximately 1% of sales. See: 2010 Status Report, page 10 noting that the median energy savings as a percent of sales for the "best practice organizations" outside California was 0.96% for commercial and industrial customers and 0.93% for residential customers. Furthermore, states are increasingly adopting goals and achieving electric savings of 2% to 3% of sales per year or higher. For example, Efficiency Vermont reports that it achieved electric savings of 2.5% of sales in 2008 (Efficiency Vermont, *Annual Report 2008*, www.encyvermont.com/stella/filelib/2008_Efficiency_Vermont_Annual_Report.pdf, and personal communication with George Twigg, Efficiency Vermont, August 27, 2010), Massachusetts has a goal to save 2.4% of electric sales by 2012 ("Patrick-Murray Administration Announces Final Approval of Nation-Leading Energy Efficiency Plans," Press Release, January 29, 2010, www.mass.gov/?pageID=eoeaepressrelease&L=1&LO=Home&sid=Eoeea&b=pressrelease&f=100129_pr_nation_leading_ee&csid=Eoeea), Illinois law sets a target of 2% of electric sales per year beginning in 2015 (220 ILCS 5/8-103(b)), and Arizona utilities have a goal to reach 22% of annual electric sales from energy efficiency in 2020 ("Commission Gives Final Approval to Energy Efficiency Rules," Arizona Corporation Commission, July 27, 2010, www.azcc.gov/Divisions/Administration/news/100727Energy%20Efficiency.pdf). For further discussion of aggressive state energy efficiency targets, see Furrey, L.A., S. Nadel, and J.A. Laitner, *Laying the Foundation for Implementing a Federal Energy Efficiency Standard*, ACEEE Report E091, March 2009, www.aceee.org/research-report/e091. We note that California's building codes and appliance efficiency standards are more stringent than in the rest of the nation, which reduces the amount of savings that are counted above the baseline in California. Therefore utilities with aggressive levels of savings in California would currently report lower levels of savings than a utility with an identical portfolio in a state with weaker codes and standards.
- ¹⁷ In 2008, only five states had savings that exceeded 1% of sales: ACEEE, *The 2010 State Energy Efficiency Scorecard*, Report No. E107, p.15 (October 2010). Available at: <http://www.aceee.org/sector/state-policy/scorecard>.
- ¹⁸ For the purpose of this report, a utility is considered to increase savings if the average annual savings target over the 10-year period is greater than the average annual reported savings achieved in years 2009 and 2010. The data to determine this is from the 2010 and 2011 Status Reports. The 11 POU's

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- that reduced their targets on this basis include: Alameda, Banning, Biggs, Glendale, LADWP, Moreno Valley, Pasadena, Pittsburgh/Island, Roseville, SVP, Truckee Donner.
- ¹⁹ While the estimated annual savings in LADWP's Final IRP indicates that they will reach 1% of sales through 2015, they have not yet adopted targets and include projected annual savings of 0% of sales for the years 2017-2020. LADWP 2010 *Power Integrated Resource Plan – Final*, December 15, 2010 found at: <http://www.ladwp.com/ladwp/cms/ladwp014239.pdf> [Hereinafter "LADWP 2010 IRP"]
- ²⁰ Alameda: 2010 annual average target is 125% of the average 2007 adopted targets, Healdsburg: 172%, Modesto Irrigation District: 105%, Palo Alto: 125%, Shasta Lake:401%, and Truckee Donner: 99%
- ²¹ 2010 Status Report; SMUD Board Meeting Adopting 10-Year Targets (May 6, 2010); Available at: <http://www.smud.org/en/board/Documents/policy-pdfs/sd-9-aug10.pdf>. LADWP 2010 IRP, Appendix B, Table B-1: 'April 2009 Sales Forecast in GWh and Conservation Components,' p.B-5 (December 2010).
- ²² The POU's (except SMUD) did not adopt demand targets through 2020. Using the market potential as a proxy, all POU's reach 1082 MW cumulatively by 2020 (509 MW reported by the POU's included in the 2010 Status Report, 288 MW from SMUD, and 285 MW estimated for LADWP). Sources: 2010 Status Report; SMUD Board Meeting Adopting 10-Year Targets (May 6, 2010). Available at: <http://www.smud.org/en/board/Documents/policy-pdfs/sd-9-aug10.pdf>. Note: Without LADWP, the cumulative MW savings reach 688 MW. LADWP did not estimate MW savings for its 10-year targets. NRDC estimates 285 MW of savings from LADWP based on the 1,598 GWh cumulative energy saved by 2020 presented in LADWP's IRP multiplied by LADWP's ratio of energy to demand savings in 2010 (i.e., 301.7 GWh/53.76 MW = 0.18 GWh/MW).
- ²³ 2010 Status Report. The avoided emission rate for electric savings is 4.37×10^{-7} MMTCO₂e/MWh. Source: California Air Resources Board, *Climate Change Scoping Plan Appendices*, Vol 2: Analysis and Documentation, p I-23 (December 2008). Available at: <http://www.arb.ca.gov/cc/scopingplan/document/appendix2.pdf>. In addition, 216,000 passenger cars driven for one year produce 1 MMTCO₂e. Source: CARB, *Conversion of 1MMTCO₂ to Familiar Equivalents* (October 2007). Available at: <http://www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf>.
- ²⁴ \$2.634 billion in net benefits is estimated by assuming all future savings produce equivalent net benefits, per unit of energy saved, as was reported in 2010. \$246 million/523 GWh (as reported in 2010) multiplied by total energy savings in 2020 (5,601 GWh) yields \$2.634 billion. Source: 2010 & 2011 Status Reports.
- ²⁵ *2007 Targets Source*: 2007 Targets Report & CEC AB 2021 Reports. *2010 Target Source*: 2010 Status Report. Vernon did not set targets in 2007 and is therefore excluded from this metric. In LADWP's IRP, it did not project any savings beyond 2016, which brings down the total. Without LADWP, the POU's (in aggregate) increase their targets as compared to 2007 by 2.7%.
- ²⁶ POU's that decreased targets: Azusa, Banning, Burbank, Corona, Glendale, Hercules, Imperial Irrigation District, Lompoc, Merced, Moreno Valley, Needles, Pasadena, Pittsburgh Power, Rancho Cucamonga, Redding, Riverside, Silicon Valley Power. LADWP did not set targets, but their estimated energy savings in their 2010 IRP show a decrease as well. POU's that did not set targets in 2010: Industry, LADWP, and Victorville. Trinity and Vernon did not set targets in 2007, and are therefore excluded from this metric.
- ²⁷ LADWP's annual energy savings estimate in its 2010 Final IRP is greater than 1% of sales for the years 2011 through 2015, but then falls off steeply to 0.65% in 2016 followed by 0% for the years 2017-2020. LADWP 2010 IRP, Table B-1,p.B-5.
- ²⁸ The only POU currently achieving an average of 1% of sales per year or planning to reach 1% of annual sales, planning to increase savings, and achieving TRCs within the range of 1 to 3 is SMUD. In 2010, the following utilities reached 1% of sales: Banning, Colton, Glendale, Gridley, Pasadena, SMUD, SVP, and Truckee Donner. Over the next ten years, the following utilities plan to reach 1% of sales at some point: Anaheim, Azusa, Colton, Glendale, LADWP, Pasadena, SMUD, and Truckee-Donner. The following utilities plan to increase their savings relative to present performance (using an average of 2009 and 2010 savings as the benchmark): Anaheim, Azusa, Burbank, Colton, Corona, Gridley, Healdsburg, Hercules, Imperial Irrigation District, Lassen, Lodi, Lompoc, Merced, Modesto Irrigation District, Needles, Palo Alto, Plumas-Sierra, Port of Oakland, Rancho Cucamonga, Redding, Riverside, Roseville, SMUD, Shasta Lake, Turlock Irrigation District, Ukiah, and Vernon. In 2010, the following utilities had TRCs within the range of 1 to 3: Alameda, Azusa, Banning, Biggs, Burbank, Glendale,

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- Gridley, Healdsburg, Hercules, Imperial Irrigation District, Lassen, Lodi, Lompoc, Modesto Irrigation District, Palo Alto, Pasadena, Plumas Sierra, Redding, Roseville, SMUD, SVP, Turlock Irrigation District, and Ukiah.
- ²⁹ While the 2010 Status Report did report targets as a percent of sale, it did not include annual reported savings as a percent of electricity sales.
- ³⁰ LADWP, SMUD, Victorville, and Industry have also not conducted new energy savings potential studies.
- ³¹ Status Reports; 2007 Targets Report & CEC AB 2021 Reports.
- ³² While 40 POU's were included in the 2011 Status Report, three of those utilities (City of Industry, Port of Oakland, and Victorville) did not report energy efficiency information for 2010 and therefore are not included in the related metrics. The Port of Oakland did report for years 2006-2008 and therefore is reflected in the results. Data is not available for City of Industry and Victorville for previous years and are therefore not included in the related metrics.
- ³³ California Municipal Utilities Association (CMUA), Northern California Power Agency (NCPA), Southern California Public Power Authority (SCPPA), *Energy Efficiency in California's Public Power Sector, A Status Report*, March 2010. Accessed at: http://www.ncpa.com/images/stories/LegReg/2010%20SB1037%20Report_Final_03152010_.pdf
- ³⁴ SMUD's target data was provided by Che McFarlin of the California Energy Commission through an email communication on December 16, 2010.
- ³⁵ LADWP 2010 IRP.
- ³⁶ There are 43 California POU's, but only 40 POU's report data in CMUA's annual status reports submitted pursuant to SB 1037. The 40 reporting POU's are included in this analysis, while the three POU's that do not report (Port of Stockton, Cerritos, and City of San Francisco) are not included in this report.
- ³⁷ California POU's serve over 3 million customers: Energy Information Administration (EIA), Form 861, Annual Electric Power Industry Database. [Hereinafter "EIA Database."] Available at: <http://www.eia.doe.gov/cneaf/electricity/page/eia861.html>. CA POU's provide more than 62,000 GWh of electricity every year. Source: California Energy Demand. Colorado used 51,036 GWh in 2009. Source: EIA, State Energy Data System (SEDS), Data File: Consumption, Electricity Retail Sales Through 2009, ESTCP (April 21, 2011). Available at: <http://www.eia.gov/state/seds/>.
- ³⁸ California Energy Commission, *California Electric Utility Service Areas*. Available at: http://www.energy.ca.gov/maps/serviceareas/electric_service_areas.html. Surprise Valley, Shelter Cove, City & County of San Francisco, and Valley Electric Association are utilities represented in the map above but not covered in this report.
- ³⁹ CMUA: "About CMUA, Representation." Available at: <http://www.cmua.org/representation.html> (last visited July 17, 2011). CMUA membership information available at: <http://www.cmua.org/membership.html>. (last visited July 17, 2011)
- ⁴⁰ The 14 NCPA member POU's that report for the annual CMUA energy efficiency status report (omitting Port of Oakland) served 383,863 customers in 2008. EIA Database.
- ⁴¹ SCPPA membership available at: <http://www.scppa.org/pages/members/members.html> (last visited July 17, 2011).
- ⁴² SCPPA members served 2,069,839 customers in 2008. EIA Database. City of Cerritos did not report to EIA, but data from: SCPPA "About Us," City of Cerritos, Statistics. Available at: <http://www.scppa.org/pages/members/cerritos.html> (last visited July 17, 2011).
- ⁴³ In 2009, LADWP sold 23,754 GWh and SMUD sold 10,595 GWh. ECDMS Database.
- ⁴⁴ In 2008, LADWP served more customers than any other POU (nearly 1.5 million customers), and sold more electricity than any other municipal utility. EIA Database.
- ⁴⁵ In 2009, SDG&E sold 20,107 GWh of electricity and LADWP sold 23,754 GWh. ECDMS Database.
- ⁴⁶ In 2008, SMUD served nearly 600,000 customers, more than all but five other POU's. EIA Database.
- ⁴⁷ In 2009, LADWP and SMUD delivered a combined 34,349 GWh. The statewide total for retail deliveries was 253,214 GWh, and the POU total for retail deliveries was 61,633 GWh. California Energy Demand.
- ⁴⁸ The Mid-sized POU's delivered 23,882 GWh of electricity in 2009. ECDMS Database.
- ⁴⁹ The Small POU's delivered 3,403 GWh of electricity in 2009. ECDMS Database.

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- ⁵⁰ Since the focus of this paper is on California's public power sector, only the sections of these bills that have direct implications for the publicly owned utilities are summarized here. However, SB 1037, AB 2021, AB 1890, AB 995, and AB 32 also contain provisions that apply to the IOUs.
- ⁵¹ AB 1890, Ch. 1051 (1996). Available at: http://www.leginfo.ca.gov/pub/95-96/bill/asm/ab_1851-1900/ab_1890_bill_960924_chaptered.pdf.
- ⁵² AB 995, Ch. 854 (1996). Available at: http://www.leginfo.ca.gov/pub/99-00/bill/asm/ab_0951-1000/ab_995_bill_20000930_chaptered.pdf.
- ⁵³ SB 1037, Ch. 366 (2005). Available at: http://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_1001-1050/sb_1037_bill_20050929_chaptered.pdf
- ⁵⁴ Cal. Pub. Utilities Code §§ 454.5(b)(9)(C), 9615(a). Available at: <http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc&codebody=&hits=20>.
- ⁵⁵ The 2003 California Energy Action Plan (EAP), created by the California Energy Commission, the California Public Utilities Commission, and the California Power Authority, set out the state's loading order to pursue energy needs through (1) energy efficiency and demand response, (2) clean distributed generation and renewable energy, and (3) clean and efficient fossil-fired generation. Available at: http://www.energy.ca.gov/energy_action_plan/index.html.
- ⁵⁶ Cal. Pub. Utilities Code § 9615(d)(2).
- ⁵⁷ 2006, 2008, 2009, 2010, and 2011 Status Reports have been filed with the CEC.
- ⁵⁸ AB 2021, Ch. 734 (2006). Available at: http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_2001-2050/ab_2021_bill_20060929_chaptered.pdf
- ⁵⁹ AB 2021 § 1(a).
- ⁶⁰ Cal. Health & Safety Code § 38500 et seq.
- ⁶¹ See CARB, "[Climate Change Scoping Plan: a Framework for Change](#)" [Hereinafter "Scoping Plan"] (Dec. 2008).
- ⁶² CARB Scoping Plan at pp.41-44.
- ⁶³ See CARB, "Proposed Regulation to Implement the California Cap-and-Trade Program," [Proposed Regulation Order](#) (Appendix A), § 95892.
- ⁶⁴ CARB, "Proposed Regulation to Implement the California Cap-and-Trade Program." § 95892(d)(3).
- ⁶⁵ Savings are first-year annual net savings. 2011 Status Report, Appendix A: Description of Utility Programs. The categories noted as "Comprehensive" and "Other" in the 2011 Status Report do not have a clear definition and are often used differently by different POUs. "Comprehensive" includes some POU programs aimed at whole-house retrofits or new construction, but also includes miscellaneous savings.
- ⁶⁶ 2011 Status Report, Appendix A: Description of Utility Programs.
- ⁶⁷ In 2010, electricity from a conventional combined cycle plant cost approximately \$0.10/kWh. CEC, *Comparative Costs of California Central Station Electricity Generation*, CEC-200-2009-07SF, p.3, (January 2010). Available at: www.energy.ca.gov/2009publications/CEC-200-2009-017/CEC-200-2009-017-SF.PDF.
- ⁶⁸ In 2010, the POUs spent \$123 million on efficiency programs, which will deliver over 5,586 GWh of lifecycle energy savings, yielding savings at a lifecycle cost of 2.21 cents/kWh. (The lifecycle cost of EE for POUs on average was 2.06 cents/kWh in 2007, 2.32 cents/kWh in 2008, 2.15 cents/kWh in 2009, and 2.2 cents/kWh in 2010.) Cost and lifecycle savings are from the 2011 Status Report, Table 4, p.18.
- ⁶⁹ The more aggressive a utility's programs were, measuring savings as a percent of sales, the cheaper energy efficiency became. See Appendix Figure A1 that demonstrates cost decreases as savings increase. See also LBNL, Goldman et al., *The Shifting Landscape of Ratepayer-Funded Energy Efficiency in the U.S.*, A13 Cost of Savings Assumptions, p. 30 (October 2009) ("The rationale for this cost function is to reflect the fact that, based on our review of energy efficiency program experience, utility costs to acquire savings (on a dollar-per-MWh basis) can be somewhat higher when portfolio savings levels are low (i.e., annual savings <0.5% of retail sales), due to the effect of fixed program delivery costs and because the utility is implementing pilot programs or is ramping up the administrative and delivery infrastructure.") Available at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-2258e.pdf>.
- ⁷⁰ *Id.*
- ⁷¹ The Status Report does not provide TRC Total Benefits or TRC Total Costs. NRDC uses the Utility Cost provided in the Status Report as the nearest approximation to derive Total Benefits and aggregate TRC ratios. The Utility Cost is then subtracted from the Total Benefits to derive Net Benefits. *Note: the*

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- true TRC costs would be somewhat higher than the derived value included in this analysis as Utility Costs exclude customer costs. Similarly, the TRC Benefits would be somewhat higher as the Status Report does not account for avoided costs of transmission and distribution. In 2010, TRC Total Benefits equaled \$369,580,367 (based on Utility Costs of \$123,433,250), the aggregate TRC ratio was 2.99, and the Net Benefits equaled \$246,147,116. Source: 2011 Status Report.
- ⁷² 2009 TRC Total Benefits equaled \$516,935,217 (based on Utility Costs of \$146,093,107), the aggregate TRC ratio was 3.5, and the Net Benefits equaled \$370,842,110. Source: 2010 and 2011 Status Reports.
- ⁷³ Imperial Irrigation District, Merced Irrigation District, Modesto Irrigation District, Plumas-Sierra, SMUD, Turlock Irrigation District, and Truckee Donner operate on a fiscal year that extends on a calendar year basis. All other utilities' data is on a fiscal year basis. 2010 data is from FY09/10 as noted in 2011 Status Report, Table 7, p.20. NRDC used the same convention for the other reported years.
- ⁷⁴ TRC is a ratio of TRC Total Benefits/TRC Total Cost. *Supra note 71*.
- ⁷⁵ In 2009, Yolo county consumed 517 GWh of electricity in the residential sector. ECDMS Database.
- ⁷⁶ In 2010, POUs met 82% of their cumulative target since 2007, achieving 1,823 GWh out of 2,229 GWh. Source: 2007-2011 Status Reports.
- ⁷⁷ Cumulative MW saved from first-year annual savings since 2006 total 403.2 MW. 2007-2011 Status Reports.
- ⁷⁸ In 2010, the cumulative reported annual energy savings since 2006 reached 1,993 GWh, which is equivalent to 2,148 GWh adding on a 7.8% line loss factor that is not accounted for in the Status Reports. Savings data from: 2006-2011 Status Reports. Line loss factor from: CEC, *Proposed Method To Calculate the Amount of Renewable Generation Required To Comply with Policy Goals*, CEC-200-2011-001-SD, p.14 (March 2011). Available at: <http://www.energy.ca.gov/2011publications/CEC-200-2011-001/CEC-200-2011-001-SD.PDF>. With the additional savings associated with avoided line loss, 2010 energy efficiency programs cuts emissions by 939,000 metric tons of CO₂. The avoided emission rate for electric savings is 4.37×10^{-7} MMTCO₂E/MWh, from the California Air Resources Board, *Climate Change Scoping Plan Appendices*, Vol 2: Analysis and Documentation, p I-23 (December 2008). Available at: <http://www.arb.ca.gov/cc/scopingplan/document/appendix2.pdf>. 939,000 metric tons of CO₂ is equivalent to the emissions from 200,000 passenger cars driven for one year, using a conversion factor of 216,000 passenger cars driven for one year/MMTCO₂e. CARB, Conversion of 1MMTCO₂ to Familiar Equivalents, October 2007. Available at: <http://www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf>.
- ⁷⁹ The POUs reported various possible reasons for lower POU projected savings in their 2010 Status Report. These reasons are due to the fact that the POUs project (1) a worse economy, (2) lower consumer disposable income, (3) reduced usage rates, and (4) increased saturation rates, as well as other factors.
- ⁸⁰ The number of POUs does not total 40 because 3 utilities did not report: City of Industry, Port of Oakland, and Victorville.
- ⁸¹ Year-over-year metrics do not account for the fact that some utilities performed very well in 2008, thus affecting their yearly change. For cumulative impacts of utility savings see Figure 7.
- ⁸² *Supra note 16*
- ⁸³ See Appendix Figure B1: Savings as a Percent of Sales by Individual Utility.
- ⁸⁴ Savings data are from: 2006-2011 Status Reports. Sales data for 2006-2008 are from the ECDMS Database. Sales for 2009-2010 are from Quarterly Fuels and Energy Report (QFER) data, in email correspondence with Andrea Gough on March 25, 2010 and July 27, 2011 in response to an NRDC data request.
- ⁸⁵ *Id.*
- ⁸⁶ See Section III.D for a further discussion of the importance of independent evaluation, measurement, and verification (EM&V).
- ⁸⁷ The data used to develop this graph was based on the most up-to-date information at the time of finalizing this report. "CPUC Staff's Most Discounted Estimate, Not Commission-Adopted" is Energy Division's Final Evaluation Report: CPUC, Energy Division, 2006-2008 Energy Division Scenario Analysis Report, Scenario 7 - Evaluated Net Savings (with interactive effects) (July 9, 2010) (excluding codes and standards and low-income efficiency savings). "IOU Reported Estimates" from: PG&E, SCE, & SDG&E, 2008 & 2009 Annual Report, EEGA, Table 1 (May 1, 2009 & June 30, 2010). IOU sales data

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- for 2006-2009 are from ECDMS Database and include service area sales to bundled and direct access customers, since direct access customers are eligible to participate in the EE programs. Using change in 2009-2010 sales from: EIA, Form EIA-826, Monthly Electric Utility Sales and Revenue Data (2010), we projected 2010 sales based on CEC ECDMS 2009 sales. *Note: 2010 IOU data is not included as it is only reported as gross savings, while all other data is net.*
- ⁸⁸ 2007 Targets Report & CEC AB 2021 Reports. Savings data from 2011 Status Report.
- ⁸⁹ 2010 Savings-as-a-percent-of-2007 targets without LADWP is 91% vs. 74%. 17 POU's nearly met or exceeded their targets, 18 failed to meet their targets, and 5 did not report either savings or targets. Targets data are from: 2007 Targets Report & CEC AB 2021 Reports. Savings data are from: 2011 Status Report.
- ⁹⁰ Cumulative targets from 2007-2010 are 2,229 GWh and POU's have reported a cumulative 1,823 GWh of savings, or 82% of their cumulative target.
- ⁹¹ 2006-2011 Status Reports; 2007 Targets Report & CEC AB 2021 Reports.
- ⁹² Texas invested \$122.2 million in energy efficiency programs in 2010; Colorado invested \$96.4 million; and Arizona \$98.3 million. Consortium for Energy Efficiency, *The State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts*, Appendix A: State Tables (December 10, 2010). Accessed at: <http://www.cee1.org/ee-pe/2010AIR.php3>.
- ⁹³ Investments equal to or greater than 2% of revenues are considered aggressive. ACEEE, *The 2009 State Energy Efficiency Scorecard*, Report Number E097, p. 9 (October 2009) (awarding top tier status to those utilities that exceed 2% of revenues).
- ⁹⁴ In aggregate, POU's invested 1.81% of revenues. 2006-2011 Status Reports. 2010 revenue based on reported data, which accounts for only the utilities that reported revenue information. (Therefore this data excludes Merced, Victorville, Industry, Pittsburgh Power, and Trinity). Investments from those utilities have also been omitted for this metric only. Revenue data are from: 2006-2009 EIA, 861 Annual Electric Power Industry Report, File 2. 2009 and 2010 revenue supplemented with data provided by Andrea Gough (CEC) in email correspondence of March 25, 2010.
- ⁹⁵ Measuring utility investments against their own revenues from the previous year normalizes variations in customer size, sales, and even climate zones.
- ⁹⁶ 2006-2011 Status Reports; EIA, 861 Annual Electric Power Industry Report, File 2.
- ⁹⁷ 2010-2011 Status Reports.
- ⁹⁸ Since 2006, over 80% of the time that a utility increased its annual investments, it increased its savings. Further, over 84% of the time that a utility increased its annual savings, it increased its investments. These findings reveal that increased investments are generally necessary to achieve higher energy savings. 2006-2011 Status Reports.
- ⁹⁹ These are correlations for POU's in aggregate. Individual POU circumstances may vary.
- ¹⁰⁰ "Each [POU] shall also annually develop and submit...a report containing...[t]he results of an independent evaluation that measures and verifies the energy efficiency savings...achieved by its energy efficiency...programs." Cal. Pub. Utilities Code § 9615(e)(3).
- ¹⁰¹ 23 POU's have completed at least one EM&V study as noted on the NCPA website. Not all of these studies have necessarily been filed with the CEC: Alameda, Biggs, Burbank, Gridley, Healdsburg, LADWP, Lassen, Lodi, Lompoc, Merced, Modesto Irrigation District, Palo Alto, Pasadena, Plumas Sierra, Port of Oakland, Redding, Riverside, Roseville, Shasta Lake, Silicon Valley Power, SMUD, Turlock Irrigation District, and Truckee Donner. Available at: <http://www.ncpa.com/energy-efficiency-m-y-reports-2.html>.
- ¹⁰² The following 6 Mid-sized POU's: Anaheim, Glendale, Pasadena, Riverside, Vernon, Imperial Irrigation District, and the following 14 Small POU's: Azusa, Banning, Colton, Corona, Hercules, Industry, Merced Irrigation District, Moreno Valley, Needles, Pittsburgh/Island, Rancho Cucamonga, Trinity, Ukiah, and Victorville do not have either an EM&V plan or a EM&V report posted on the NCPA evaluation website.
- ¹⁰³ The only POU currently achieving an average of 1% of sales per year or planning to reach 1% of annual sales, planning to increase savings, and achieving TRCs within the range of 1 to 3 is SMUD. In 2010, the following utilities reached 1% of sales: Banning, Colton, Glendale, Gridley, Pasadena, SMUD, SVP, and Truckee Donner. Over the next ten years, the following utilities plan to reach 1% of sales at some point: Anaheim, Azusa, Colton, Glendale, LADWP, Pasadena, SMUD, and Truckee-Donner. The following utilities plan to increase their savings relative to present performance (using an average of 2009 and 2010 savings as the benchmark): Anaheim, Azusa, Burbank, Colton, Corona, Gridley,

Healdsburg, Hercules, Imperial Irrigation District, Lassen, Lodi, Lompoc, Merced, Modesto Irrigation District, Needles, Palo Alto, Plumas-Sierra, Port of Oakland, Rancho Cucamonga, Redding, Riverside, Roseville, SMUD, Shasta Lake, Turlock Irrigation District, Ukiah, and Vernon. In 2010, the following utilities had TRCs within the range of 1 to 3: Alameda, Azusa, Banning, Biggs, Burbank, Glendale, Gridley, Healdsburg, Hercules, Imperial Irrigation District, Lassen, Lodi, Lompoc, Modesto Irrigation District, Palo Alto, Pasadena, Plumas Sierra, Redding, Roseville, SMUD, SVP, Turlock Irrigation District, and Ukiah.

¹⁰⁴ NRDC previously recommended independent and comprehensive EM&V for POU: “Every POU should have EM&V plans and results.” NRDC Letter to CMUA Re: 2009 Status Report, p.4 (June 30, 2009) [Hereinafter “NRDC 2009 Letter”]; “Consistent, robust, and independent evaluation is critical to ensure that energy efficiency can be depended upon as a resource.” NRDC Letter to CMUA Re: 2008 Status Report, p.2 (June 18, 2008) [Hereinafter “NRDC 2008 Letter”].

¹⁰⁵ Messenger, M. et al, *Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs*, Lawrence Berkeley National Laboratory, LBNL-3277E, April 2010, Table 8.

¹⁰⁶ Cal. Pub. Utilities Code § 9615(b).

¹⁰⁷ “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” Cal. Pub. Utilities Cod § 9615(a).

¹⁰⁸ Customers save money *directly* through efficiency programs that reduce the amount of energy they use at their home or business, as well as *indirectly* through avoiding the cost of purchasing the more expensive and dirtier conventional energy resources.

¹⁰⁹ Only a few POU report the source of funding for their efficiency investments in their annual status reports. Alameda, Anaheim, and Modesto Irrigation District reported efficiency funding that came from procurement funds. Palo Alto, Truckee-Donner, Roseville, and Pasadena spent more than the minimum required by the PGC, but did not report specific amounts of procurement funds used. 2011 Status Report, Appendix A: Description of Utility Programs.

¹¹⁰ NRDC previously recommended that efficiency be treated as a procurement resource and offered suggestions for determining whether or not each POU was truly integrating efficiency into their procurement planning. NRDC Letter 2008, p. 2 and NRDC Letter 2009, p. 4.

¹¹¹ It should be noted that IOUs invest significantly more than the minimum required by the PGC. SCE will spend four times as much as the PGC requires from 2010-2012; PG&E will spend over twice; and SDG&E almost twice. IOU 2010-2012 Compliance Filings, A.08-07-021 et al, November 23, 2009 (PG&E Advice Letter 3065-G and 3562-G, SCE Advice Letter 2410-E, SDG&E Advice Letter 2127-E/1903-G, SoCal Gas Advice Letter 4041).

¹¹² California Energy Commission, 2008, *2008 Integrated Energy Policy Report Update*, CEC-100-2008-008-CMF, p.48.

¹¹³ Cal. Pub. Utilities Code § 9615(e)(1).

¹¹⁴ 2011 Status Report.

¹¹⁵ Of our previous recommendations, POU have incorporated reporting savings compared to AB 2021 targets, and partially incorporated investment as a percent of revenue (2009 revenue provided as 2007 revenue projected out 2 years). However, POU have not reported total net benefits, savings as a percent of sales (kWh), or the levelized cost per kWh. NRDC 2007 Letter Re: Energy Efficiency in California’s Public Power Sector, p.2 (February 6, 2007); NRDC 2008 Letter, p.3.

¹¹⁶ In the 2006-2011 Status Reports, savings as a percent of sales (kWh) were not provided for reported energy savings.

¹¹⁷ 2011 Status Report, Table 10: Efficacy of Public Power Efficiency Programs, p.23.

¹¹⁸ 2010 Status Report; SMUD Board Meeting Adopting 10-Year Targets (May 6, 2010); Available at: <http://www.smud.org/en/board/Documents/policy-pdfs/sd-9-aug10.pdf>. Table B-0-1: 2009 Sales Forecast in GWh and Conservation Components, p.B-4 (November 2010); LADWP 2010 IRP.

¹¹⁹ 2010 Status Report. The avoided emission rate for electric savings is 4.37×10^{-7} MMTCO₂e/MWh. Source: California Air Resources Board, *Climate Change Scoping Plan Appendices*, Vol 2: Analysis and Documentation, p I-23 (December 2008). Available at: <http://www.arb.ca.gov/cc/scopingplan/document/appendix2.pdf>. In addition, 216,000 passenger cars driven for one year produce 1 MMTCO₂e. Source: CARB, *Conversion of 1MMTCO₂ to Familiar Equivalents* (October 2007). Available at: <http://www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf>.

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- ¹²⁰ \$2.634 billion in net benefits is estimated by assuming all future savings produce equivalent net benefits per unit of energy saved, as was reported in 2010. \$246 million/523 GWh (as reported in 2010) multiplied by total energy savings in 2020 (5,601 GWh) yields \$2.634 billion. Source: 2010 & 2011 Status Reports.
- ¹²¹ Alameda: 2010 annual average target is 125% of the average 2007 targets, Healdsburg: 172%, Modesto Irrigation District: 105%, Palo Alto: 125%, Shasta Lake: 401%, and Truckee Donner: 99%
- ¹²² POU's that decreased targets: Azusa, Banning, Burbank, Corona, Glendale, Hercules, Imperial Irrigation District, Lompoc, Merced, Moreno Valley, Needles, Pasadena, Pittsburgh Power, Rancho Cucamonga, Redding, Riverside, Silicon Valley Power. POU's that did not set targets in 2010: Industry, LADWP, and Victorville. Trinity and Vernon did not set a 2007 target and therefore are not included in this metric.
- ¹²³ LADWP's IRP annual energy savings projection is greater than 1% of sales for the years 2011 through 2015, but then falls off steeply to 0.65% in 2016 followed by 0% for the years 2017-2020. LADWP 2010 IRP, Table B-1, p.B-5.
- ¹²⁴ The 2009-2010 two-year average energy savings is 6,370 GWh and the 2011-20 year annual average is 5600 GWh. 2009, 2010, and 2011 Status Reports. Without LADWP, the POU's aggregate annual average energy saving targets through 2020 is 17% *higher* than the average reported savings from 2009-2010. Without LADWP, the 2009-2010 two-year average energy savings is 3,430 GWh and the 2011-20 year annual average is 4004 GWh.
- ¹²⁵ Only utilities that exceeded 1.14% of sales received top tier status in last year's ACEEE Scorecard. ACEEE, *The 2010 State Energy Efficiency Scorecard*, Report No. E107, p.15 (October 2010). See Martin Kushler, Dan York and Patti Witte, *Meeting Aggressive New State Goals for Utility Sector Energy Efficiency: Examining Key Factors Associated with High Savings*, ACEEE, p.1 (March 2009). Additionally, the POU's own benchmark for best practices of POU's is approximately 1% of sales. The 2010 Status Report indicates on page 10 that the median energy savings as a percent of sales for the "best practice organizations" outside California was 0.96% for commercial and industrial customers and 0.93 % for residential customers.
- ¹²⁶ Weighted averages are calculated by taking the total energy savings for the 10-year period, and dividing by total sales for the same time frame. E.g., the combined Large POU's set a target of 3,397 GWh. Therefore 3,397 GWh total savings/364,964 GWh total sales for those utilities = 0.93% sales.
- ¹²⁷ ACEEE, *The 2010 State Energy Efficiency Scorecard*, Report No. E107, p.15 (October 2010).
- ¹²⁸ AB 2021 (2006) Sec. 1 (a)
- ¹²⁹ 17 POU's increased and 18 POU's decreased savings targets.
- ¹³⁰ Compiled economic potential from RMI potential study, LADWP and SMUD in 2007 resulted in 10,892 GWh by 2016. Economic potential from 2011 to 2020 resulted in 83,349 GWh: 2010 Status Report.
- ¹³¹ Regulatory Assistance Project. *Integrating the Impact of Energy Efficiency Policy and Programs Into Utility Resource Planning*, August 24, 2010, p.76
- ¹³² NRDC. "Analysis of California's Publicly Owned Utilities' Ten-Year Energy Efficiency Targets," January 9, 2008. p.13
- ¹³³ Personal communications with Gary Cullen of Navigant, February 2011.
- ¹³⁴ Communication with Scott Tomashofsky of NCPA summarizing changes made by POU's that responded to NRDC's data request. April 23, 2010. It remains uncertain if additional POU's also modified default assumptions, but did not respond to the data request.
- ¹³⁵ NRDC. "Analysis of California's Publicly Owned Utilities' Ten-Year Energy Efficiency Targets," January 9, 2008. p.11
- ¹³⁶ 2010 Status Report, p.10.
- ¹³⁷ California Public Utilities Code 9615 (b)
- ¹³⁸ SMUD set targets, but did not complete an updated potential study.
- ¹³⁹ See LBNL, Goldman et al., *The Shifting Landscape of Ratepayer-Funded Energy Efficiency in the U.S.*, A13 Cost of Savings Assumptions, p. 30 (October 2009) ("The rationale for this cost function is to reflect the fact that, based on our review of energy efficiency program experience, utility costs to acquire savings (on a dollar-per-MWh basis) can be somewhat higher when portfolio savings levels are low (i.e., annual savings <0.5% of retail sales), due to the effect of fixed program delivery costs and because the utility is implementing pilot programs or is ramping up the administrative and delivery infrastructure.") Available at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-2258e.pdf>

¹⁴⁰ Lifecycle cost data: 2007-2011 Status Reports. Graph is zoomed in to show curve, omitting 11 data points that are above 10 cents/kWh (all of which are 0.2% of sales or less) and omitting data points less than 0.01% (average price was 17.4 cents) in order to draw power trend line.

¹⁴¹ 2011 Status Report and ECDMS Database.

¹⁴² 2006-2011 Status Reports. 2010 revenue based on reported data, which accounts for all utilities that reported revenue, which excludes Burbank, Merced, Victorville, City of Industry, Pittsburgh Power, Palo Alto and Trinity. Investments from those utilities have been omitted also, for this metric. Revenue data are from: 2006-2009 EIA, 861 Annual Electric Power Industry Report, File 2. 2009 and 2010 revenue supplemented with data provided by Andrea Gough (CEC) in email correspondence of March 25, 2010.