Staff Workshop on Publicly Owned Utilities' Energy Efficiency Progress and 2010Targets

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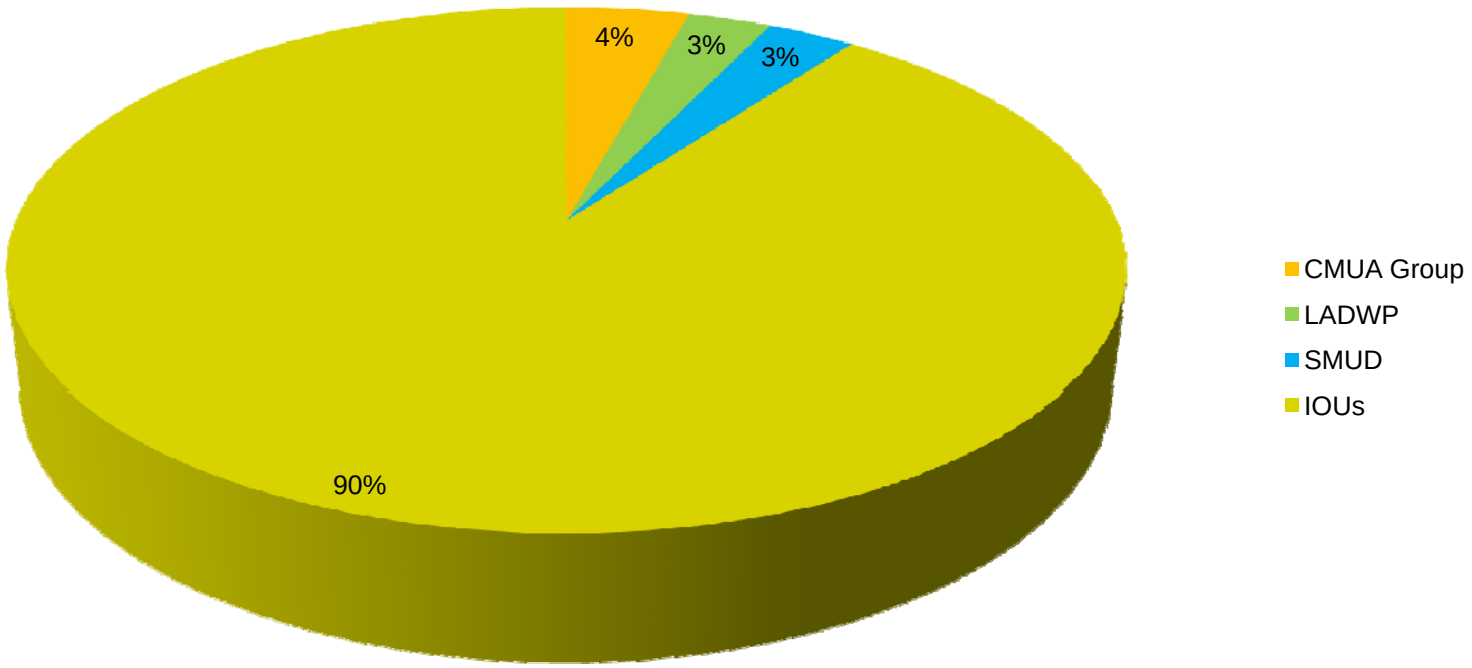
Kae C. Lewis
Demand Analysis Office
Electricity Supply Analysis Division
Klewis@energy.state.ca.us / 916-654-4176

Today's Agenda

- Introduction
  - Purpose
  - Background
- Presentations
  - Staff and Consultant Reports
  - POU Staff
  - NRDC
  - KEMA
- Other Comments
- Adjourn

2010 Statewide Annual Energy Savings

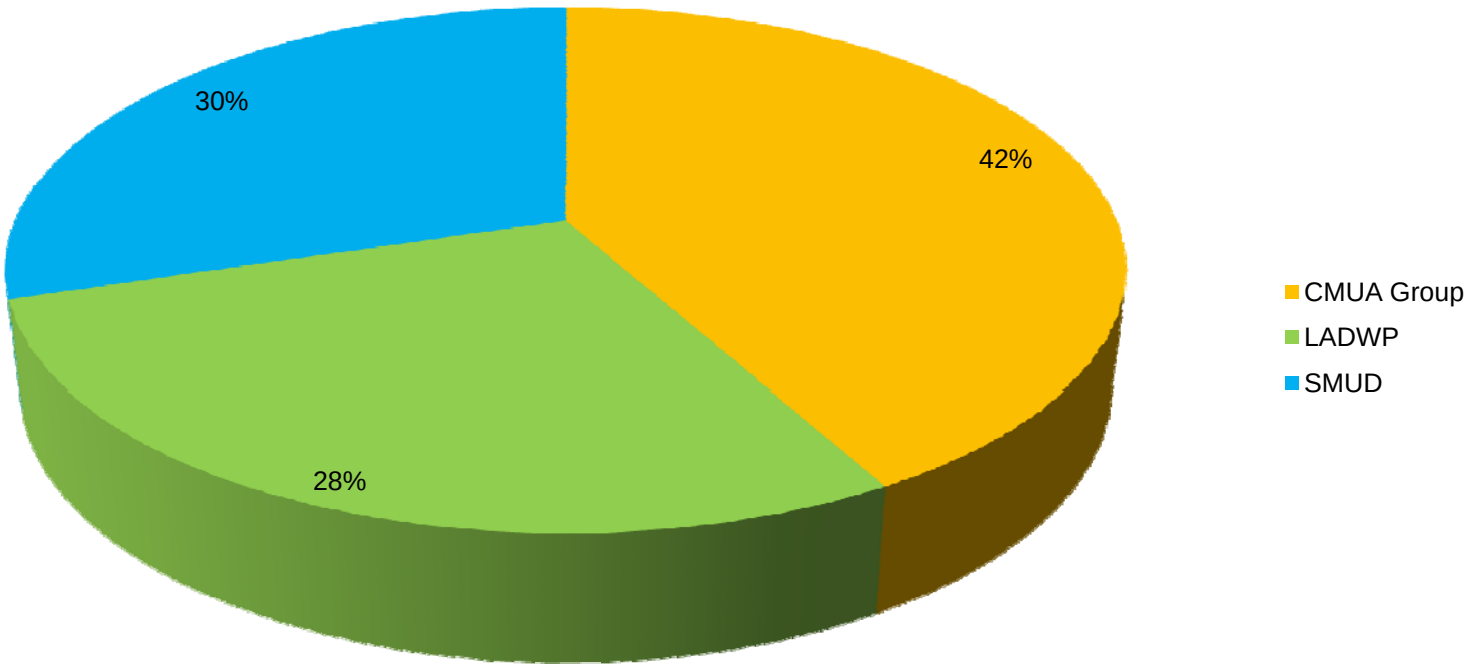
Percent of All Utilities Total Savings



Source: IOUs' Annual Reports for 2010, http://eega.cpuc.ca.gov/AnnualReports2010.aspx, CMUA *Energy Efficiency in California's Public Power Sector: A Status Report*, March 2011

2010 Statewide Annual Energy Savings

Percent of POU Total Savings



Source: *CMUA Energy Efficiency in California's Public Power Sector: A Status Report*, March 2011

Legislative Background

- **SB 1037 (2005)**
  - All publicly owned utilities are obligated to report investments in energy efficiency programs annually to their customers and to the Energy Commission.

- **AB 2021 (2006)**
  - Requires POUs, Energy Commission and CPUC (for IOUs) to develop, on a triennial basis, a statewide estimate of utility energy efficiency potential and establish savings targets for the next 10 years. Energy Commission monitors and reports yearly POU progress towards approved targets. POUs will acquire cost-effective efficiency before other energy resources.

- **SB 488 (2009)**
  - Requires Energy Commission to evaluate the effectiveness of POUs' comparative energy use disclosure (home energy report) programs along with those of the IOUs (by the CPUC).

Where Are We?

2006 POUs submit first annual energy efficiency report to Energy Commission with program savings, expenditures and cost-effectiveness results (Dec 06)

2007 POUs, CPUC (IOUs) and Energy Commission develop first statewide energy efficiency potential estimate and targets for 2007-2016

2008 -- 2010 POUs submit annual energy efficiency reports (March 2008 to 2010)

2010 POUs (CMUA group) revise their 2007 efficiency potential estimates. CMUA group and SMUD set targets for 2011-2020

2011 Energy Commission evaluate revised efficiency potential estimate and targets for 2010-2020

Intent of AB 2021

- Each POU should first **acquire all energy efficiency resources that are cost-effective, achievable and reliable.**
- Energy efficiency should be procured so that the state can meet the goal of **reducing electricity consumption** by 10 percent over ten years (annual average 1%).
- Energy savings achieved through this legislation is part of the state's plan to **reduce carbon emissions.**

These intentions are the basis of criteria by which efficiency targets and recorded savings can be evaluated: magnitude of savings, cost-effectiveness, feasibility and reliability

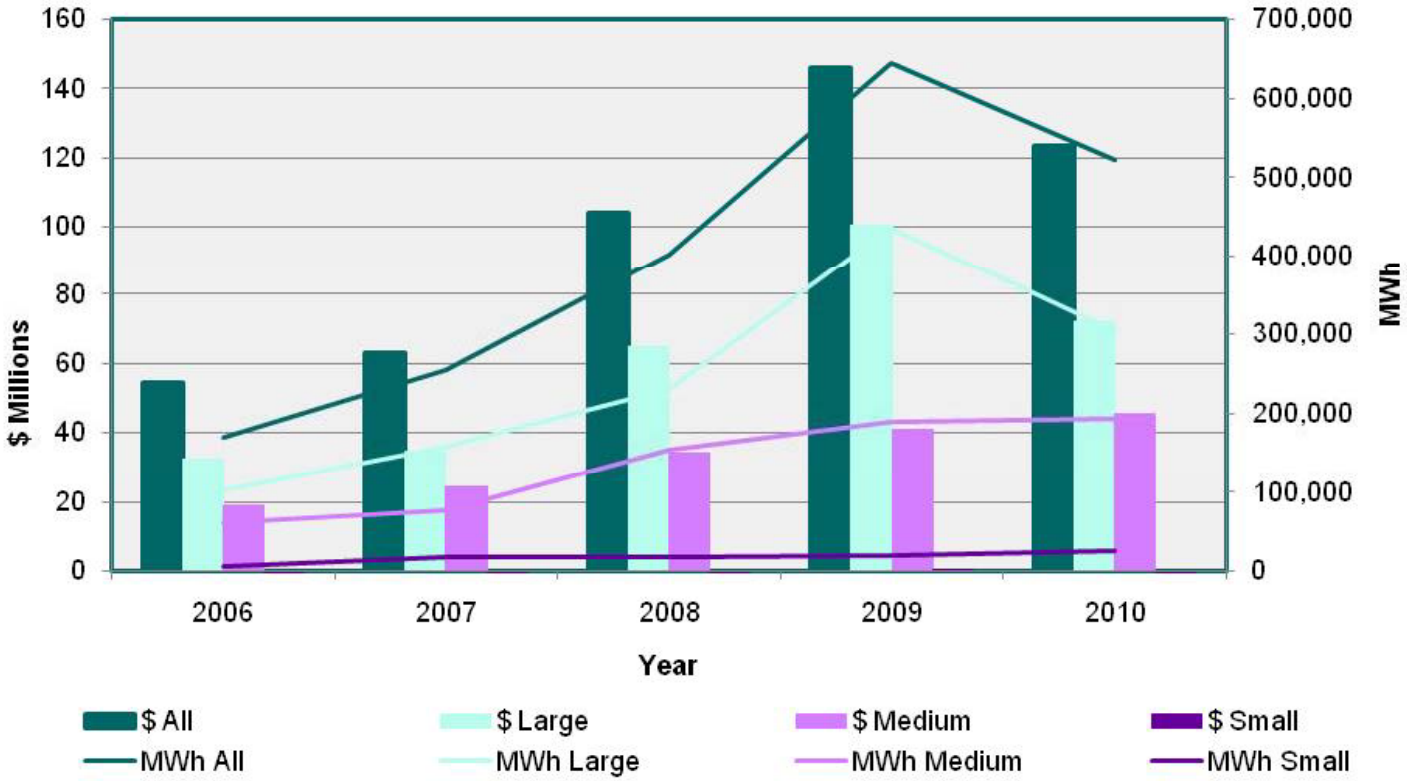
Staff Report

- Annual Trends of POU Expenditures and Savings
- Evaluation, Measurement and Verification (EM&V)

- 2010 Efficiency Potential Study and Targets
  - The players
  - 2007-2010 efficiency potential estimates
  - Trends in target setting
  - Conclusions and recommendations
  - Value and efficiency of the AB 2021 process and products

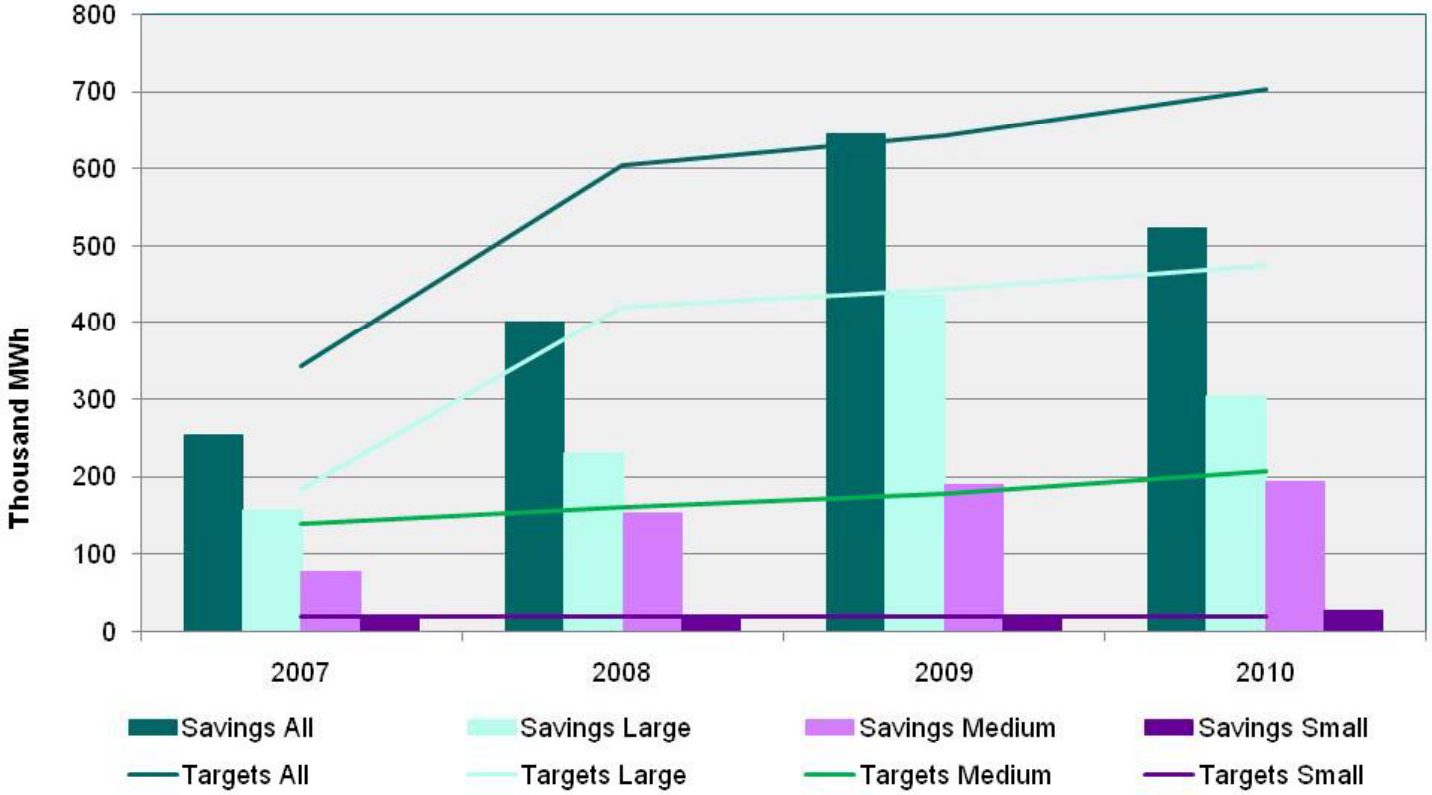
Consultant : KEMA, Inc.

POUs' Annual Energy Efficiency Expenditures and Savings



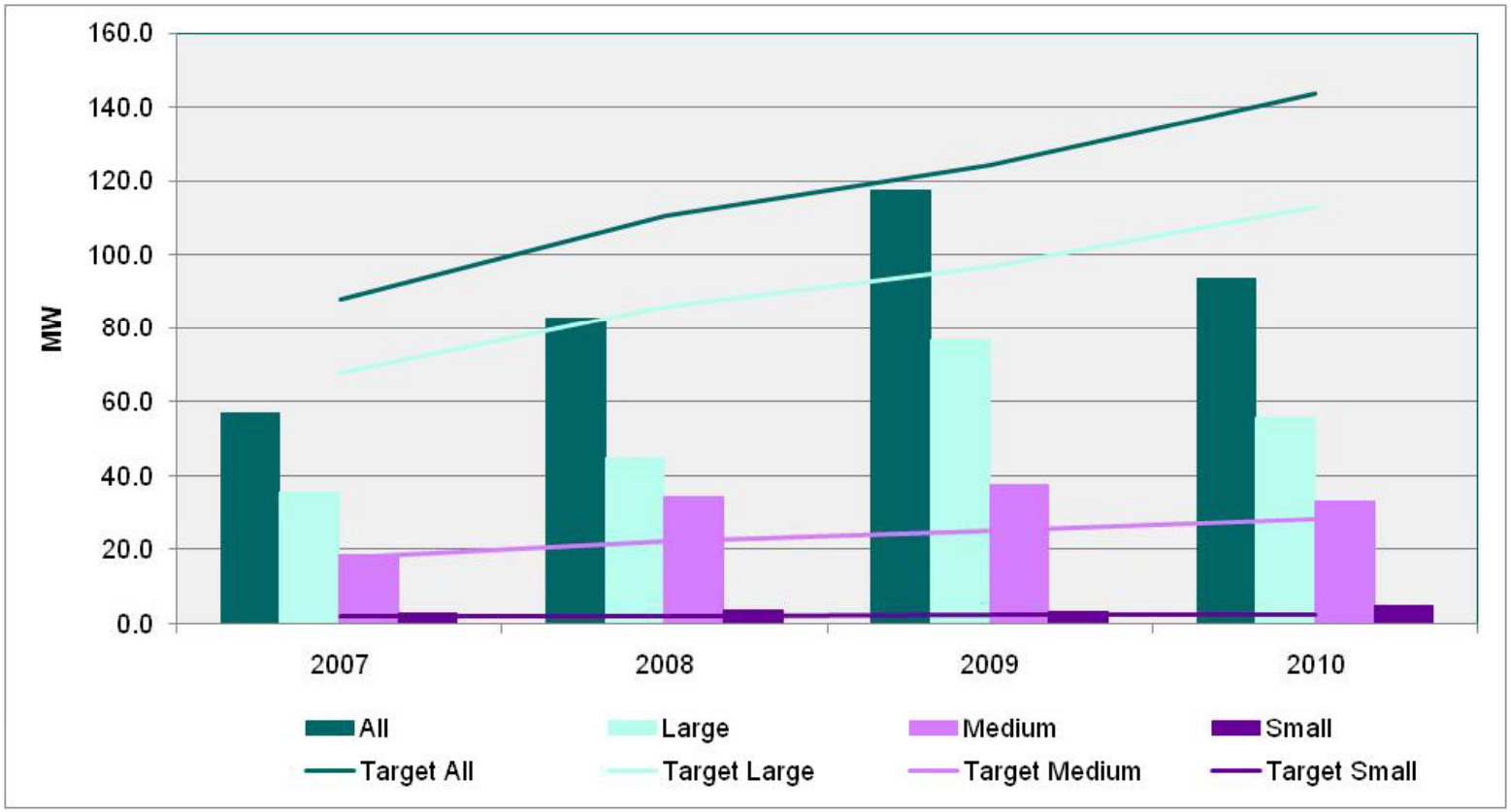
Source: Expenditure and data obtained from CMUA, *Energy Efficiency in California's Public Power Sector: A Status Report, March 2011*.

POUs' Annual Energy Savings and Targets



Sources: CMUA, *Energy Efficiency in California's Public Power Sector: A Status Report, March 2008, March 2009, March 2010, March 2011*; California Energy Commission, *Achieving All Cost-Effective Energy Efficiency in California,* Final Staff Report, CEC-200-2007-019-SF, December 2007.

POUs' Annual Peak Demand Savings and Targets



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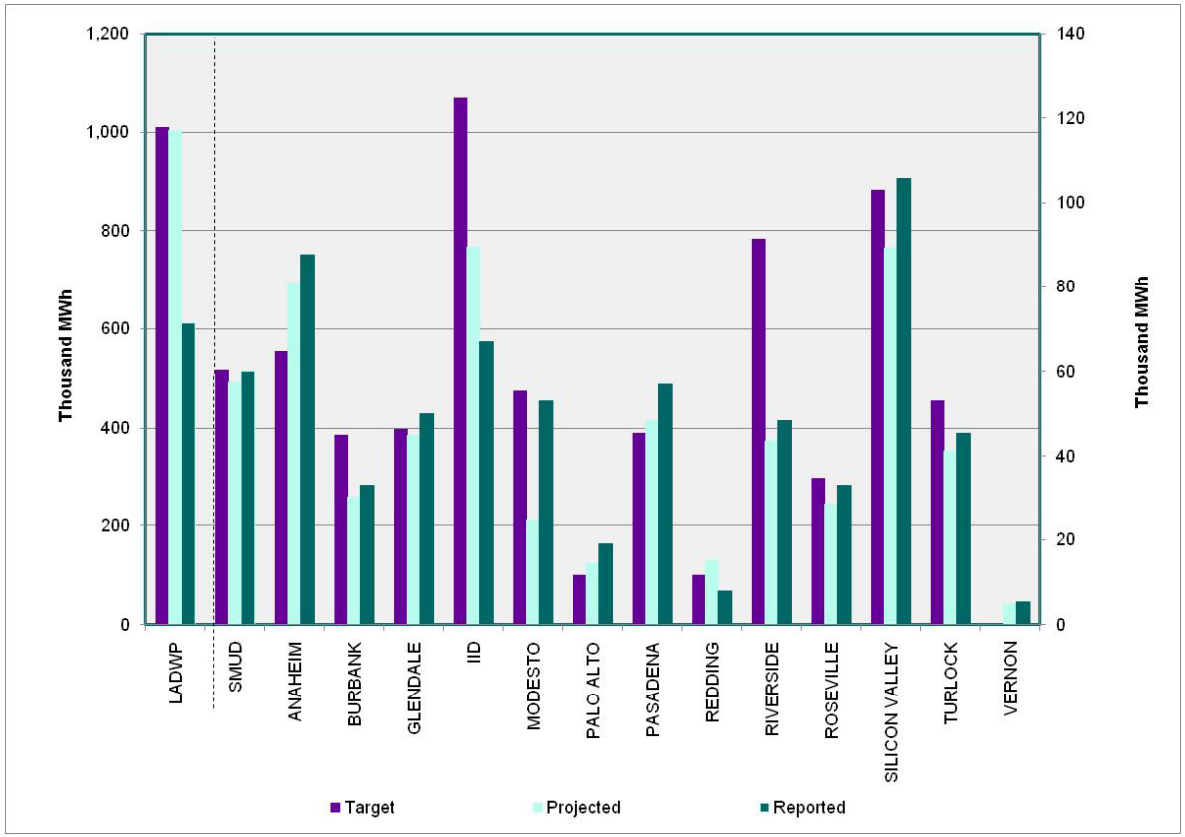
Largest 15 POUs' Cumulative Targets, Projected Savings, and Reported Efficiency Savings 2007-2010



Source: CMUA, *Energy Efficiency in California's Public Power Sector: A Status Report, March 2008, March 2009, March 2010, and March 2011*.
Notes: Vernon did not provide targets. LADWP's savings appear on the left vertical axis, because they are significantly greater than the savings of the other POUs.

Other Metrics of Annual Progress

- Savings as Percentage of Total Sales
- Expenditures as Percentage of Revenue
- Portfolio Cost-effectiveness (2010)

Evaluation, Measurement and Verification (EM&V)

- EM&V can increase savings through the information it yields and insure reliability of savings, increasing their resource value
- Half of POUs have completed one or more impact studies
- Guidelines developed in 2011; workshops in January 2011
- Key takeaways:
  - POU diversity precludes uniform EM&V
  - Small utilities have limited access to EM&V resources
  - Internal verification may be sufficient in many instances
  - Net savings analysis may not yield new information
  - POUs claim no incentive to inflate savings numbers
  - POU staff can have difficulty with EM&V contractors

EM&V Status of Publicly Owned Utilities as of April 2011

Northern CA – Large POUs	Northern CA – Small POUs	Southern CA – Large POUs	Southern CA – Small POUs
Program Years Evaluated	Program Years Evaluated	Program Years Evaluated	Program Years Evaluated
Lodi 2008, 2009 Modesto ID *in progress* Palo Alto 2008, 2009 Redding 2008 Roseville 2008, 2009 Silicon Valley 2008, 2009 SMUD 2006, 2007, 2008, 2009 Truckee-Donner 2008, 2009 Turlock ID 2008, 2009	Alameda 2008 Biggs 2008 Gridley 2009 Healdsburg Hercules Lassen 2009 Lompoc 2008 Merced ID Pittsburgh-Island Plumas Sierra Port of Oakland 2008 Ukiah	Anaheim *in progress* Burbank 2009 Glendale *in progress* Imperial ID *in progress* LADWP 2007, 2008 Pasadena *in progress* Riverside *in progress*	Azusa Banning Colton Corona Moreno Valley Needles Rancho Cucamonga Vernon

California Energy Commission EM&V Guidelines POU Energy Efficiency Programs

Version: January 2011

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Summary of EM&V Studies for each POU in March 2012 Report (Part B)

Program Year	Name of Study	Programs Evaluated	Ex Ante Claimed Savings	Percent of Portfolio (kWh)	Process or Impact	Budget for Studies ($)	Dates of Expected Study Start and Completion	Ex Post Verified Savings	POU Staff Contact
2009-2010									
		1	kWh: kW:					kWh: kW:	
		2	kWh: kW:					kWh: kW:	
		3	kWh: kW:					kWh: kW:	
2010-2011 Current									
		1	kWh: kW:					kWh: kW:	
		2	kWh: kW:					kWh: kW:	
		3	kWh: kW:					kWh: kW:	
2011-2012 Planned									
		1	kWh: kW:					kWh: kW:	
		2	kWh: kW:					kWh: kW:	
		3	kWh: kW:					kWh: kW:	

Recommendations for Annual Reports and EM&V

- POUs file individual E3 models underlying annual savings-CMUA March 2012 Report
- POUs file expenditures in PGC categories – March 2012 report
- POUs provide status of integrated resource planning or link to IRP- March 2012 report
- CEC sponsor EM&V workshops to increase communication
- For final EM&V guidelines, CEC stratifies POUs based on magnitude of savings, capacity to perform and manage EM&V, and need for EM&V information
- CEC answer key EM&V concerns on net savings, Total Market Gross goals, multi-year planning, internal verification, and contractor relations
- POUs continue impact studies and report EM&V status and plans- March 2012 Report

2010 Efficiency Potential and Targets

- The purpose of potential studies
- The California utility players
- 2007-2010 efficiency potential estimates
- Trends in target setting
- Conclusions and recommendations
- **Where should we go from here? Improving the value and efficiency of the potential and target revisions**

Efficiency Potential Studies

- Efficiency potential estimates possible future savings and where efficiency opportunities lie
- Technical & economic potential are theoretical constructs
- Market potential incorporates real-world adoption results based on customer behavior and other measurable market barriers
- Forecast change in multiple inputs over time
- Potential studies can be misused – requires lots of data (all calibers); influences can be difficult to model; estimates are not precise
- State and utility policy – Energy Action Plan's loading order mandate, carbon emissions reduction (AB 32)
- Resource/procurement planning – demand forecasting and integrated resource planning
- Efficiency portfolio planning and program design

CA Utility Efficiency Target Revision Efforts

in California

- **POUs (CMUA Group)** – Completed potential estimates and targets for 2011-2020 by October 2010; next revision 2013

- **LADWP** – Potential and target study began in mid-2010 (Global Energy Partners). May be available in September 2011.

- **SMUD** – New targets in May 2010 but no new potential study on the horizon. Likely to follow the IOUs.

- **IOUs** – Draft results of estimated potential and scenarios for the Goals Study (September 2011); draft results of Goals Study (December 2011). IOUs need approved goals by January 2013, year before next program cycle begins (2014).

Key Results: 2010 Efficiency Potential (MWh)

- Technical and economic savings potential are theoretical or PODs
- 2010 technical potential at 10,700 GWh (2020) is 96% higher than 2007 technical potential (2016); demand potential is 2,900 MW (4x higher)
- 2010 economic savings potential at 9,500 GWh (2020) is 136% higher than 2007's estimate
- Tech/econ potential – 30% of 2020 energy consumption
- 2010 market savings potential at 2,150 GWh (2020) – slightly higher than 2007 market potential (2016); demand potential also higher
- Market potential – 7% of 2020 consumption (.68% annual average)
- Market potential, used as basis for most targets, based on 50% customer incentives. Higher incentives increase savings.

Estimated Potentials for Publicly Owned Utilities

(Excluding SMUD and LADWP)

	Energy Savings Potentials - GWh			Demand Savings Potentials – MW		
	Technical	**Economic**	**Market**	**Technical**	**Economic**	**Market**
Current Analysis (2010), 2011-2020	10,693	9,525	2,143	2,861	2,283	526
Previous Analysis (2007), 2007-2016	5,460	4,038	2,109	732	507	302

POUs with Individual Assessments of 2010 Efficiency Potential and Targets

KEMA Analysis

Anaheim Public Utilities
Burbank Water & Power (W&P)
Glendale W&P
Imperial Irrigation District (ID)
Modesto ID
City of Palo Alto
Pasadena W&P
Riverside Public Utilities
Roseville Electric
Silicon Valley Power
Truckee-Donner
Turlock ID

Summary of 2010 Target Assessment

- **Feasibility**
  - Relationship of past-future savings (ramp up)
  - Relationship of market potential to targets
  - Utility has adequate efficiency resources
- **Reliability**
  - Utility delivery of projected savings
  - Utility has EM&V plan and useable results
- **Cost-effectiveness**
  - Total Resource Cost test
  - Portfolio cost per first-year kWh savings
- **Consumption Reduction**
  - Ten percent of base energy consumption over 10 years
  - Strive for 1 percent for each year of use reduction

Key Results: 2011- 2020 Targets (MWh)

- Targets were equal to market potential for most utilities (12 exceptions including Pasadena, Palo Alto and Truckee-Donner)
- Half of POUs set their 2011 targets higher than their 2009 reported savings; 2011 target is 89% of 2009 savings
- Annual target trend: 2010 savings ramp up: 2011-12 declining; 2013-2018 peaking; 2019-2020 declining
- Cumulative targets reach savings of nearly 7% of forecasted energy consumption in 2020; 5 CMUA POUs reach 10%; SMUD reaches 14%
- Targets appear to be more achievable than the 2007 targets but less aggressive. Larger utilities had more aggressive targets than small POUs

2020 Energy Savings Targets

	2011–2020 Target (GWh)
12 Largest POUs in CMUA Group	1,890
34 Medium and Small POUs	315
SMUD	1,799
Total	4,004

Note: Excludes LADWP.

Source: California Municipal Utility Association, *Energy Efficiency in California's Public Power Sector: A Status Report,* March 2010, and March 2011.

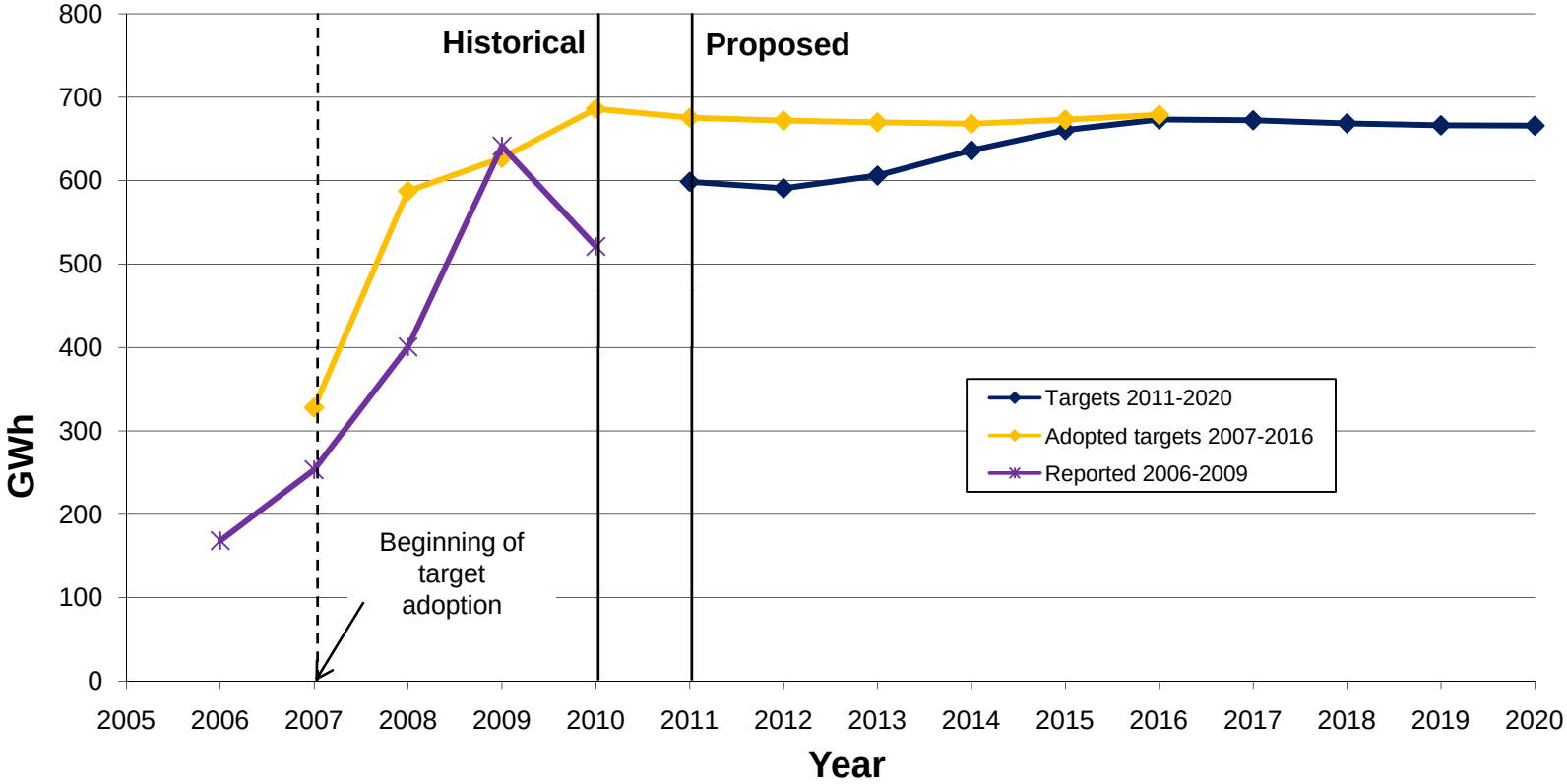
2020 Peak Demand Savings Targets

	2020 Target (MW)
12 Largest POUs	450
34 Medium and Small POUs	76
Total	526

Note: Excludes LADWP and SMUD .

Source: KEMA, Inc., *POU's Revised Energy Efficiency Potential and Targets, July 2010,* CEC-200-2008-007-SF, May 2011.

All Utilities' Historical Annual Energy Efficiency Program Savings and Targets



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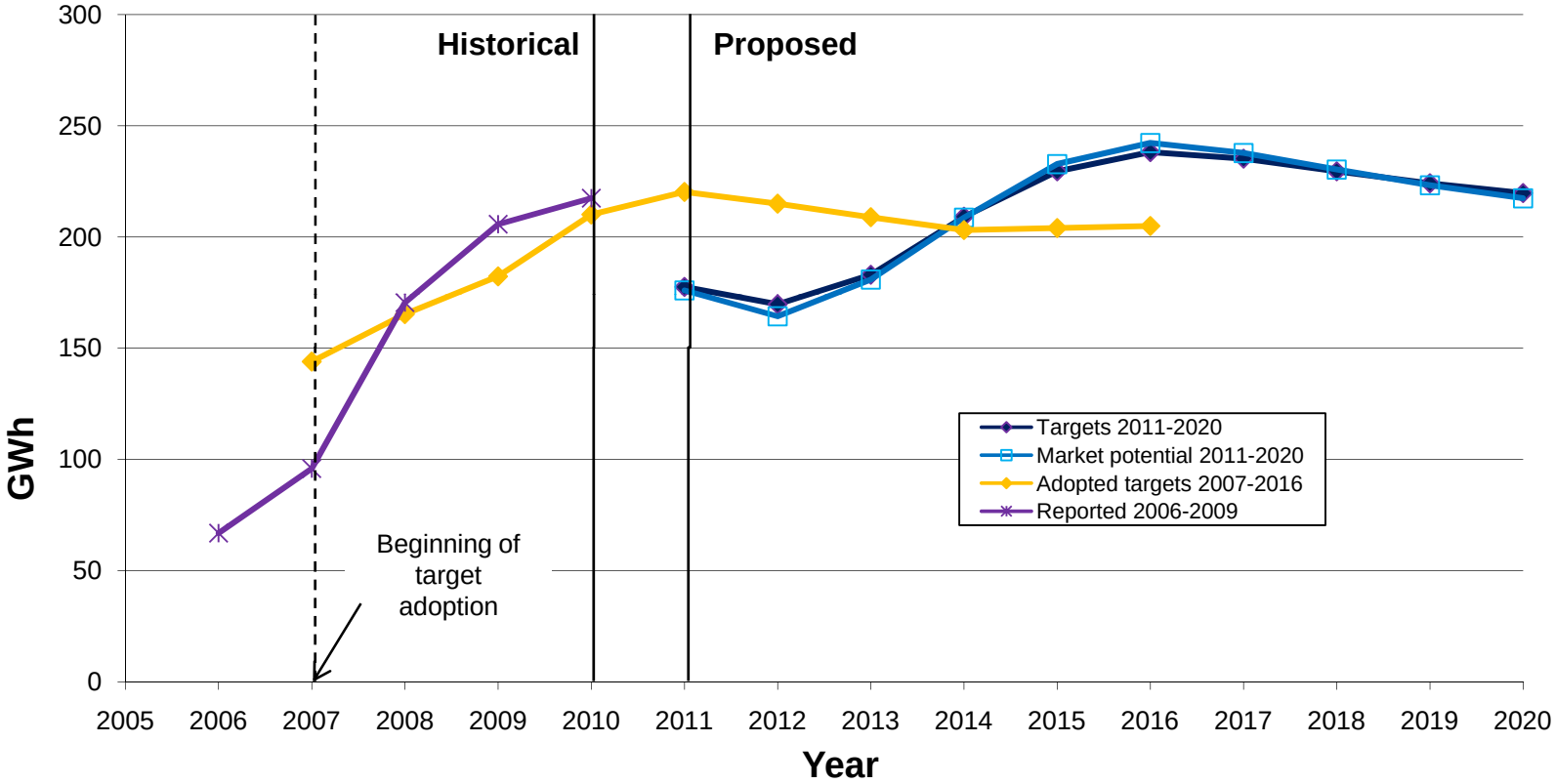
Note: Utilities omitted due to lack of complete data: Industry, Island Energy, Port of Oakland, Vernon, Victorville.

All Utilities' (Excluding LADWP and SMUD) Historical Annual Energy Efficiency Program Savings and Targets



Sources: CMUA, *Energy Efficiency in California's Public Power Sector: A Status Report,* December 2006, March 2008, March 2009, March 2010, and March 2011;
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Note: Utilities omitted due to lack of complete data: Industry, Island Energy, Port of Oakland, Vernon, Victorville.

Staff Concerns & Recommendations

- A true triennial statewide estimate of efficiency and targets requires better alignment among utilities (IOU-POU)
- Potential and target revisions in 2013 must reflect real value to utilities and state and be developed in an efficient process
- Technical and economic estimates that were substantially different between 2007 and 2010 would seem to have limited value
- POUs should consider the continuance of the CalEERAM method for 2013
- Exchange of complete and accurate data and all utility models must be coordinated well in advance
- Scenario analysis with varying levels of customer incentives could show realistic levels of incentive increases that leads to more savings.
- KEMA – Recommendations to improve CalEERAM analysis and product

Efficiency Potential Study and Targets
Improving the Future

- **This time**: the experience of the AB 2021 efficiency potential study and target setting in 2007 and 2010
  - What value do the POUs get from the AB 2021 process and the product?
  - How are the products used by the POUs?
  - If the process and products are irrelevant to utility planning, why is that the case?

- **Next time**: suggestions for improvements in efficiency potential estimation and target setting
  - How can more value be gotten from the AB 2021 process?
  - How can efficiency potential estimation and target setting be made more efficient?

Contacts

Demand Analysis Office
Electricity Supply Analysis Division

Cynthia Rogers
916-651-9009
crogers@energy.state.ca.us

Doug Kemmer
916-651-0481
dkemmer@energy.state.ca.us

Bill Junker, Mgr.
916-654-4172
Bjunker@energy.state.ca.us