



# **EM&V for Energy Efficiency in Publicly Owned Utilities**

January 20, 2011

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## California Publicly Owned Utilities (POUs)

- 40 locally owned electric utilities
- (2009) IOU vs. POU savings: 85% vs. 15%
- Heterogeneous – sales range from 100 MWh to 288,000 MWh; customer mix differs
- LADWP and SMUD are largest; contribute over 68% of savings
- Fifteen largest POUs contribute nearly 98% of savings



# California Energy Commission

## POU Groups and Savings

Utility/ Group	Specific Utilities	Percent of Total Claimed Savings 2009
<b>IOUs</b>	PG&E SCE SCG SDGE	85% of all utility savings
<b>LADWP</b>		7% of all utility savings 45% of POU savings
<b>SMUD</b>		3% of all utility savings 23% of POU savings
<b>Largest 13 POUs</b>	Anaheim Modesto Silicon Valley Power Banning Palo Alto Turlock Burbank Pasadena Truckee Donner Glendale Riverside Imperial Roseville	4% of all utility savings 30% of POU savings
<b>Smallest POUs</b>	Alameda Industry Plumas Sierra Azusa Lassen Port of Oakland Biggs Lodi Rancho Cucamonga Colton Lompoc Redding Corona Merced Shasta Lake Gridley Moreno Valley Trinity Healdsburg Needles Ukiah Hercules Pittsburgh Power Vernon	0.4% of all utility savings 3% of POU savings



# CEC's Mandate in POU EM&V

- SB 1037 (2005) and AB 2021 (2006) emphasized increased energy efficiency for the publicly owned utilities
- **POUs report**
  - Efficiency program expenditures, savings and cost-effectiveness
  - Independent evaluation of efficiency programs
- **CEC responsible for**
  - Monitoring POUs' annual efficiency progress
  - Reviewing POU independent evaluation studies, reporting results, and, if necessary, recommending improvements
  - Insuring that savings verification increases the reliability of savings and contributes to better program design
  - Our focus is savings impacts, not program process, studies



## POU Evaluation Progress and Plans

- Since 2008, nearly half of POUs have completed EM&V impact studies for efficiency programs
- Additional studies are in progress (2011) mainly for the Southern California utilities
- CEC performed in-depth review of all POU existing evaluation reports in 2010
- CEC is developing *EM&V Guidelines* for future impact studies
- EM&V Workshops held in January 2011



# California Energy Commission

## EM&V Status of Publicly Owned Utilities January 2010

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



## POU EM&V Characteristics

- Programs evaluated are predominantly commercial lighting and custom projects; larger utilities include residential lighting, appliance rebates and refrigerator recycling
- POUs rely heavily on in-house monitoring procedures
- Installation verification with or w/o deemed savings critique is principle method; good process reviews
- Documentation provides a range of completeness
- The calculation of net savings is viewed as unnecessary by many
- EM&V results, e.g., realization rates, exist for sample only
- Realization rates usually approach 100%



## Draft POU EM&V Criteria Framework

- CEC's criteria for an acceptable EM&V impact study is based on international and CPUC evaluation protocols for energy efficiency programs.
- Framework criteria provides for:
  - Complete and consistent reporting of programs in annual (SB 1037) report
  - Documentation of all assumptions, sources and algorithms
  - Calculation of gross and net savings using standard methods of sampling and savings estimation
  - Thorough explanation for differences between claimed (ex ante) and verified (ex post) savings impacts
  - Clear conclusions and recommendations on savings reliability, and, if necessary, program improvements





## Challenges to Efficiency Program Evaluation in POU's

- Funds allocated for EM&V work may be too limited for comprehensive review
- Some POU staff are new to EM&V and most have other efficiency and utility responsibilities
- Some POU's are having negative experiences with EM&V contractors
- CPUC protocols may not be practical for smaller utilities; CEC staff has to learn more about POU's' EM&V needs & resources to provide guidance