



California Energy Commission

2009 IEPR Workshop California Energy Demand 2010-2020 Staff Draft Forecast

Efficiency and Conservation

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Energy Savings Categories

- Utility and Public Agency Efficiency Programs (committed)
- Building and Appliance Standards
- Naturally Occurring Savings



Summary

- Savings from these three sources reduce consumption and peak demand by 16-20% over the forecast period
- Largest source of savings is combination of building and appliance standards
- Additional lighting savings beyond programs and standards
- Analysis has limitations



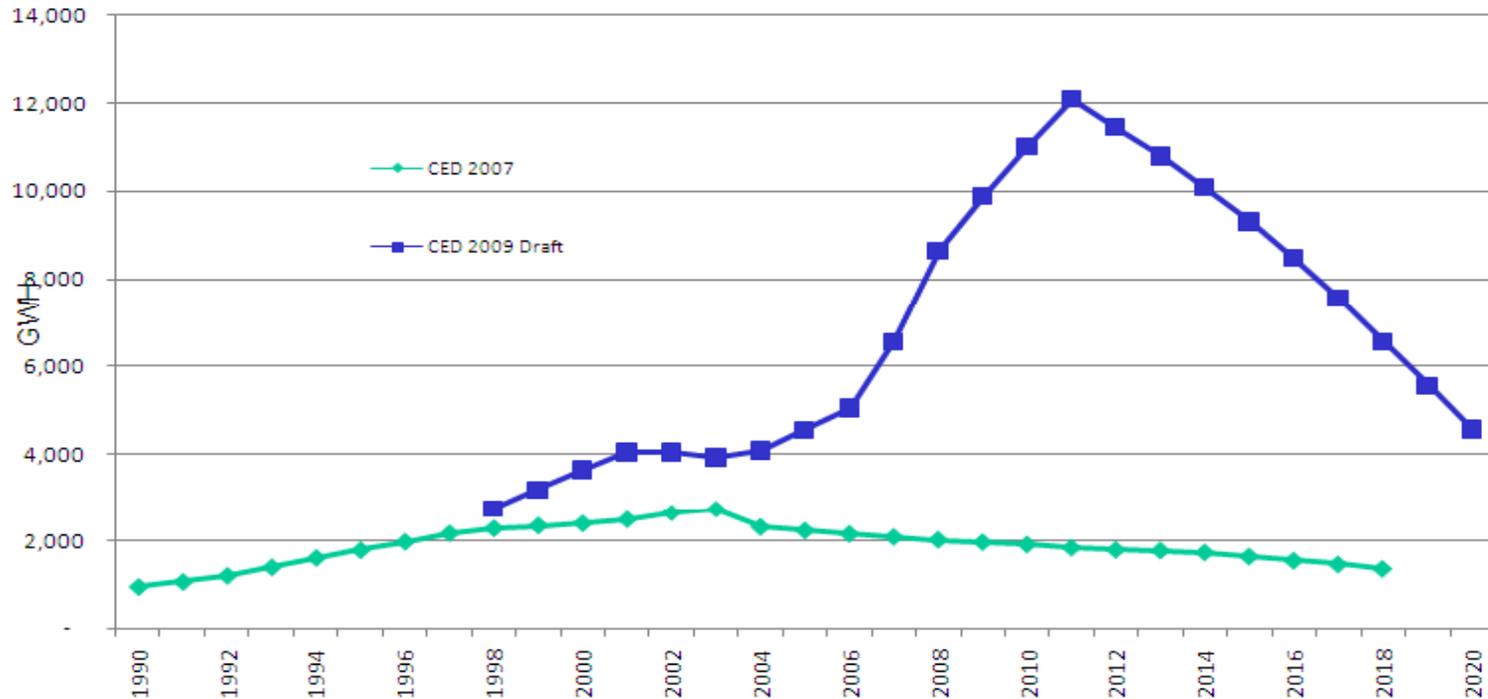
Utility and Public Agency Efficiency Programs

- Staff set out to re-estimate savings from utility programs and to measure the impacts of the 2009-2011 IOU program plans
- Idea was to estimate program savings not previously incorporated in Energy Commission forecasts
- Support from Itron, Demand Forecasting Energy Efficiency Quantification (DFEEQP) Working Group



Efficiency Program Savings for Investor Owned Utilities vs. CED 2007

Large differences beginning in 2006



Source: California Energy Commission, 2009



IOU Efficiency Program Impacts

- Some impacts incorporated in models, others through “post-processing”
- These are preliminary estimates
- 2009-2011 programs still in the approval process



Building and Appliance Standards

- Energy Commission forecasting models incorporate building and appliance standards through changes in inputs
- End-use consumption per household in the residential sector and end-use consumption per square foot in the commercial sector
- To measure the impact of each individual set of standards, staff removed the input effects from standards one set at a time



Standards Incorporated in Forecast

Residential Model	
1975 HCD Building Standards	1976-82 Title 20 Appliance Standards
1978 Title 24 Residential Building Standards	1988 Federal Appliance Standards
1983 Title 24 Residential Building Standards	1990 Federal Appliance Standards
1991 Title 24 Residential Building Standards	1992 Federal Appliance Standards
2005 Title 24 Residential Building Standards	2002 Refrigerator Standards
Commercial Model	
1978 Title 24 Nonresidential Building Standards	1992 Title 24 Nonresidential Building Standards
1978 Title 20 Equipment Standards	1998 Title 24 Nonresidential Building Standards
1984 Title 24 Nonresidential Building Standards	2001 Title 24 Nonresidential Building Standards
1984 Title 20 Nonres. Equipment Standards	2004 Title 20 Equipment Standards
1985-88 Title 24 Nonresidential Building Standards	2005 Title 24 Nonresidential Building Standards

Source: California Energy Commission, 2009



Naturally Occurring Savings

- Meant to capture load impacts of changes in energy use not directly associated with standards or efficiency programs
- Focus on impacts that could overlap with programs and standards
- Includes impacts of rate changes (price effects) and lighting savings
- Terminology: taxonomy work



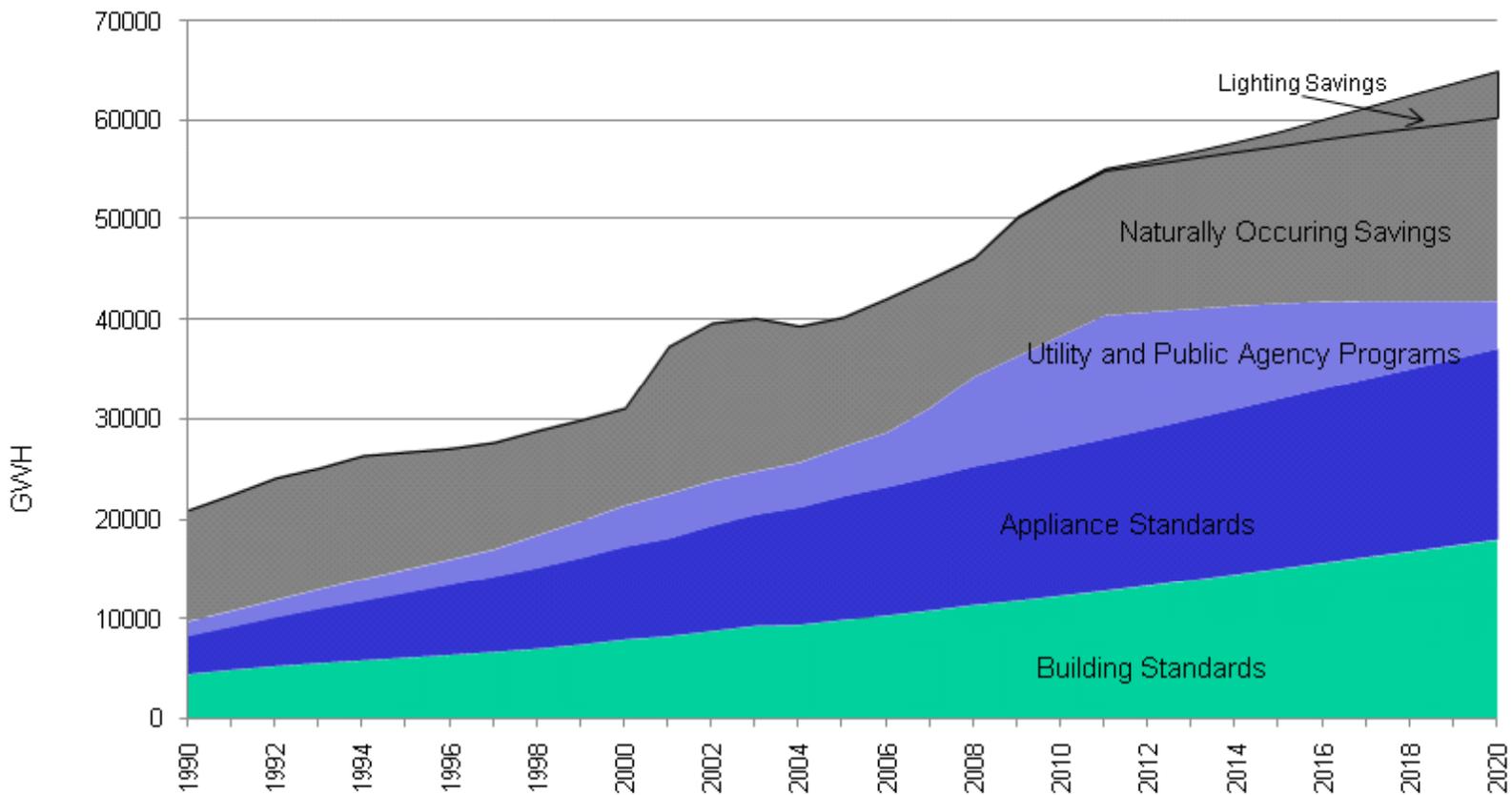
Lighting Savings Included in Naturally Occurring

- Focus of utility programs and State and Federal Legislation
- Committed utility program impacts decay after 2011
- Unrealistic to assume average lighting per household returns to current levels
- Forecast assumes average residential lighting continues at 2011 levels for IOUs
- Assumed gradual reduction for POUs (75% by 2020)



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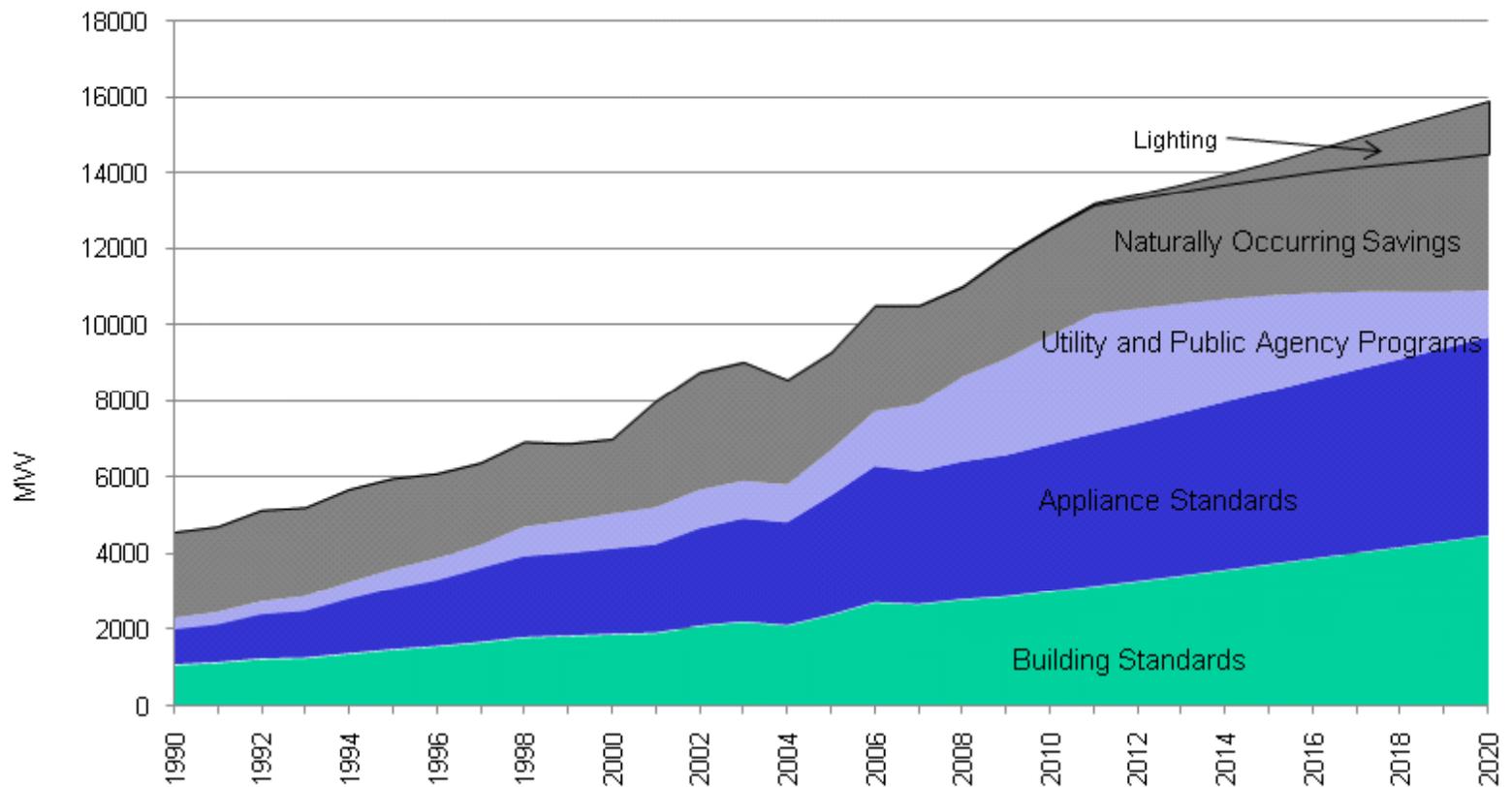
Electricity Consumption Savings by Category: Mid-Rate Case





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Electricity Peak Savings by Category: Mid-Rate Case





Savings Impacts

- Total consumption reduced 16% in 2010 vs. “counterfactual”; 18% by 2020
- Corresponding peak reductions are 17% and 19%
- In 2010, standards impacts make up 51% of total consumption savings
- By 2020, they make up 57%
- Corresponding peak impacts 55% and 60%



Savings Impacts

- Utility programs reach a share of 22% of consumption savings in 2011 (peak: 24%)
- Naturally occurring savings:
 - 27% of total in 2010
 - 36% in 2020 (peak: 23% and 32%)
- Residential consumption savings:
 - 48% of total in 2010
 - 47% in 2020 (peak: 58% and 57%)



Savings Impacts

- Naturally occurring savings increase by 2,200 GWH in high-rate case and decrease by 2,700 GWH in low-rate case by 2020
- Corresponding peak numbers: +450 MW and -550 MW



Limitations of Analysis

- POU impacts not updated since 2007 forecast
- Relies on assumption of “counterfactual”
- Attribution is inexact
- “Take back” and related factors
- Impact of economy on utility programs



Revised Forecast

- Refinement of energy efficiency program numbers
 - Replacement of decayed measure impacts
 - Realization rates
- POU impacts
- Updated econ/demo
- Scenarios for economic projections