

How the Cost of Saving a Kilowatt-Hour Is Changing and How Long the Savings Last

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Presented at the 2015 ACEEE National Conference on Energy Efficiency as a Resource

September 22, 2015



Overview

- **Cost of Saved Energy Project**
- **Trends in the Program Administrator (PA) Cost of Saved Electricity – Preliminary Results**
 - National
 - Regional
 - Sectoral
- **Trends in the *Program-Specific* PA Cost of Saved Electricity – Preliminary Results**
 - Residential lighting, behavioral, retrofits
 - C&I custom, prescriptive and small commercial
- **Duration of Electricity Savings**

LBL Cost of Saved Energy Project

LBL DSM Program Database

- Program Administrator CSE: 100+ administrators in 35 states
 - ~8,000 electric and gas program years 2009-2014
- Total Cost of Saved Energy: 50+ administrators in 20 states
 - ~3,000 program years

Data Collected

- Annual & lifetime savings, net & gross
- Budgets & expenditure details
- Measure lifetimes for programs
- Participation

LBLN Cost of Saved Energy Project

LBLN DSM Program Database

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Standardization Is Critical

- A common DSM lexicon and program typology
- LBNL EE Program Reporting Tool – due out soon

Data Collected

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LBNL Cost of Saved Energy Project: Analyses and Results

Results

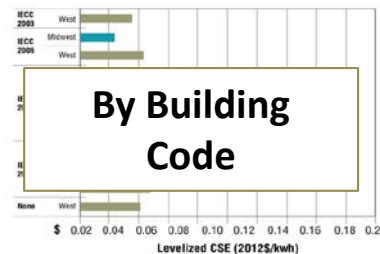
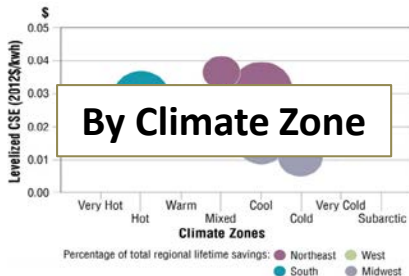
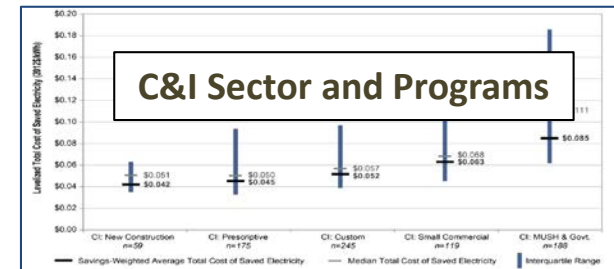
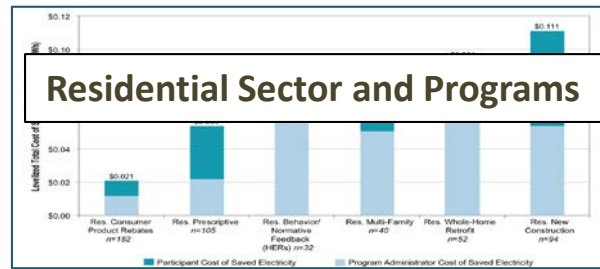
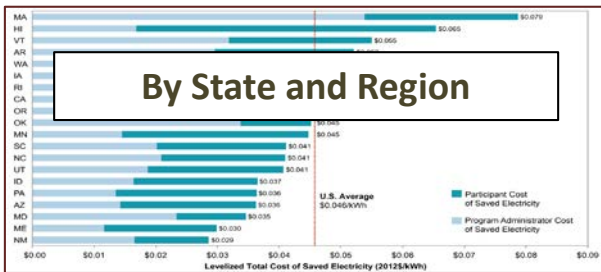
Program Administrator Cost of Saved Energy

March 2014

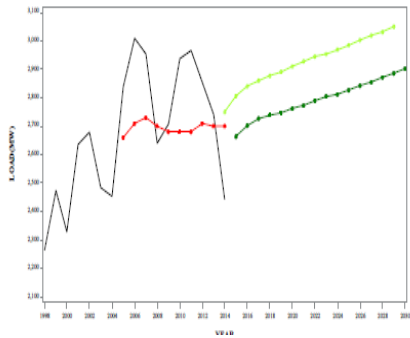
Total Cost of Saved Energy

April 2015

- National, state, region
- Market sector
- More than 60 program types



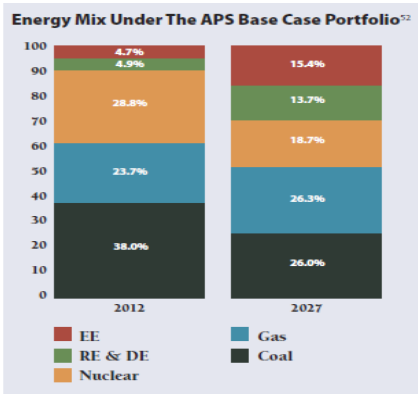
Why the Cost of Saved Energy



Load Forecasting



Weighing Cost Performance Among Efficiency Resources



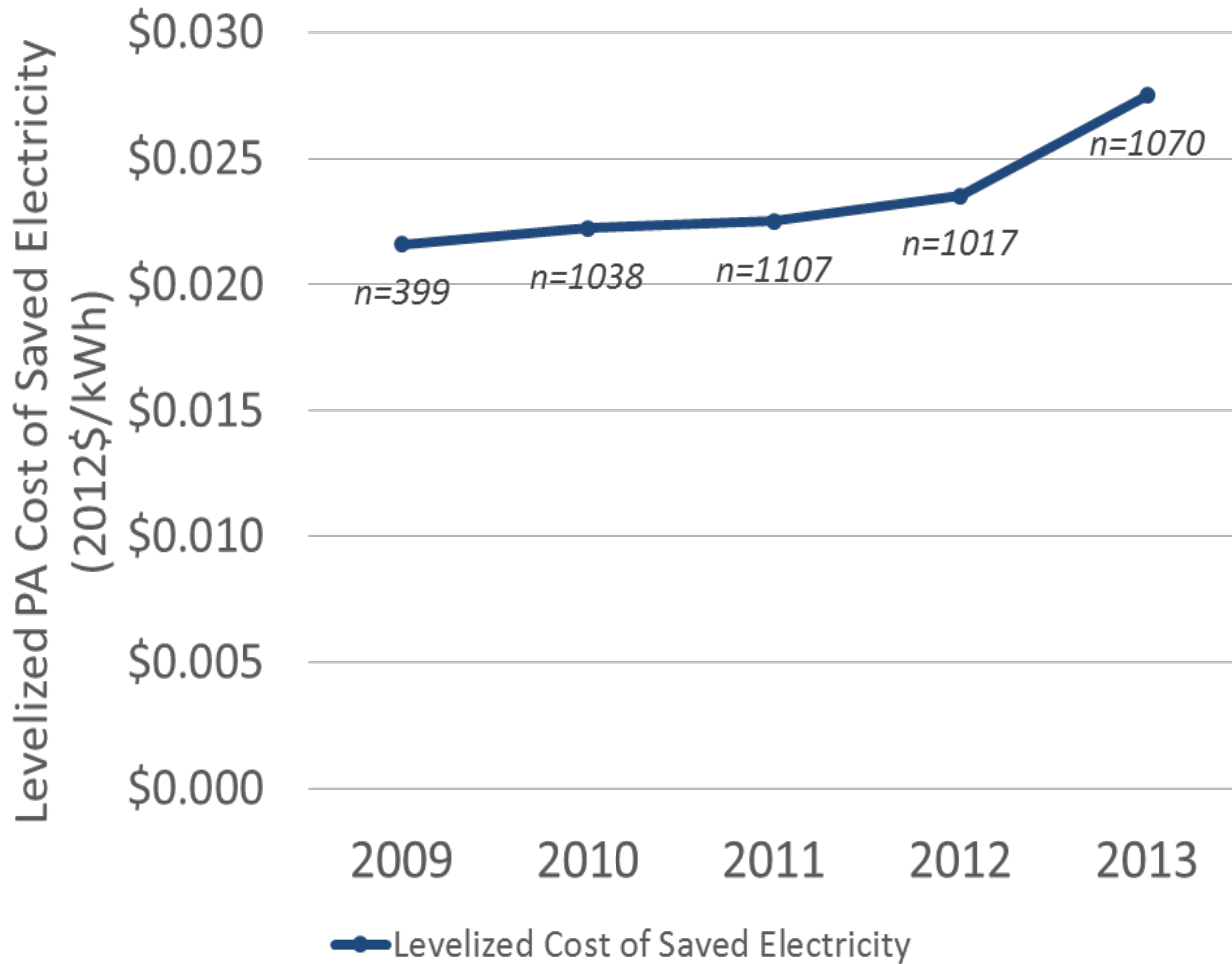
Integrated Resource Planning



Assessing Markets and Trends

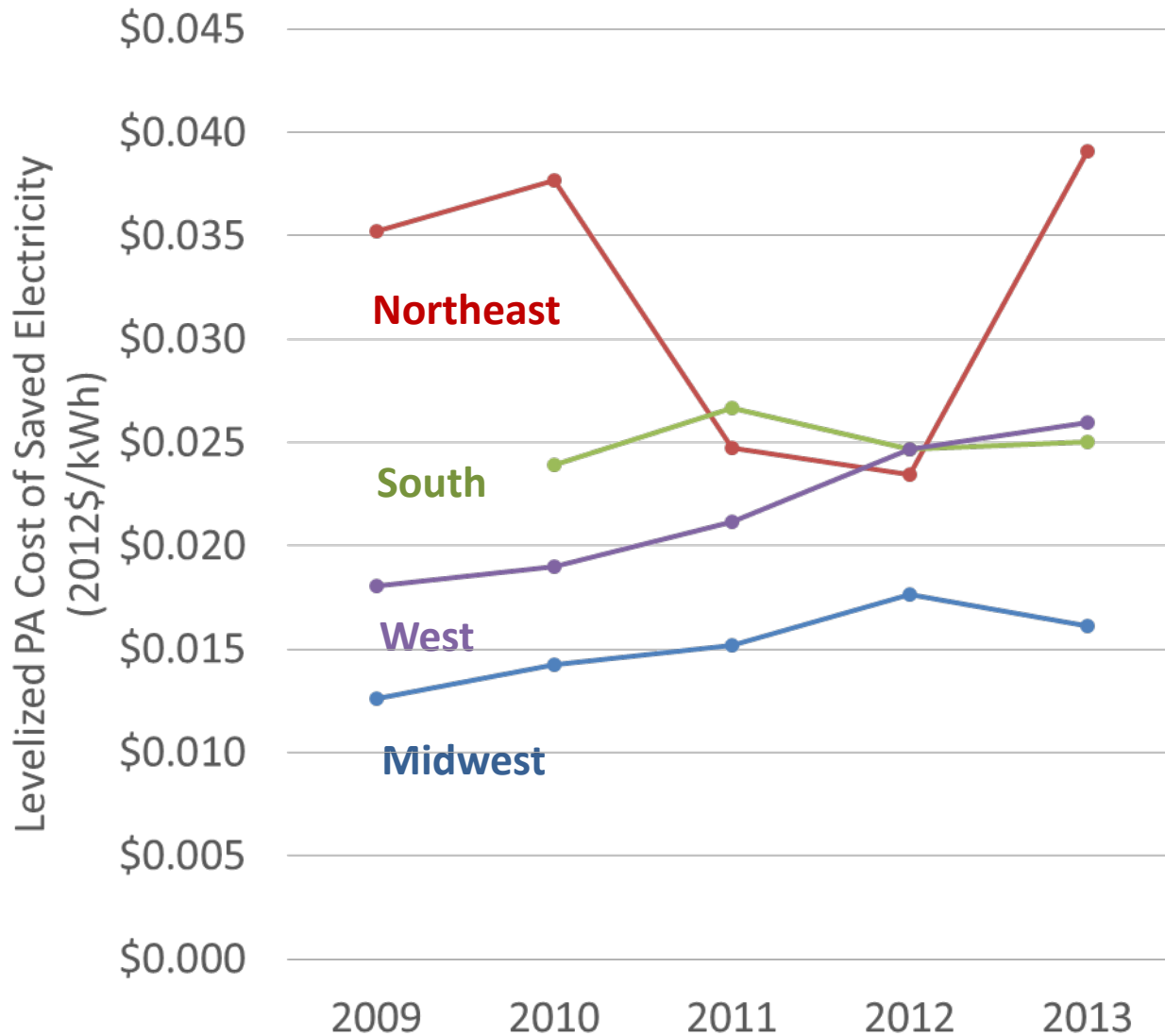
Trends in the Program Administrator Cost of Saved Electricity: 2009 to 2013 Preliminary Results

Program Administrator Cost of Saved Electricity (PA CSE) National Trend

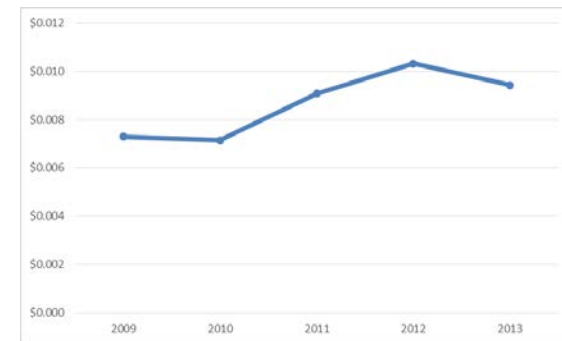


- The average cost of saving electricity is rising, going from 2.2 cents to 2.7 cents per kWh over 2009-2013
- Compound annual growth is 5% per year

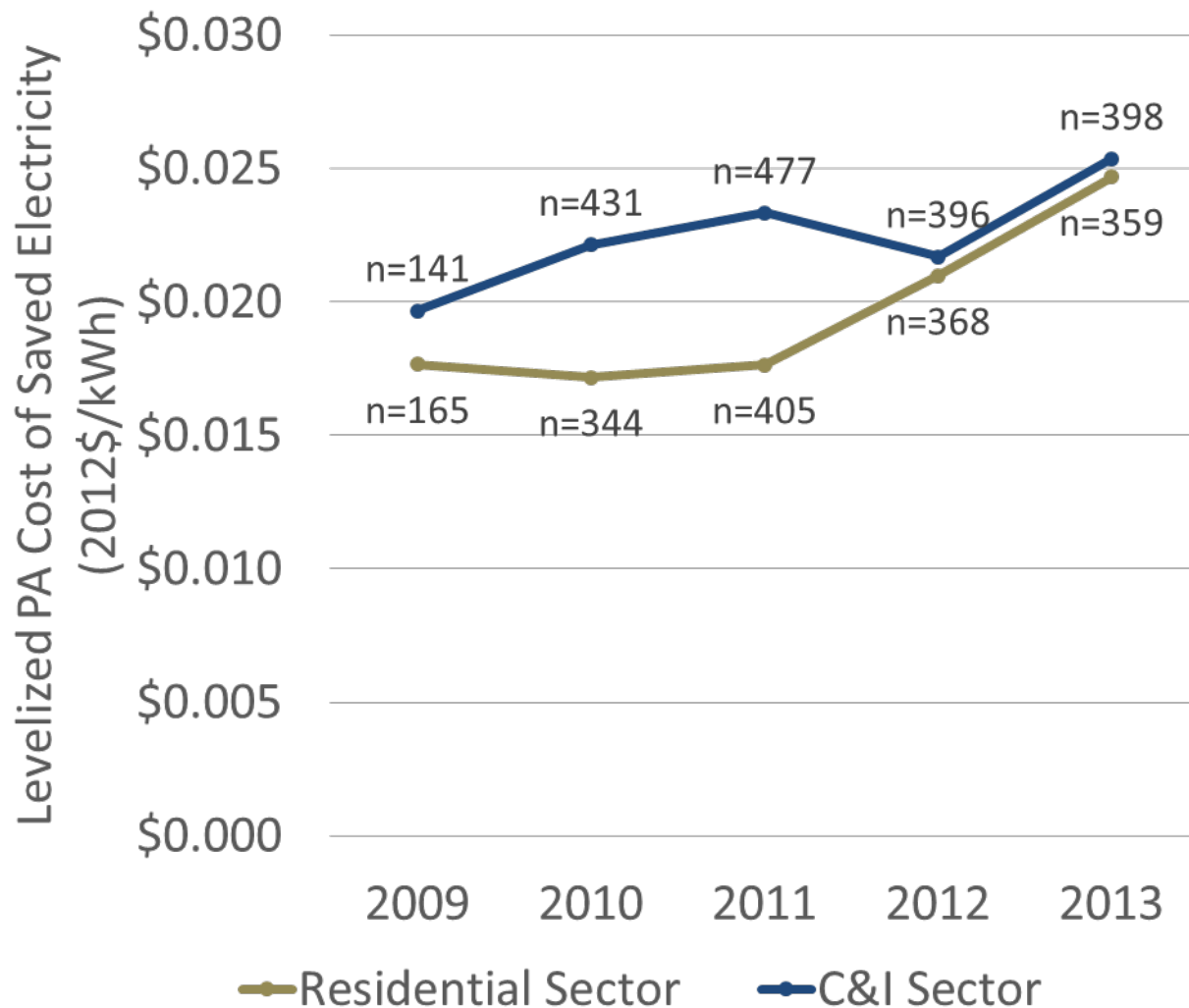
Regional Trends



- Regional trends are mixed
- Average cost of electricity savings in all regions is level or rising
- Cost of saving energy rising fastest in the West – about 7.5% annually since 2009
- Lighting highly influential, e.g., in Midwest

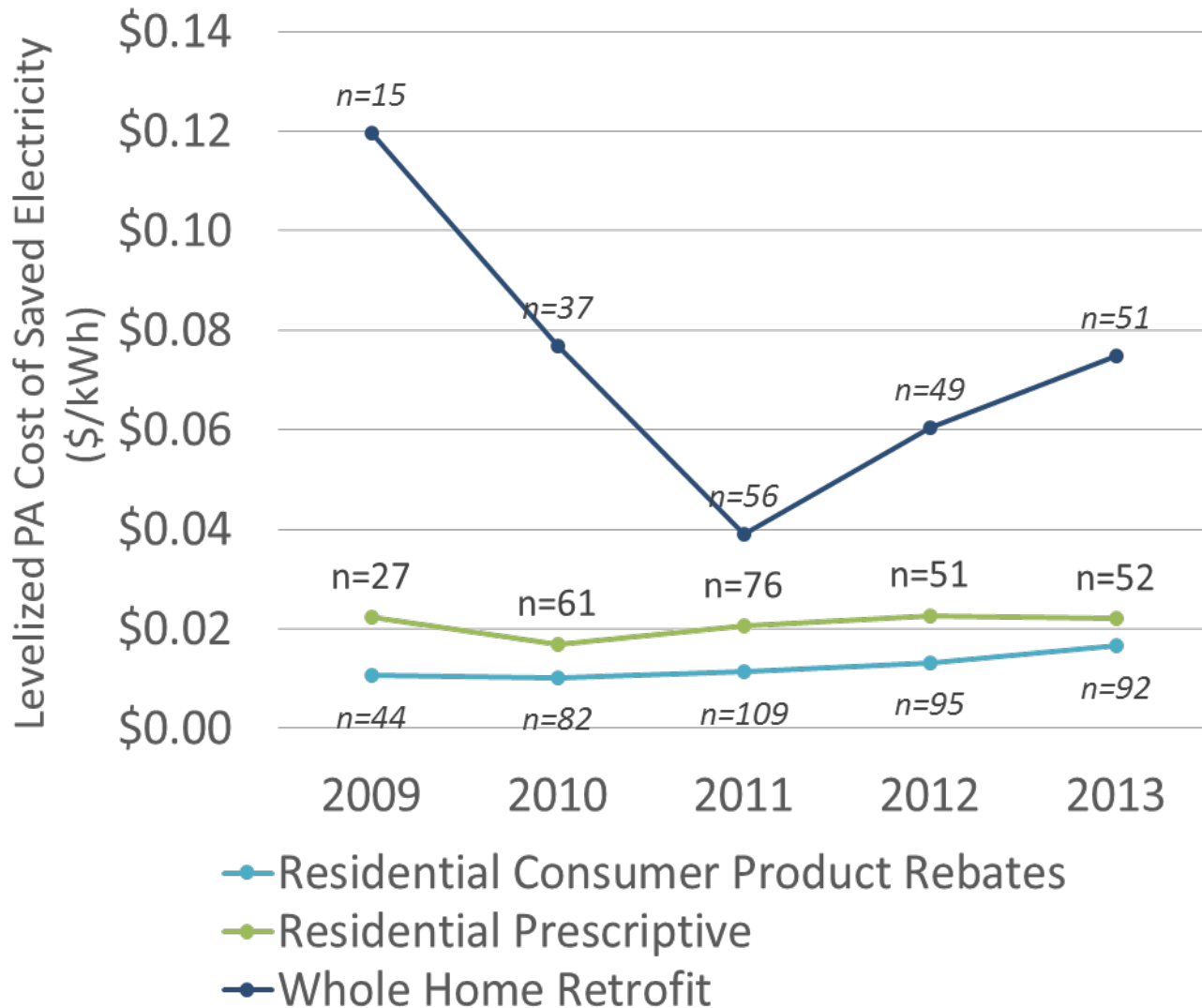


Residential and C&I Sector Trends



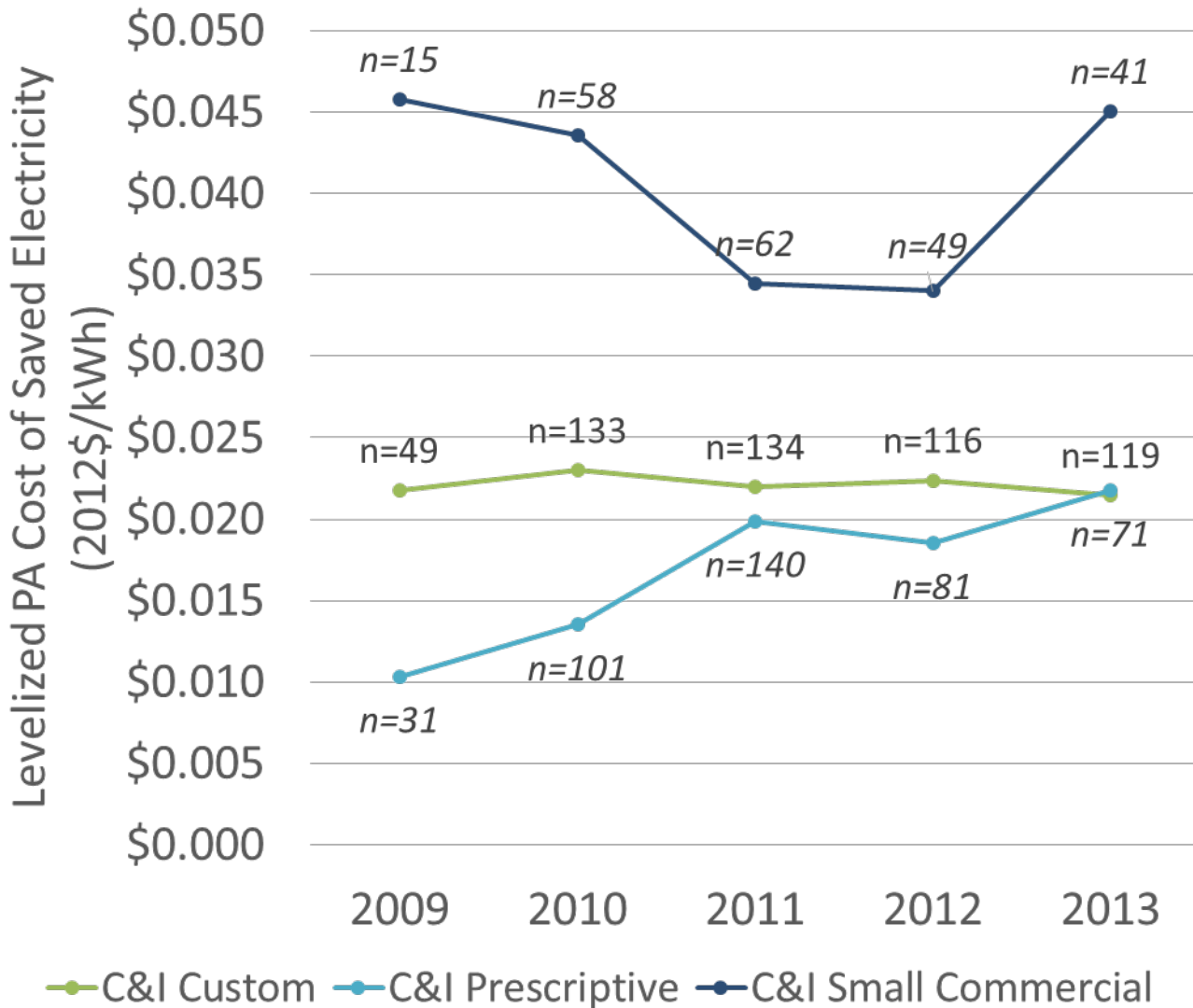
- Cost of saving electricity in homes: Rising 1.8 to 2.5 cents per kWh in five years for annual growth rate of 7%
- Cost of savings in business and ag: Rising 2 to 2.5 cents per kWh for 5% annual growth

Trends for Select Residential Programs



- Cost of electricity savings rising for Consumer Product Rebates but from a very low base
- Prescriptive programs flat
- Retrofit programs (home performance and direct install) fallen since 2009 but lately rising as spending increases but savings flat

Trends for Select C&I Programs



- Levelized PA CSE for common C&I programs nearly level or rising
 - Custom programs largely flat
 - Prescriptive programs rising but leveling off
 - Some flux in small commercial programs but essentially flat

Variability in the Cost of Saved Energy

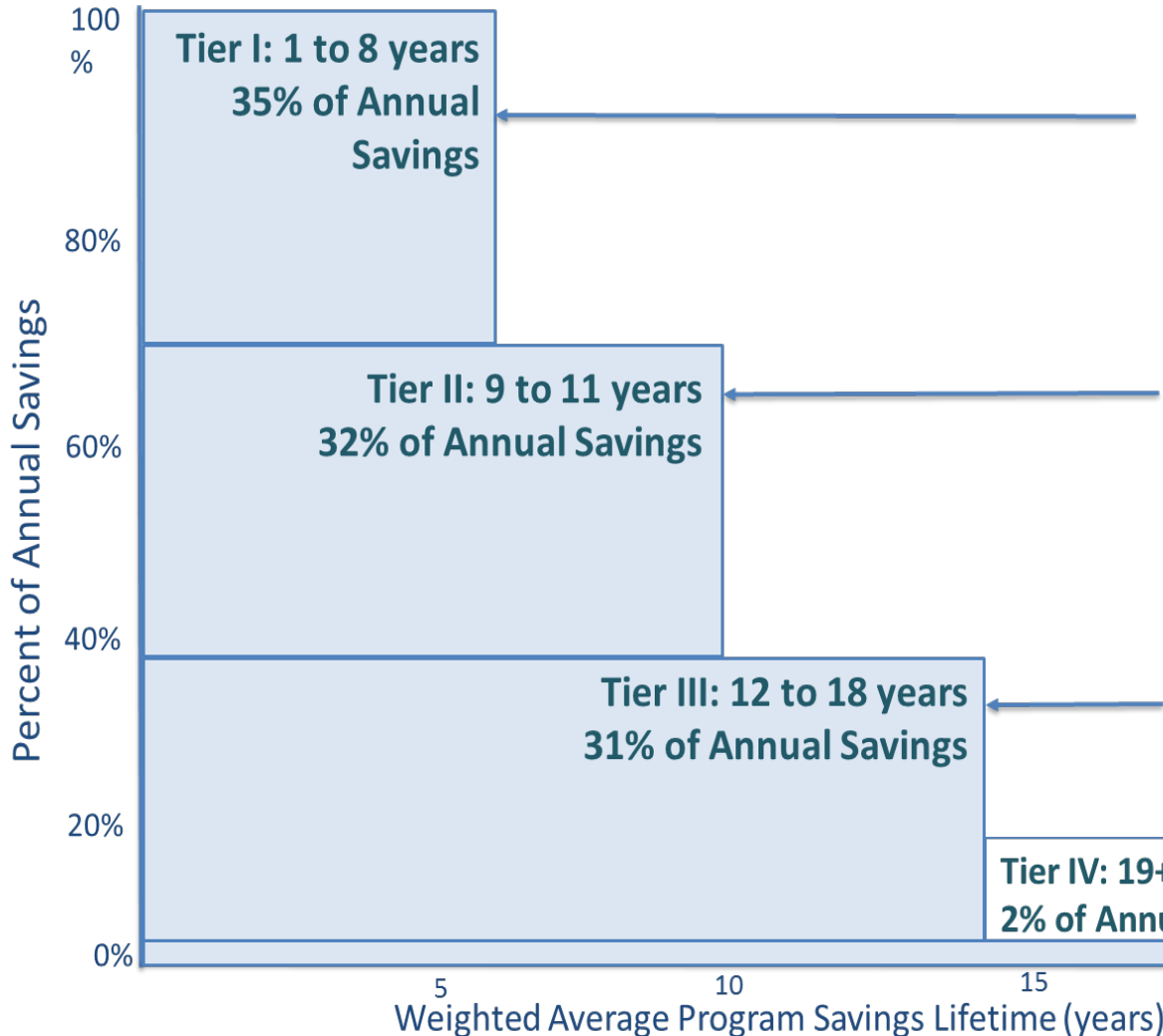
- Policy context
 - Baselines – building energy codes and standards or common practice
 - Cost-effectiveness screening practices
 - Avoided supply costs
 - Building and equipment stock and new/emerging technologies
 - Program administrator performance and motivation
 - Economies of scale
 - Resources and approaches for estimating measure life and verifying savings
 - Labor and materials costs
- ...and more.

What Program Administrators Report About How Long the Savings From Their Programs Last

Magnitude and Distribution of Annual Savings By Program Type

Example Programs in Tier

- Res and C&I Lighting
- Consumer Electronics
- Appliance Recycling
- Residential Behavioral Feedback
- Res and C&I HVAC Tune-Ups
- Appliance Rebates
- Multi-Family Retrofits
- Pool Pumps
- Voltage Optimization
- Small Commercial Prescriptive
- Whole-Home Retrofits
- Low Income (Shell/System)
- Data Centers
- Industrial and Ag. Process
- Commercial HVAC
- Res and C&I New Construction
- Residential Insulation
- Cool Roofs



Conclusions

- **The levelized program administrator cost of saved electricity has been rising – \$0.02 to \$0.027/kWh nationally, in most regions and in each sector**
- **Increase is slower in C&I programs than in residential programs**
- **More complicated and mixed trends at the program level**
 - CSE Rising
 - Residential consumer product rebates, including lighting
 - C&I prescriptive
 - CSE Flat or Declining
 - C&I custom and small commercial
 - Residential prescriptive
 - Whole-home retrofit
- **Two-thirds of national annual energy savings are lasting 9+ years**

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