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Still The First Fuel: National Review of EE Resource Costs DRAFT Findings

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Agenda

- Introduction
- Background
- Methodology
- Data!
- Draft Conclusions and Next Steps

Disclaimer

- Findings are preliminary and subject to peer review this fall
- Publication by the end of 2013

Introduction

- Update of 2009 ACEEE study on the Cost of Saved Energy of utility EE programs
  - Broader group of states and entities
  - Data by customer class as available
- Goal is to provide a broad set of data and observe trends
- Broad audience: utility resource planners; EE implementers; advocates, etc.
- Costs are from a utility cost test perspective
- Regional and National efforts to improve consistency & collect data, e.g. NEEP, LBNL, SEE Action

Challenges

- Host of challenges in consistent data reporting of EE program costs and benefits
  - program cost types (admin, rebates, EM&V, shareholder incentives, etc.)
  - Variation in reporting & evaluation of savings
  - net vs. gross savings
  - at-site vs. at-generation electricity savings
  - discount rates, measure lifetimes

Methodology

- Collected EE annual reports, evaluations of cost-effectiveness, data requests to PSCs or program administrators
- 17 states so far (multiple utilities); 2009-2012
- Compiled data, and applied common methodology to calculate first-year costs and cost of saved energy (CSE)

	States Included in Data Set	Program Administrator(s) Covered		States Included in Data Set	Program Administrator(s) Covered
1	Arizona	Arizona Public Service Company (APS)	9	Minnesota	Xcel Energy
2	California	IOUs	10	New Mexico	Public Service of New Mexico
3	Colorado	Xcel Energy	11	Nevada	NV Energy
4	Connecticut	CEEF	12	Oregon	Energy Trust of Oregon
5	Illinois	Ameren and Com-Ed	13	Pennsylvania	IOUs
6	Iowa	IOUs	14	Rhode Island	National Grid
7	Massachusetts	IOUs	15	Texas	IOUs
8	Michigan	All utilities	16	Utah	Rocky Mountain Power
			17	Vermont	Efficiency Vermont

Data compiled
Energy efficiency savings (electricity and natural gas) as reported
net vs. gross
site vs. generation electricity impacts
by customer class
Program costs by type for EE only (admin, rebates, & shareholder incentives) (no DR or renewables)
Measure lifetimes by customer class
Benefit cost ratios

Methodology, cont.

Converted costs to real 2011$ (GDP deflators)
Selected at-site energy savings (converted as needed)
Selected net energy savings* for calculations
Derived first-year “acquisition” costs (program-year $ / program-year incremental savings)
Applied common real discount rate and reported measure lifetime* to calculate levelized cost of saved energy (CSE)

Levelized “Cost of Saved Energy”

- Levelized cost of Energy (LCOE) used as a way to compare resources across their lifespan
- For efficiency, this is the Cost of Saved Energy (in $/kWh or therm) = (C x Capital Recovery Factor)/D

Capital Recovery Factor = [A*(1+A)^(B)]/[(1+A)^(B)-1]

Where:

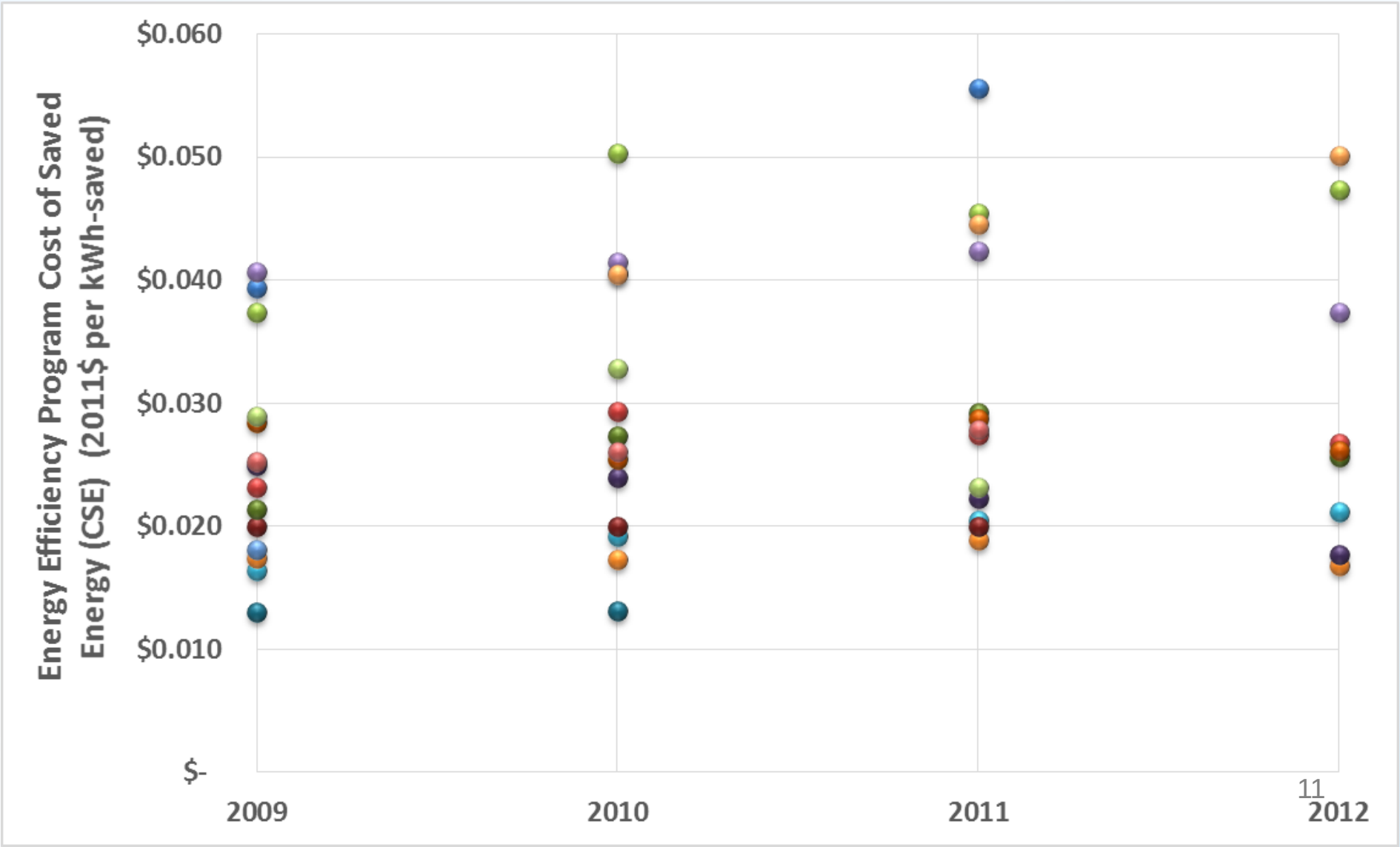
A = Discount rate

B = Estimated measure life in years

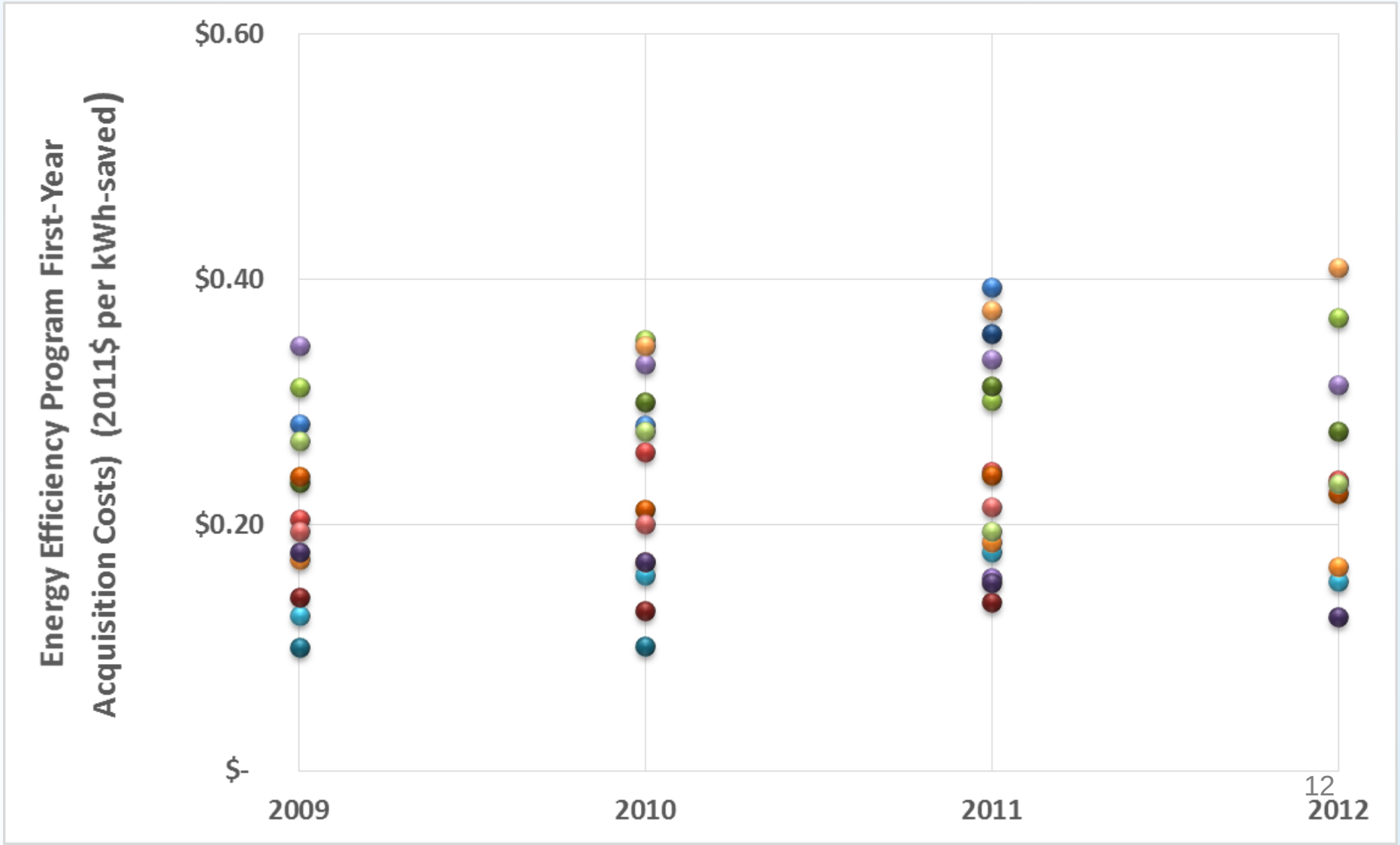
C = Total program cost

D = Incremental annual energy saved

Levelized Cost of Saved Energy (CSE) by Year for Electricity Programs (preliminary)



First-Year EE Acquisition Costs by Year for Electricity Programs (preliminary)



Cost of Saved Energy (CSE) Summary ($ per kWh) (preliminary)

	2009	2010	2011	2012	2009-2012 Average*
Average*	$0.026	$0.029	$0.030	$0.030	**$0.028**
Median	$0.025	$0.027	$0.028	$0.026	**$0.026**
Minimum	**$0.013**	$0.013	$0.018	$0.017	**$0.013**
Maximum	$0.041	$0.050	**$0.056**	$0.050	**$0.045**

First-Year Cost Summary ($ per kWh)

	2009	2010	2011	2012	2009-2012 Average
Average	$0.22	$0.24	$0.25	$0.25	**$0.24**
Median	$0.20	$0.24	$0.24	$0.24	**$0.23**
Minimum	**$0.10**	$0.10	$0.14	$0.13	**$0.10**
Maximum	$0.35	$0.35	$0.39	**$0.41**	**$0.38**

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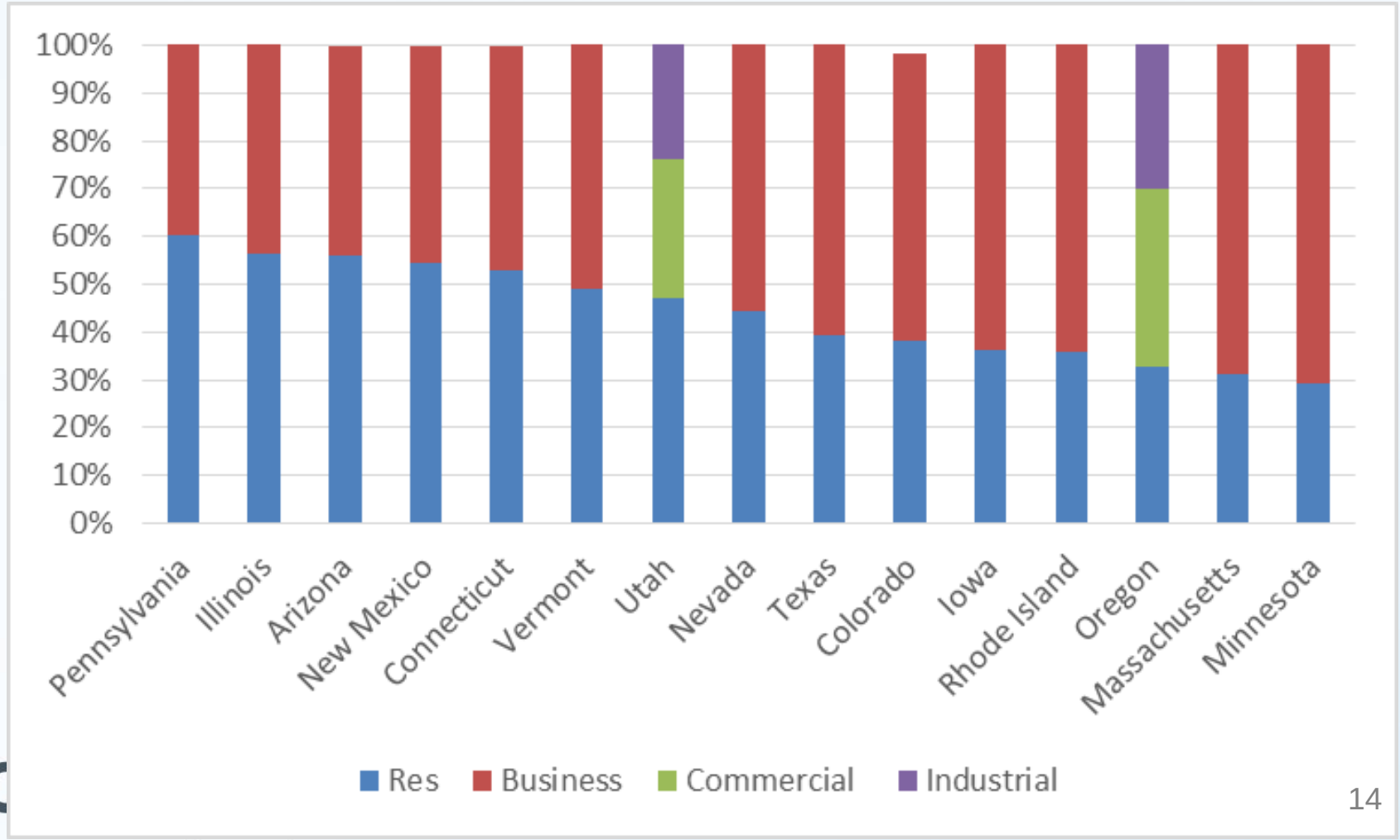
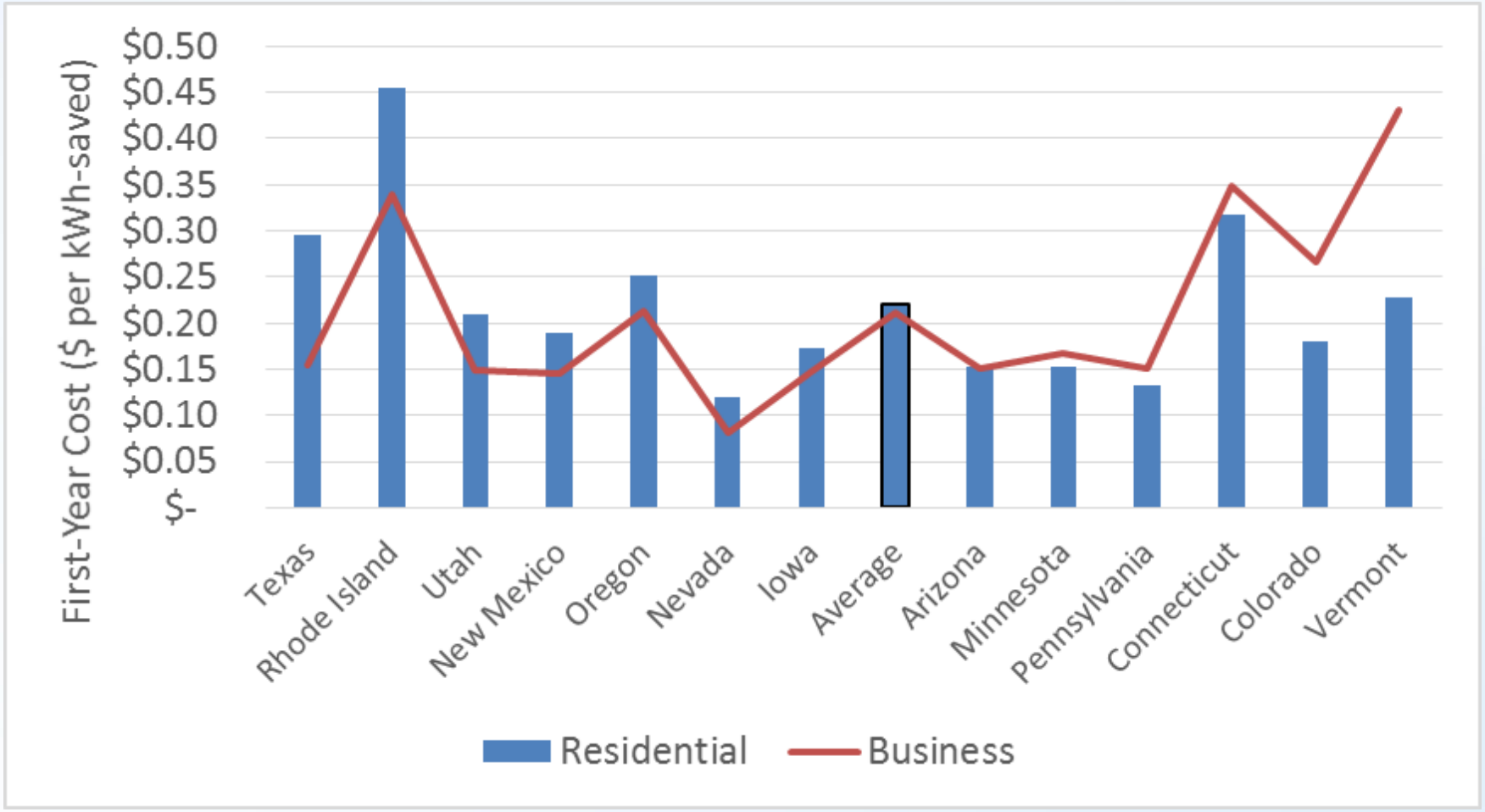
*Note: Simple average, etc. of state-level data points

Electricity Savings by Sector (2009-2012 total) (preliminary)



First-Year Cost by Customer Class (preliminary)



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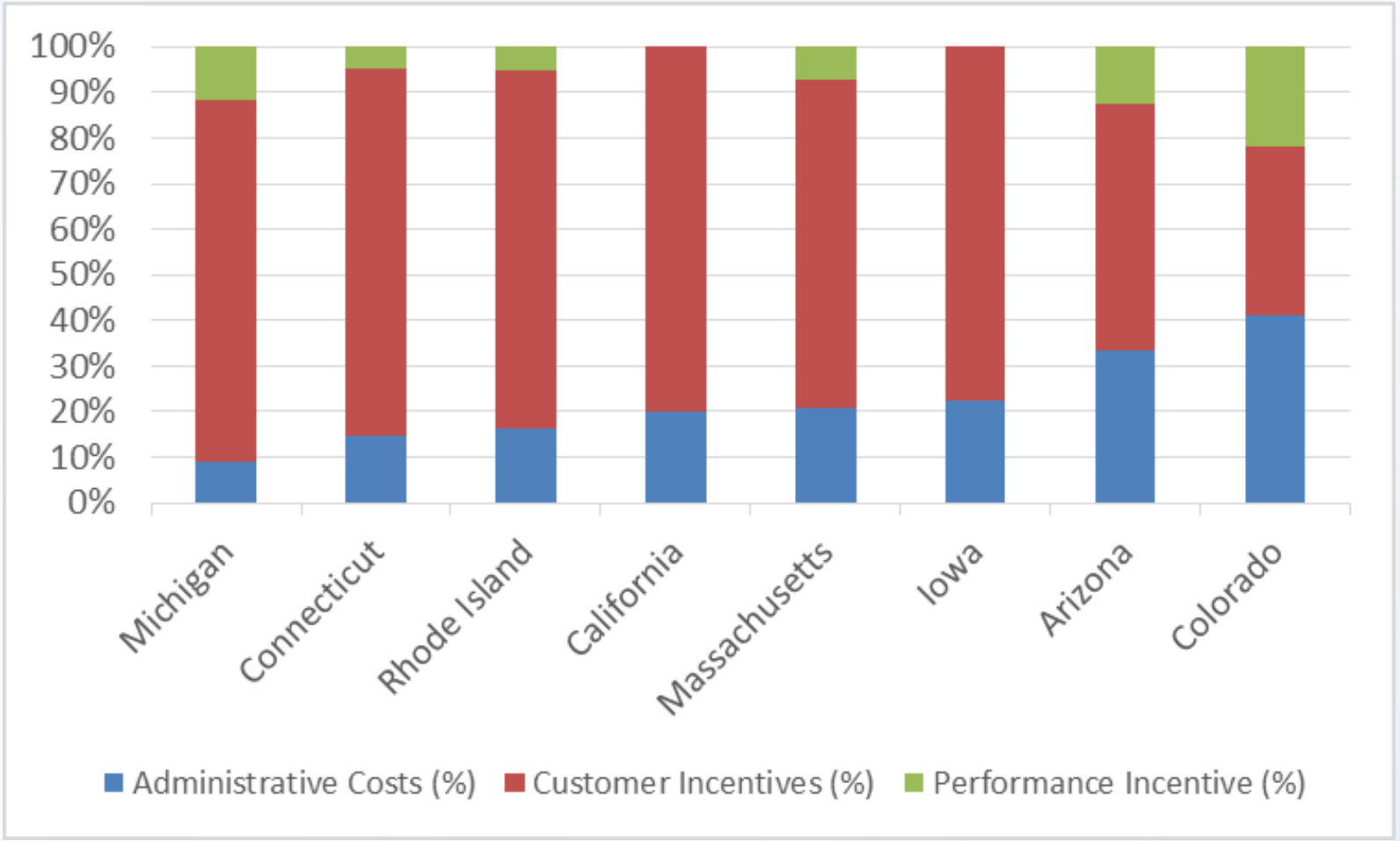
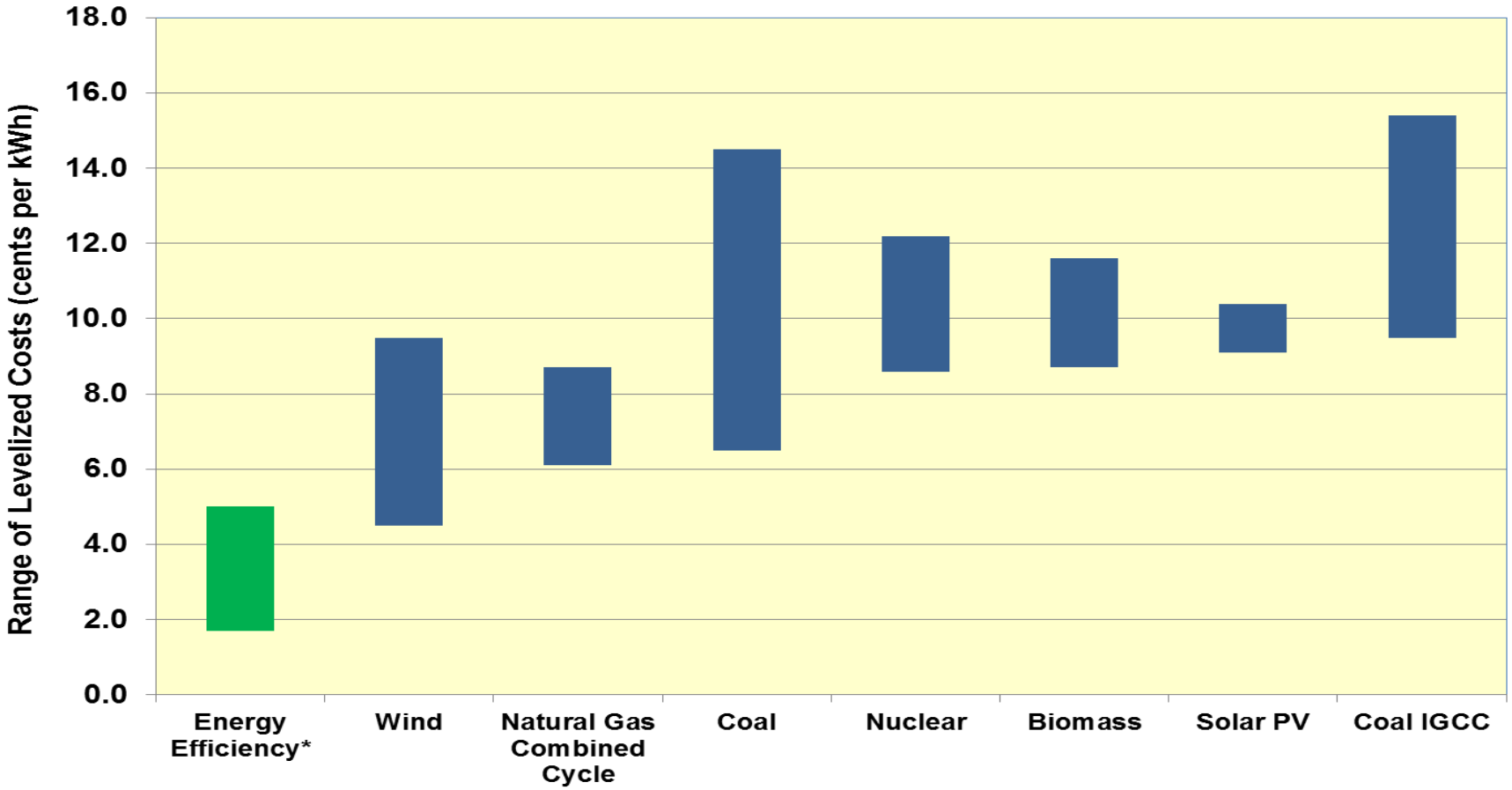
Efficiency Resource Costs by Type (preliminary)



More to come…

- Natural gas program cost of saved energy
- Benefit / cost ratios for TRC, UCT, etc.
- Energy savings levels (% of sales)
- Apply different discount rates
- Additional states/utilities

Levelized costs of new electricity resource options in 2012 (EE preliminary)



*Notes: Energy efficiency program portfolio data from Molina 2013 (ACEEE forthcoming); All other data from Lazard 2013. High-end range of coal includes 90% carbon capture and compression.

Conclusions (Preliminary Findings)

- Host of variables make it difficult to compare data among states
- Credibility of efficiency as a resource calls for greater consistency in evaluation methodology and reporting metrics
- How can we bridge the gap on reporting metrics?
- Average program CSE across 17 states from 2009-2012 ranges from $0.013 to $0.045/kWh, with an average of $0.028/kWh
- Slightly higher cost range from last review, but also improved data collection methods
- Cost by customer class varies among states
- Efficiency remains the “first fuel” – least-cost resources compared to supply resources on a levelized cost basis
- What other resource cost metrics are valuable to planners?