MEETING AGGRESSIVE NEW STATE GOALS FOR ENERGY EFFICIENCY:

EXAMINING KEY FACTORS ASSOCIATED WITH HIGH SAVINGS

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THE OPPORTUNITY

A ‘perfect storm’ for Energy Efficiency

1. Massive increases and great volatility in fuel prices
2. Large and unprecedented increases in the costs of power plant construction
3. Shrinking reserve margins leading to concerns about electric system reliability in many regions
4. Growing uncertainty about the ability to finance and secure cost recovery for large electric generating plants
5. Mounting concerns about global warming
   - Political
   - Economic

THE CHALLENGE

- In the last 2 years, a number of states have established aggressive new energy savings goals
  - MN 1.5% savings per year
  - IL and OH ramp up to 2%/year next decade
  - NY, MD discussing goals that would exceed 2%/year by 2015
  - VT heading to >2% in next few years
  - Several other states in the 1% to 2% range w/ ramp-up

However:

- In our last comprehensive review (2004), the few very best states were only saving 0.8% per year

THE QUESTION

How are we going to accomplish this?

Focus of our current ACEEE study:

- Identify the current "top states
- Identify the primary elements that have contributed to top performance
- Identify key factors that may enable significant increases in future performance

METHODOLOGY

- Identified a panel of 9 top energy efficiency experts
- Obtained their nominations for the 10 “top states” in utility-sector energy efficiency
- Analyzed actual EIA and state data on energy efficiency spending and savings
- Using the above, identified a set of 14 top states
- Conducted data collection & interviews with each state
- Additional input from our expert panel on key factors

The remaining slides present our initial results

Table 1: Experts' Rankings of States on Utility Sector Energy Efficiency

State	Median Rank by Expert Panelist	Number of Times State Was Selected by Expert Panelist as One of Top Ten Leading EE States
California	1	9
Massachusetts	3	9
Connecticut	3	7
Vermont	4	9
Wisconsin	6	8
New York	6	8
Oregon	7	9
Minnesota	7	6
New Jersey	9	7
Washington	9	6
Texas	11	5
Iowa	11	3
Rhode Island	13	2
Nevada	14	1

Table 2: Electric Energy Efficiency Program Savings and Spending Data for Leading States

State	Median Rank by Expert Panel	Number of times selected	Rank with tie-breakers used	Total EE spending as % total revenues for all utilities		EE spending per capita		EE incremental savings -- statewide as % of total state kWh sales	
				%		$/capita		%	
				2006	2007	2006	2007	2006	2007
California	1	9	1	1.1%	1.9%	$9.85	17.64	0.7%	0.9%
Massachusetts	3	9	2	1.5%	NA	$19.43	NA	0.8%	NA
Connecticut	3	7	3	1.5%	2.1%	$20.31	28.05	1.2%	1.3%
Vermont	4	9	4	2.4%	3.5%	$25.46	37.78	1.1%	1.8%
Wisconsin	6	8	5	1.3%	1.6%	$13.15	16.05	0.5%	NA
New York	6	8	6	1.1%	1.1%	$11.66	12.31	0.6%	NA
Oregon	7	9	7	2.0%	2.2%	$17.15	18.54	0.8%	0.9%
Minnesota	7	6	8	1.0%	1.5%	$9.33	13.20	0.6%	NA
New Jersey	9	7	9	0.9%	1.0%	$9.60	10.96	0.3%	0.3%
Washington	9	6	10	2.2%	2.4%	$17.77	19.67	0.7%	0.7%
Texas	11	5	11	0.2%	0.2%	$2.47	3.36	0.1%	0.1%
Iowa	11	3	12	1.7%	NA	$17.57	NA	0.7%	NA
Rhode Island		2	13	1.6%	1.6%	$16.18	16.23	1.2%	0.8%
Nevada		1	14	0.7%	0.8%	$9.63	11.40	0.6%	0.6%

Figure 1: Expert Rankings vs EE Spending as % Revenues

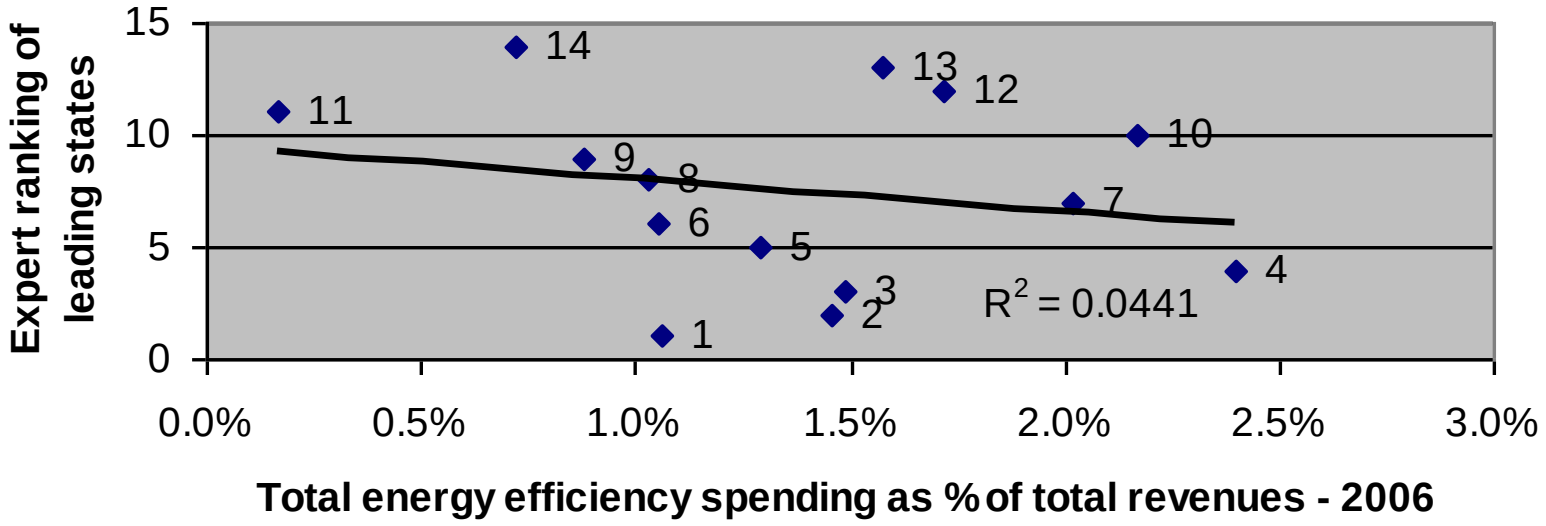


Figure 2: Expert Rankings vs EE Spending Per Capita

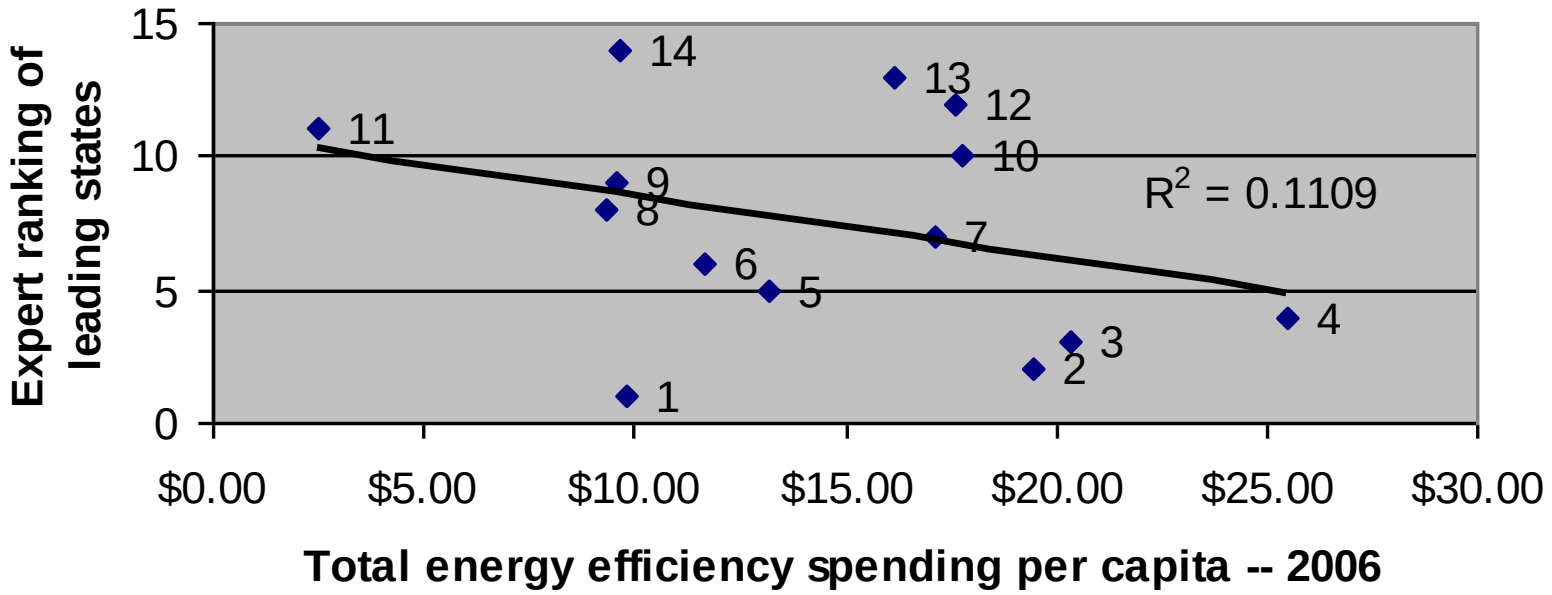
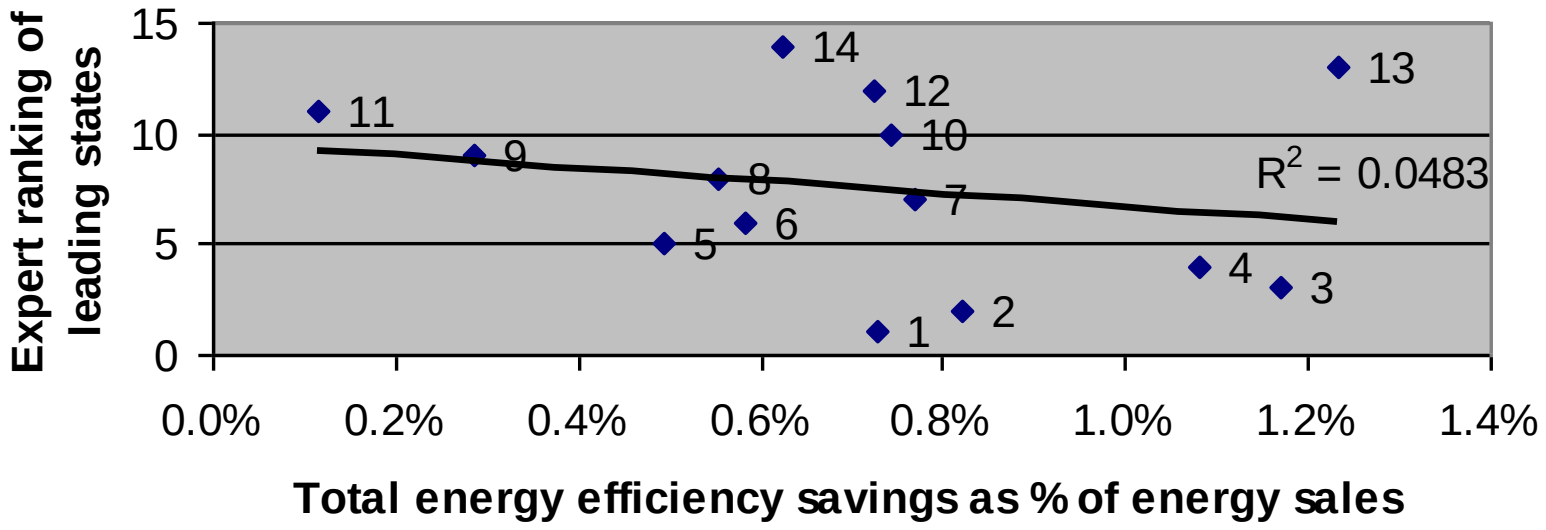


Figure 3: Expert Rankings vs EE Savings as % Energy Sales



OBSERVATIONS REGARDING STATE RANKINGS

- Expert rankings of top states were not solely driven by spending and savings numbers, other factors such as state policies and longevity of commitment likely influence
- Nevertheless, they included the top 8 states in annual savings %, and 12 of the top 16
- We feel our “top 14” are a very good representation of the top states in the nation in terms of utility-sector energy efficiency

HOW IMPORTANT IS THE LEVEL OF FUNDING PROVIDED FOR ENERGY EFFICIENCY?

- Intuitively, one would expect that the level of energy efficiency program funding would be a major driver of the relative level of energy savings achieved
- On the other hand, there is a pervasive cultural opinion that you can't just "throw money at a problem", and that spending a lot of money doesn't guarantee a successful outcome

What does the data indicate?

Figure 4: EE Spending as % Revenues vs. EE Savings as % Energy Sales

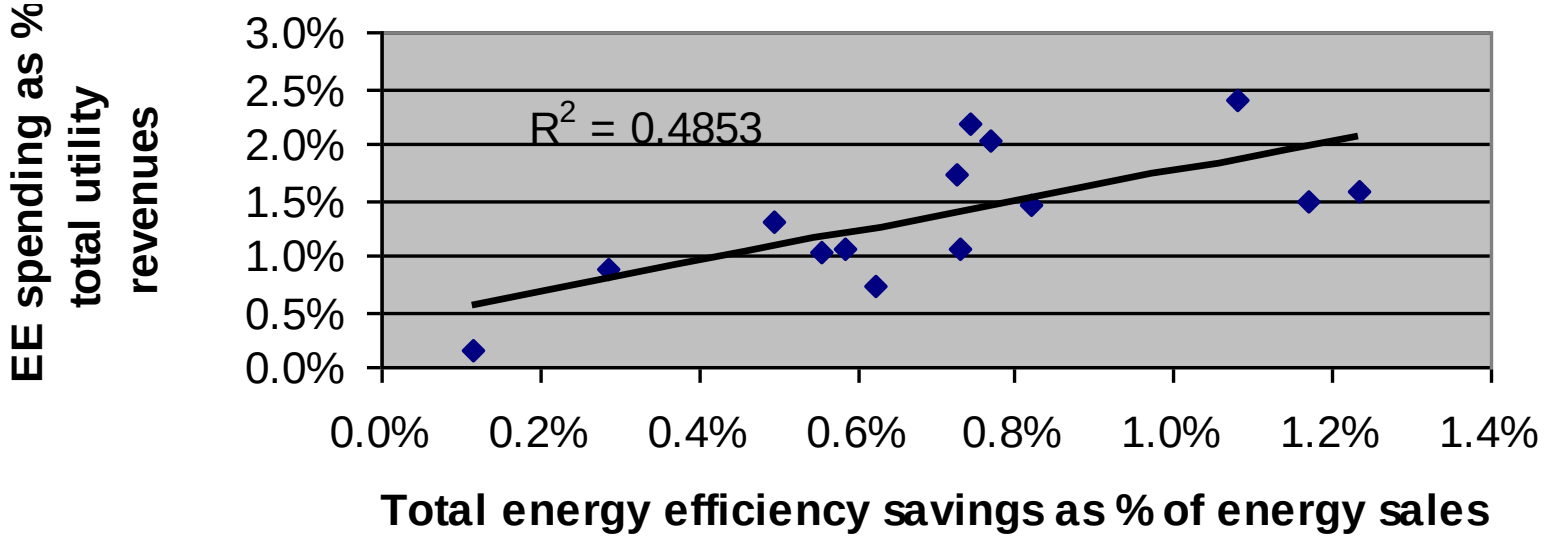
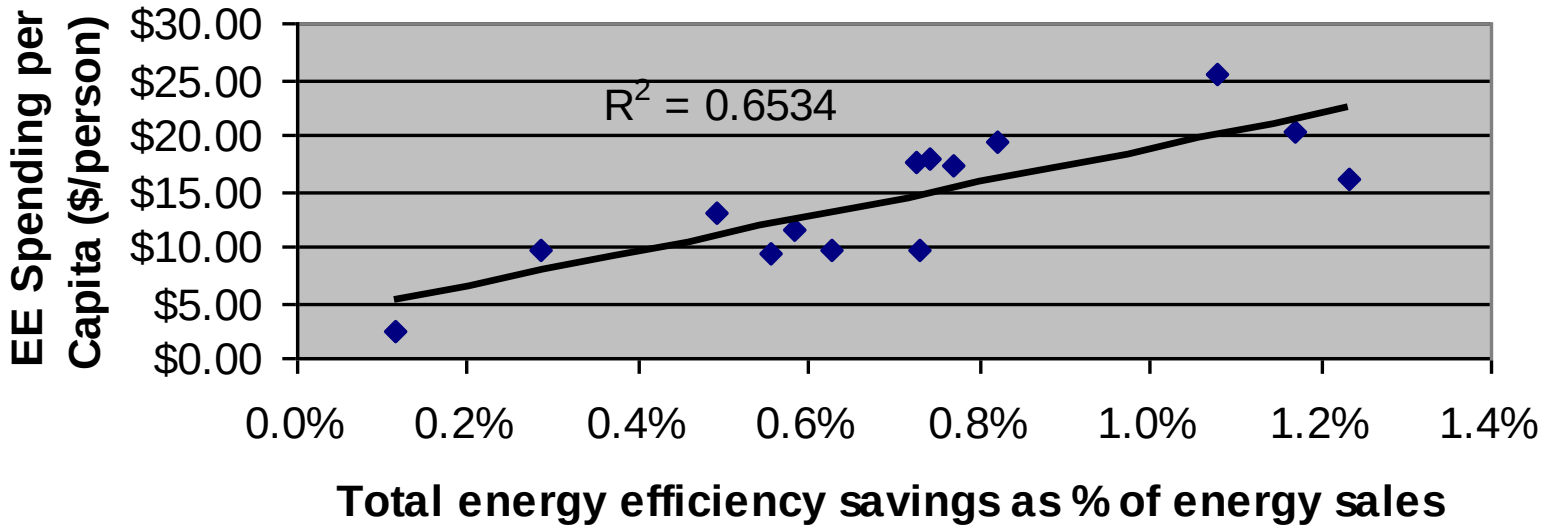


Figure 5: EE Spending per capita vs EE Savings as % Energy Sales



CONCLUSION ON THE IMPORTANCE OF THE FUNDING LEVEL?

You can't just talk the talk…

You gotta walk the walk

Table 3: Energy Efficiency Spending and Savings by Sector

State		Expenditures		Savings		
		Res	Non-Res	Year	Res	Non-Res
Connecticut	**Program**	29%	71%	2007	34%	66%
Vermont	Efficiency Vermont	49%	51%	2007	60%	40%
Wisconsin						
	Focus on Energy: 2nd half FY07	39%	61%	2007	36%	64%
	Focus on Energy: Cumulative program 2001-2007	45%	55%	2007	42%	58%
New York						
	NYSERDA	50%	50%	2007	25%	75%
Northwest Region	Regional data--WA, OR, ID and western MT	40%	60%	2007	36%	64%
New Jersey		64%	36%	2007	62%	38%
Texas		64%	36%	2007	43%	57%
Iowa		43%	57%	2006	24%	76%
Rhode Island		38%	62%	2007	38%	62%
	Max	64%	71%		62%	76%
	Min	29%	36%		24%	38%
	Median	44%	56%		37%	63%
	Mean	46%	54%		40%	60%

Table 4: Percentage Savings/Percentage Spending

Key: Values less than 100% mean that percentage savings are less than percentage spending			
Values greater than 100% mean that percentage savings are greater than percentage spending			
		Res	**C/I**
CT		116%	94%
VT	Efficiency Vermont	122%	79%
WI			
	Focus on Energy: 2nd half FY07	93%	105%
	Focus on Energy: Cumulative program 2001-2007	93%	105%
NY			
	NYSERDA	51%	149%
Northwest Region	Regional data--WA, OR, ID and western MT	88%	108%
NJ		97%	106%
TX		67%	158%
IA		56%	133%
RI		98%	101%
	Max	122%	158%
	Min	51%	79%
	Median	93%	106%
	Mean	88%	114%

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Table 5: Electricity Savings by Program and Principal End-Use Technologies (1 of 3)

Southern California Edison	Percentage Savings of Sector (%)	Percentage Savings of Total (%)
Residential		
Lighting	77	35
Refrigeration	20	9
HVAC	3	1
Commercial/Industrial		
Lighting	61	28
Process	18	8
Other	13	6
All lighting		63
Pacific Gas & Electric		
Residential		
Lighting	92	37
Refrigeration	5	2
HVAC	2	1
Commercial/Industrial		
Lighting	69	36
Process	13	7
Other	9	5
All lighting		72

Table 5: Electricity Savings by Program and Principal End-Use Technologies (2 of 3)

Narragansett Electric Co – National Grid	Percentage Savings of Sector (%)	Percentage Savings of Total (%)
Residential		
Lighting	73	27
Other end use segmentation not available		
Efficiency Vermont		
Residential		
Lighting	89	53
Hot water fuel switching	2	1
Space heating fuel switching	2	1
Commercial/industrial		
Lighting	60	24
Industrial process efficiency	15	6
Motors	7	3
All services		
Lighting		77
Industrial Process Efficiency		6
Motors		3

Table 5: Electricity Savings by Program and Principal End-Use Technologies (3 of 3)

New Jersey Clean Energy Program	Percentage Savings of Sector (%)	Percentage Savings of Total (%)
Residential		
Lighting	83	51
HVAC	9	5
New Homes	4	2
Commercial/Industrial		
End-use savings data not available		
Focus on Energy (Wisconsin)		
Residential		
Lighting	63	26
ECM furnace (fans)	9	4
Refrigeration	5	2
Commercial/Industrial		
Lighting	55	37
Compressed Air	9	6
HVAC	8	6
All lighting		63

OBSERVATIONS ON SPENDING BY SECTOR AND BY PROGRAM/END USE

- Most states are fairly balanced in spending by sector (general concern for "equity" in terms of who pays)
- Generally true that there is more savings per dollar spent in the C&I sector than in Residential
- Saving thus far have been heavily dominated by lighting….both for C&I and Residential….but especially so for Residential (63% to 92% of sector savings in the states for which we had data)
- New federal lighting standards in a few years (beginning in 2012) will dramatically affect potential savings from CFL programs….Need new ideas for Residential sector

Expert's Ratings of Key Energy Efficiency Factors (1 of 4)

Factor	Historical Importance (mean rating) (1-10 scale)	No. of times given #1 rating	Importance for meeting higher goals (mean rating) (1-10 scale)	No. of times given #1 rating
Relative size of EE program budget	8.8	Five	9.4	Four
Strong legislative requirement for EE	8.3	Three	9.4	Six
Supportive regulatory commission	8.0	Three	8.5	Four
EE programs that are higher quality than typical industry practices	7.1	One	8.0	Three
Utility shareholder incentives for EE program results	6.8	One	8.3	Three
Personal commitment to EE by top utility management	6.8	Four	8.9	Five
Increased experience and capability due to prior EE program experience	6.4	One	7.7	One
How high the price of electricity (gas) is	5.6	None	6.8	None

Expert's Ratings of Key Energy Efficiency Factors (2 of 4)

Factor	Historical Importance (mean rating) (1-10 scale)	No. of times given #1 rating	Importance for meeting higher goals (mean rating) (1-10 scale)	No. of times given #1 rating
Having decoupling in place	5.4	One	7.8	Three
Who administers the EE programs (utility vs. non-utility)	5.1	None	5.1	None
Existing state building codes/ efficiency stds – affect "baseline"	4.9	None	5.9	None
Particular characteristics of state/ service territory	4.5	None	5.3	None
Whether a state is "restructured" or not	4.4	One	4.4	One
Having some penalty for poor EE program performance	4.0	None	5.0	None
Diminished remaining potential due to history of prior EE programs	3.8	None	4.1	None
The perceived cost of carbon emissions	3.4	None	7.9	None

Expert's Ratings of Key Energy Efficiency Factors (3 of 4)

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Personal commitment to EE by top utility management	6.8	Four	8.9	Five
Increased experience and capability due to prior EE program experience	6.4	One	7.7	One
How high the price of electricity (gas) is	5.6	None	6.8	None

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Expert's Ratings of Key Energy Efficiency Factors (4 of 4)

Factor	Historical Importance (mean rating) (1-10 scale)	No. of times given #1 rating	Importance for meeting higher goals (mean rating) (1-10 scale)	No. of times given #1 rating
Having decoupling in place	5.4	One	7.8	Three
Who administers the EE programs (utility vs. non-utility)	5.1	None	5.1	None
Existing state building codes/ efficiency stds – affect "baseline"	4.9	None	5.9	None
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Diminished remaining potential due to history of prior EE programs	3.8	None	4.1	None
The perceived cost of carbon emissions	3.4	None	7.9	None

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Expert's Ratings of Key Future Factors (1 of 2)

Factor	Historical Importance (mean rating) (1-10 scale)	No. of times given #1 rating	Importance for meeting higher goals (mean rating) (1-10 scale)	No. of times given #1 rating
Relative size of EE program budget	8.8	Five	9.4	Four
Strong legislative requirement for EE	8.3	Three	9.4	Six
Supportive regulatory commission	8.0	Three	8.5	Four
EE programs that are higher quality than typical industry practices	7.1	One	8.0	Three
Utility shareholder incentives for EE program results	6.8	One	8.3	Three
Personal commitment to EE by top utility management	6.8	Four	8.9	Five
Increased experience and capability due to prior EE program experience	6.4	One	7.7	One
How high the price of electricity (gas) is	5.6	None	6.8	None

Expert's Ratings of Key Future Factors (2 of 2)

Factor	Historical Importance (mean rating) (1-10 scale)	No. of times given #1 rating	Importance for meeting higher goals (mean rating) (1-10 scale)	No. of times given #1 rating
Having decoupling in place	5.4	One	7.8	Three
Who administers the EE programs (utility vs. non-utility)	5.1	None	5.1	None
Existing state building codes/ efficiency stds – affect "baseline"	4.9	None	5.9	None
Particular characteristics of state/ service territory	4.5	None	5.3	None
Whether a state is "restructured" or not	4.4	One	4.4	One
Having some penalty for poor EE program performance	4.0	None	5.0	None
Diminished remaining potential due to history of prior EE programs	3.8	None	4.1	None
The perceived cost of carbon emissions	3.4	None	7.9	None

KEY POLICIES IN TOP STATES

- **Energy Efficiency Cost Recovery** – All 14 states have some type of well-established, practical and substantial utility rate funding mechanism for EE program cost recovery

- **Shareholder Incentives** – Nine of the 14 states have utilities as the primary administrator of the EE programs. Seven of those nine feature some type of "shareholder incentive" tied to EE performance

- **Other Performance Incentives** – The other five states have the EE programs administered by govt. or "3rd party non-profit organizations", so shareholder incentives are 'N/A'. But 2 have performance incentives for the administrator

KEY POLICIES IN TOP STATES

Decoupling – At the time of the savings results in Table 2 only one state had decoupling for electric utilities (CA), but several states have since decided to implement decoupling, and a number of others are examining the issue.

Energy Efficiency Resource Standards (EERS) – are a fairly recent policy development, but eight of the 14 states have now adopted some type of specific annual energy savings requirements

MEETING AGGRESSIVE NEW ENERGY SAVINGS GOALS: INITIAL CONCLUSIONS

- Must 'walk the walk' (will need to commit to significant funding levels for energy efficiency programs)
- Be willing to use strong financial incentives for customers (should be plenty of 'head room' for this)
- Must address utility economics (i.e., decoupling and shareholder incentives)
- Should incorporate climate goals and motivations (both political and economic….i.e., monetize carbon)
- Take advantage of prior experience with exemplary programs
- Consider moving to 'gross savings' targets for the state, and "all in" (i.e., codes, standards, public campaigns, etc.)