



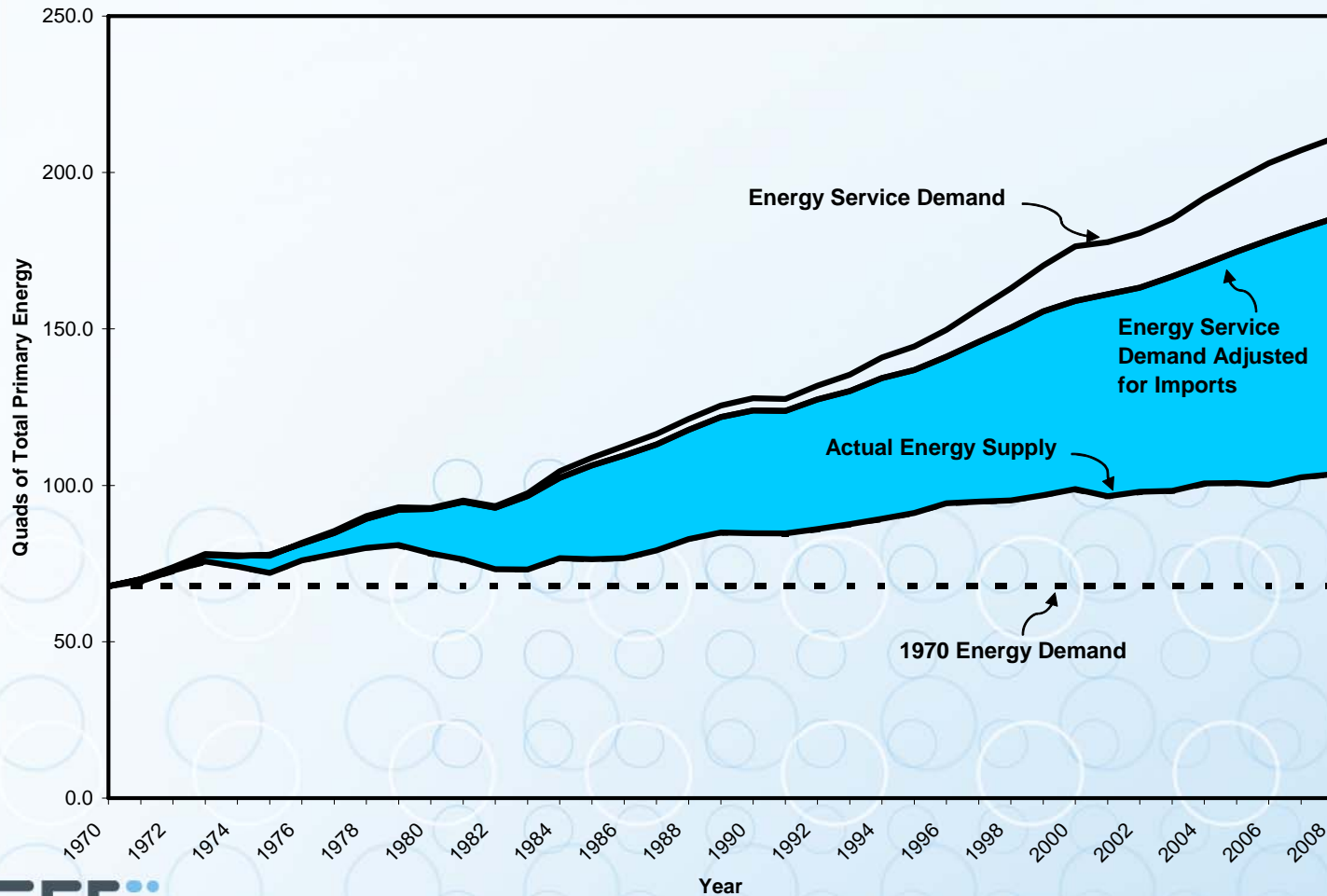
Energy Efficiency Resource Standards

Steven Nadel

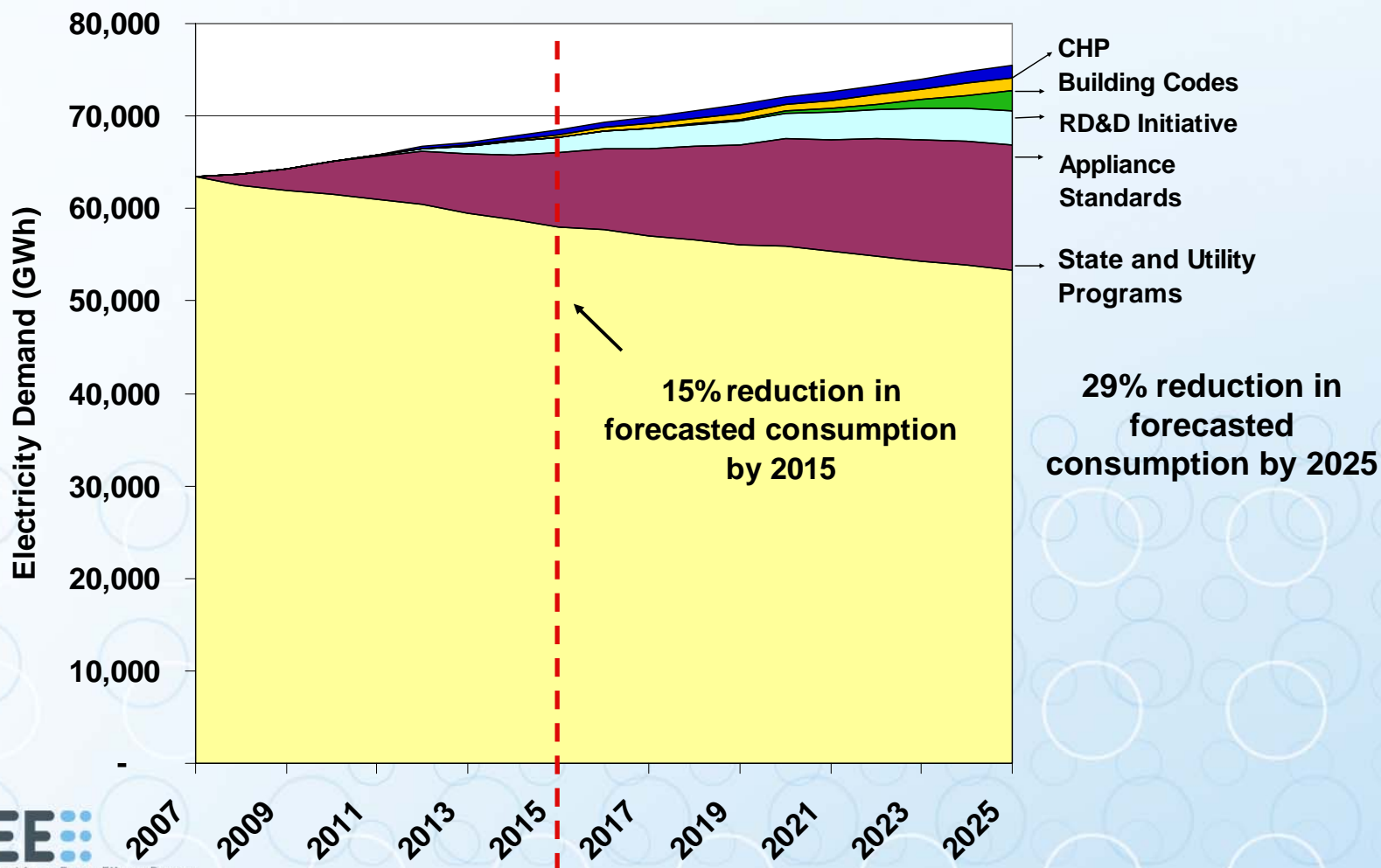
American Council for an Energy-Efficient
Economy

Jan. 2009

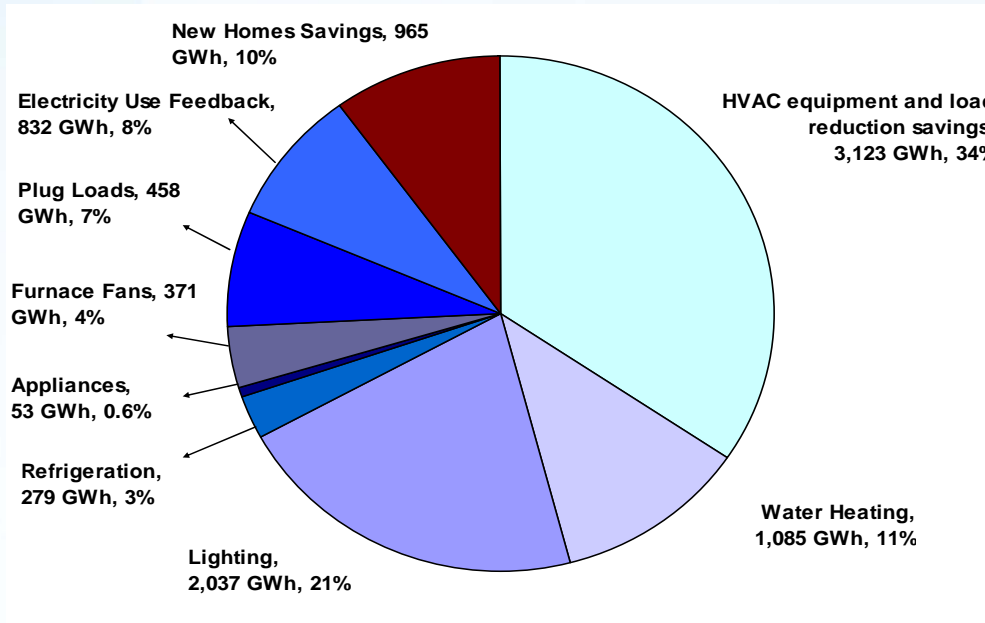
U.S. Energy Use in Relation to GDP 1970-2008



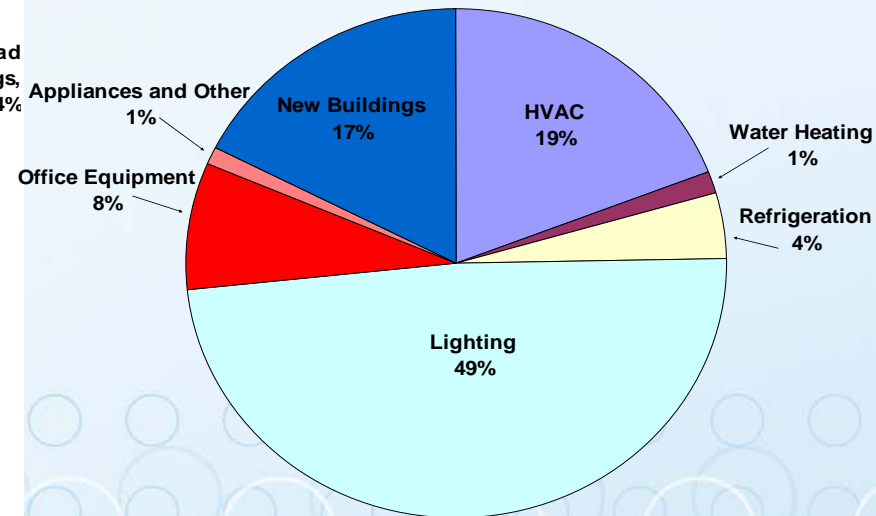
Share of Maryland Electricity Sales That Can Be Met by Efficiency Policies



Many Efficiency Measures Contribute Towards Savings Targets



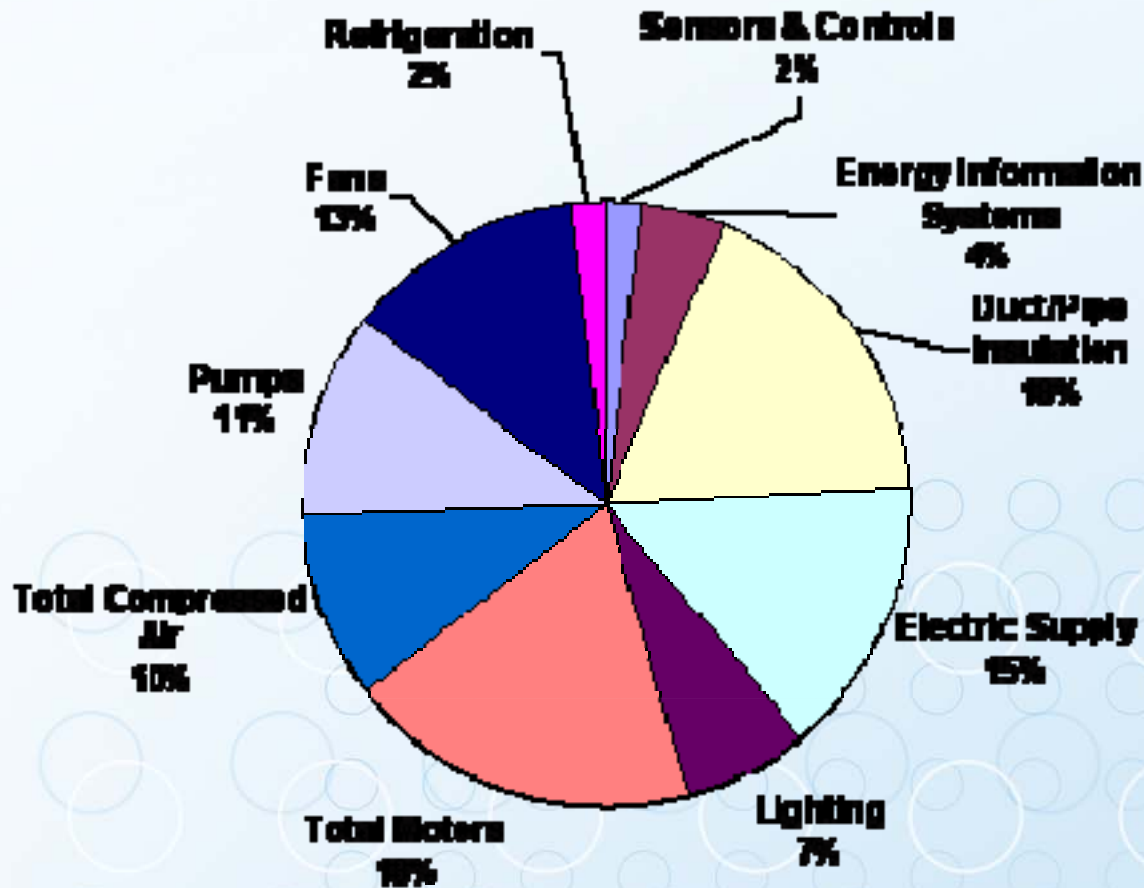
Residential



Commercial

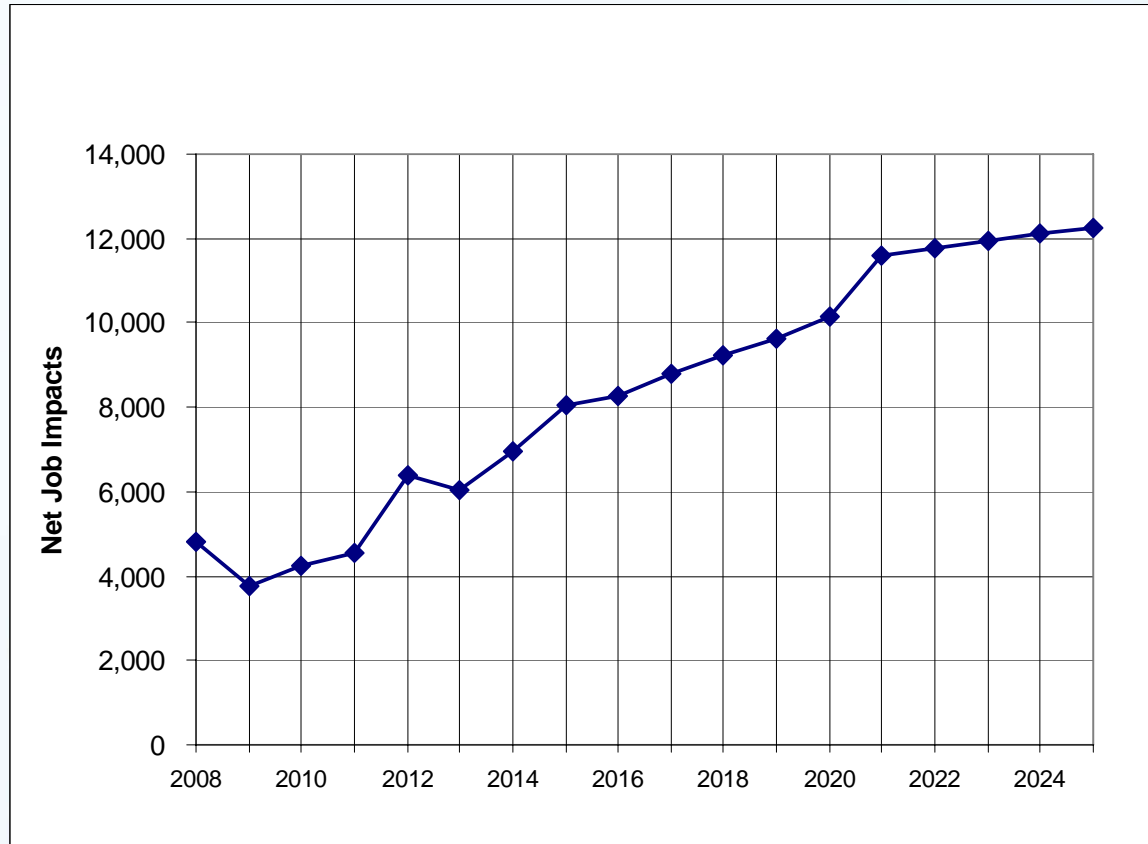
Source: ACEEE Feb. 2008 Maryland study

Industrial Efficiency Opportunities in Maryland



Efficiency Programs Generate Jobs

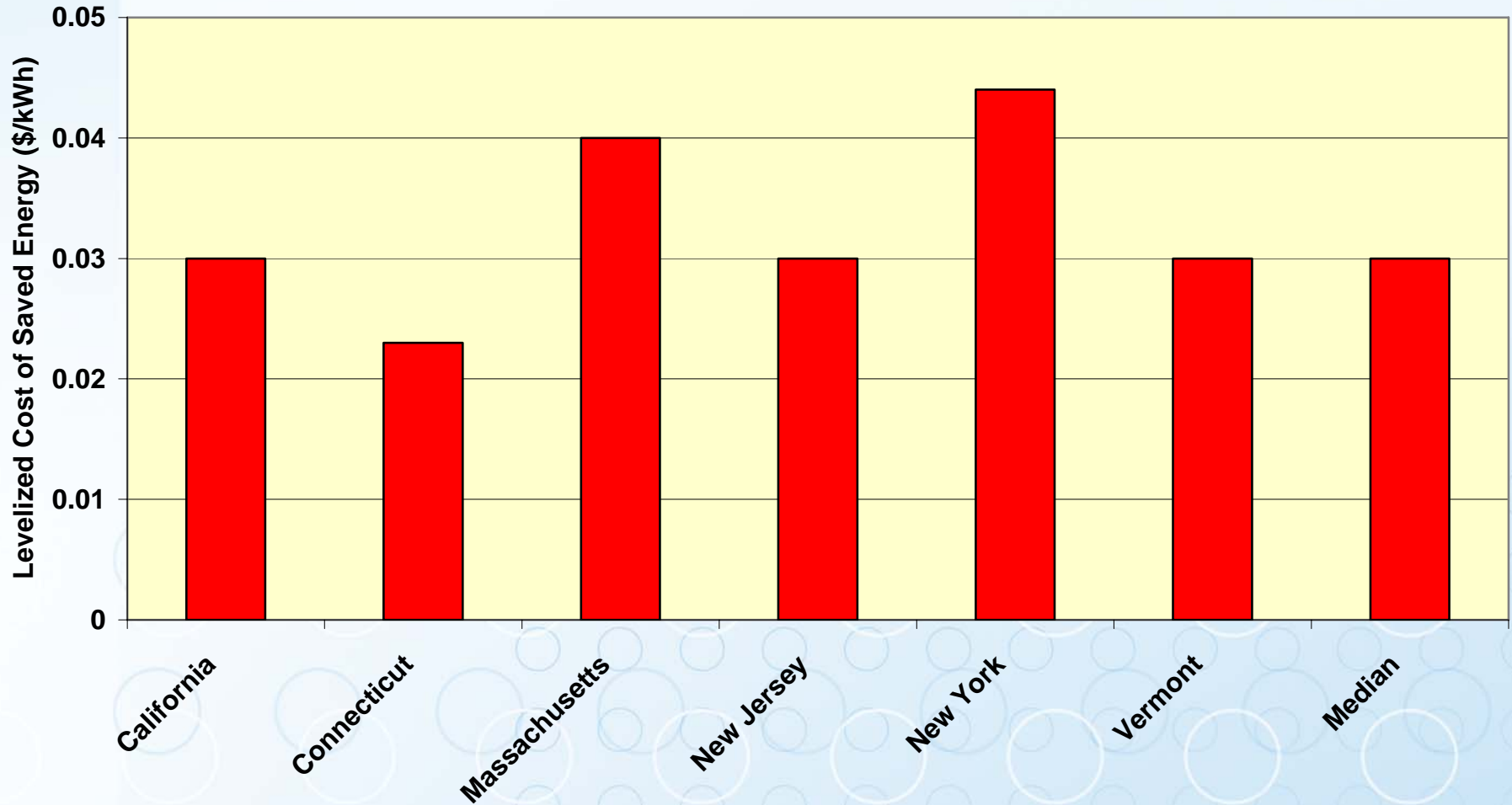
(Maryland 29% savings by 2025 scenario)



Source: ACEEE Feb. 2008 Maryland report

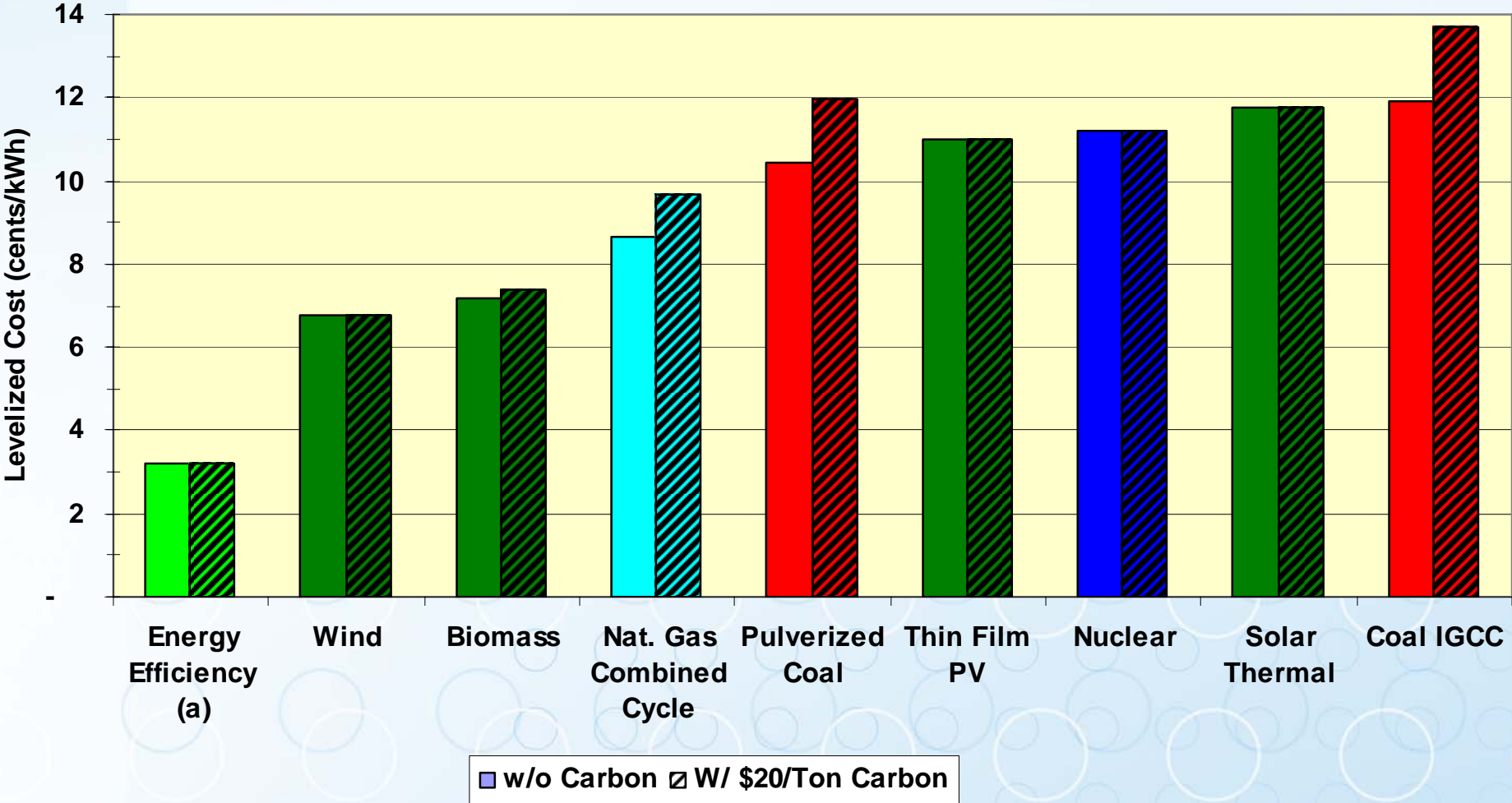
Efficiency Resources Cost Effective

Evaluated results of All-Sector State-Level Energy Efficiency Programs

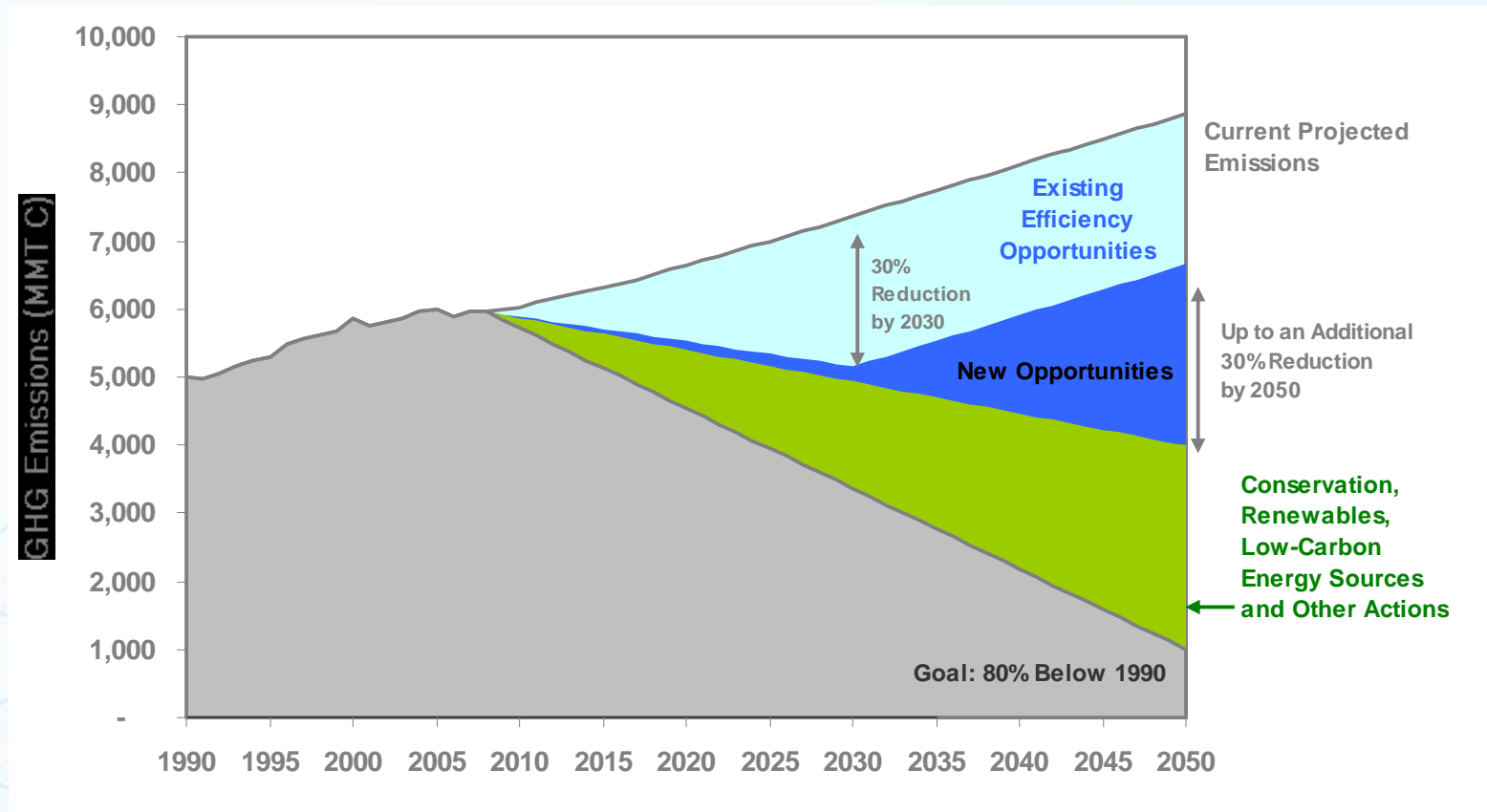


Source: ACEEE, "Five Years In," 2005

Cost of New Electricity Resources



Role of Efficiency in Addressing Climate Change in the U.S.



Note: This graph is stylized and is not exact.

Energy Efficiency Resource Standards

Analogous to a Renewable Portfolio Standard
Electric and/or gas savings targets for utilities

- Includes end-use efficiency and sometimes combined heat & power (CHP) and codes/standards
- Targets generally start low and increase over time

Savings must be documented in accordance with evaluation rules established by regulators

Can authorize bilateral contracts to exchange savings credits and provide a role for 3rd parties

Why an EERS?

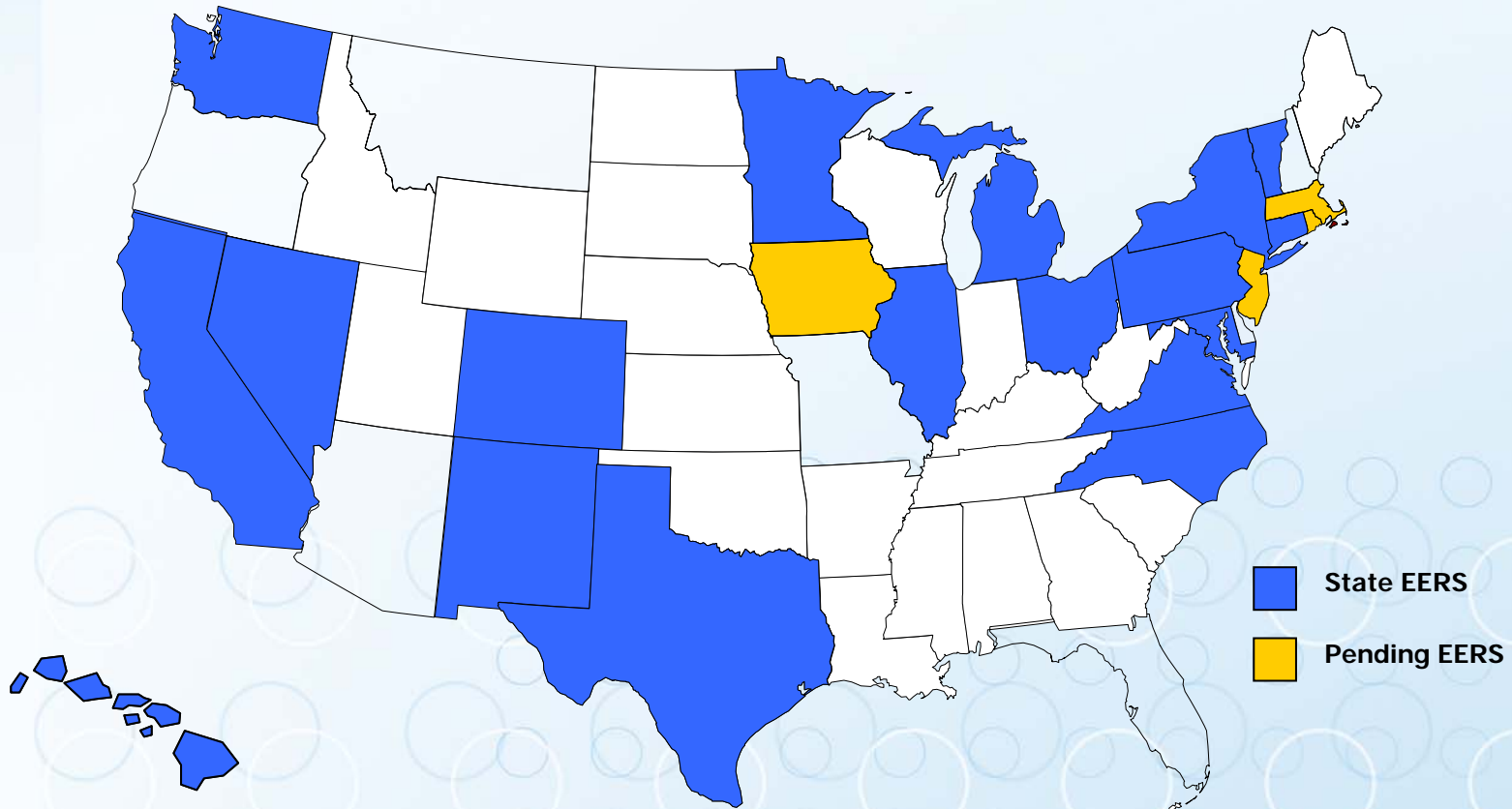
Achieve substantial energy and emissions savings

Performance based – emphasizes savings, not spending

Can be easier to legislate savings targets than spending amounts

Can start programs quickly, without many years of study (but targets should be based on cost-effective opportunities)

States with Energy Efficiency Resource Standards (EERS)

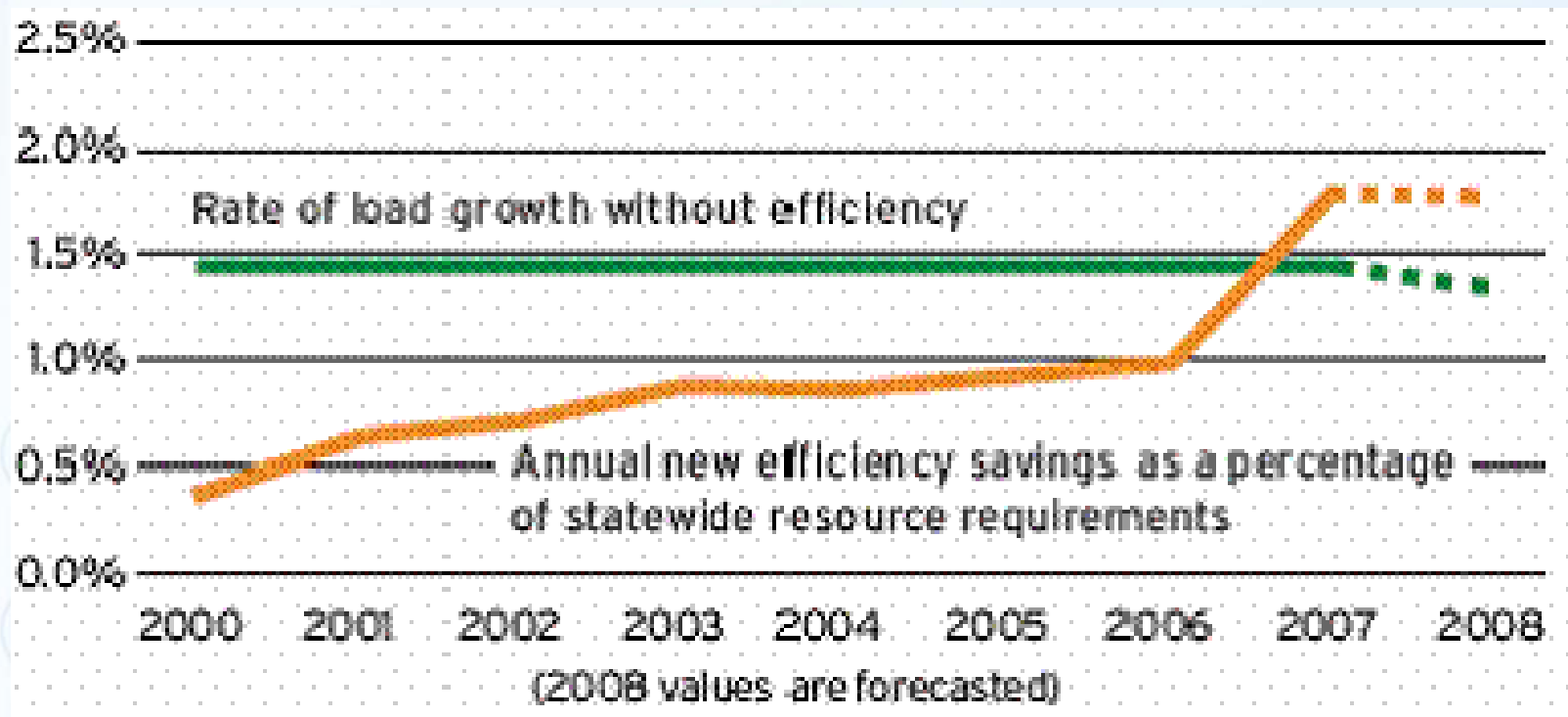


Texas

- First state to establish an EERS
- Initially 10% of load growth but increased by legislature to 20% of load growth
- Utilities have not had difficulty meeting and exceeding targets
- In 2009, bill likely to come up to increase to 30% or even 50% of load growth or the equivalent as % of sales

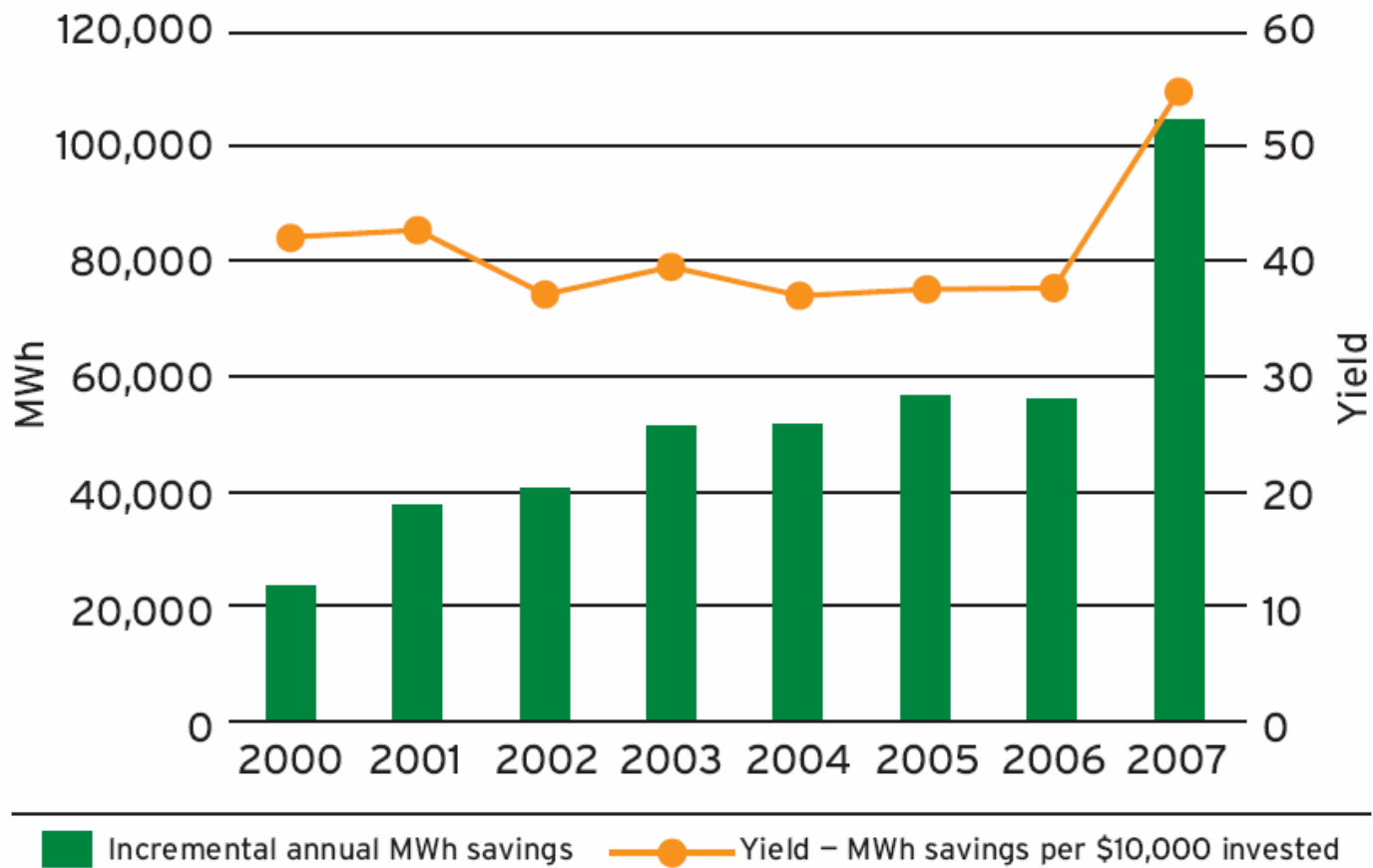
Vermont

- Targets set in contract with Efficiency Vermont
- Have exceeded each year

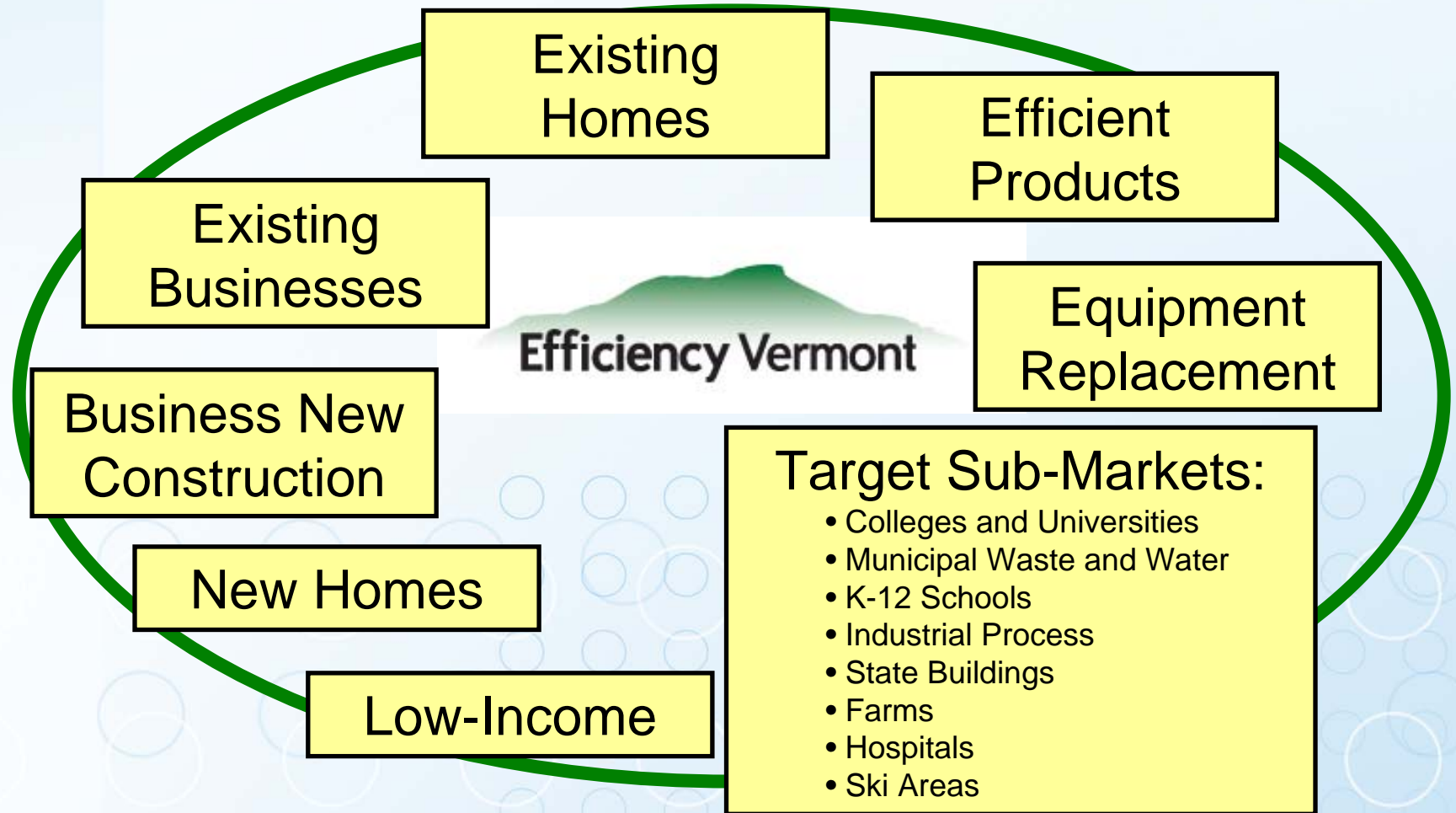


Vermont

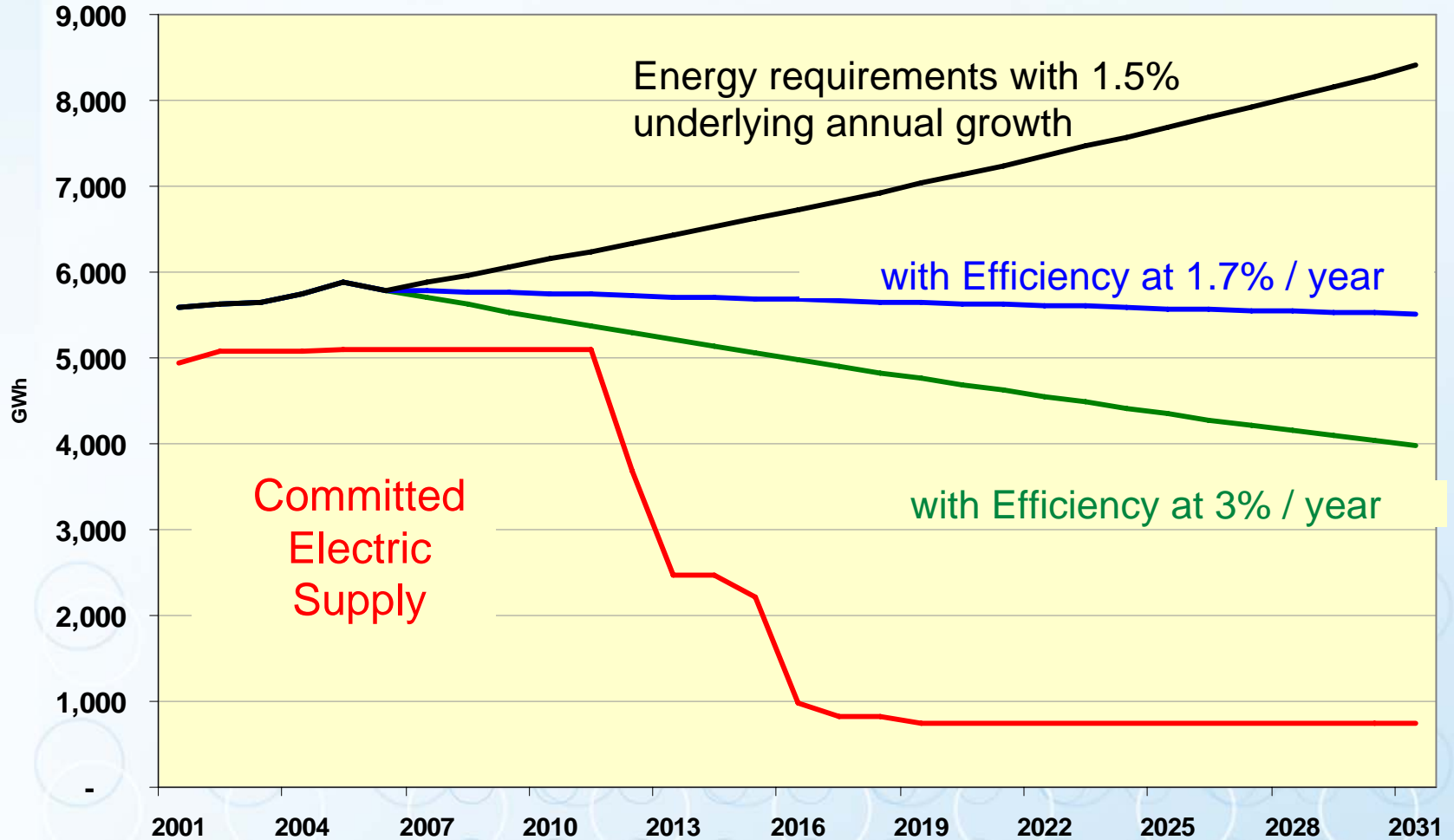
Efficiency Vermont MWh Savings and Yield: 2000-2007



What Markets Do We Work In?



Potential Impact of Energy Efficiency on Vermont's Future Electric Needs



Nevada

Combined EERS and RPS, with EE capped at 25% of total

Utilities seeking to maximize EE since less expensive and easier to develop than renewables

(NC and HI also have combined EERS/RPS)

Annual Savings in Leading States

<u>State</u>	<u>Target</u>	<u>Notes</u>
California	6%	Actual savings in 2001 (2/3 behavioral)
Massachusetts	2%+	Plan to ramp up to 1.5% by 2010, 2-3%/yr over following decade
Illinois	2.0%	After 7 year ramp-up; subject to cost caps
Ohio	2.0%	After a 10 year ramp-up; PUCO can find not feas
California	~2%	Preliminary results for installations in 2007
Maryland	1.88%	15% by 2015; includes standards & codes
New York	1.88%	15% by 2015; includes standards & codes
Vermont	1.75%	Approved plan for 2007-2008, on track in 2007; higher levels being discussed
New Jersey	1.54%	Legislation authorizes target of 20% in 2020
Minnesota	1.5%	2007 legislation; includes standards & codes
Connecticut	~1.5%	Derived from utility plan for 2008-2018
California	1.0%	10 year target
CO, MI	~1%	Targets ramp up to this level after a few years

EERS Implementation

So far implemented in Hawaii, Nevada, Pennsylvania, California, Connecticut and Vermont

- In all cases have met or are on-track for meeting targets

Majority of states still developing regulations and have yet to implement targets

A Federal EERS

Various Senators working on stand-alone EERS bills

- Schumer-Landrieu 10% electric, 5% gas by 2020 (2007 amendment)

Also option of combined EERS-RES

- House-passed RES (2007) was 11% renewables, 4% EE
- Bingaman reportedly working on combination RES-EERS, perhaps with higher numbers

Obama's campaign platform calls for 15% electric savings by 2020, including codes and standards

Savings Grow Over Time

	<u>Electric</u>		<u>Natural Gas</u>	
	Annual	Cumulative	Annual	Cumulative
2012	0.50%	1.0%	0.35%	0.7%
2014	0.75%	2.5%	0.65%	2.0%
2016	1.00%	4.5%	0.75%	3.5%
2018	1.00%	6.5%	0.75%	5.0%
2020	1.25%	9.0%	1.00%	7.0%
2022	1.50%	12.0%	1.00%	9.0%
2024	1.50%	15.0%	1.00%	11.0%

How Does a Federal EERS Affect States that Already Have a State EERS?

States can implement federal and state EERS simultaneously – same filings, meet higher targets

States can set higher targets to gain additional savings

States with targets greater than the federal targets also benefit from savings in nearby states

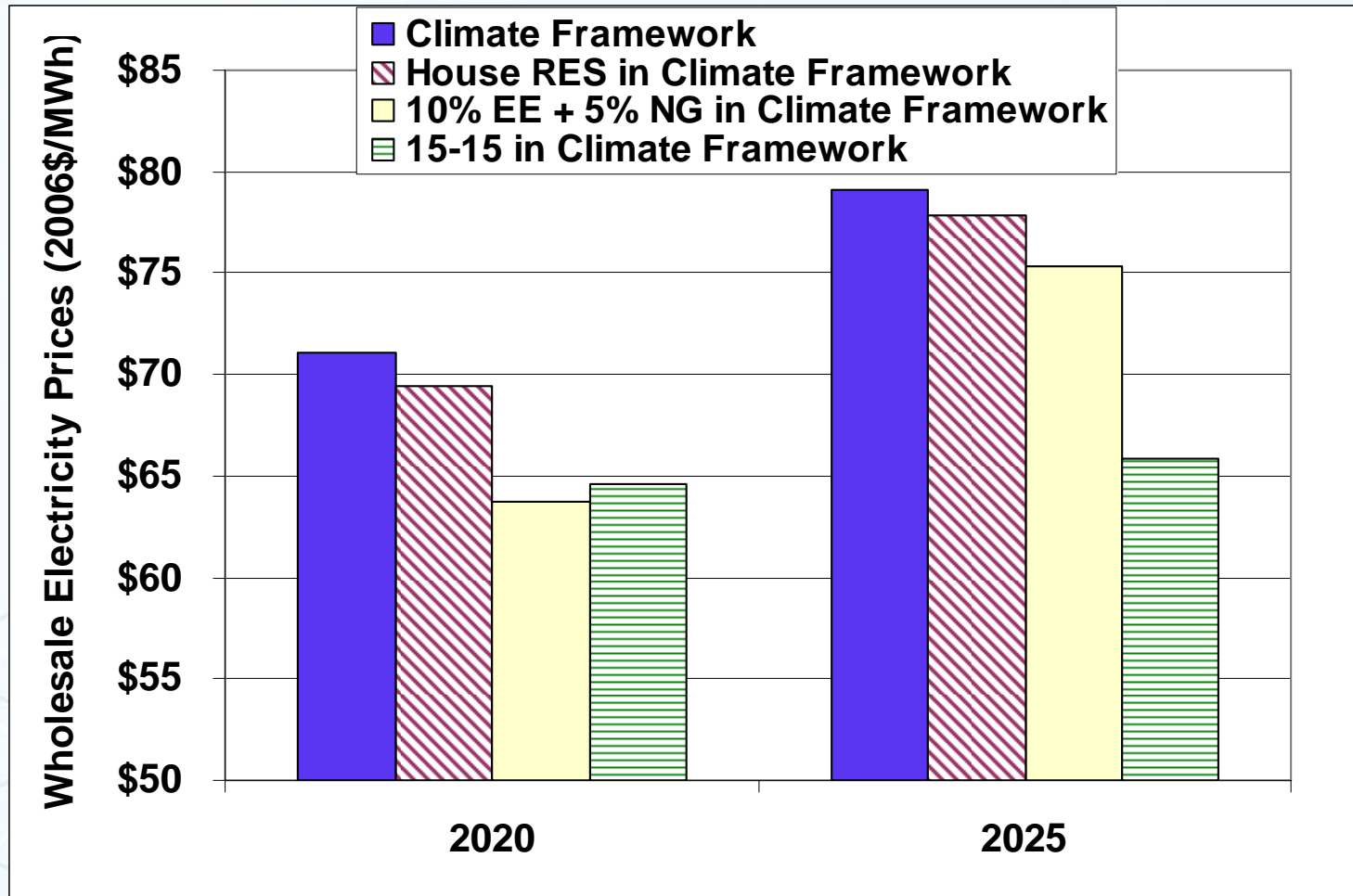
- Emission reductions
- Impacts on energy prices

Impacts of a Federal EERS

(15% electric, 11% gas by 2020; savings over and above existing state EERS's; includes codes & standards)

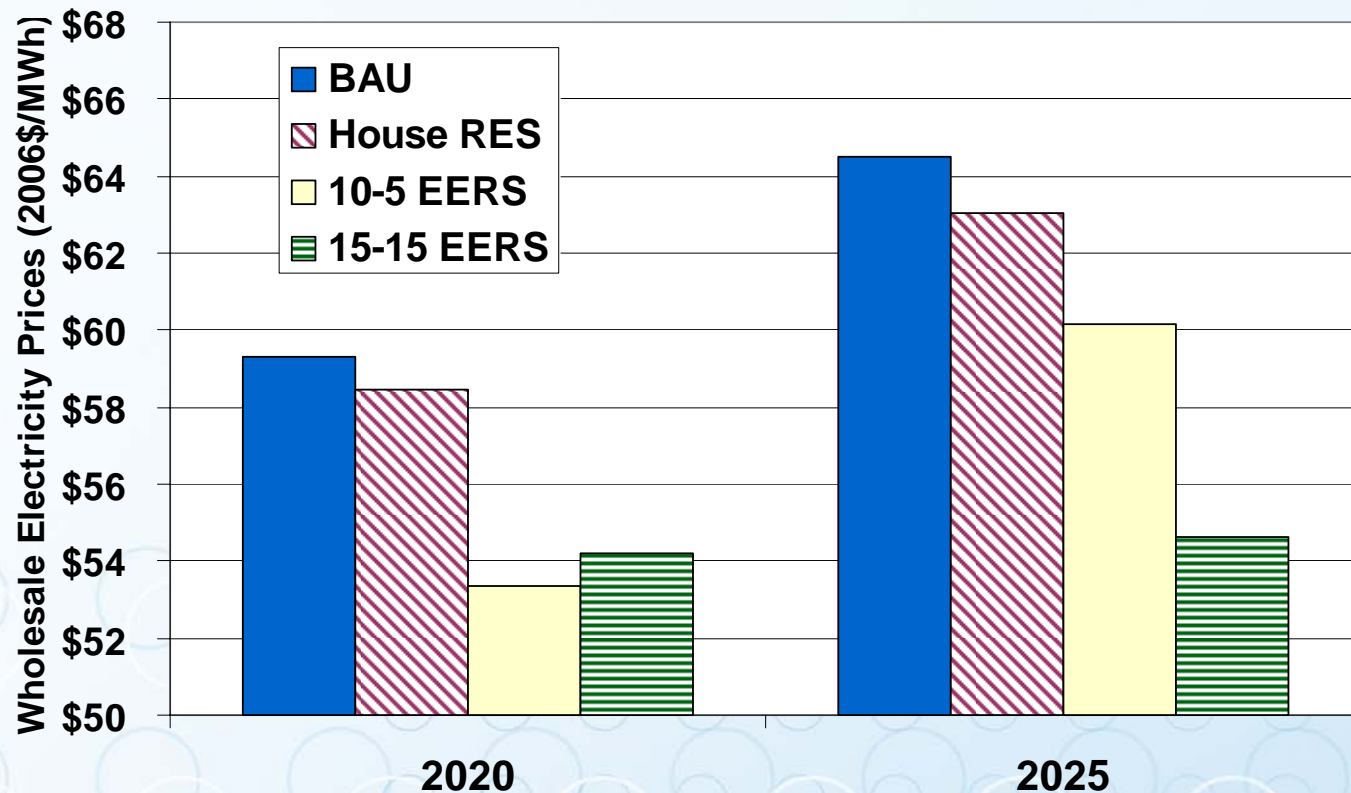
- Peak demand savings of 90,000 MW (300 power plants, 300 MW each)
- CO2 emissions down 260 MMT in 2020 (equivalent to taking 43 million vehicles off the road for a year)
- 260,000 net jobs created
- Net savings of \$25 billion (B/C ~3:1)

National Wholesale Electricity Price With an EERS (Climate Framework Scenario)



Note: Cost of efficiency programs will raise prices at retail level modestly.

Midwest Wholesale Electricity Prices in Business as Usual & Efficiency Scenarios



Source: ACEEE Dec. 2007 EERS-RES study

Needed Items for a Federal EERS

- Savings standards of at least 15% for electric and 10% for gas by 2020, including savings from codes/standards)
- If combined with renewables, *at least* 10% for efficiency by 2020 (excluding codes/stds.)
- Include CHP, recycled energy, T&D improvements (big tent)
- States can also set higher targets
- Good measurement and verification

Needed Items (continued)

- Allow states to oversee implementation, if willing and able
- Allow and encourage third-parties to participate (e.g. bilateral contracts for savings credits within power pools)
- Buyout option at 5 cents/kWh – high enough to fund states to run programs to achieve missing savings
- Leave details to implementing agency (probably DOE)

Conclusion

- EERS an increasingly popular policy – 18-23 states
- Working well thus far
- Time for a federal EERS to address lagging states in order to achieve national benefits
 - Energy and energy bill savings
 - Power and energy reliability
 - Jobs
 - Greenhouse gas emissions reductions
 - Lowers the cost of addressing climate change