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All Cost-Effective Conservation. All???? Are You Serious?

Presentation to Missouri Financial Research Institute

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About Jim Lazar

Jim Lazar is a RAP Senior Advisor, based in Olympia, WA

- Economist with 34 years experience in utility resource planning, rate development, and financial analysis
- Expert witness in more than 100 rate proceedings on revenue requirement, cost allocation, rate design, and energy efficiency.
  - Participated in development of energy efficiency programs in Washington, Oregon, Idaho, Montana, California, Arizona, and British Columbia
- Assisted RAP in many US states, plus Brazil, China, Hungary, India, Indonesia, Israel, Mauritius, Mozambique, Namibia, Philippines
- Author or co-author of RAP publications on Electricity Regulation, Energy Efficiency, Pricing, and Emissions Costs.

Many thanks to the American Council for an Energy-Efficient Economy for several of the graphics in this presentation. www.aceee.org

Acquiring "All" Cost-Effective Energy Conservation

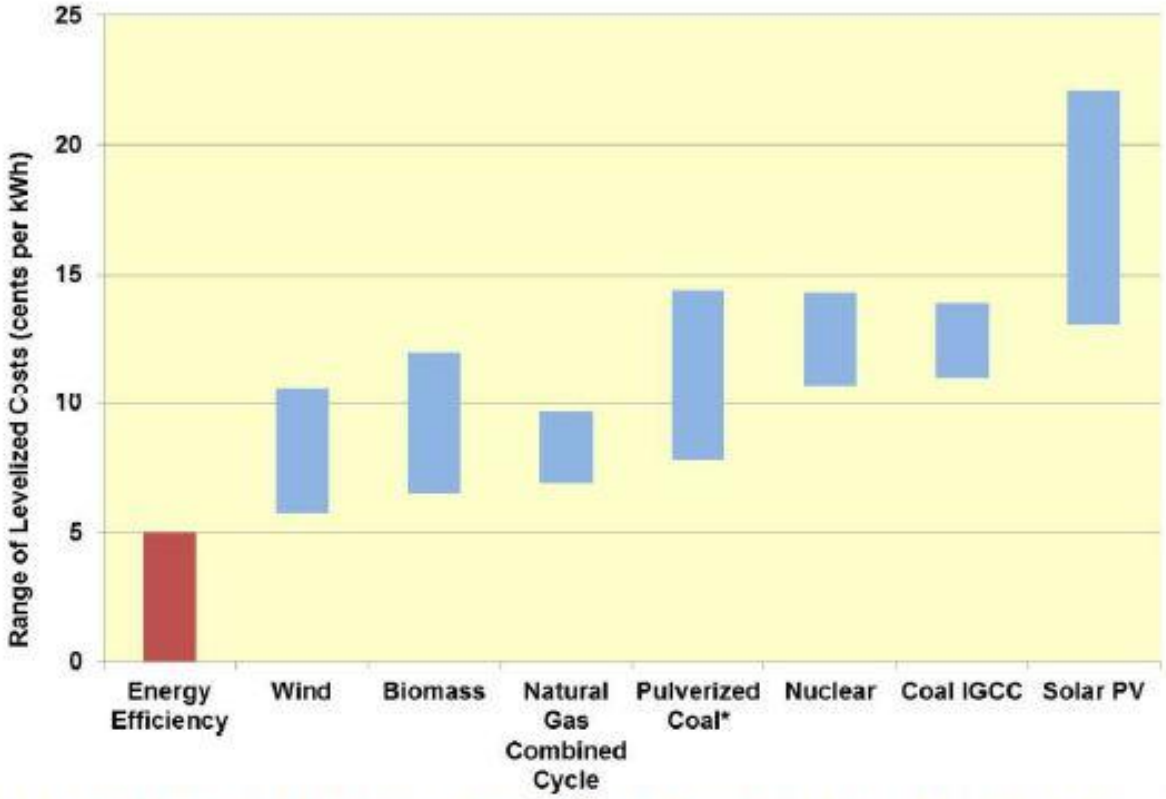
- Defining and measuring cost-effectiveness
- Show where it's happening
- Ramping up programs gradually
- Illustrate financial and ratepayer benefits
- Give examples of "best states"
- Addressing utility financial impact: the "least-cost strategy" should be the most profitable strategy.

What Do We Mean By "All Cost-Effective" Conservation

- Only discussing electricity; you can draw parallels to natural gas, water, and even transportation.
- Many market barriers; Experience shows that the utility system must be involved in programs.
- "Cost-effective" means it costs less than a supply-side alternative over the life-cycle of the measure.
- Saves money compared with the alternative; a failure to deploy leaves money on the table.
- Should (where needed) include non-energy benefits, such as reduced maintenance cost.
- Includes utility programs, governmental programs, building codes and appliance standards, and education.

Conservation is Nearly Always Cheaper than Supply

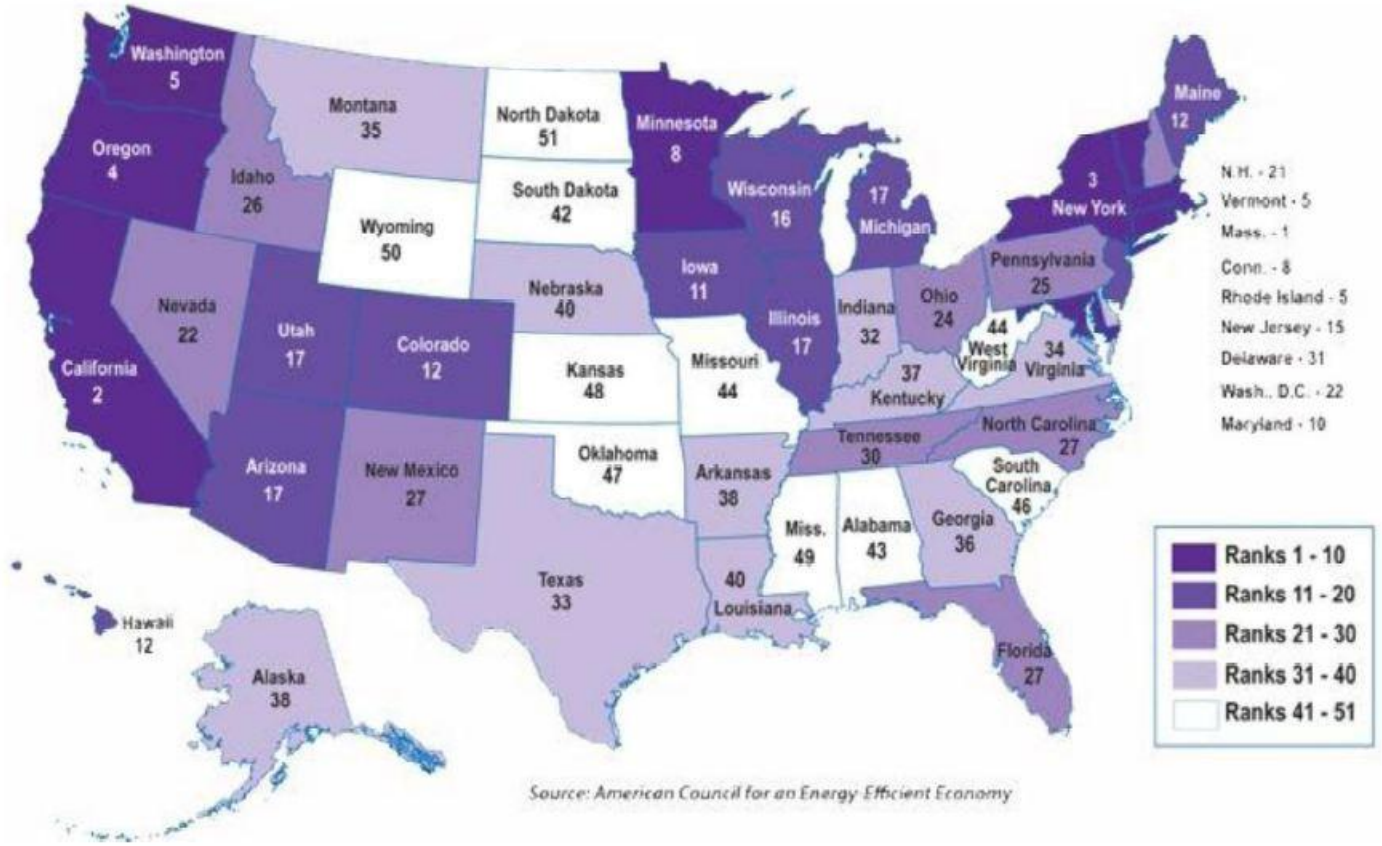
Figure 2. Levelized Utility Cost of New Electricity Resources



Notes: All data from Lazard (2011). High-end range of advanced pulverized coal includes 90% carbon capture and compression.

Who Is Achieving This?

Figure 1. Map of Results from the *2011 State Energy Efficiency Scorecard*



The Leaders:

Massachusetts

California

New York

Oregon

Washington

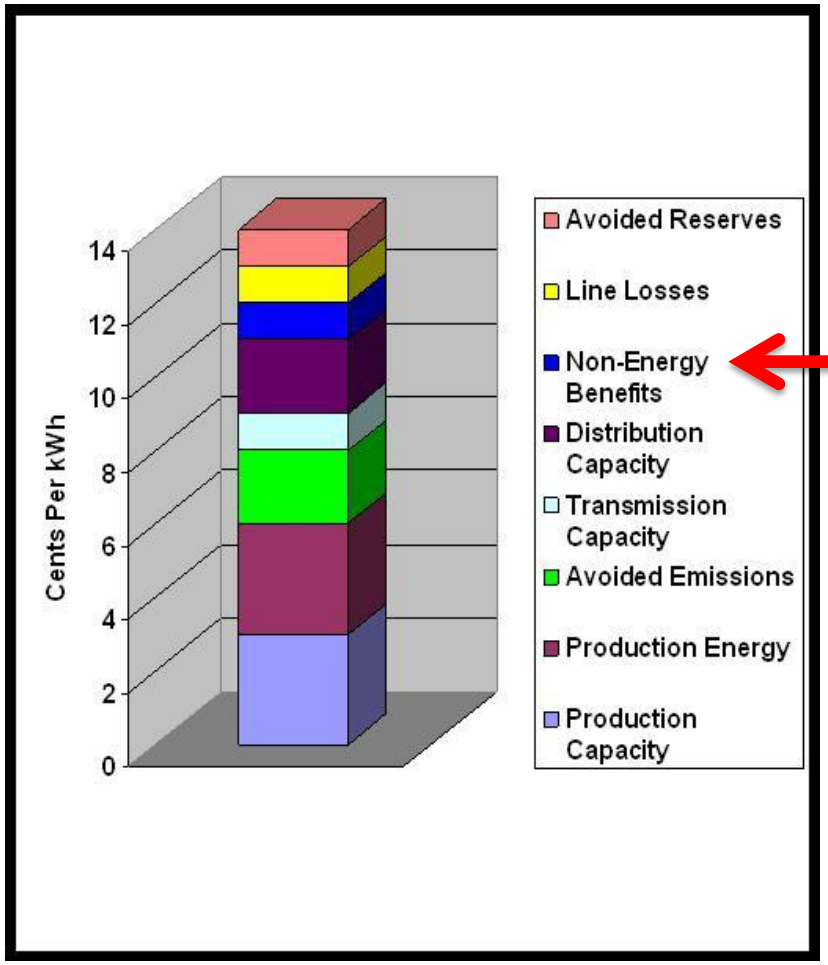
Vermont

Connecticut

Rhode Island

Minnesota

Energy Efficiency Has MANY Benefits



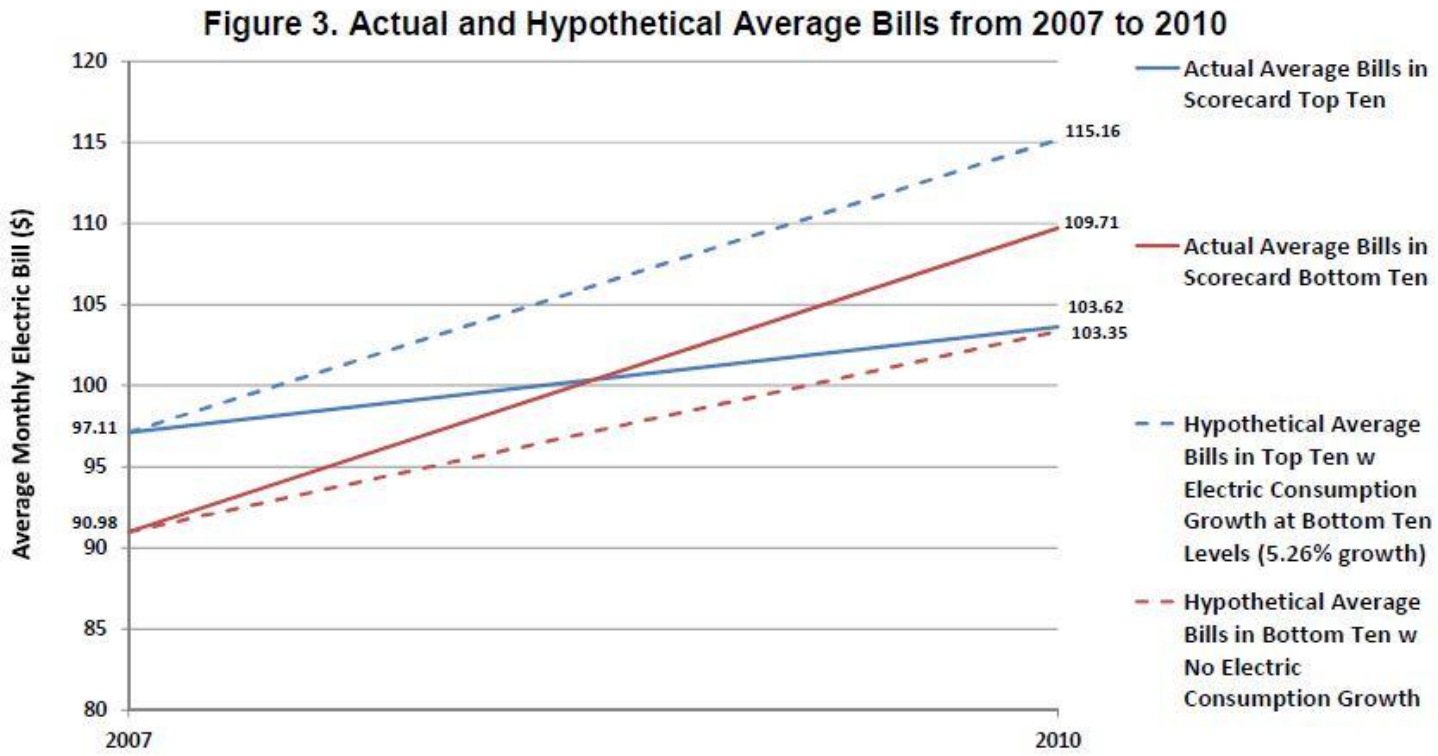
Not all of the benefits are received as benefits to the utility system.

Example non-energy benefits:

- Less frequent lamp replacement for long-lasting CFLs
- Less water, sewer, and soap used by high-efficiency clothes washers
- Improved employee productivity with modern office lighting systems
- New Zealand Home Retrofit Program:
  - **43%** reduction in hospital admissions for respiratory ailments
  - **39%** reduction in days off work
  - **23%** reduction in days off school
  - Program justified on energy, but health benefits are 9X greater.

Cost Impacts
Of Success and Failure

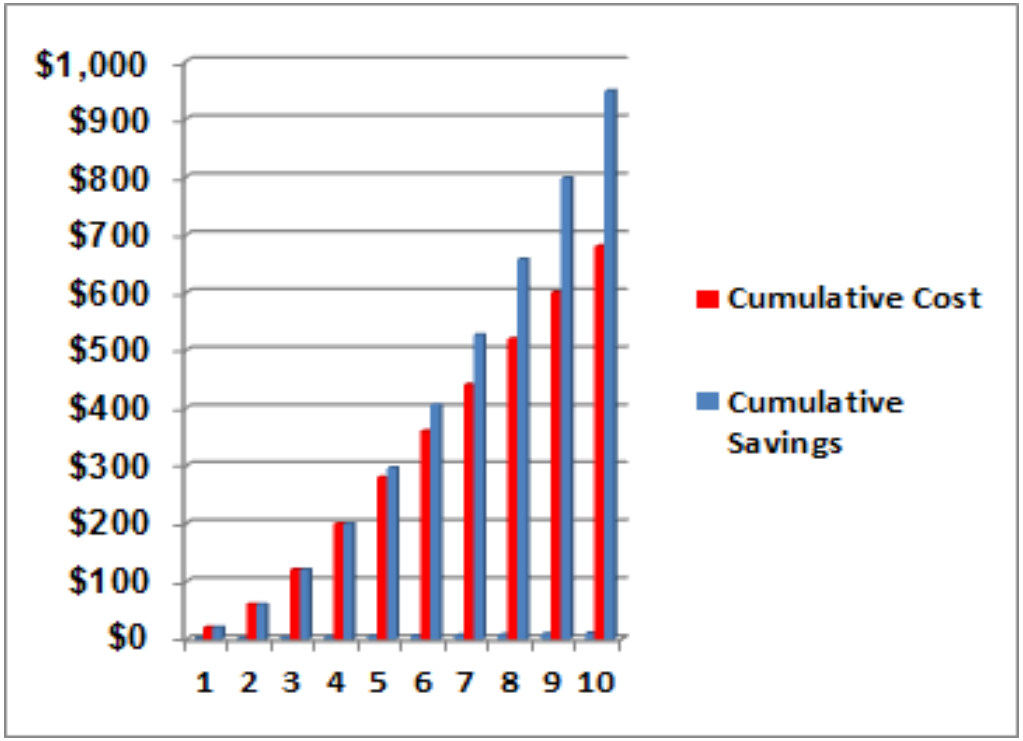
States with aggressive EE have slower rise in electricity bills.



How Fast Can You Ramp Up A Program Without Creating A Backlash?

If you pick low-hanging fruit first, you can have annual benefits > annual costs every year. If the early programs are widespread, nearly every consumer wins.

Year	Budget x $1 million	Average Payback of Measures	Savings of Current Measures	Annual Savings
1	20	1	20	20
2	40	2	20	40
3	60	3	20	60
4	80	4	20	80
5	80	5	16	96
6	80	6	13	109
7	80	7	11	121
8	80	8	10	131
9	80	8	10	141
10	80	8	10	151



How Much Does It Cost, and Where Does It Come From?

- **Best states are investing 2.5% – 4.5% of utility revenues on EE.**
- **Money comes from system benefit charges on bills.**

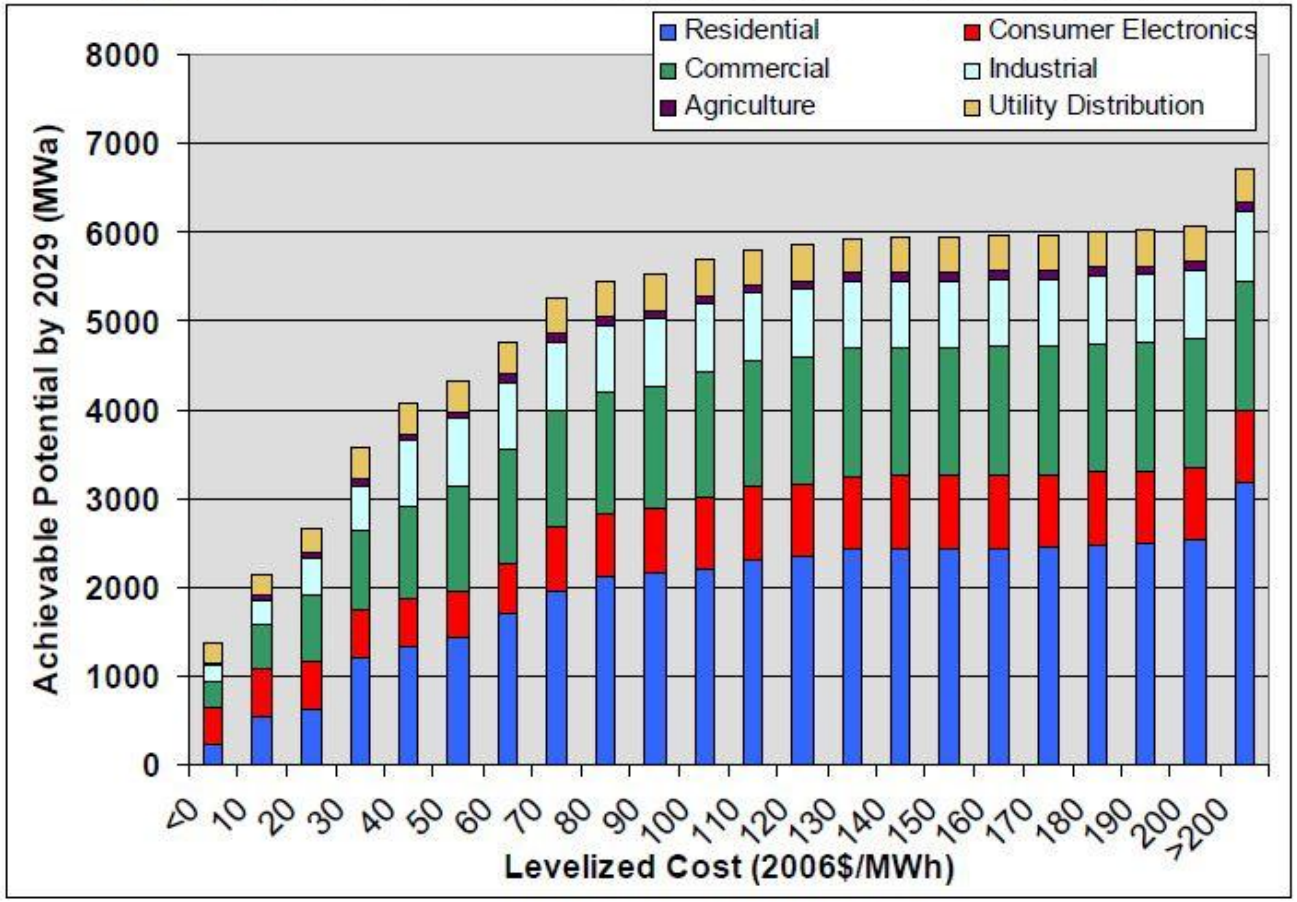
State	2010 Budgets (Million $)	Budgets as Percent of Revenues
Vermont[1]	$34.0	4.57%
Massachusetts[2]	$301.9	3.69%
California	$1,158.1	3.42%
Washington[2b]	$184.9	3.35%
Rhode Island[3]	$32.1	2.92%
Utah[4]	$55.5	2.86%
Minnesota[5]	$160.2	2.80%
Oregon	$91.1	2.60%
New York[6]	$583.6	2.47%
Idaho[7]	$36.1	2.43%

Process Needed To Identify and Acquire all C-E Conservation

- State Legislature / Governor
  - Policy Direction to Utilities and Regulators
  - Adoption of Codes and Standards
- Utility Regulator
  - Integrated Resource Planning Process
  - Decision on Utility or 3rd-Party Implementation
  - Budget and Program Evaluation
  - Cost Recovery Mechanism
  - Decoupling or Treatment of Lost Margins
- Utility or Third-Party Administrator
  - Program Design
  - Program Implementation
  - Program Evaluation

Example 1:
Northwest Power and Conservation Council

Figure 4-1: Achievable Conservation by 2029 by Sector and Levelized Cost



- Established by Congress in 1980
- Adopts regional power plan for 4 NW states.
- Incentives for compliance, penalties for failure.
- EE adequate to serve 90% of load growth

NW Power Council Planning Process

- Congress decreed loading order: Conservation, renewables, high-efficiency, conventional
- Council members appointed by Governors
- Funded at $2 – 4 million/year from electricity revenues. (Separate process for fish protection)
- Several public advisory bodies
- 5 year plan cycle; public comment during development.
- The cost-effectiveness threshold is around $.15/kWh, encompassing Production, Transmission, Distribution, emissions, risk, and lead time values. Non-energy benefits are considered in identifying the portfolio.
- BPA, states and utilities do implementation

The “Teeth” In the Council’s Plan

- BPA must get Council approval for major new power plant commitments.
- Publicly-Owned Utilities: Council empowered to recommend surcharges on BPA wholesale power.
- Oregon: Energy Trust of Oregon charged with implementation, and subject to state regulatory commission oversight.
- Washington: Initiative 937 requires state commission and State Auditor to assess penalties for inadequate achievement.

Washington Initiative 937
"It's not just a good idea. It's the law."

- Applies to utilities serving 25,000 or more customers
- Utility must adopt a 10-year conservation plan "consistent with the methodology" of the Council.
- Every 2 years, utility must acquire at least 20% of it's 10-year "achievable conservation potential."
- Reviewed by State Auditor (publicly-owned utilities) and Utilities and Transportation Commission (private utilities).
- Any shortfall of achievement subject to a $50/MWh penalty. Significantly more than the lost margin.

Example 2: Vermont Statewide 3rd-Party Implementation

- Regulator and Legislature created the process.
- All utilities pay into a common fund, implemented by the 3rd Party Administrator
- 3rd Party Administrator under contract to and reports to state utility regulator.
- Efficiency Vermont reports net cost of electricity savings (after attributing a portion of costs to water, oil, propane etc) are $.03 - $.05/kWh.
- Operates statewide, generally on behalf of utility
- Being emulated in Oregon, Wisconsin, Maine, Hawaii, and evolving in several other states.

Example 3: California

Investor-Owned Utilities (IOUs)

Serve ~70% of State

CPUC adopted “loading order”

Three-Part Cost-recovery and Incentive Mechanism

- System benefit charge for program direct costs
- Decoupling mechanism to recover lost sales margins
- Shareholder incentive program based on achievement of EE goals.

Publicly-Owned Utilities (POUs)

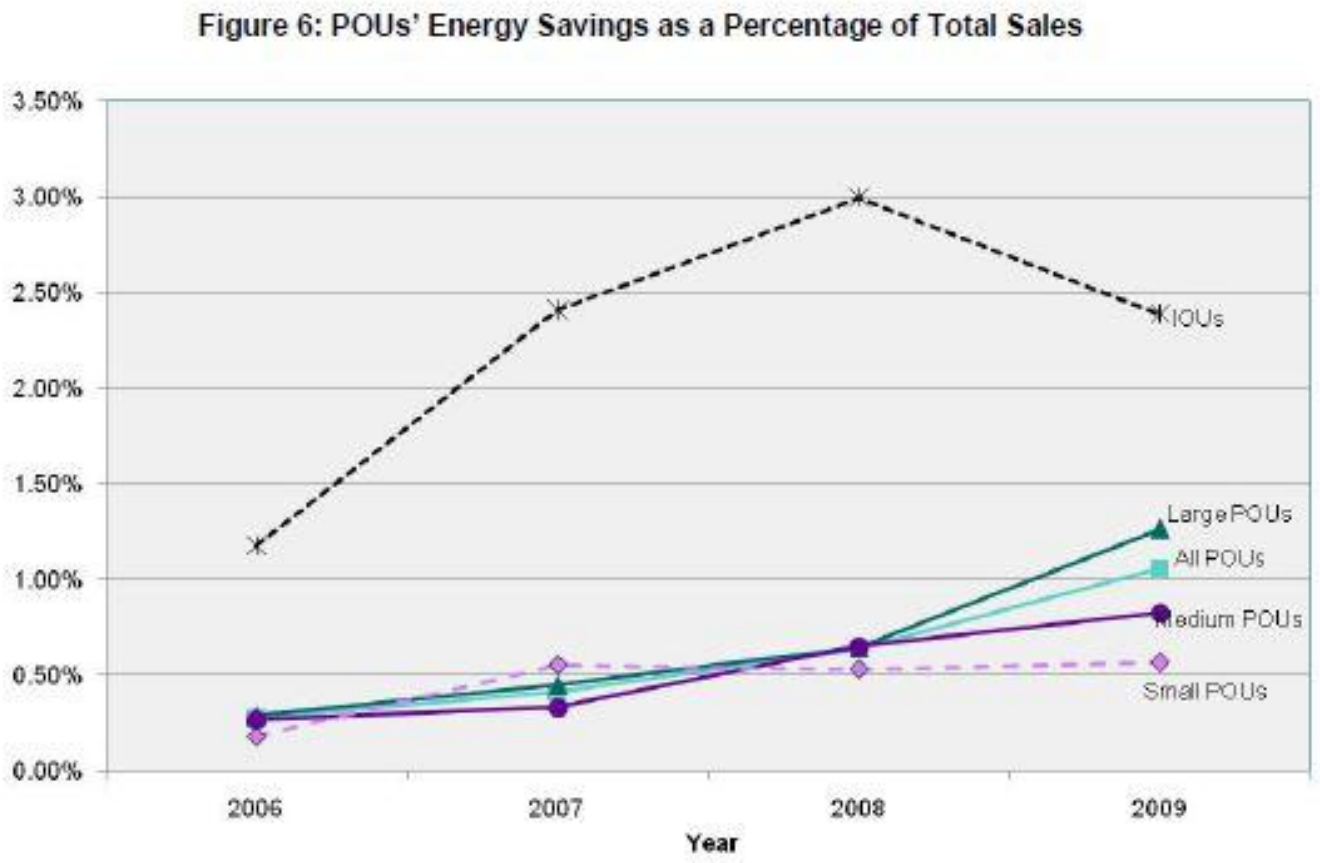
Serve ~30% of State

AB 2021 (2006) mandated achievement of all cost-effective energy efficiency.

Annual report to the California Energy Commission, and an investigatory docket by the CEC.

POUs do not count savings from codes and standards, so their savings look much smaller.

California Reported Electricity Savings



IOUs:

Includes savings from codes and standards; ~3.5% of revenue

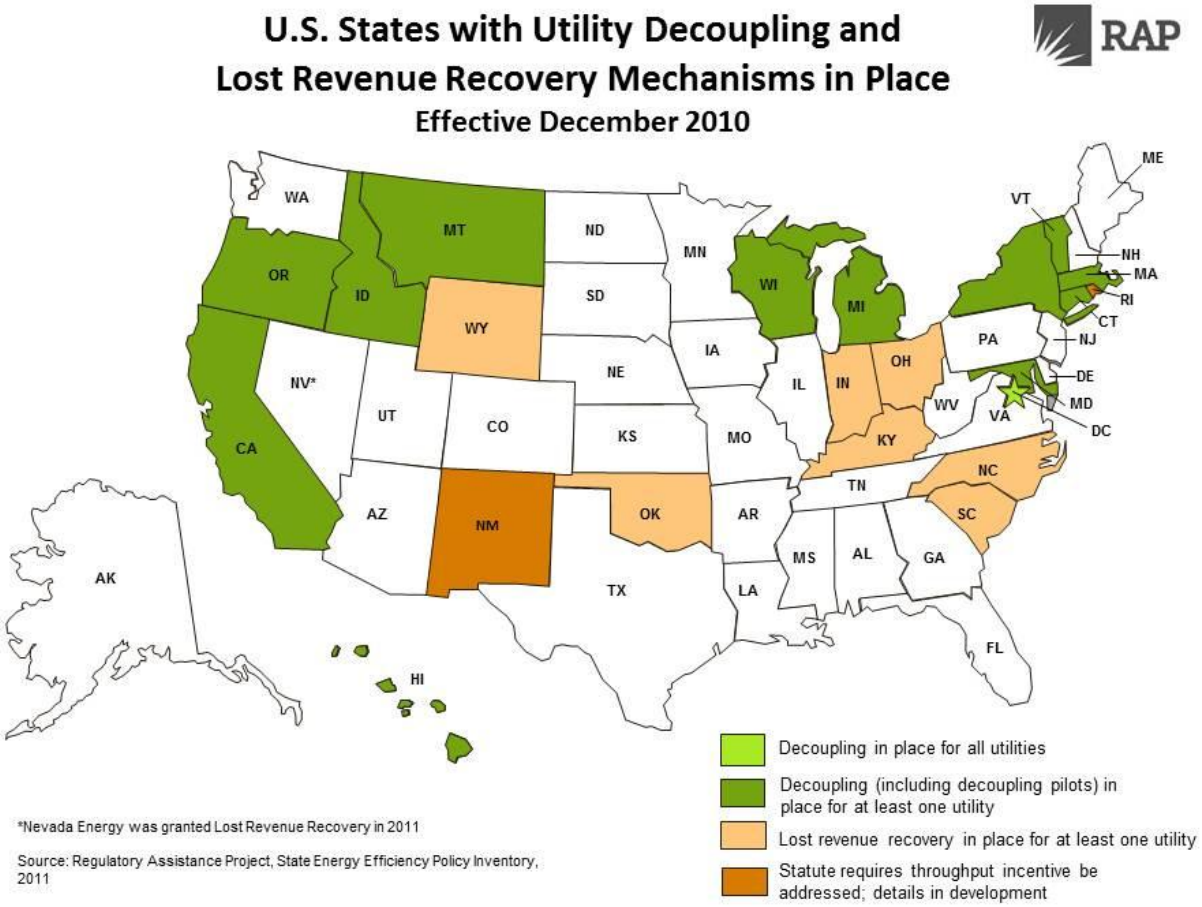
POUs:

Does not include savings from codes and standards. ~2.5% of revenue

Challenges to Achieving High Levels of Energy Efficiency

- **Financing**: Energy efficiency is capital-intensive, and rating agencies do not treat investments in energy efficiency the same as they treat investments in power plants.
  - Solution: System Benefit Charges, that fund EE programs from revenues.
- **Rate Impacts:** Energy efficiency increases costs, but decreases sales. As a result, rates increase.
  - Solution: While rates increase, bills to consumers decrease, and nearly every consumer benefits if programs are successful in achieving all cost-effective energy efficiency.
  - Broad-based programs ensure that there are few, if any, non-participants
- **Earnings Impact:** Utilities have historically profited from investment in power plants, and by selling more power.
  - Solution: Revenue regulation instead of rate base regulation; decoupling and lost margin recovery mechanisms.
  - Solution: Shareholder incentives, and poor performance penalties

Revenue Stabilization, Lost Margin Recovery, and Decoupling



About half of states have a mechanism in place to assure that utilities do not lose net income as a result of implementing energy efficiency programs.

This includes most of the top-rate states in energy efficiency performance.

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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