



# Making Energy Efficiency Profitable for Utilities

ACEEE 2008 National Symposium on Market Transformation  
April 1, 2008

David Pickles  
Vice President  
ICF International  
7160 North Dallas Parkway, Suite 360  
Plano, TX 75024

[dpickles@icfi.com](mailto:dpickles@icfi.com)  
(972) 841-2567

1. What is the need to realign utility incentives
2. What tools are available to do this
3. What approaches have the states taken
4. What evidence is there that this works
5. Issues and trends
6. Recommendations of the Action Plan

# National Action Plan for Energy Efficiency Addresses Utility Barriers

- Released on July 31, 2006 at the National Association of Regulatory Utility Commissioners meeting
- Goal: To create a sustainable, aggressive national commitment to energy efficiency through gas and electric utilities, utility regulators, and partner organizations
- Over 50 member public-private Leadership Group developed five recommendations and commits to take action
- Additional commitments to energy efficiency – exceeds 90 organizations

## National Action Plan for Energy Efficiency Recommendations

1. Recognize energy efficiency as a high-priority energy resource.
2. Make a strong, long-term commitment to implement cost-effective energy efficiency as a resource.
3. Broadly communicate the benefits of and opportunities for energy efficiency.
4. Provide sufficient, timely and stable program funding to deliver energy efficiency where cost-effective.
5. Modify policies to align utility incentives with the delivery of cost-effective energy efficiency and modify ratemaking practices to promote energy efficiency investments.

## *“Aligning Utility Incentives with Investment in Energy Efficiency”, November 2007*

- Describes the financial effects on a utility of its spending on energy efficiency programs
- Summarizes how those effects could constitute barriers to more aggressive and sustained utility investment in energy efficiency
- Illustrates how adoption of various policy mechanisms can reduce or eliminate these barriers
- Provides a number of examples of such mechanisms drawn from the experience of utilities and states

*Note: this presentation draws upon these materials as resource, but the opinions and interpretations are my own and do not necessarily represent the opinions of the Action Plan Leadership Group, Advisory Group, EPA or DOE.*

# Why Are We Talking?

---

- While opinions differ as to the appropriate level of national spending on energy efficiency, the general consensus is that it is significantly higher than current levels
- While opinions differ on the appropriate role of utilities, state and federal government, retail electric providers, and third-party “efficiency utilities”, there is general consensus that both local distribution utilities and fully integrated utilities will play an important role in the funding and delivery of energy efficiency
- In many states, the ways utilities are regulated, and the ways in which they plan and upgrade their systems, serves to put investment in energy efficiency at a significant disadvantage relative to supply-side investments

# And the Problem Is....

---

*Expenses drop right to the bottom line*



*Margin can be lost on every kWh saved by EE*



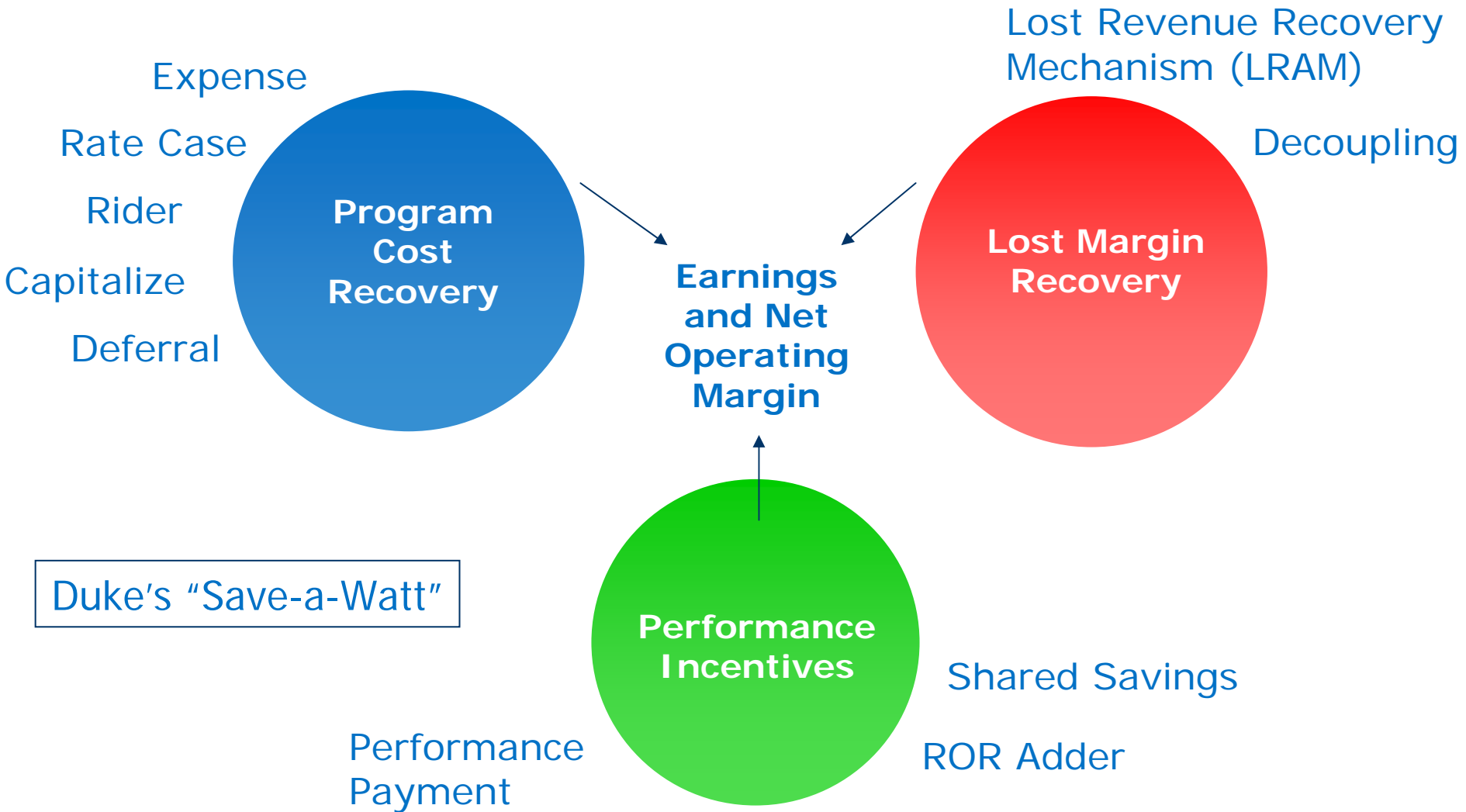
**Earnings  
and Net  
Operating  
Margin**



It is the direction and magnitude of these combined effects that ultimately determines whether a utility's financial interest is aligned with a policy interest in promoting utility investment in EE

*Even if costs and margins are recovered, shareholders are better off with a new power plant*

# Several "Tools" Exist for Addressing Each Problem



- Shareholder incentives are very common with 18 of the 36 states with significant DSM funding offering utility incentives of some kind
- Six states provide a separate mechanism for the recovery of lost electricity margins
- 14 states have either approved or have pending electric decoupling mechanisms to insulate utility earnings from DSM program performance
- Ten states have either an approved or pending mechanism treating both lost margins and shareholder incentives

# Status of Regulatory Treatments of EE for Electric Utilities

State	Cost Recovery System			Fixed Cost Recov.		Incent.
	Rate Case	Benefit Charge	Adjust. Clause	Decoup.	LRAM	
Vermont		●			●	●
Massachusetts		●		○	●	●
Oregon		●				
Connecticut		●			●	●
Washington	●		●			
Rhode Island		●		●		●
New Hampshire		●		○		●
Minnesota	●			●		●
New Jersey		●		○		
California	●	●		●		●
Maine		●				
Iowa	●		●			
Wisconsin	●	●		○		
Montana		●				●
New York		●		●		
Hawaii				○		●
Utah	●		●			
Idaho	●			●		
Florida			●			
D.C.	●			○		
Nevada	●					●
Texas	●					
Colorado	●		●	○		●
Nebraska						
Tennessee						

● = Approved

○ = Pending

State	Cost Recovery System			Fixed Cost Recov.		Incent.
	Rate Case	Benefit Charge	Adjust. Clause	Decoup.	LRAM	
Ohio			●		●	●
South Carolina						●
New Mexico	●					
Kentucky			●		●	●
Michigan						
North Dakota						
Arizona	●	●	●			●
South Dakota						
West Virginia						
North Carolina						
Indiana	●				●	●
Pennsylvania	●					
Illinois	●					
Mississippi	●					
Alaska						
Missouri						
Georgia	●					●
Alabama	●					
Oklahoma						
Arkansas						
Louisiana						
Maryland				○		
Kansas						●
Virginia						
Wyoming						
Delaware	●			○		

## Some Empirical Evidence

- Hypothesis – Energy Efficiency Savings are Greater in States with Decoupling and/or Shareholder Incentives
- Dataset – EIA Form 861, 200 Electric Utilities, 1992-2006
- Dependent Variable – Annual Incremental Energy Efficiency Savings by IOUs

Variable	Coefficient	t statistic
Intercept	-6,056	3.2
Total MWh	-0.00085	5.6
Peak MW	0.00103	3.9
Total Customers	0.03312	9.9
Trend	515	2.5
Restructuring	-18,392	7.8
EE Cost	5.6	48.0
Decoupling	43,253	7.3
Financial Incentive	16,480	5.6
R-squared	0.69	
# Observations	2,961	

“Using data of 200 electric utilities over 15 years, this analysis shows with very high statistical confidence that the regulators who add incentives would expect greater energy savings and more utility spending for energy efficiency”

Source: Energy Efficiency: Do Regulatory Incentives Matter? Charles J. Cicchetti and James H. Lin. Submitted for Peer Review, 2008.

# Program Cost Recovery

---

- EE spending has a \$ for \$ impact on earnings. Recovery is basic precondition.
- Basic options
  - Expensing
    - Riders with true-ups
    - Rate case – base rates
  - Capitalization
    - Rate case – rate base
    - Escrow accounting/deferred accounts
- What matters
  - Timing of recovery (and matching spending to recovery)
  - Risk of (non) recovery
  - Rate impacts v total cost
  - ROE and depreciation rate
  - Perception of risk associated with regulatory assets

## How Can You Lose a Margin?

---

- Conventional cost allocation assigns some (and usually most) fixed costs to volumetric charges.
- These charges are set based on an estimate of expected volume.
- All else being equal, if volume is lower than the level estimated, insufficient revenue is earned to cover all fixed costs.
- Depreciation and interest get covered first, so any shortfall hits the margin

# Lost Margin Illustration

	Baseline (rate setting proceeding )	Case 1 (2% reduction in sales)	Case 2 (2% increase in sales)
1. Variable Costs	\$1,000,000	\$980,000	\$1,020,000
2. Depreciation + other fixed costs	\$500,000	\$500,000	\$500,000
3. Capital Cost	\$5,000,000	\$5,000,000	\$5,000,000
4. Debt	\$3,000,000	\$3,000,000	\$3,000,000
5. Interest (@10%)	\$300,000	\$300,000	\$300,000
6. Equity	\$2,000,000	\$2,000,000	\$2,000,000
7. Rate of Return on Equity (ROE@ 10%)	10%	10%	10%
8. Authorized Earnings	\$200,000	\$200,000	\$200,000
9. Revenue Requirement (1+2+5+8)	\$2,000,000	\$1,980,000	\$2,020,000
10. Sales (kWh)	20,000,000	19,600,000	20,400,000
11. Average Price (9÷10)	\$0.10	\$0.101	\$0.99
12. Earned Revenue (11×10)	\$2,000,000	\$1,960,000	\$2,040,000
13. Revenue Difference (12-9)	0	-\$40,000	+\$40,000
14. % of Authorized Earnings (13 ÷8)	0	-20%	+20%

- Lost Margin Recovery Mechanism (LRAM)
  - Estimate the sales reduction associated with EE
  - Calculate the associated margin under-recovery
  - Periodic true-ups
  - Can be complicated to determine what is actually lost
- Decoupling
  - Many flavors, but basically, calculate allowed revenue or revenue per customer and allow utility to periodically true-up to this level based on changes in sales
  - Depending on the details, the adjustments can move prices higher or lower
  - Not simply about protecting margins; Very much about removing the incentive to promote sales.

# Issues in Lost Margin Recovery

---

- LRAM can be complex; places a premium on EM&V which itself is a constant source of contention
- Decoupling can be simpler, however . . .
  - The more adjustments that are made the more complex a decoupling mechanism can become
- Decoupling can introduce modest rate volatility. In reality the volatility associated with EE programs will be lower than with weather, fuel adjustment clauses, etc
- Debate over the impact on overall risk to the utility and impact on ROE
- Rate design can help alleviate the problem, but it is not likely to be the solution.

# Performance Incentives

---

- Addressing cost recovery and lost margins only eliminates two barriers; it will not put EE on financial par with steel in the ground.
- Basic options:
  - Rate basing
    - Enhanced ROE (Nevada)
  - Performance Target Incentives
    - CT “performance management fees” for meeting certain savings and other performance targets
    - MA utilities earn a share of net savings for surpassing a range of performance targets
  - Shared Savings
    - CA utilities receive various shares of net benefits for achieving various levels of kWh, kW and therm savings (also pay penalties for under-performing relative to targets).

# A Partial Landscape

State	Type of Utility Performance Incentive Mechanism	Details
AZ	Shared Savings	Share of Net Economic Benefits up to 10 percent of total DSM spending.
CT	Performance Target Savings and other programs goals	Management fee of 1 to 8 percent of program costs (before tax) for meeting or exceeding predetermined targets. One percent incentive is given to meet at least 70 percent of the target, 5 percent for meeting the target, and 8 percent for 130 percent of the target.
GA	Shared Savings	15 percent of the net benefits of the Power Credit Single Family Home program.
HI	Shared Savings	Hawaiian Electric must meet four energy efficiency targets to be eligible for incentives calculated based on net system benefits up to 5 percent.
IN	Shared Savings/Rate of Return (utility-specific)	Southern Indiana Gas and Electric Company may earn up to 2 percent added ROE on its DSM investments if performance targets are met with one percent penalty otherwise.
KS	Rate of Return Incentives	2 percent additional ROE for energy efficiency investments possible.
MA	Performance Target Multi-Factor Performance Targets, Savings, Value, and Performance	5 percent of program costs are given to the distribution utilities if savings targets are met on a program-by-program basis.
MN	Shared Savings Energy Savings Goal	Specific share of net benefits based on cost-effectiveness test is given back to the utilities. At 150 percent of savings target, 30 percent of the conservation expenditure budget can be earned.
MT	Rate of Return Incentives	Two percent added ROE on capitalized demand response programs possible.
NV	Rate of Return Incentives	Five percent additional ROE for energy efficiency investments.
NH	Shared Savings Savings and Cost- Effectiveness Goals	Performance incentive of up to 8 to 12 percent of total program budgets for meeting cost-effectiveness and savings goals.
RI	Performance Targets Savings and Cost- Effectiveness Goals	Five performance-based metrics and savings targets by sector. Incentives from at least 60 percent of savings target up to 125 percent.
SC	N/A	Utility-specific incentives for DSM programs allowed.

# Trends in Utility Incentives

---

- Increased interest in broad topic by many stakeholders (Commissions, utilities, legislators, non-profits, etc)
- Renewed interest in exploring decoupling
  - Idaho Power pilot in **ID**
  - Legislation in **CT, NY, MN**
  - Filing by Pepco in **MD** and **DC**
  - Docket in **IA**
- LRAM less prevalent but still being explored
- Large variety of approaches for performance incentives
  - **CA** – Rewards and penalties based on a) how well the utility met CPUC established energy savings targets; b) the economic benefits generated from the utility’s EE portfolio
  - **NV** – Enhanced ROR
  - **TX** – Shared Savings

# Challenging Issues

---

1. Recovery of margins, and are margins guaranteed. Rate case frequency
2. Should utilities be doing this anyway or could someone else do the job
3. How should goals be set, and should caps apply to shareholder incentives. Are penalties appropriate, and if so – when
4. What is the appropriate benefit cost perspective (especially for shared savings incentives) and how much M&V is appropriate?
5. How should we address persistence and measurement of the impacts of the programs
6. Rate design for cost recovery and equity between customers and classes
7. Role of retail and local distribution companies in states with retail competition
8. Role of munis and coops, code and standards, etc.
9. Integration with the resource planning process (generation and transmission)

# Recommendations

---

- Balance of utility risk and reward
- Stabilize customer rates and bills
- Stabilize utility revenues
- Promote simplicity and appropriate regulatory costs
- Maintain consistency with broader policy context
- Test complex policies under broad range of scenarios
- Ensure clarity and consistency of rules
- Collaborate
- Provide for flexibility
- Promote culture change