Energy Efficiency Incentives & Utility Business Models: Implications for Regulation

Wayne Shirley
Director

The Regulatory Assistance Project

China ♦ India ♦ European Union ♦ Latin America ♦ United States

Website: *http://www.raponline.org*

Regulatory Assistance Project

- Nonprofit organization founded in 1992 by experienced energy regulators
- Advises policymakers on economically and environmentally sustainable policies in the regulated energy sectors
- Funded by U.S. DOE & EPA, the Energy Foundation, ClimateWorks and other foundations
- We have worked in 40+ states and 16 nations

Will Traditional 20th Century Regulation Suffice in the 21st Century?

- Traditional Drivers
  - Price
  - Reliability
  - Cost – generally internalized costs only
  - Increased sales lowered prices (but not necessarily bills) and were "consistent" with this model, as long as costs were subordinate to price and reliability
- New Drivers
  - Carbon constraints
    - As an internalized cost -- informs resource choices
    - As an imposed constraint – costs must yield, so least cost strategy important
  - Decentralized Technologies
    - Smart Tech
    - Clean Generation

Regulatory Incentives: a/k/a *What's In It For Me?*

- All regulation is "incentive regulation."
  - What utility behaviour is motivated by the financial incentives inherent in regulation in New Mexico?
- If you want to achieve aggressive demand-side savings goals, you need utilities motivated to get there

Current Regulation

- Encourages increased sales
  - May lower prices in the short-run
  - Raises total costs in the long-run
- Discourages end-use efficiency and load management
- Counter to both efficiency and long-term cost policy objectives

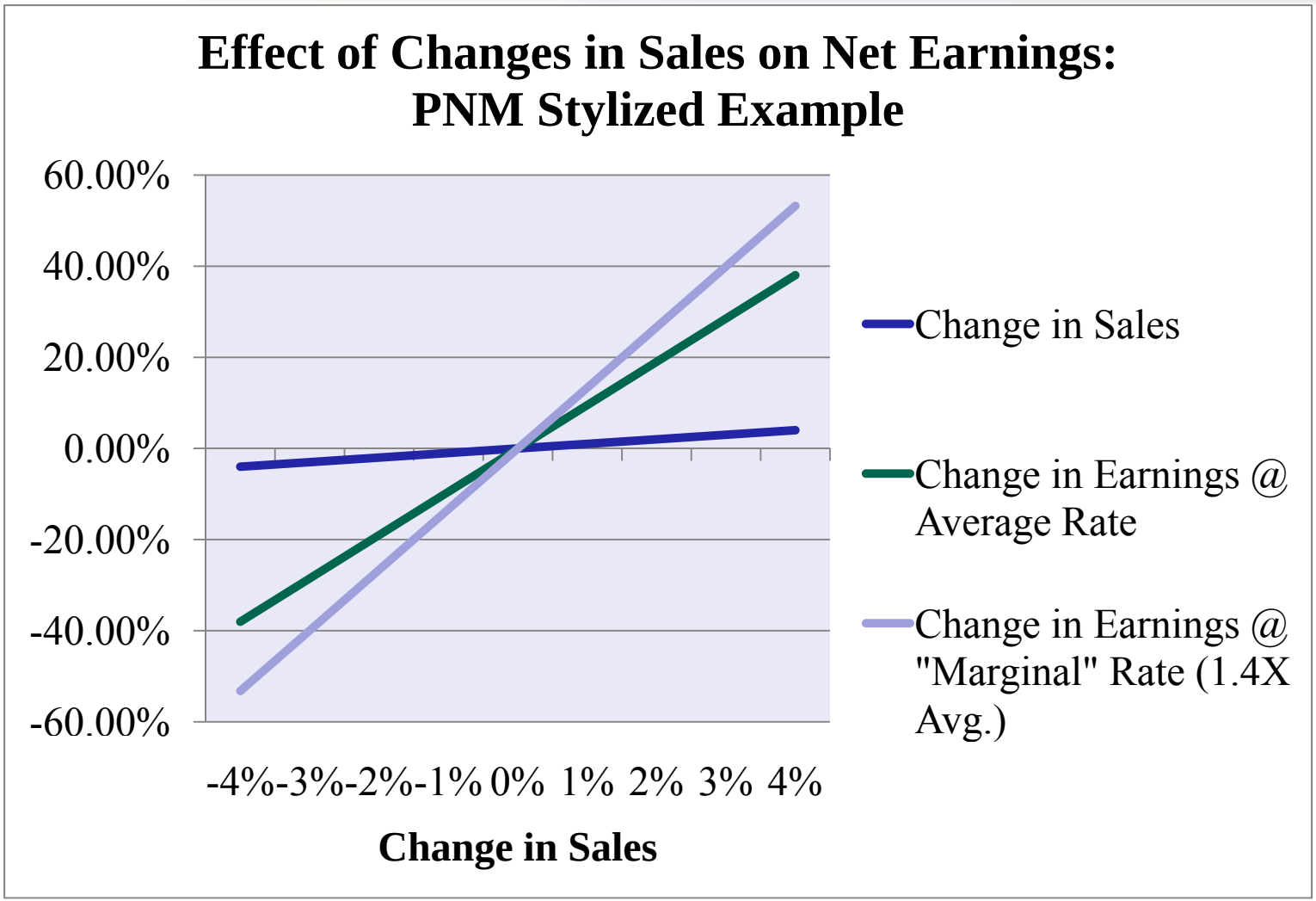
Effect of Changes in Sales on Net Earnings: PNM Stylized Example @ System Average Rate

Impact of Changing Sales on Earnings: Stylized PNM Example							
	Base Revenues	Change in Sales	Net Change in Revenues	Tax Savings/(Cost)	Change in Net Earnings	Base Earnings	% Change in Earnings
4% Decrease in Sales	$ 537,199,133	-4.00%	$ (21,487,965)	$ 8,507,085	$ (12,980,880)	$ 78,889,968	-16.45%
3% Decrease in Sales	$ 537,199,133	-3.00%	$ (16,115,974)	$ 6,380,314	$ (9,735,660)	$ 78,889,968	-12.34%
2% Decrease in Sales	$ 537,199,133	-2.00%	$ (10,743,983)	$ 4,253,543	$ (6,490,440)	$ 78,889,968	-8.23%
1% Decrease in Sales	$ 537,199,133	-1.00%	$ (5,371,991)	$ 2,126,771	$ (3,245,220)	$ 78,889,968	-4.11%
-	$ 537,199,133	0.00%	$ -	$ -	$ -	$ 78,889,968	0.00%
1% Increase in Sales	$ 537,199,133	1.00%	$ 5,371,991	$ (2,126,771)	$ 3,245,220	$ 78,889,968	4.11%
2% Increase in Sales	$ 537,199,133	2.00%	$ 10,743,983	$ (4,253,543)	$ 6,490,440	$ 78,889,968	8.23%
3% Increase in Sales	$ 537,199,133	3.00%	$ 16,115,974	$ (6,380,314)	$ 9,735,660	$ 78,889,968	12.34%
4% Increase in Sales	$ 537,199,133	4.00%	$ 21,487,965	$ (8,507,085)	$ 12,980,880	$ 78,889,968	16.45%

When Most Savings Are From Highest Block of Rates

Rate Design and Program Design Matter		
Change in Sales	Change in Earnings @ Average Rate	Change in Earnings @ "Marginal" Rate (1.4X Avg.)
-4.00%	-16.45%	-23.04%
-3.00%	-12.34%	-17.28%
-2.00%	-8.23%	-11.52%
-1.00%	-4.11%	-5.76%
0.00%	0.00%	0.00%
1.00%	4.11%	5.76%
2.00%	8.23%	11.52%
3.00%	12.34%	17.28%
4.00%	16.45%	23.04%

Effect of Changes in Sales on Net Earnings: PNM Stylized Example



Addressing the Throughput Issue: Disincentive Piece

- Lost Margin Adjustment
  - Limited to DSM effects
  - Measurement intensive
  - Litigation prone
- Decoupling – Full version
  - Removes weather and economic cycle risk for customers (& utility) on fixed costs portion of bill
  - Lowers cost of capital
  - Not dependent on measurement issues (driven by billing determinants)
- Neither of these is a “positive” (business model) incentive

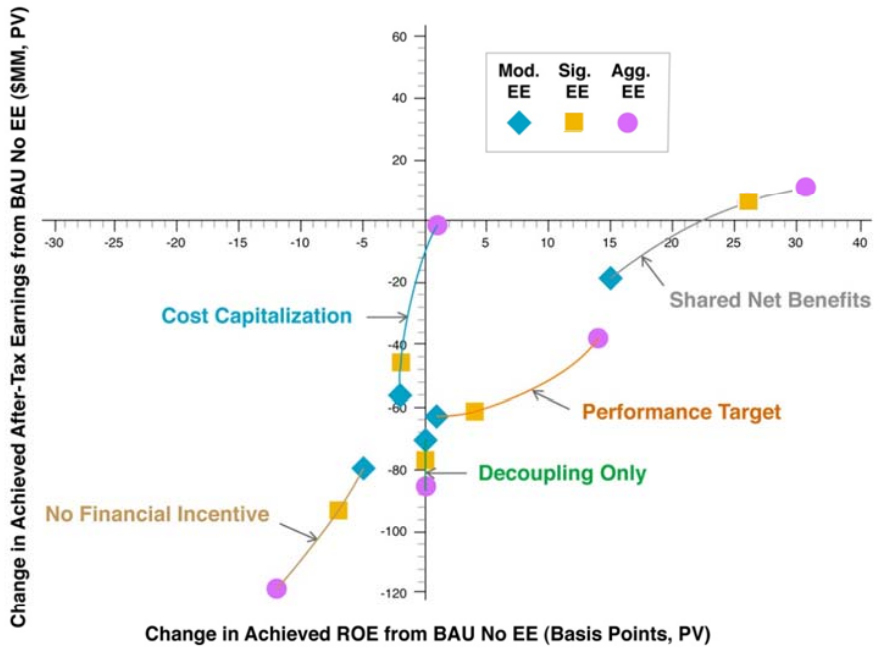
Aligning Business Models with Public Policies

- Efficiency (policy objective)
  - Production
  - Delivery
  - End-use
  - Long-term planning
- Carbon (constraint)
  - Cap & Trade (financial)
  - De-carbonization (technological)
  - Find least cost paths
- Challenge:
  - Identify the appropriate performance metric for objectives and design a profit mechanism which rewards success
  - Identify existing mechanisms which reward anti-policy results and rectify them
  - Build traditional pricing mechanisms around policy objectives and constraints – focus on results

Quick Overview: Positive Incentive Models

- Performance/Budget Model
  - Utility receives a % of EE/DSM spending
- Net Shared Benefits Model
  - Utility receives a % of the net economic benefits of EE/DSM
- Capitalization Model
  - Utility capitalizes EE/DSM spending and amortizes over some period (likely 3-5 years)

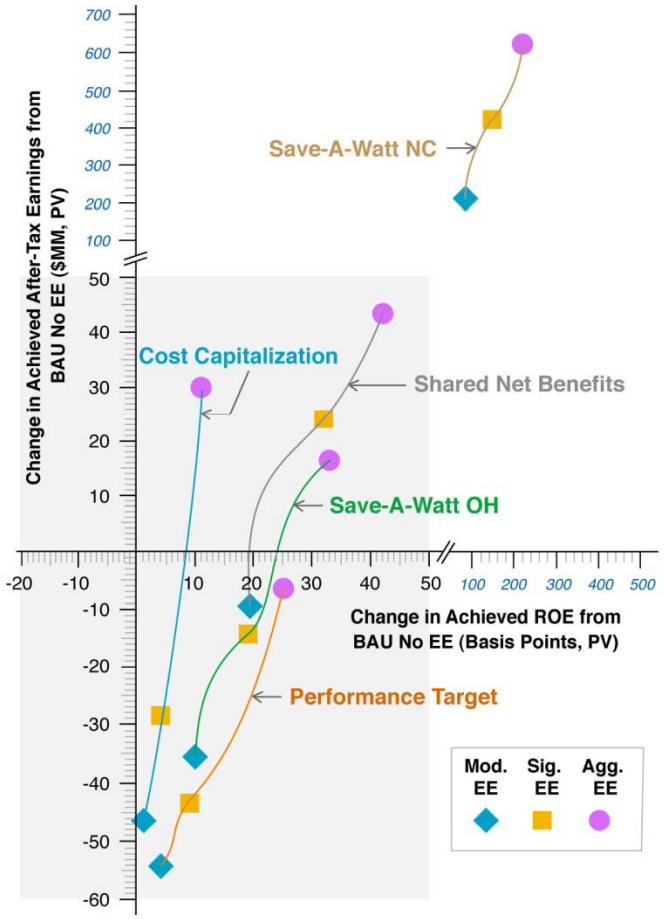
Effect of Decoupling or Shareholder Incentives on Utility ROE and Earnings



Finance theory suggests that preferred metric to assess value to shareholders of alternative investment options is impact on earnings per share (EPS) on a risk-adjusted basis; not total earnings. ROE is a good proxy for this when no additional equity is issued.

- Application of full Revenue Per Customer decoupling entirely removes short-term disincentive from any reduction in sales between rate cases, but does not improve earnings opportunities
- Performance Target and Shared Net Benefits are only mechanisms that produce positive change in ROE for all EE savings levels if implemented alone
- Increase in earnings with Shared Net Benefits in Significant and Aggressive EE cases, compared to BAU No EE case

Effect of Decoupling and Incentive Mechanisms on Utility ROE and Earnings



- EE more likely to be "profit center" for utility if combine mechanisms
- ROE of SW utility always increases with combined decoupling and incentive mechanism, compared to BAU No EE case
- Earnings generally increase only in the Aggressive EE case

Future Regulatory Policy Framework

- Understand carbon as a constraint – not just a cost
- Seek to meet carbon constraints at the least cost over time
  - Time is not on our side – quicker carbon reductions will lower long-term cost of carbon compliance
  - Carbon allowances likely to generate funding for clean resources
- Maximize energy efficiency
  - Lowers total cost of system in both short-run and long-run
  - Lowers carbon more than any other resource and at lower cost
  - Offsets higher cost alternatives
- Reconcile regulatory incentive structure to a carbon constrained context
- Now is the time to reform regulation to meet these challenges

Strategies

- Clearly identify your goals: Metrics are important
  - Peak *and* energy reductions
    - Peak avoids long-run capital costs, fuel and market prices
    - Energy reduces carbon and fuel
    - Portfolio and Risk Considerations
- Don't get lost in the minutiae –
  - Some progress = Lots of learning
  - Don't let the perfect be the enemy of the good
- Be prepared to abandon traditional approaches in favor of new ones
  - Tie new policies to performance
  - Seek to do what's achievable on an aggressive path

Resources

- National Action Plan for Energy Efficiency, *Aligning Utility Incentives with Investment in Energy Efficiency,* prepared by Val R. Jensen, ICF International, November 2007, at http://www.epa.gov/cleanenergy/documents/incentives.pdf.
- Peter Cappers, Charles Goldman, Michele Chait, George Edgar, Jeff Schlegel and Wayne Shirley, *Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility*, Ernest Orlando Lawrence Berkeley National Laboratory, March 2009, at:
  - http://eetd.lbl.gov/EA/EMP/reports/lbnl-1598e.pdf
  - http://eetd.lbl.gov/EA/EMP/reports/lbnl-1598e-app.pdf (appendices).
- Peter Cappers and Charles Goldman, *Empirical Assessment of Shareholder Incentive Mechanisms Designs Under Aggressive Savings Goals: Case Study of a Kansas "Super-Utility,"* Ernest Orlando Lawrence Berkeley National Laboratory, August 2009, at:
  - http://eetd.lbl.gov/EA/EMP/reports/lbnl-2492e.pdf
- Michael W. Rufo, Itron Inc., "Evaluation and Performance Incentives: Seeking Paths to (Relatively) Peaceful Coexistence," Proceedings of the 2009 International Energy Program Evaluation Conference, Aug. 12-14, 2009, pp. 1030-1041, at:
  - http://docs.cpuc.ca.gov/efile/CM/106837.pdf.
- Richard Cowart, "Efficient Reliability: The Critical Role of Demand-Side Resources in Power Systems and Markets at:
  - http://www.raponline.org/showpdf.asp?PDF_URL='docs/RAP%5FCowart%5FDSResourcesInPowerSystemAndMkts%5F2001%5F06%2Epdf'

Thanks for your attention. Questions?

- Contact info:
  - E-mail: wshirley@raponline.org
  - Website: http://www.raponline.org