

Regulatory Barriers to Energy Efficiency

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Advisory Committee on Energy

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The Regulatory Assistance Project

Vermont ♦ Maine ♦ New Mexico ♦ California ♦ Beijing ♦ Brussels ♦ Illinois



About the Regulatory Assistance Project

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.
 - Richard Sedano was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.
- Funded by foundations and the US Department Of Energy. We have worked in nearly every state and many nations.
- Also provides educational assistance to stakeholders, utilities, advocates.



Some Regulatory Barriers to Energy Efficiency

- The Throughput Incentive
 - Utilities make money on sales
- Edifice Complex
 - Attraction to building supply and transmission resources
- Measuring a counter-factual
 - What would have happened? Are savings real?



Some Regulatory Barriers to Energy Efficiency

- **The Throughput Incentive** is today's topic
 - Utilities make money on sales
- **Edifice Complex**
 - Attraction to building supply and transmission resources
- **Measuring a counter-factual**
 - what would have happened? Are savings real?

Reminder:

What is Energy Efficiency?

- Utility consumer-funded energy efficiency
 - Cost effective actions from a system or societal perspective which are not happening
 - **Programs** overcome key market barriers
 - Awareness
 - Information
 - Assistance
 - Cash Flow
 - Money
 - Responsibility
- Addressing “**participants**” (building decision-makers) and “**trade allies**” (who serve decision-makers)



Energy Efficiency is also:

- **Building Energy Codes**
- **Appliance and Equipment Energy Standards**
- **Community-based** energy efficiency programs
- **Energy Service Company (ESCO) Performance Contracts**
- **Personal Choices**

Does utility support these?

Does regulation make a difference ???



What does energy efficiency do?

- Reduces waste for 3 ¢/kWh investment
- Adds value for customers, service area
 - Reduce cost
 - Maintain or improve quality and comfort
- Reduces need for more expensive power generation
 - And load growth-driven T&D
- **Reduces utility sales**

If Energy Efficiency is Least Cost



- Shouldn't regulation promote the least cost result?
- Should the **least cost** result by the **most profitable**?
- Even if the investment raises rates?
 - Let's be honest, all options we are looking at are raising rates
 - And energy efficiency rate effect is small in comparison



Appreciating the Effect of Reduced Utility Sales

- Helps to appreciate utility ratemaking
 - Cost of service (COS), based on PUC investigation
 - Fuel or generation costs
 - Embedded Fixed Costs
 - Rates, an outcome of COS divided by sales
 - Average **embedded** cost
 - Distinct for each customer class and tariff



Rates and Utility Costs

- Generally, utility rates exceed short run incremental (marginal) cost
 - Rates $>$ MC
 - So if sales go up after the end of the rate case, there is a margin
 - And if sales go down after the end of the rate case, some fixed costs are exposed
- Some customers more focused on rates, others more focused on bills



The Throughput Incentive

- Traditional regulation effects add up to encouraging utility to add sales and to avoid (resist?) reducing sales
- The throughput incentive creates pressure when trying to implement energy efficiency or distributed generation or demand response
 - Misaligned, conflicting regulatory signals




Throughput Incentive Applies to All Utilities

- Investor-owned, cooperative-owned and municipally-owned utilities all see fixed cost coverage as an imperative
- Some companies choose to assign energy efficiency a high priority despite incentives
- Some companies don't worry about the incentives if energy efficiency expectations are modest



What Should the Regulator Do about the Throughput Incentive?



Consider how utilities make money

- Capital investments form the “Rate Base”
 - Rate base earns a “Return on Equity Investment”
 - ROE is around 10% these days
 - ROE is meant to reflect return shareholders expect in order to provide equity capital, and also indicates a measure of risk
 - Utility capital structure is often roughly 50/50 debt/equity (debt is lower cost), but debt holders like higher equity proportions



Debt and Equity Support the Rate Base

	Cost	% of Capital
Debt	6%	50%
Equity	10%	50%
Weighted Avg Cost of Capital	8%	

**This is the cost customers pay
to attract capital to the utility**



Utility earnings (Net Income)

- Return on equity investment built into cost of service and into rates (A)
- Margins on sales in excess of rate case assumptions adds revenues (A)
- Reduced costs between rate cases go to the bottom line (B)
- **Revenue (A) – Costs (B) = Net Income**



Utility Structure Matters

- A vertically integrated utility (G+T+D) earns on all these – diversified
- A wires utility (T+D) earns only on these fixed assets
- The math shows that a percent of sales reduction or increase drives a higher percentage of earnings to a wires utility



Circumstances Matter

- If underlying sales are rising briskly, savings due to energy efficiency might just reduce upside revenue opportunity
- But if underlying sales are rising slowly or are stagnant or declining, savings due to energy efficiency expose the utility to significant risks
 - Wall St, especially debt raters, care about this!



What does PUC do now if it wants to ramp up EE?

- Comfort in familiar
 - Staff, utilities know rate cases – find sol’ns here
 - Remedies seem to offer more risks if something goes wrong than they offer in benefits
 - New utility business models unfamiliar, exotic
- Decide that the paradigm is changed
 - Force stakeholders to rethink everything, try
- Statute can make all the difference



Utility Squeeze

- Energy Efficiency expectations rising
 - EE savings as a % of total kWh sales rising
 - A few years ago, 1% was quite good (sales growth **dampened**)
 - Today, top performers are hitting 2% (sales growth **neutralized**)
 - In order to achieve prospective climate change goals, 3% will be needed (absolute sales **declining**)
- The squeeze on the utility is now palpable



Compliance vs. Innovation/Inspiration

- Utilities will comply with the law
- Utilities comfortable with their business incentives will go further to maximize savings and exceed required targets
 - Through **innovation**
 - Through **inspired leadership** and staff commitment
 - Utilities have a special role with customers



Regulatory Concerns

- How do rates change
- Regulatory, efficiency/ convenience
- Appearance of excessive utility gains (front page test)
- Keep business as usual
- Respond to changed paradigm
- Reliability, funding of fixed costs (Wall St.)
- Incentives to control costs
- Opportunity for customer to save from energy efficiency
- Regulatory lag: good or bad for customers?
- Risk



A Moment on Risk

- We want the utility to be responsible for providing reliable service at the least cost consistent with safety, environment, etc.
 - Utility is at **risk** for penalties if they fail
- This is different than the **system risks** from markets and global trends
 - Customers are at **risk**, and we direct utilities to manage that risk the best way they can



These concerns will help evaluate solutions

- But first, a discussion and then a break...



Thanks for your attention

- rsedano@raponline.org
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- RAP Mission: *RAP is committed to fostering regulatory policies for the electric industry that encourage economic efficiency, protect environmental quality, assure system reliability, and allocate system benefits fairly to all customers.*

Solutions to Regulatory Barriers to Energy Efficiency and Distributed Resources

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A list of solutions

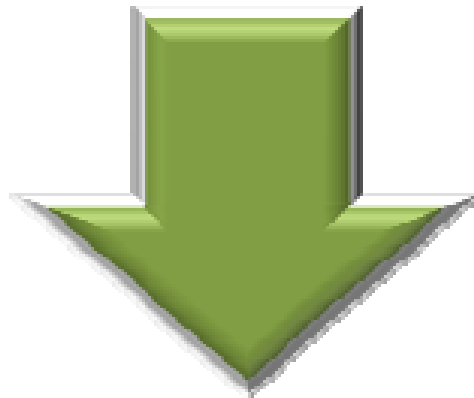
- Decoupling
- Shift costs to customer charge
- Return lost revenues from energy efficiency programs
- Add financial incentives
- Existing (strengthened) regulation
- Non-utility (3rd party) administration



Decoupling

- Focus on fixed costs from the last rate case
- Reconcile rates periodically to recover those costs, perhaps adjusted by a formula that captures major changes over time
- Enhancements can bound rate change size and resulting earnings
- Can successfully make utility indifferent to sales

Traditional Regulation vs. Decoupling




Traditional Regulation:
Revenues Change With
Consumption



Decoupling:
Prices Change With
Consumption





Shift Revenue to Customer Charge, reduce volume rate

- Customer charge might go from \$3-\$10/mo. to \$30 in order to make utility indifferent to sales, with reduction in volume charge
 - Low use customer see an increase
 - Energy efficiency less beneficial to customer
- Known as “Straight-Fixed-Variable” (SFV)



Lost Revenue Adjustment

- Returns to utility net margin that would have accrued without energy efficiency
- Utility still has incentive to build load and to avoid sales reductions not directly due to its programs
- Some history of tough regulatory process to calculate



Financial Incentives

- Instead of reducing throughput incentive, regulators can apply an opposite force, putting a reward on the administrator achieving a certain level of spending, savings, or other metric
 - Can be an acceptable substitute for decoupling



Existing Regulation

- Regulators apply performance expectations and reviews with explicit penalties if compliance or performance is lacking
- Rate cases might get more frequent if energy efficiency ramps up to high levels, approximating what decoupling would do



Non-utility (3rd Party) Administration

- If utility throughput incentive is irreconcilable, or for other reasons, government can assign energy efficiency task to someone else
 - As in OR, VT and HI, a 3rd party
 - NY, ME, WI have state govt responsible
 - CT and MA have a public-private board making management decisions



My Preference: Decoupling

- Decoupling directly addresses the throughput incentive, applied not just to savings from energy efficiency programs, but to savings from all sources
- Respects imperative to cover fixed costs as found in most recent rate case with revenue
 - Respects most recent rate case
- Rate design preserved (no SFV)



My Preference: Decoupling

- Rate reconciliation can be ministerial and will tend to be small, smaller than fuel clause adjustments (and can be applied in current time, monthly)
- Fewer Rate Cases may be needed
- Works compatibly with financial performance incentives and with 3rd party
- Reduces business risk, which reduces costs that customers pay (not a zero sum game)



My Preference: Decoupling

- Rationalizes incentives so regulation is not as much about correcting past wrongs, utility more interested in customer value
- Decoupling can be simple or complex, but complexities only serve to more precisely strike a balance between the utility interest and the public interest
- Legislature in some states does direct consideration of decoupling



Paradigm Shifts Are Here

- Every state can choose a strategy
 - Based on its priorities
 - Energy efficiency a compelling resource and does not “just happen”
- Statutes should be reviewed to see if they are unnecessarily and unproductively precluding or narrowing useful options



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