RAP | Energy solutions for a changing world

Energy Efficiency for Natural Gas Utilities and Decoupling

A Workshop for Keystone Energy Efficiency Association

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April 6, 2011

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Introducing RAP and Rich

- 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 directs RAP's US Program. He was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.

Reduced Gas Sales Caused by:

- Energy efficiency programs
- Sales attrition due to increased end use efficiency
- Few new end uses

All are of interest to regulators to assure public interest behavior from regulated companies and a reasonable standard of economic service delivery for natural gas customers

Energy Efficiency: Attrition and Programs

- Attrition occurring naturally in the market
  - Good news: furnaces, etc. are more efficient!
- More cost effective energy efficiency likely available
  - Deliver through programs
- Regulatory attention needed around revenues covering fixed costs (decoupling discussed soon), **incentives matter**

Today's Program

- Regulation and Price-setting Basics
- Decoupling methods
- Clarifications welcome at noted stopping points
- Discussion welcome at the end

Regulation and Price-setting

Regulation

- A set of statutes, rules and common practices
- A community of government, utility, consumers and others
- A set of public interest issues that address monopoly services and markets
- A major output: prices

Price-setting

- Based on a cost of service, usage data
- Based on an allocation of costs among customer classes
  - Distinction between fixed and variable costs, which depends on POV (short or long term, average or marginal)
- Tariffs identify terms and conditions for similarly situated customers
  - Not supposed to be influenced by politics

Energy Efficiency Cost Recovery

- Covered in rates, along with all other costs of service
- Or funded through a separate, "system benefits" charge on customers bills
  - Drawback: SBC suggests EE is unlike other resources. A political target.
- Rate and bill impacts
  - EE has rate and bill impacts, as do pipelines and other supply investments, but they're not the same
    - There's a mismatch between expensing EE and rate-basing pipeline
    - The rate and bill impacts over the long term must be compared, before a judgment can be made: cost-effective EE reduces bills
    - **Remember: Compared to what?**

Keep Scale in Mind

- Higher spending states are at ~3% of revenues for energy efficiency
  - Saves capacity costs due to accumulated peak day savings – sustained long term benefit
    - Degree varies depending on utility excess capacity
  - Protects consumers and economy from larger effects of volatile commodity prices

Competitive Issues

- In some states, natural gas alternatives are available and some (many?) customers can switch back and forth
- Where energy efficiency is offered,
  - Some are concerned that it is a price disadvantage compared with alternatives
  - Others see energy efficiency as a service advantage and bill stabilizer that other alternatives do not offer

Key Decoupling Points

- Rate Case Focus on Revenue Requirement (for **utility fixed costs**) Remains Key
- Some way to project revenue requirement (a "target revenue") over a few years time
  - Revenue per customer
  - Other primary drivers of cost of service
    - Capital spend trend may change in next decade
  - Objective: revenue requirement approximates what a rate case would produce
  - Reset rev. req. before assumptions lose validity >>>
    - Periodic (every 3-5 year) rate case
- Willingness to reconcile rates to collect that revenue

Decoupling:
Effect on Rate Design

(none)

Decoupling

Incentives Matter

Traditional Regulatory Methods Provide Strong Disincentives for Customer-Sited Resources

- Utility revenues and profits are linked to unit sales (therms)
  - But, in the short run, a utility's non-commodity marginal costs are small relative to demand for gas
- Loss of sales between rate cases lowers utility revenues, while non-commodity costs don't change much, so net income is reduced
- Successful acquisition of customer-sited resources—energy efficiency and distributed generation / combined heat and power—becomes bad news, unless there are frequent rate cases
- *The effect may be quite powerful. . .*

How Changes in Sales Affect Earnings

	Revenue Change		Impact on Earnings		
% Change in Sales	Pre-tax	After-tax	Net Earnings	% Change	Actual ROE
5.00%	$9,047,538	$5,880,900	$15,780,900	**59.40%**	17.53%
4.00%	$7,238,031	$4,704,720	$14,604,720	**47.52%**	16.23%
3.00%	$5,428,523	$3,528,540	$13,428,540	**35.64%**	14.92%
2.00%	$3,619,015	$2,352,360	$12,252,360	**23.76%**	13.61%
1.00%	$1,809,508	$1,176,180	$11,076,180	**11.88%**	12.31%
0.00%	$0	$0	$9,900,000	**0.00%**	11.00%
-1.00%	-$1,809,508	-$1,176,180	$8,723,820	**-11.88%**	9.69%
-2.00%	-$3,619,015	-$2,352,360	$7,547,640	**-23.76%**	8.39%
-3.00%	-$5,428,523	-$3,528,540	$6,371,460	**-35.64%**	7.08%
-4.00%	-$7,238,031	-$4,704,720	$5,195,280	**-47.52%**	5.77%
-5.00%	-$9,047,538	-$5,880,900	$4,019,100	**-59.40%**	4.47%

Least-Cost Service Should be the Most Profitable

- The "throughput" incentive is at odds with public policy to supply electric power services at the lowest total cost:
  - inhibits a company from supporting investment in and use of least-cost energy resources, when they are most efficient,
  - encourages the company to promote incremental sales, even when they are wasteful
- Ratemaking policy should align utilities' profit motives with public policy goals: acquiring all cost-effective resources, whether supply or demand
- The utilities' throughput incentive promotes inefficient outcomes, even where:
  - there is no programmatic energy efficiency; and
  - even with third-party administration of energy efficiency programs.

Regulatory Priorities

- Revenue Requirement
  - The principal outcome from a rate case
  - Support wires and pipes system over time
- Prices
  - The outcome of revenue requirement and billing determinants
  - Important to consumers, but in what ways?
- Energy Efficiency **New**

A Regulatory Model: Revenue-Sales Decoupling

- Breaks the mathematical link between sales volumes and revenues (and, ultimately, profits)
  - Makes revenue levels immune to changes in sales volumes
  - Fundamentally, it's a matter of enabling recovery of the utility's prudently incurred fixed costs, including return on investment, in a way that doesn't create perverse incentives for unwanted actions and outcomes
- Two objectives:
  - To protect the utility from the financial harm associated with least-cost actions and
  - To remove the utility's incentive to increase profits by increasing sales

A Regulatory Model: Revenue-Sales Decoupling

- Decoupling revenues, rather than earnings directly, preserves the utility's incentive to improve its operational and managerial efficiency
- This is a revenue issue, not a pricing issue: it is not intended to decouple customers bills from consumption
  - Unit-based consumption pricing approaches remain
  - Customers continue to see the cost implications of their consumption decisions, while the utility's risks associated with variations in sales due to efficiency are mitigated
  - Unit-based consumption pricing reflect the relationship between demand and cost causation in the long-run

Purpose of Decoupling

- Utility profits no longer linked to sales, but to operational efficiency
- A key barrier to least-cost energy service is removed

Design Goal

- Over time, utility revenues track what frequent rate cases would have produced
  - Note emphasis on revenues
  - Rates change from time to time to meet revenue sufficiency, the base was set in the last rate case
  - Simple basic mechanism: it's just math

How RPC Decoupling Changes Allowed Revenues

- In any post-rate case period, the Target Revenue for any given volumetric price (i.e. demand charge or energy rate) is derived by multiplying the RPC value from the rate case by the then-current number of customers – here customer count went up and sales went down

Periodic Decoupling Calculation		
From the Rate Case		
Target Revenues		$10,000,000
Test Year Unit Sales		100,000,000
Price	$	0.10000
Number of Customers		200,000
Revenue Per Customer (RPC)		$50.00
Post Rate Case Calculation		
Number of Customers		200,500
Target Revenues ($50 X 200,500)		10,025,000
Actual Unit Sales		99,750,000
Required Total Price	$	0.1005013
Decoupling Price "Adjustment"	$	0.0005013

Suggested Alternatives to Decoupling

- Business as Usual
- Lost Revenue Adjustment Proceedings
- Straight Fixed Variable Rate Design

Lost Revenue Adjustment

- Pros
  - Clear focus on revenue effects of energy efficiency
- Cons
  - Strains EM&V process with contention
  - Requires choice of avoided cost dataset
  - Costly in dollars and regulatory time
  - Utility always in a position of clawing back what is "lost"
  - Broader effects on utility sales are not included

Straight Fixed Variable Rate Design

- Pros
  - Set rates, no administration
  - Successful mitigation of utility throughput incentive
- Cons
  - Raise bills to low use customers by large %
  - Damage value to customer of reduced energy use
  - Interfere with use of rates for “smart pricing”
  - Confuses short run and long run marginal costs, corrupts effect of price on long run investment

Business as Usual

- Pros
  - Participants are used to it
  - Consumer protections in place, such as they are, including stable price
- Cons
  - Throughput incentive in force and associated incentive conflicts
  - Actual revenues inevitably diverge from rate case result
  - Better opportunities for other innovations to promote public interest
  - Rate cases needed more frequently

Revenue Decoupling: The Essential Concept in Review

- Basic Revenue-Sales Decoupling
  - Utility "base" revenue requirement determined with traditional rate case
  - Each future period has a calculable "allowed" revenue requirement
  - Differences between the allowed revenues and actual revenues are tracked
    - Variety of ways of tracking differences
  - The difference (positive or negative) is flowed back to customers in a small adjustment to unit rates

Cost of Capital

- Decoupling takes variability out of utility revenues and coverage of fixed costs
  - Business risk is reduced compared with same utility in traditional regulation
  - Combine decoupling and rate case to value
- Wtd Avg cost of capital can be reduced by changing debt/equity ratio or ROE

Other important decoupling elements

- Formula to adjust revenue requirement?
- Full or partial decoupling
  - Adjust for weather or economic cycle?
- Limited true up or customer class
- True up interval (and accrual rate)
- Capping adjustments, dead bands
- Sharing earnings, dead bands

Oregon PUC Order 09-020 pg 27

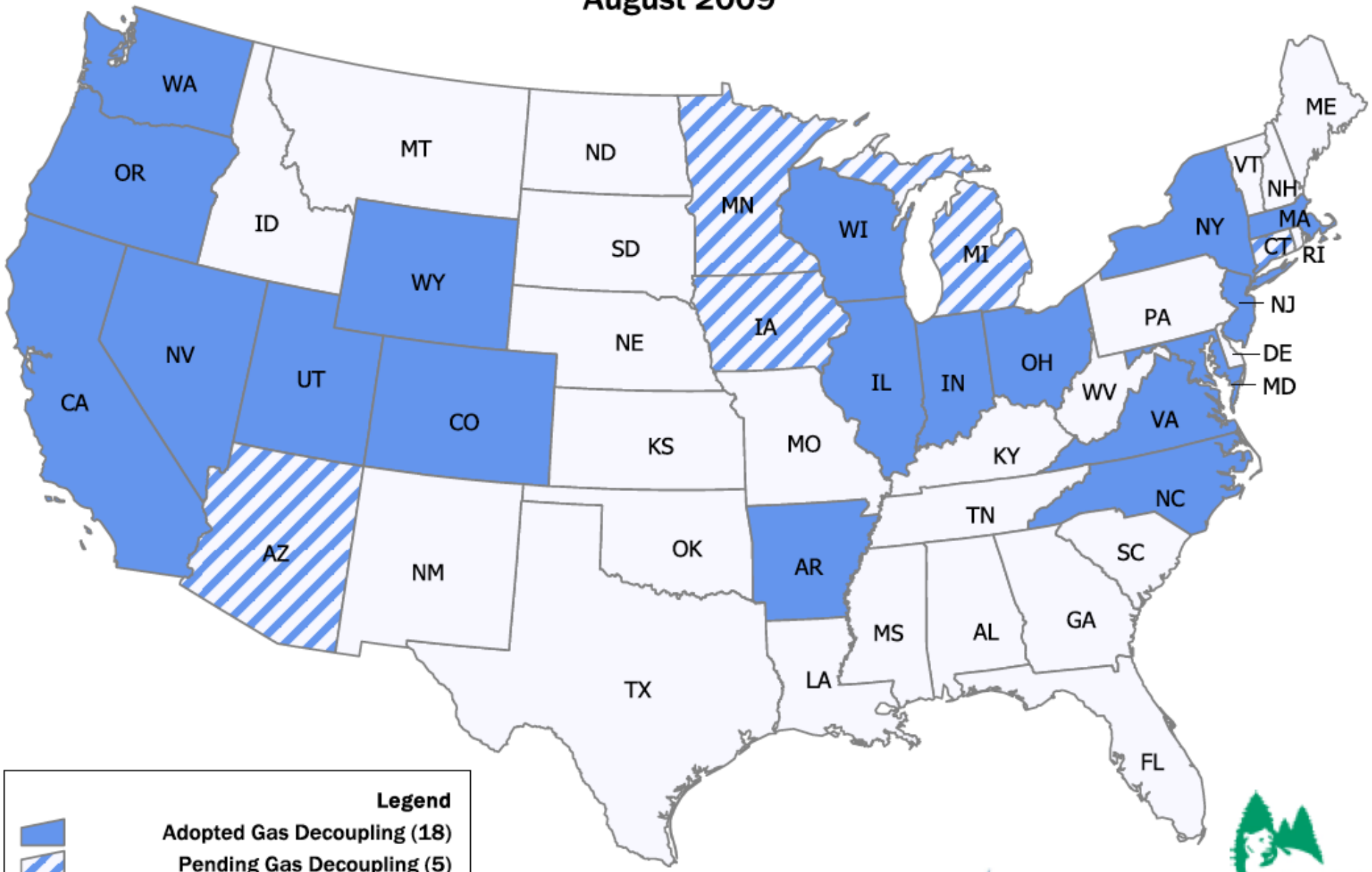
"… PGE does have the ability to influence individual customers through direct contacts and referrals to the ETO. PGE is also able to affect usage in other ways, including how aggressively it pursues distributed generation and on-site solar installations; whether its supports improvements to building codes; or whether it provides timely, useful information to customers on energy efficiency programs. We expect energy efficiency and on-site power generation will have an increasing role in meeting energy needs, underscoring the need for appropriate incentives for PGE."

Attrition, Energy Efficiency and Decoupling

- Decoupling can be a good policy response to any structural reduction in sales on a utility network with heavy short run fixed costs
- Natural gas companies facing attrition have proposed decoupling
  - Justification sometimes looks more self-interested than public interested
  - Commitment to energy efficiency

Gas Decoupling in the US

August 2009



AGA American Gas Association

NRDC

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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