Decoupling Workshop: Arizona Corporation Commission

Presentation by
Wayne Shirley and Jim Lazar
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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

What We'll Cover Today & Tomorrow

- Decoupling Basics
- Misperceptions about decoupling
- Related Risk Issues
- Harmonizing rate design with decoupling
- Parties' Specific Issues and Concerns

The Fundamentals Matter

- Treatment of production costs (i.e. variable costs)
  - Typically flowed through
  - No profit margin for utility
- Treatment of non-production costs (i.e. generally return, O&M and short-run fixed costs)
  - Recovery tied to rate case pricing and sales volume
  - This is where the utility profits are

Utility Financial Structures Enhance Power of Incentives

- Few non-production costs vary with sales in the short run
  - So, increased sales go to bottom line
  - Conversely, decreased sales come out of bottom line
- Customers exposed to 100% of deviation from assumed sales
- Company's risk/opportunity mitigated by income taxes
- High leverage means that utility profits represent relatively small share of total cost of capital
  - Revenue changes on the margin only affect profit
  - This makes profits highly sensitive to changes in revenues
- <u>The effect may be quite powerful…</u>

Assumptions for a Sample Distribution Utility

Assumptions	
Operating Expenses	$160,000,000
Rate Base	$200,000,000
Tax Rate	35.00%

Cost of Capital	% of Total	Cost Rate	Weighted Cost Rate		Dollar Amount	
			Pre-Tax	After-Tax	Pre-Tax	After-Tax
Debt	55.00%	8.00%	4.40%	2.86%	$8,800,000	$5,720,000
Equity	45.00%	11.00%	4.95%	7.62%	**$9,900,000**	$15,230,769
Total	100.00%			10.48%		

Revenue Requirement	
Operating Expenses	$160,000,000
Debt	$5,720,000
Equity	$15,230,769
Total	$180,950,769
Allowed Return on Equity	**$9,900,000**

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%

Revenue-Profit Decoupling: What is it?

- Breaks the mathematical link between sales volumes and profits
- Objective is to make profit levels immune to changes in sales volumes
  - This is a revenue issue more than a pricing issue
  - Volumetric pricing and other rate design (e.g. TOU) may be "tweaked" in presence of decoupling, but essentials of pricing structures need not be changed because of decoupling
- Not intended to decouple customers' bills from their individual consumption

Full Decoupling

- Insulates a utility's revenue collections from any deviation of actual sales from expected sales.
- The cause of the deviation—e.g., increased investment in energy efficiency, weather variations, changes in economic activity—does not matter.
- Full decoupling renders a utility indifferent to changes in sales, regardless of cause. It eliminates the profit-related "throughput" incentive. The utility's revenues are no longer a function of sales, and its profits cannot be harmed or enhanced by changes in sales. Only changes in expenses will then affect profits.

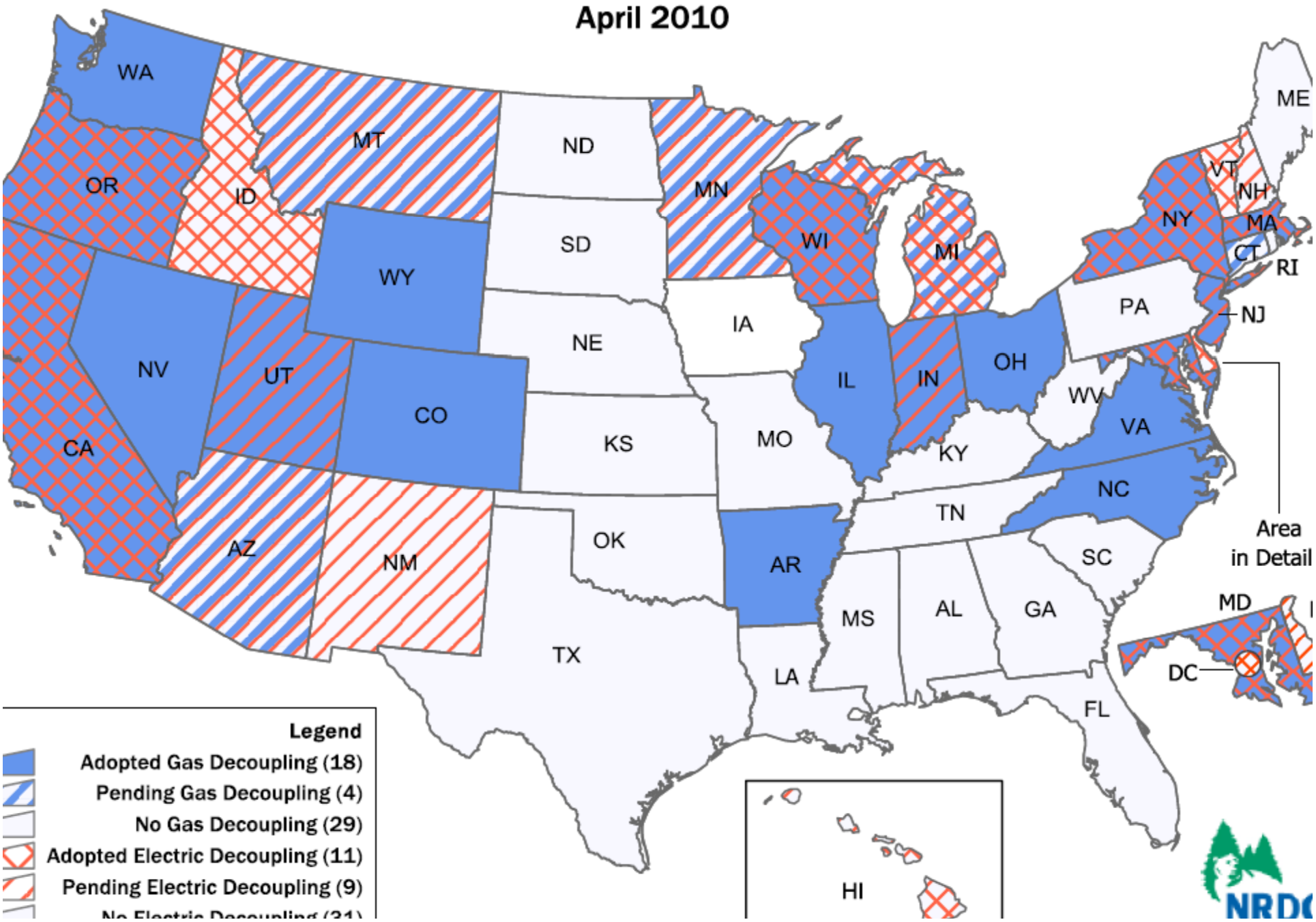
Partial Decoupling

- Insulates only a portion of the utility's revenue collections from deviations of actual from expected sales.
- Any variation in sales results in a partial true-up of utility revenues (e.g., 90% of the revenue shortfall is recovered).
- This approach is fundamentally the same as full decoupling, but the amount of revenue that can be collected or refunded through the decoupling adjustment is simply constrained by the allowed percentage

Limited Decoupling

- Accounts for the revenue impacts only from specified *causes* of variations in sales, such as energy efficiency or weather
- Alternatively, may allow for revenue adjustments for all causes *except particular* ones. For example, variations due to some or all other factors (e.g., economy, end-use efficiency) *except* weather are included in the true-up. In this instance, the utility and, necessarily, the customers still bear the revenue and bill risks associated with changes in weather
- Can be some combination of the above
- Requires the application of more complex mathematical calculations than either full or partial decoupling, and these calculations depend in part on data whose reliability are sometimes vigorously debated
- More important than this is the fundamental question that the choice of approaches to decoupling asks: how are risks borne by utilities and consumers under decoupling, as opposed to traditional regulation?

Gas and Electric Decoupling in the US

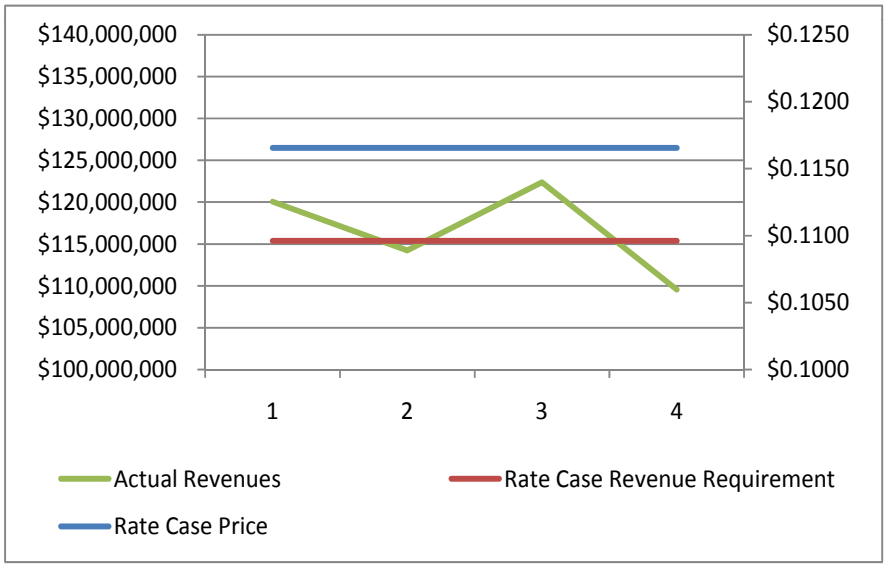


Revenue Decoupling: The Basic Concept

- Basic Revenue-Profit Decoupling has two primary components:
  1. Determine a "target revenue" to be collected in a given period
     - In the simplest form of revenue decoupling (sometimes called "revenue cap" regulation), Target Revenues are always equal to Test Year Revenue Requirements
     - Other approaches have formulas to adjust Target Revenue over time
  2. Set a price which will collect that target revenue
     - This is the same as the last step in a traditional rate case – i.e. *Price = Target Revenues ÷ Sales*

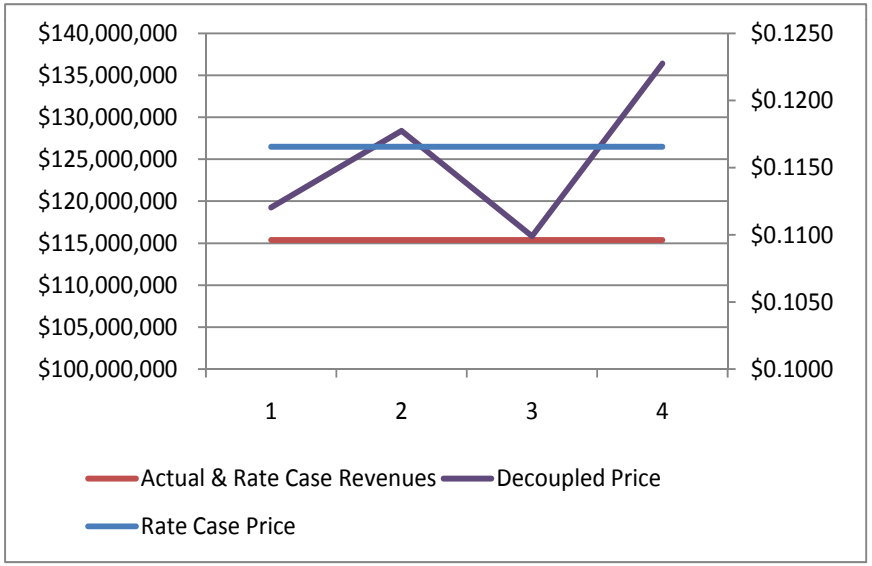
The Essential Characteristic of Decoupling

Traditional Regulation:
Constant Price =
Fluctuating Revenues/Bills



Revenues = Price * Sales

Decoupling:
Precise Revenue Recovery =
Fluctuating Prices



Price = Target Revenues ÷ Sales

The Decoupling Calculation

- Utility Target Revenue Requirement determined with traditional rate case
  - By class & by month (or other period coinciding with how often decoupling adjustment is made)
- Each future period *will have* different *actual* unit sales than Test Year
- The difference (positive or negative) is flowed through to customers by adjusting Price for that period (see Post Rate Case Calculation)

Periodic Decoupling Calculation	
From the Rate Case	
Target Revenues	$10,000,000
Test Year Unit Sales	100,000,000
Price	$0.10/Unit
Post Rate Case Calculation	
Actual Unit Sales	99,000,000
Target Revenues (from above)	$10,000,000
Required Total Price	$0.10101/Unit
Decoupling Price “Adjustment”	$0.00101/Unit

Approaches Where Target Revenues Are Not Held Constant

- California
  - Embeds decoupling in broader PBR context
  - Allows Target Revenues to change – e.g. for inflation & productivity
- Many now use Revenue Per Customer model, where Target Revenues are recomputed to account for customer growth

RPC Decoupling

- Recognizes that, between rate cases, a utility's costs change in a way generally linear to the number of customers served
- For each volumetric price, a "revenue per customer" average can be calculated from the rate case adjusted test year data.

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

Periodic Decoupling Calculation	
From the Rate Case	
Target Revenues	$10,000,000
Test Year Unit Sales	100,000,000
Price	$0.10/Unit
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	99,000,000
Required Total Price	$0.101768/Unit
Decoupling Price “Adjustment”	$0.001768/Unit

Changes To The RPC To Reflect Utility-Specific Conditions

- Inflation and Productivity Adjustment
  - Allowed RPC changes over time to reflect inflation (increase) and productivity (decreases)
- Separate RPC for Existing and New Customers
  - If new customers have higher or lower usage than existing customers (or a higher or lower cost of service), the RPC can be separately calculated for each cohort

How Decoupling Is Administered

- Some (e.g. California) use an annual accrual of the revenue over- and under-recoveries and then collect or refund that amount over an ensuing 12 mo. Period
  - CA also uses future test years and annual "attrition" proceedings to approve decoupling adjustments
- Annual proceedings are potential opportunity for litigation and challenge

How Decoupling Is Administered

- Others use a "current" system which makes the decoupling adjustment directly on customers' bills for that month (or, sometimes, with a 30-60 day lag)
  - Decoupling does not necessarily require any "lag" as is customary for fuel clauses
- When all inputs are derived directly from billing information, then process becomes ministerial and not subject to much litigation or challenge

Risks and Other Issues Affected By Decoupling

- Weather
- Economic
- Regulatory Lag
- Financial & business risk of utility
  - Cost of capital implications

How States Have Approached Decoupling?

Feature#	Gas Decoupling#	Electric Decoupling#
Revenue change between rate cases		
Revenue-per-customer	23	4
Attrition adjustment	3	4
No change	3	1
No separate tariff	3	3
Timing of Rate True-ups		
Annual	19	8
Semi-annual/quarterly	2	1
Monthly	4	3
Weather		
Not weather-adjusted	20	10
Weather-adjusted	8	2
Limit on adjustments and/or dead-band	9	6
Per class calculation and adjustments	25	7
Earnings Test	4	
Pilot/known expiration date	11	4
Surcharges only	3	
Total Utilities Analyzed	**28**	**12**

Source: Lesh, *Rate Impacts And Key Design Elements Of Gas And Electric Utility Decoupling: A Comprehensive Review*, The Electricity Journal (June 2009)

Pitfalls to Avoid: Maine

- Decoupled with annual deferral account
- Experienced significant economic decline
- Large price increases followed
- Decoupling was blamed, but a rate case would have certainly been required anyway
- Solution: Bound the results or have a "trigger" for review

What is weather risk?

- Weather risk is the risk that revenues change on account of changes in weather
- Utility and customer both face risk: If you receive more (or less) revenues or pay less (or more) in customer bills, then you face weather risk

Relationship of Utility Profits and Customer Bills to Weather

- Prices are usually determined using weather-normalized billing determinants
- In extreme weather, consumption goes up, along with profits and consumer bills
- In mild weather, consumption goes down, along with profits and consumer bills
- Both utility and customer face risk, with opposite economic effect

Addressing concerns about price volatility

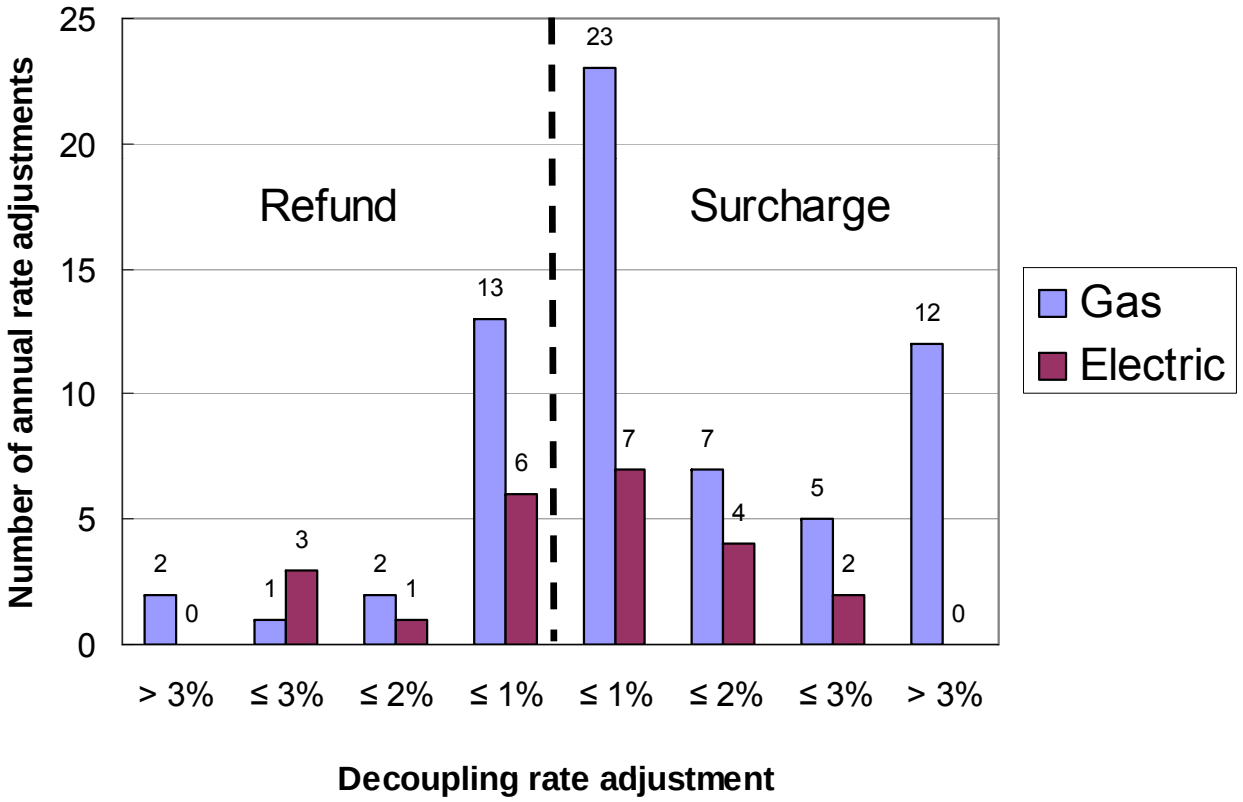
- Actual price adjustments experienced elsewhere imply low risk of price shock
- Risk may be somewhat higher where annual adjustments are imposed, as opposed to using "current" methodology
- But, commission can bound the magnitude of any given price change in order to mitigate against potential
  - Raises question of whether "difference" is tracked in balancing account or "foregone" by utility

How Big are the Price Adjustments?

	Northwest Natural		Power	
Year	PGA % Change	Decoupling % Change	PCA % Change (Res)	Decoupling % Change
1995	(6.2)			
1996	(4.8)			
1997	10.5			
1998	9.2			
1999	7.2			
2000	21.4			
2001	20.8			
2002	(12.7)		7.5	
2003	4.9	0.6	(18.9)	
2004	20.1	0.36	0	
2005	16.6	0.77	0	
2006	3.8	(0.27)	(14.0)	
2007	(8.7)	(0.1)	11.0	
2008	15.6	<(1.0)	8.45	(0.8)
2009			10.2	0.8

Source: Lesh, *Rate Impacts And Key Design Elements Of Gas And Electric Utility Decoupling: A Comprehensive Review,* The Electricity Journal (June 2009)

Do Prices Always Go Up?



Source: Lesh, *Rate Impacts And Key Design Elements Of Gas And Electric Utility Decoupling: A Comprehensive Review*, The Electricity Journal (June 2009)

Comparison of Traditional Regulation and Decoupling

Issue/Topic	Traditional Regulation	Decoupling
Revenue Requirement	Cost of service	Same, but may allow a "revenue path" between rate cases
Likelihood allowed revenue requirement will be over- or under-collected	High	Low – revenue collected is equals "target" revenue
Weather risk	Customers and company bear weather risk with opposite "signs"; Results in wealth transfers based on weather	Customers and company shielded from weather risk; no wealth transfers due to weather; Earnings stability means lower equity ratio required
Economic cycle risk	Company primarily bears economic cycle risk	Company shielded from risk; results in lower cost of capital
Need for rate cases	Likely need more often when growth or other factors are changing	Reduced to 3-5 year periodicity at commission's discretion
Rate Design	See company's current rate design	Essentially undisturbed; may need some harmonizing with fuel clause

Alternatives & Complements To Decoupling

- Alternatives
  - Lost Margin Recovery
  - Fixed/Variable Rate Design
  - Weather-only Normalization
- Complements
  - Rate of Return Incentive
  - Shared Savings Incentive / Penalty Mechanisms
  - Real-Time Pricing
  - Third-Party Administration of EE Programs

Lost Margin Recovery

- Lost margin mechanisms attempt to measure the lost sales due to utility energy-efficiency programs, and provide recovery of the foregone margins.
- Positives
  - Eliminates utility profit attrition from EE programs
  - Impact on customers easy to explain
- Negatives:
  - Contentious to calculate
  - May result in utility resistance to codes and standards.
  - No measurable benefit to cost of capital
- Example: Hawaii, 1992 - 2007

Rate of Return Incentive

- Allow utility a premium rate of return on energy efficiency investment, over and above that earned on general rate base.
- Benefits:
  - Creates a positive profit incentive for EE investment.
  - Easy to explain to consumers.
- Negatives:
  - Creates a positive incentive to invest, not to *conserve*.
- Examples: Washington (1980-1990); Nevada (2007-)

Shared Savings Incentive / Penalty Mechanism

- Divide the "net benefit" of EE investment between utility and consumers. Can be in place of or in addition to decoupling.
- Positives
  - Give the utility a combination incentive to both achieve high levels of EE, and to do it at low total cost.
- Negatives
  - Difficult to explain; Complex to administer
  - Utility share must be ~35% to cover lost margins
- Examples: Washington (PSE 2007-09)

Fixed / Variable Rate Design

- Set rates so that all non-variable costs are recovered in a fixed charge unrelated to usage. Charge can be different for different customer types (Single-family, Multi-family)
- Positives:
  - Simple to administer;
  - Effective for utility earnings stabilization;
  - Cost of capital benefits.
- Negatives
  - Causes usage rates to be far below long-run incremental cost, impairing economic efficiency
  - Causes significant increases in customer usage
  - Results in severe bill impacts for small-use consumers
  - Undermines value of efficiency to consumer
- Example: East Ohio Natural Gas

Weather-Only Normalization

- A form of limited decoupling to reflect changes in usage due to weather only, not conservation or economic conditions.
- Positives
  - Easy to administer
  - Achieves cost of capital benefits nearly equal to decoupling.
- Negatives
  - Does not address throughput incentive relative to energy efficiency
- Example: Brooklyn Union Gas Company

Real-Time Pricing

- Some advocate that pricing all service on a real-time basis is economically efficient, and will lead to rational decisions by consumers.
- Positives
  - Leads to improved short-run resource utilization.
- Negatives
  - Except in rare cases, leads to earnings attrition when consumers use less.
  - Fails to price based on long-run marginal cost, including environmental costs, leading to long-run inefficiency.
  - Consumers may be unable to respond without automation, leading to consumer hostility
  - Evidence of market barriers to efficiency are not addressed.
- Example: Georgia Power Industrial Rate

Third Party Administration of EE Programs

- Delegating energy efficiency to a non-utility third-party provider puts programs in the hands of an entity without a lost-margin bias.
- Positives
  - Throughput incentive is irrelevant
  - Performance has been very good
  - Higher level of oversight is common
- Negatives
  - Lower level of coordination with T&D planning
  - Utility still faces lost margins and rate case pressure
- Examples: Efficiency Vermont; Energy Trust of Oregon

Summary of Alternatives to Decoupling

- Many alternatives to decoupling address some of the same barriers – but do not reduce the financial risk of the utility.
- Pricing alternatives may reduce financial risk, but may be unacceptable to consumers, and do not address the barriers to efficiency investment by consumers.
- Moving efficiency outside the utility may be a promising strategy if utilities remain resistant to efficiency, but there is a duplication of customer contact effort, and a loss of coordination with T&D planning.

Decoupling and the Cost of Capital

- Rating agencies recognize decoupling as a risk mitigator and earnings stabilizer.
- This can be recognized either in the return on equity or in the equity capitalization ratio.

Declining Sales Volumes Typically Reduce Net Income

- Without decoupling, utility sales and net income vary with sales volumes.
  - If short-run marginal cost is lower than average cost, and/or if there is a PGA / Fuel Clause, then net income declines with decreased sales. (Typical)
  - If short-run marginal cost is higher than rates, and there is no Fuel Clause, then there is an inverse relationship. (Pacificorp).

Several Warm Years Can Deplete Retained Earnings

- Assume rates with 75% gas cost (with PGA) and 25% delivery cost, and net income = 20% of delivery cost.
- A 20% reduction in sales volumes causes net income to drop to zero.
- If the dividend is still paid (out of retained earnings), they can be quickly depleted.
- Many bond covenants prohibit paying dividend if retained earnings are depleted.
- If retained earnings are depleted and/or the dividend is suspended, a bond downgrade is likely, increasing borrowing costs for years to come.

Rating Agencies Value Stable Earnings

- A utility that can pay dividends out of cash earnings every year, regardless of weather, is likely to be viewed as lower risk.
- S&P has specifically identified a "**Business Risk Profile Rating"** that ties the utility's risk profile to a required equity ratio to maintain a given bond rating.
- Most distribution utilities are rated 1, 2, 3, or 4 on a 10-point risk scale (independent power producers are rated 7 – 9)
- A lower risk utility needs less equity to get the same bond rating (and thus the same bond interest cost).

Northwest Natural:
1 Step Benefit From Weather Adjustment

- Northwest Natural Gas received a partial decoupling (90%) in 2002.
- Christensen Associates review prepared in 2005.

"CFO David Anderson believes that DMN and WARM were contributing factors to NW Natural obtaining the best rating in the Standard & Poor's (S&P) business risk profile (scoring a 1 on a scale of 1 to 10). Similarly, he believes that DMN and WARM contributed to the upgrade in NW Natural's S&P bond rating from A to A+. An improved risk profile has several beneficial effects. It allows NW Natural to maintain smaller lines of credit, reduce the share of equity in its capital structure, and maintain a lower coverage ratio."

Benefit of a One-Step Improvement in the Risk Profile

- S&P Indicates that a 1-step reduction in the Business Risk Profile means about a 3% lower equity capitalization ratio is needed to maintain the same bond rating.

S&P Required Equity Capitalization

Risk Profile	BBB Rating	A Rating
3	35% - 45%	45% - 50%
2	32% - 42%	42% - 48%
Difference	3%	2.5%

How a Lower Equity Ratio Produces Lower Rates

Without Decoupling	Ratio	Cost	Weighted With-Tax Cost of Capital
Equity	45%	11.0%	7.62%
Debt	55%	8.0%	2.86%
Weighted Cost			10.48%
Revenue Requirement: $1 Billion Rate Base			$ 104,800,000
With Decoupling			
Equity	42%	11.0%	7.11%
Debt	58%	8.0%	3.02%
Weighted Cost			10.13%
Revenue Requirement: $1 Billion Rate Base			$ 101,280,000
Savings Due to Decoupling Cost of Capital Benefit:			$ 3,520,000

A Lower Equity Ratio Does Not Mean A Lower ROE

- A lower equity ratio still means the utility earns the same return on equity. It simply has fewer shares of stock (and more bonds) making up its capital structure.
- In the previous example, the ROE was 11%, and the cost of debt was 8%, reflecting an identical rate of profit, and an identical bond rating (and interest cost).

Why Not Leave The Equity Ratio Unchanged, and Let The Bond Rating Rise?

- Either one will produce the same effective results in the long run.
  - A lower risk utility with an unchanged equity ratio will **eventually** get a higher bond rating.
  - The higher bond rating will result in lower interest rates over time.
- The bond rating benefits take decades to materialize.
- The equity ratio adjustment can be done at the same time (or in the next rate case) as decoupling.
- By synchronizing the changes, decoupling can produce a reduction in rates for consumers, at no cost to investors.
  - Equity holders get the same ROE as before
  - Bond investors get the same interest rate as before
  - Both are taking less risk.

Decoupling Can Mean A Win-Win For All

- The investor receives the same return, more stable earnings, and a lower business risk profile.
- The consumer receives a lower revenue requirement.
- If weather decoupling is done in real-time (every billing cycle), the consumer also receives a lower bill in cold or hot years, when bills are most difficult to pay.

Thanks for you Attention

- Questions?
- Contact: wshirley@raponline.org
- Website: www.raponline.org