Decoupling: Mechanics and Issues

Presentation to the
New Mexico Public Regulation Commission
Energy Efficiency Incentives Workshop
July 16-17, 2008

Presented by
Wayne Shirley

The Regulatory Assistance Project

50 State Street, Suite 3
Montpelier, Vermont USA 05602
Tel: 802.223.8199
Fax: 802.223.8172

27 Penny Lane
Cedar Crest, New Mexico USA 87008
Tel: 505.286.4486
E-Fax: 773.347.1512

110 B Water St.
Hallowell, Maine USA 04347
Tel: 207.623.8393
Fax: 207.623.8369

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

Context for Decoupling

- All forms of regulation are incentive regulation
- Utilities can be expected to respond to the incentives they are given
  - Direct relationship to profitability
  - Management pay structure
- If incentives are poorly designed, expect poor results

Utility Financial Structures Enhance Power of Incentives

- Few non-production costs vary with sales
  - So, increased sales increase profits
  - Conversely, decreased sales decrease profits
- High leverage means that utility profits represent a relatively small share of total cost of capital
  - This makes profits highly sensitive to changes in revenues
- The effect may be quite powerful…

Assumptions for Hypothetical Utility: Non-Production Costs

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	
			Nominal	Tax Adjusted	Nominal	Tax Adjusted
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	Nominal	Tax Adjusted	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%

Policy Framwork

- "Throughput" incentive is at odds with a requirement to invest in customer-located clean energy:
  - Energy Efficiency
  - Distributed Generation/Self-generation
- Policies should, instead, align utility profit motives with acquisition of these clean resources

Revenue Decoupling: The Essential Concept

- Basic Sales-Revenue 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

Defining The Terms of Decoupling

- **Full** Decoupling
  - Any variation in sales, due to conservation, weather, economic cycle, or other causes results in an adjustment (true-up) of collected utility revenues with allowed revenues
- **Partial** Decoupling
  - Any variation in sales, due to conservation, weather, economic cycle, or other causes results in a partial true-up of utility revenues (e.g., 90% of lost margins recovered)
- **Limited** Decoupling
  - Only specified causes of variation result in rate adjustments, e.g.,
    - (A) Only variations due to weather are subject to the true-up (i.e., actual year revenues (sales) are adjusted for their deviation from weather-normalized revenues). This is simply a weather adjustment clause
    - (B) Variations due all other factors (e.g., economy, end-use efficiency) except weather are included in the true-up
    - (C) Some combination of the above

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
  - This is not a pricing issue
  - Volumetric pricing and other rate design (e.g. TOU) may be "tweaked" in presence of decoupling, but pricing structures need not be changed
- Not intended to decouple customers' bills from consumption

Revenue Decoupling: The Basic Concept

- Basic Revenue-Profit Decoupling has two primary components:
  - 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
  - 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 = Revenues ÷ Units

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 proceedings to approve decoupling adjustments
- Caveat: 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

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

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 mostly as a function of the number of customers served
- For each volumetric price, a "revenue per customer" average can be calculated from the rate case test year data used to set prices

How RPC Decoupling Changes Allowed Revenues

- In any future 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

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, the RPC can be separately calculated for each

Risks Affected By Decoupling

- Weather
- Economic
- Regulatory Lag
- Implications for financial & business risk of utility

What is weather risk?

- Weather risk is the risk that revenues change on account of changes in weather
- If you receive more (or less) revenues or pay less (or more) in customer bills because of weather, 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

Decoupling Also Decouples Revenues From Weather

- Because Target Revenues are determined using weather-normalized values, decoupling eliminates effect of weather on utility net revenues.
- **Myth:** Decoupling "shifts" weather risk from utility to customer
- **Reality:** Utility and customer take (or avoid) weather risk together in near zero sum wealth transfer (taxpayers take part of risk as well). For every weather-related decoupling price increase, there is equally likely to be a weather-related decoupling decrease
  - Wealth transfer is, therefore, a function of the vagaries of the weather – consider whether there are any public policies furthered by this phenomenon

Economic Risk

- Like weather, changes in economic conditions can change sales volume
- Decoupling has the effect of eliminating this risk as well because price adjustments are driven by actual sales

Regulatory Lag

- Because prices are periodically adjusted to reflect changes in sales, decoupling has effect of reducing regulatory lag
- May have cost of capital implications
- Should have effect of reducing lumpiness of price changes that occur in periodic full rate cases

Outside the Effect of Decoupling

- Because decoupling drives revenues, not costs, utility profits remain a function of changes in underlying cost structure
- Utility ability to improve profits by reducing costs is not impacted

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 Mild Weather Years Can Deplete Retained Earnings

- A large reduction in sales (say 20%) can causes net income to drop to zero
- Dividend payments can quickly deplete retain earnings
- 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)

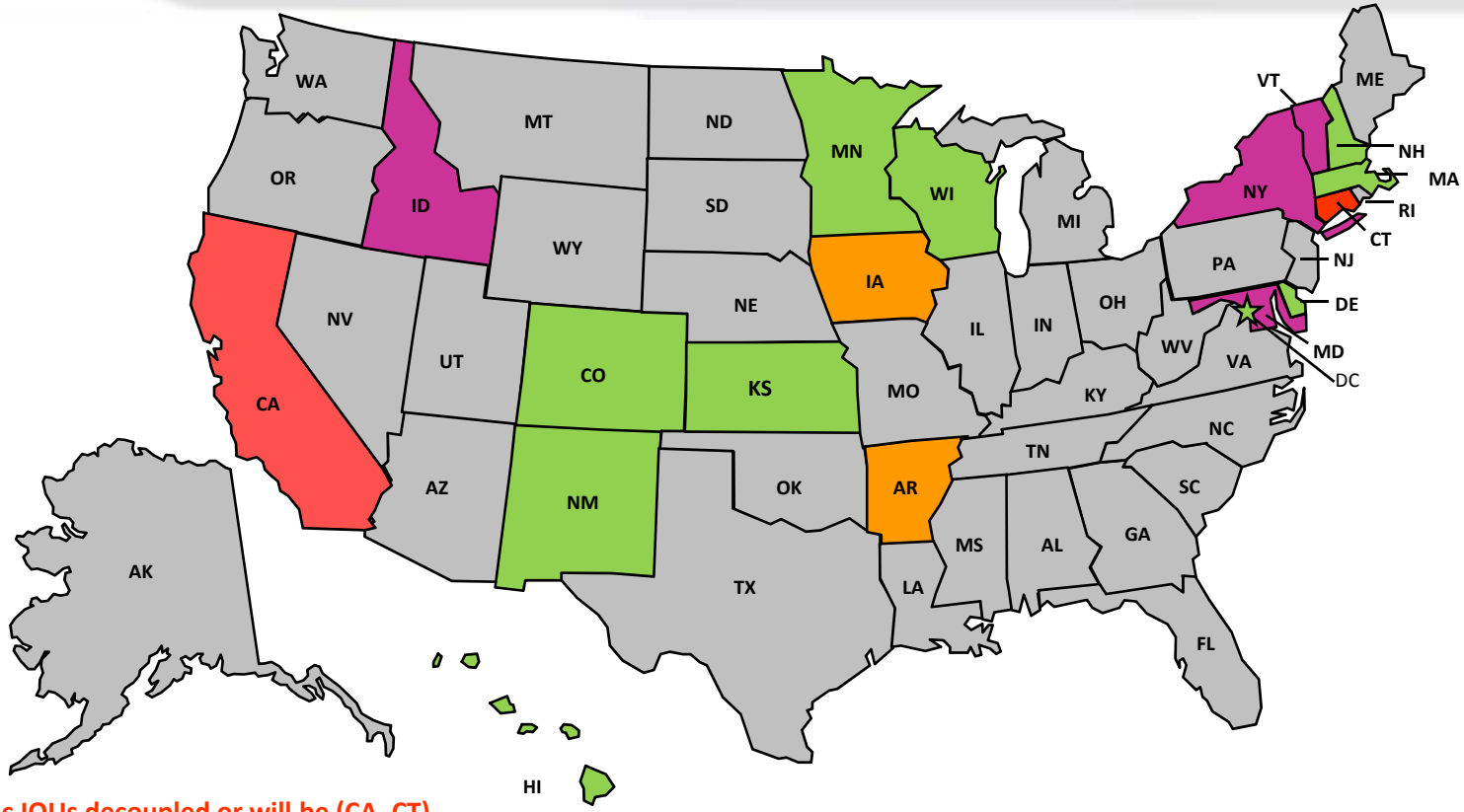
Why Not Leave The Equity Ratio Unchanged, and Let The Bond Rating Rise?

- 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: Consumer Benefits

- 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 on a current basis (every billing cycle), the consumer also receives a lower bill in extreme weather periods, when bills are most difficult to pay

Decoupling Status: Electric Utilities



LEGEND

All electric IOUs decoupled or will be (CA, CT)

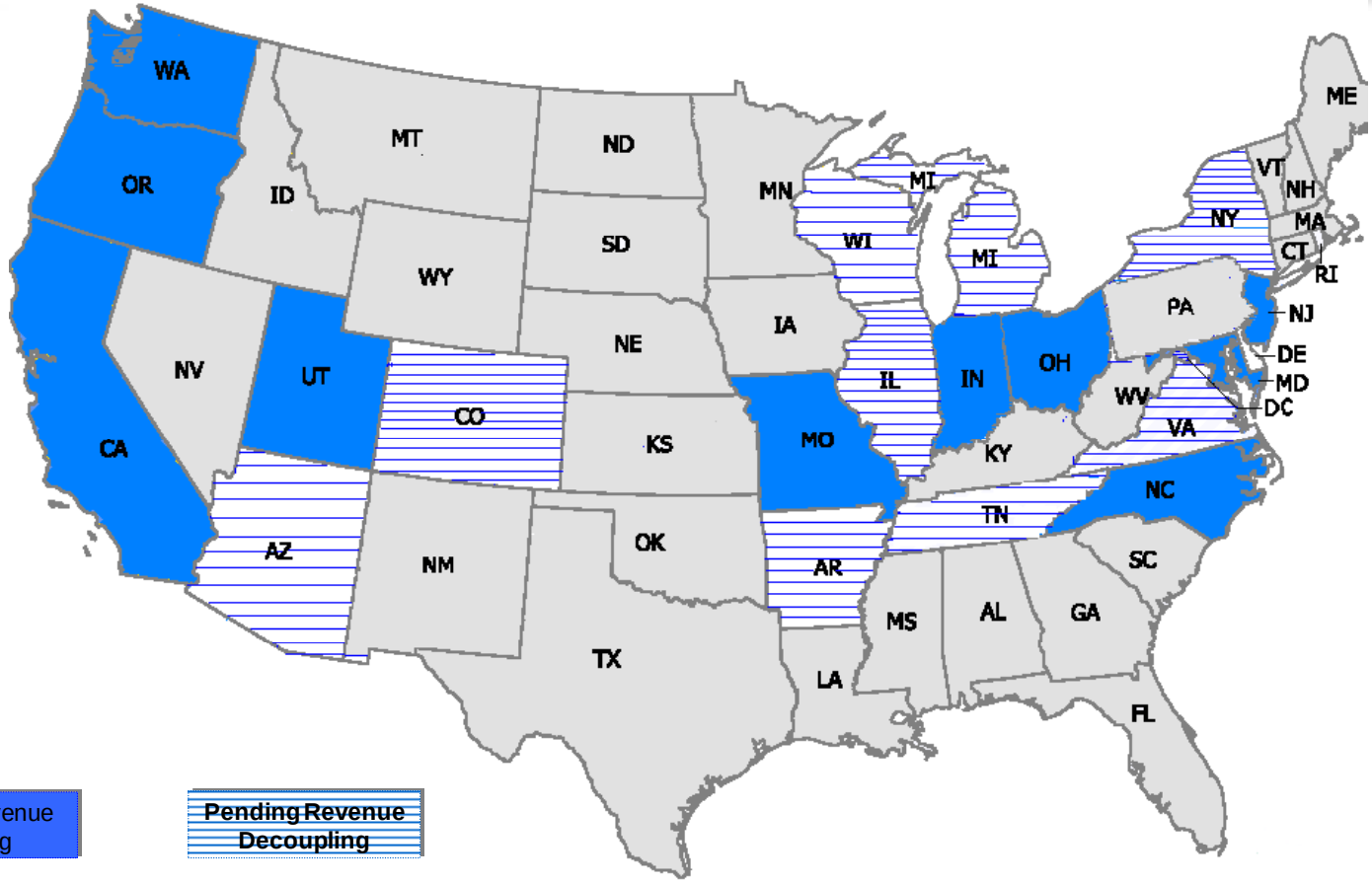
At least one electric IOU is decoupled (ID, MD, NY, VT)

States considering decoupling (docket or investigation opened, or utility has filed proposal) (CO, DC, DE, HI, KS, MA, MN, NH, NM, WI)

States where commission has indicated it will consider decoupling proposals (AR, IA)

Source: RAP April 16, 2008

Decoupling Status: Gas Utilities



Learn More

- Profits & Progress Through Least-cost Planning
  - http://www.raponline.org/Pubs/General/Pandplcp.pdf
- Profits and Progress Through Distributed Resources
  - http://www.raponline.org/showpdf.asp?PDF_URL=Pubs/General/ProfitsandProgressdr.pdf
- Performance-based Regulation For Distribution Utilities
  - http://www.raponline.org/Pubs/General/DiscoPBR.pdf
- Performance-Based Regulation in a Restructured Electricity Industry
  - http://www.synapse-energy.com/Downloads/pbr-naruc.doc

Thanks for your attention…

- Website: http://www.raponline.org
- E-mail: wshirley@raponline.org
- Questions?