Customer-Sited Resources and Utility Profits:

Aligning Incentives with Public Policy Goals

Florida Public Service Commission

7 August 2008

Frederick Weston

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*

About RAP

- 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.
- Funded by US DOE & EPA, Energy Foundation and other foundations, and international agencies. We have worked in 40+ states and 16 nations.
- RAP advises governments directly, does not appear for parties in contested cases (but may be Commission witness or adviser)
- Also provides educational assistance to stakeholders, utilities, and advocates.

All Regulation is Incentive Regulation

- The trick is simply understanding what the incentives are and how they affect behavior

Traditional Regulatory Methods Provide Strong Disincentives for Customer-Sited Resources

- Utility revenues and profits are linked to unit sales (kW, kWh, therms, etc.)
  - But, in the short run, a utility's marginal costs are only vaguely related to demand for gas or electricity (more on this in a moment)
- Loss of sales due to successful acquisition of customer-sited resources—energy efficiency and DG/CHP—will lower utility profitability
- This is true regardless of the means of delivering the EE and other programs
  - The incentive remains even where net revenues lost as a consequence of efficiency are recompensed
- *The effect may be quite powerful. . .*

. . . How Powerful?

- On vertically integrated utilities
  - Reduced sales revenues, offset by avoided commodity costs
    - Relative impacts to the bottom line are smaller than they are to:
- Pipes- and Wires-only companies
  - Reduced sales revenues, offset by minimal or no avoided T&D costs
- In this decade, decoupling has been applied to base, non-commodity costs in gas and electricity
  - Pass-throughs for more than half of a utility's costs, i.e., the gas commodity or fuel and purchased power

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%

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.

A New 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
- 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
    - Especially true of the costs of wires, but also of generation

Revenue Decoupling: The Essential Concept

- 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

Defining The Terms of Decoupling

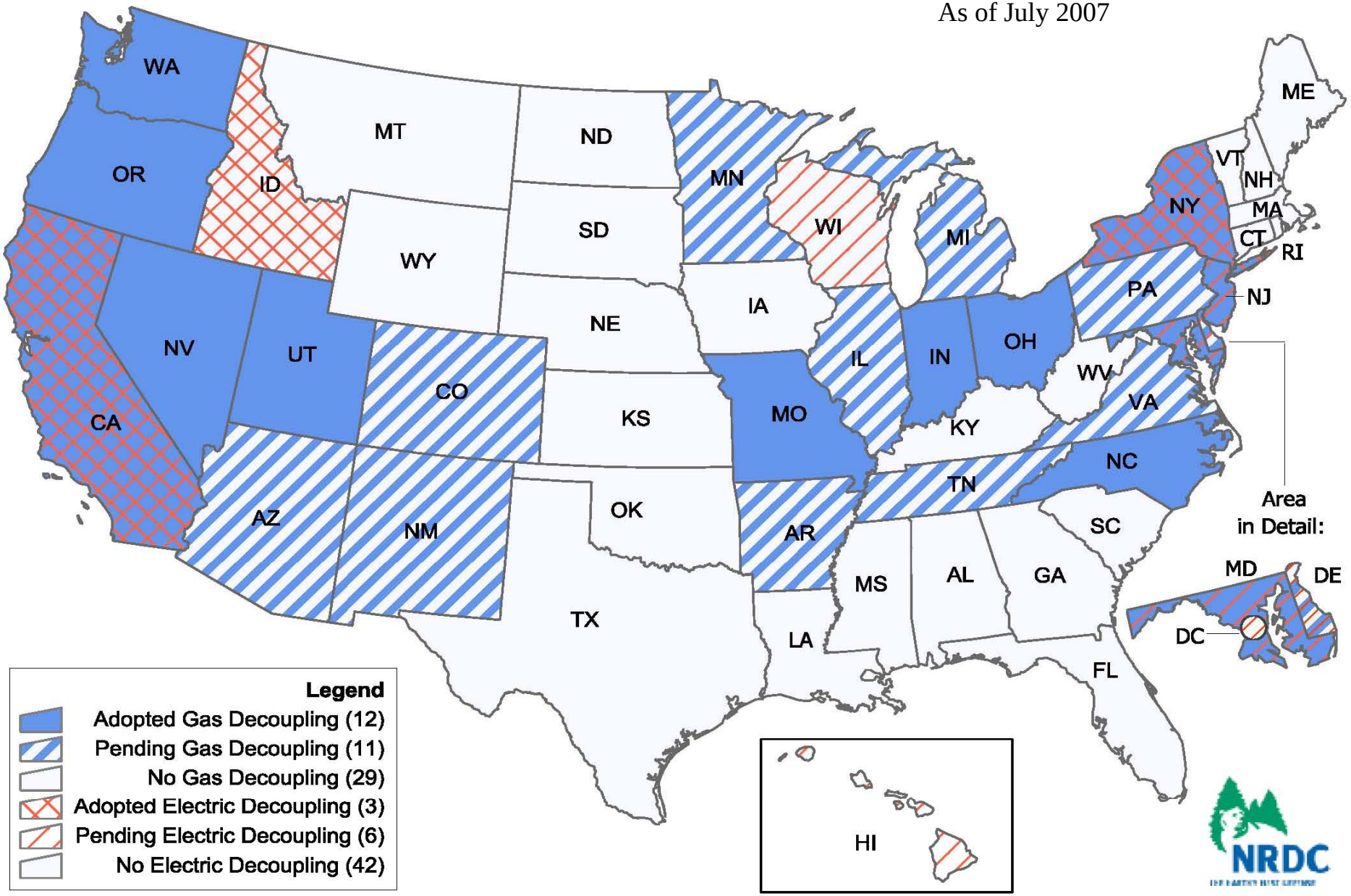
- **Full** Decoupling
  - Any variation in sales, due to conservation, weather, economic cycle, or other causes results in an adjustment (true-up) of collected utility revenues with allowed revenues
- **Partial** Decoupling
  - Any variation in sales, due to conservation, weather, economic cycle, or 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

Relating Regulatory Methods to Cost Drivers

- Regulation should more directly link utility remuneration to the costs the utility faces
- What drives utility costs?
  - In the long-run
    - Demand for electricity service is the primary driver of costs
  - But in the short-run (the rate-case horizon)
    - Utility costs vary more directly with numbers of customers than with sales or, where customer growth is relatively flat, with the need to replace aging, depreciated assets
    - Particularly true of unbundled distribution service, where the marginal costs of delivery are, on average, very low or nil, but for which the costs of acquiring and serving customers are significant and recurring
- How does the answer to this question affect the design of a decoupling mechanism?
  - How have the financial and business risks of the utility changed and how should regulators account for those changes?

Gas and Electric Decoupling in the US

As of July 2007



Appendix: Mechanics of Decoupling

Revenue Decoupling: The Basic Concept

- Basic Revenue-Sales Decoupling has two primary components:
  - One: 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 equal to Test Year Revenue Requirements
    - Other approaches have formulas to adjust Target Revenue over time
  - Two: Set a price which will collect that target revenue – no more, no less
    - This is the same as the last step in a traditional rate case – i.e. Price = Revenues ÷ Units
      - However, with decoupling, the price will be adjusted periodically to account for over- or under-collections

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-month period
  - CA also uses future test years and annual 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

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 for reasons other than sales fluctuations – e.g., for inflation & productivity
- A number of states now use the Revenue-Per-Customer model, in which Target Revenues are recomputed to account for changes in numbers of customers

RPC Decoupling

- Recognizes that, between rate cases, a utility's costs change more as a function of the number of customers served than as a consequence of sales or other factors
- 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
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, the RPC can be separately calculated for each cohort

Learn More

- Revenue Decoupling: Standards and Criteria, A Report to the Minnesota Public Utilities Commission
  - http://www.raponline.org/showpdf.asp?PDF_URL=%22Pubs/MN-RAP_Decoupling_Rpt_6-2008.pdf%22
- 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