Decoupling Supporting Energy Efficiency for Alaska Consumers and Utilities

A Workshop for the Alaska RCA

Presented by Richard Sedano

April 19, 2011
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.
Decoupling
Topics for Today

• Why are so many states looking at decoupling now?
• What does decoupling do, and how?
• Ways to decouple and alternatives
• Decoupling and Utility Pricing
• Limits of decoupling, and decoupling myths
• Communicating with Customers
The U.S. Outlook

➤ Energy efficiency getting more important
  – Pick your reason

➤ Some states see regulatory reform as necessary
  – Loading order
  – Cost recovery systems for energy efficiency
  – Decoupling ***
  – Performance incentives
Policy Overview

• New Energy Efficiency: the challenge
• Throughput Incentive: a barrier
• Decoupling: an answer

Why should utility profitability be linked to sales? More generally, regulators are wise to consider the incentives in the businesses they oversee – are they sympathetic with the public interest or in opposition? And can they be changed?
Influencing Behavior: How Does Utility Grow Net Income?

- Under traditional rate-of-return (ROR) regulation:
  - Price = Revenue Requirement/sales estimate

- But:
  - Actual Revenues = P * Q
    - Where: Q = actual sales

- And, therefore:
  - Profit = Actual Revenues – Actual Costs

- The utility makes money by:
  - Reducing costs and
  - Increasing sales and, thus, revenues
Public Power and Co-ops

• Shareholders are not a pre-requisite to experience the throughput incentive
• Pressure to cover fixed costs, meet key ratios leads to the throughput incentive
• All utilities have pressure to cover fixed costs and will tend to promote sales increases and avoid sales reductions
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
How to Promote **Innovation**, not just **Compliance**, in Energy Efficiency?
Traditional Regulatory Methods Provide Strong Disincentives for Customer Resources

- Traditional regulation sets prices
- Utility revenues and profits are linked to unit sales
  - But, in the short run, a utility’s non-commodity **marginal** costs are usually small
- 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

<table>
<thead>
<tr>
<th>% Change in Sales</th>
<th>Revenue Change</th>
<th>Impact on Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-tax</td>
<td>After-tax</td>
</tr>
<tr>
<td>5.00%</td>
<td>$9,047,538</td>
<td>$5,880,900</td>
</tr>
<tr>
<td>4.00%</td>
<td>$7,238,031</td>
<td>$4,704,720</td>
</tr>
<tr>
<td>3.00%</td>
<td>$5,428,523</td>
<td>$3,528,540</td>
</tr>
<tr>
<td>2.00%</td>
<td>$3,619,015</td>
<td>$2,352,360</td>
</tr>
<tr>
<td>1.00%</td>
<td>$1,809,508</td>
<td>$1,176,180</td>
</tr>
<tr>
<td>0.00%</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>-1.00%</td>
<td>-$1,809,508</td>
<td>-$1,176,180</td>
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</table>
Reminder

- Revenue  <<< focus of decoupling
- Costs
- Net income

Decoupling addresses coverage of fixed costs regardless of sales. Decoupling generally does not address net income.
Key Elements of Utility Financial Motivation to Support Energy Efficiency

- Cost Recovery Practices
- Solve the Throughput Incentive
- Financial Performance Incentives

- Regulatory **Flexibility** in Energy Efficiency Oversight is also important
- Supporting EE and DG means sales should **not** matter
Incentives Matter
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 motive 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.
Key Decoupling Points

• Rate Case Focus is 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 and the Law

- Law must allow rates to be reconciled after a rate case without a new rate case
- Even when allowed implicitly, commissions may be reluctant to push it
- Statutes can express a preference to
  - Resolve the throughput incentive,
  - Implement decoupling, but not require it
  - Require it
Decoupling: Effect on Rate Design

(rate design can focus on customer price signals not on utility revenue adequacy)
The Decoupling Transformation:
Decoupling

Revenue = Price * Units Sold
The Decoupling Transformation: Decoupling

\[
\text{Price} = \frac{\text{Revenue}}{\text{Units Sold}}
\]
Credit Implications Of Decoupling

Standard & Poor's Views Decoupling As Generally Positive From A Credit Perspective:

➢ Provides The Opportunity For A Utility To Earn A Pre-Determined Level Of Distribution Revenue Regardless Of The Actual KWH Sold

➢ Enables Utilities To Project Cash Flow More Accurately And Avoid Much Of The Earnings Volatility From Changes Due To Policy Goals (And Other Influences -- Weather/Economy) That Occur Under Traditional Rate Mechanisms

➢ Reduces Need For Rate Case Filings, Resulting In Lower Overall Costs For The Utilities

Lower utility costs become
Lower customer costs
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, again, emphasis on revenues
  – Rates change periodically, reconciled, to meet revenue sufficiency for fixed costs, the base was set in the last rate case
  – Simple basic mechanism: it’s just math
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 enabling recovery of the utility’s prudently incurred fixed costs, including return on investment, in a way that doesn’t create 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
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.

<table>
<thead>
<tr>
<th>Periodic Decoupling Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>From the Rate Case</strong></td>
</tr>
<tr>
<td>Target Revenues</td>
</tr>
<tr>
<td>Test Year Unit Sales</td>
</tr>
<tr>
<td>Price</td>
</tr>
<tr>
<td>Number of Customers</td>
</tr>
<tr>
<td>Revenue Per Customer (RPC)</td>
</tr>
<tr>
<td><strong>Post Rate Case Calculation</strong></td>
</tr>
<tr>
<td>Number of Customers</td>
</tr>
<tr>
<td>Target Revenues ($50 X 200,500)</td>
</tr>
<tr>
<td>Actual Unit Sales</td>
</tr>
<tr>
<td>Required Total Price</td>
</tr>
<tr>
<td>Decoupling Price “Adjustment”</td>
</tr>
</tbody>
</table>
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
Typical Regulation:
Price is constant, revenues fluctuate through time
Decoupling, monthly current adjustments: Revenue constant, Price adjusted thought time
Revenue per Customer Advantages

• Revenues track more closely with what rate case would likely produce
  – Fixed costs track # of customers
  – Avoid rate cases
  – Relook every 3-5 years as structural changes to cost of service occur
Revenue per Customer 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
  – For each customer class
• Allowed revenues equal RPC multiplied by number of customers
Grades of Decoupling

• Full – insulates utility revenue from any sales deviation between actuals and expecteds
• Partial – part of revenue change is insulated, part is not
• Limited – Sales adjustments due to energy efficiency programs only, so weather and economy are normalized in an extra step
Partial Decoupling

• Only part of the deviation in revenue is added to rates
• Utility retains some profit/sales connection
  – If reduced enough to change management outlook, strategy, behavior, this can be fine
• Rate shifts dampened
• Use sharing, collars, caps
Weather and Economic Cycle

• These risks burden utility and consumer
• Full Decoupling does not “shift” risk
• Utilities “insure” against these risks by adding costs
  – Consumers pay for everything
• Better to reduce overall risk, which reduces insurance costs to customers
  – Reconciliations based on total sales, not normalized delivers full value to consumers
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 a condition.
Some important decoupling elements, options

• 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
Accrual vs. Current Price Adjustments

• Accrual is standard
  – Price adjusted annually, or perhaps quarterly, based on actual deviation from forecast

• Current can be accomplished, essentially collecting the appropriate revenue requirement in each billing cycle (used in Maryland)
Adjustment Process: Ministerial or Review

• Most mechanisms include rate drivers that are objective
  – Just do the math and you have your new rate
• California include a review of known and measurable changes
  – Big policy or rate base changes deferred to a future rate case
  – State might want reviews during a pilot period
Decoupling Operates on Revenues not Profits: Performance Metrics

• Focus of decoupling mechanism is on utility revenue
  – Typically customer class-specific

• Profits (net income) is Revenue – Cost
  – Utility can increase profits by reducing cost through process reengineering, etc.
  – **Performance system** on key consumer interests can protect reliability, service quality from harmful cost cuts
Performance and Decoupling

• Performance indicators are useful to assure continued service quality
  – Addresses possibility that utility would cut costs and compromise essential services
  – Categories
    • Reliability
    • Customer service
    • Other public interest priorities
Factoring in Trends: Add to the Formula

• Future Test Year forecasts all rate case determinants one year out
  – Not permitted in most states
• Other trends can be included, for example
  – Change in Size or Usage per Household
  – Productivity
• Decoupling is not one thing and is adaptable to local priorities and conditions
Protecting against Extremes

• Rate adjustment caps
  – Annual rate change no more than, say, ±3%
  – Historic decoupling reconciliations are within this band

• Frequent reconciliations
  – Rate can be adjusted “currently” and monthly
    • Tend to produce rate ups and downs
Protecting against Extremes

• Earnings bands
  – Dead band – small changes in earnings ignored
  – Sharing band – effects of significant changes divided between consumer and company
  – Collar – no change in earnings greater than ...
Moody’s on Hawaii Electric

• The ratings affirmation and outlook change reflects the progress being made by the company and various stakeholders to transform the regulatory framework for HEI's electric utilities to a decoupling structure that will reduce sales volume risk and produce more timely recovery of invested capital and operations and maintenance (O&M) costs.

• The stable rating outlook at HEI incorporates our belief that the regulatory transition underway in Hawaii will proceed in an orderly fashion with the Hawaii PUC issuing the final decoupling order during 2010.
Decoupling and Risk of the Firm

• Over time, utility recovery of costs previously approved in rate cases or included in decoupling reconciliation becomes more likely, reducing risk.

• This does not happen overnight – why?
  – Risk that state will backtrack
  – Especially if called a pilot
  – Risk profile changes with sustained commitment
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
Decoupling and Power Cost Adjustment

- Power Cost Adjustment Mechanism fails if the utility loses motivation to control power costs to the extent they can.
- In the presence of decoupling and energy efficiency programs, which are important ways to control long term power costs, utility motivation is more certain and PCAM device is more likely a success.
Decoupling and Rate Base

• Decoupling does not check motivation of the utility to invest in rate base
  – Sound regulation of investments and rate case review does that
  – If capital becomes the major driver of utility cost, and it becomes a part of the decoupling reconciliation mechanism, then some review process for annual capital spending that probably does not occur now would probably be necessary
Limits of Decoupling

• By itself, decoupling removes a disincentive to help customers reduce sales
  – And reduces incentive to build sales
  – Rate base earnings incentive remains

• A positive incentive system is needed to hardwire incentives to achieve success in energy efficiency
Limits of Decoupling

• Decoupling plan revenue recovery approximates what would be allowed in a rate case
  – Circumstances may be stable over 3-5 years
• Changing circumstances can disrupt even a good plan
  – Sudden shift in economy
  – Consecutive years of abnormal weather
  – Congress, state law
Formula Slides
Traditional Regulation

- Revenue Requirement = 
  \[(Expenses + Return + Taxes)_{\text{Test Period}}\]

- Price = 
  \[\frac{\text{Revenue Requirement}}{\text{Units Sold}}_{\text{Test Period}}\]
## Traditional Regulation Example

### Revenue Requirement Calculation

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Net Equity Investment</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Allowed Rate of Return</td>
<td>10.00%</td>
</tr>
<tr>
<td>Allowed Return</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>Taxes (35% tax rate)</td>
<td>$5,384,615</td>
</tr>
<tr>
<td>Total Return &amp; Taxes</td>
<td>$15,384,615</td>
</tr>
<tr>
<td>Total Revenue Requirement</td>
<td>$115,384,615</td>
</tr>
</tbody>
</table>

### Price Calculation

<table>
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<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Requirement</td>
<td>$115,384,615</td>
</tr>
<tr>
<td>Test Year Sales (kWh)</td>
<td>1,000,000,000</td>
</tr>
<tr>
<td>Rate Case Price ($/kWh)</td>
<td>$0.1154</td>
</tr>
</tbody>
</table>
Traditional Regulation Between Rate Cases

• **Revenues**<sub>Actual</sub> = Units Sold<sub>Actual</sub> * Price

• **Profit**<sub>Actual</sub> = (Revenues – Expenses – Taxes)<sub>Actual</sub>
Decoupling
(same as traditional regulation)

- **Revenue Requirement** =
  \[
  \text{Revenue Requirement} = \left(\text{Expenses} + \text{Return} + \text{Taxes}\right)_{\text{Test Period}}
  \]

- **Price**
  \[
  \text{Price}_{\text{End of Rate Case}} = \frac{\text{Revenue Requirement}}{\text{Units Sold}}_{\text{Test Period}}
  \]
## Decoupling Example

### Revenue Requirement Calculation

<table>
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<tr>
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</tr>
<tr>
<td>Total Revenue Requirement</td>
<td>$115,384,615</td>
</tr>
</tbody>
</table>

### Price Calculation

- Revenue Requirement: $115,384,615
- Actual Sales (kWh): 990,000,000
- Decoupling Price ($/kWh): $0.1166
- Decoupling Adjustment ($/kWh): $0.0012
Decoupling (between rate cases)

- **Price**$_{\text{Post Rate Case}}$ = Revenues$_{\text{Allowed}}$ $\div$ Units Sold$_{\text{Actual}}$

- Revenues$_{\text{Actual}}$ = Revenues$_{\text{Allowed}}$

- Profits$_{\text{Actual}}$ = (Revenues – Expenses – Taxes)$_{\text{Actual}}$
Revenue per Customer Calculations

• **Revenue per Customer**<sub>Test Period</sub> = 
  \[
  \frac{\text{Revenue Requirement}_{\text{Test Period}}}{\text{No. of Customers}_{\text{Test Period}}}
  \]

• **Revenues**<sub>Allowed</sub> = 
  \[
  \text{Revenue per Customer}_{\text{Test Period}} \times \frac{\text{No. of Customers}_{\text{Actual}}}{\text{Units Sold}_{\text{Actual}}}
  \]

• **Price**<sub>Actual</sub> = \[
  \frac{\text{Revenues}_{\text{Allowed}}}{\text{Units Sold}_{\text{Actual}}}
  \]
# Monthly RPC values for 3 months

## Deriving the Revenue per Customer Values

### Small Commercial Class Example

#### Test Period Values

<table>
<thead>
<tr>
<th>Billing Period</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Test Period Customers</td>
<td>142,591</td>
<td>142,769</td>
<td>142,947</td>
</tr>
<tr>
<td>Customer Charge</td>
<td>$25.00</td>
<td>$25.00</td>
<td>$25.00</td>
</tr>
<tr>
<td>Total Customer Charge Revenues</td>
<td>$3,564,775</td>
<td>$3,569,225</td>
<td>$3,573,675</td>
</tr>
</tbody>
</table>

### Energy Revenue per Customer

<table>
<thead>
<tr>
<th>Energy Sales (kWh)</th>
<th>181,238,883</th>
<th>189,304,436</th>
<th>170,240,013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Case Price</td>
<td>$0.165</td>
<td>$0.165</td>
<td>$0.165</td>
</tr>
<tr>
<td>Total Energy Sales Revenues</td>
<td>$29,904,416</td>
<td>$31,235,232</td>
<td>$28,089,602</td>
</tr>
<tr>
<td>Energy Revenue per Customer</td>
<td>$209.72</td>
<td>$218.78</td>
<td>$196.50</td>
</tr>
</tbody>
</table>

### Demand Revenue per Customer

<table>
<thead>
<tr>
<th>Demand Sales (kW)</th>
<th>1,189,355</th>
<th>1,165,396</th>
<th>1,148,975</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Case Price</td>
<td>$4.4600</td>
<td>$4.4600</td>
<td>$4.4600</td>
</tr>
<tr>
<td>Total Demand Sales Revenues</td>
<td>$5,304,523</td>
<td>$5,197,667</td>
<td>$5,124,429</td>
</tr>
<tr>
<td>Demand Revenue per Customer</td>
<td>$37.20</td>
<td>$36.41</td>
<td>$35.85</td>
</tr>
</tbody>
</table>
Pricing Under A RPC Decoupling System

• Prices are still set in the usual way
  – Consumption-based unit prices: per kWh, per kW
  – Retains customer incentives for efficiency
  – Prices are adjusted annually (up or down) to reflect:
    • Changes in the allowed RPC and
    • Over- or under-collections from the previous year
  – Challenge: designing the RPC formula to minimize the effects (on both consumers and the utility) of annual changes in the RPC
    • Guideline: Structure the decoupling plan to roughly track the revenue growth that would have otherwise occurred under traditional regulation
Decoupling Supports Efficient Pricing

• Not all sales are equal
  – Cost varies from time to time, yet most rates are flat and non-discriminatory
  – Changing to dynamic prices changes which sales are profitable (peak sales!)
  – If utility revenues cover fixed costs, these circumstances don’t matter
Dynamic Rates

• Beyond the scope of this day
• Important complement to energy efficiency
• Opportunity for consumers to self-regulate their usage
  – Design is important to anticipate “losers” and maximize system benefit
  – Baby steps and long term vision needed
  – Technologies that automate consumer response useful
Block Rates

• Some states use block rates to signal value to customers
  – Declining block rates suggest that using more energy is valuable and lowers system costs
  – Flat rates suggest that using more energy has no effect on system costs
  – Inclining block rates suggest that using more energy imposes system costs (new sources cost more than average all-in supply cost)
Block Rates and Energy Efficiency

• Inclining block rates reinforce energy efficiency
  – More value for customers to reduce use
  – Higher “tail-block” rate captures uses with a high degree of peak coincidence (e.g., A/C)
  – Low-income households will generally pay less

• Are inclining block rates reflective of energy supply horizon?
Here, a decoupled utility indifferent to high marginal rate

<table>
<thead>
<tr>
<th>Rate Element</th>
<th>Low-Income</th>
<th>All Other Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum monthly Charge</td>
<td>~$3.50</td>
<td>~$4.45</td>
</tr>
<tr>
<td>Baseline Quantities</td>
<td>$0.83160</td>
<td>$0.11559</td>
</tr>
<tr>
<td>101%-130% of Baseline</td>
<td>$0.09563</td>
<td>$0.13142</td>
</tr>
<tr>
<td>131%-200% of Baseline</td>
<td>$0.09563</td>
<td>$0.22580</td>
</tr>
<tr>
<td>201%-300% of Baseline</td>
<td>$0.09563</td>
<td>$0.31304</td>
</tr>
<tr>
<td>over 300% of Baseline</td>
<td>$0.09563</td>
<td>$0.35876</td>
</tr>
</tbody>
</table>

Utility can lose these high-priced sales with no consequences
Alternatives to Address Throughput Incentive

• Do nothing / improve traditional system
• Decoupling or Revenue Regulation
• Lost revenue adjustment
• Rate Design (straight fixed variable)
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
Downsides of Lost Revenue Adjustments

- Backward looking
- Litigating savings and avoided costs to precisions not needed otherwise
  - History in 1990s filled with big battles, high stakes for utilities
- Utility still left with motivation to inflate sales and operate programs that produce phantom savings
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
Downsides of Straight Fixed Variable Rate Design

• Distorts long run marginal cost
  – SFV Usually based on short run marginal cost
  – LRMC based on high cost G&T
• Diminishes customer motivation to save
  – And actually motivates increased consumption as demand elasticity ≠ 0
• Raises bill most for lowest users
  – Political limits probably prevent full SFV
• Discourages inclining, TOU rates
More on **Straight Fixed Variable Rate Design**

- Major change to traditional ratemaking
- Fixed charge must be *high* to make utility indifferent to sales
- Unavoidable burden for low-income
- Shifts revenue requirement to low-volume users
  - But high-volume users tend to drive new investment
- Does not give consumers price signals that reflect the marginal cost of production
Rate Design should be about **price signals** to consumers, not revenue adequacy

<table>
<thead>
<tr>
<th>Rate Element</th>
<th>High Customer</th>
<th>Low Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Charge</td>
<td>$25.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>Usage Charge</td>
<td>$0.10</td>
<td>$0.14</td>
</tr>
<tr>
<td><strong>Total Bill for 500 kWh average usage</strong></td>
<td><strong>$75.00</strong></td>
<td><strong>$75.00</strong></td>
</tr>
</tbody>
</table>

Which rate design better represents long run marginal costs?
How SFV Affects Payback on Efficiency Investments

Reduction of Monthly Customer Usage from 1,000 to 900 kWh
Energy Efficiency Investment of $200

<table>
<thead>
<tr>
<th>kWh</th>
<th>Standard Tariff</th>
<th>Straight Fixed Variable Tariff</th>
</tr>
</thead>
</table>
| 1,000 | Fixed charge $15.00  
Volumetric charge $75.00  
Total $90.00 | Fixed charge $50.00  
Volumetric charge $40.00  
Total $90.00 |
| 900   | Fixed charge $15.00  
Volumetric charge $67.50  
Total $82.50 | Fixed charge $50.00  
Volumetric charge $36.00  
Total $86.00 |
| Savings | $7.50/month ($90/year) | $4.00/month ($48/year) |
| Payback period | 2.2 years | 4.2 years |

Adapted from Table 2, David Magnus Boonin, National Regulatory Research Institute, *A Rate Design to Encourage Energy Efficiency and Reduce Revenue Requirements*, July 2008.
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
Downsides of Traditional Regulation

• Incremental Sales Margins between rate cases kept for utility
• Frequent rate cases to address EE-driven sales deflection but are expensive and consuming
  – Future test year banned in most states
• Regulatory lag (which cuts both ways)
• Unnecessary risks
  – Added costs utilities incur to manage risks, lag
Communications a Key Element to Success

- Why are my rates changing?
  - And how much this time, and trends
- How are utility decisions, priorities changing?
- How is utility performance?
  - Hopefully good news
- Engage customers, coax them in with info
Communicating with Customers

• Useful price information can and should be conveyed to customers in usable forms
  – See our report on page 41
• Customers across the US are already used to rates that change between rate cases
  – Fuel and purchased power lines
  – Other surcharges, including for energy efficiency
Favorable Customer Perspective

- Savings potential to total cost of service from EE, other performance improvement and innovation >> decoupling adjustment
- Customers see decoupling as part of an effort to create policy coherence
  - So associate decoupling with other reforms and strategies to mitigate high capex, high commodity costs, climate change risks
Transition to Decoupling

• Best if in conjunction with general rate case
  – OK if it builds on a recent rate case
• Transition Speed depends on clarity of purpose
  – Can be swift
  – A pilot can build comfort and confidence in how mechanism works
• Tentativeness will delay cost of capital benefits and can muddle result
Decoupling and the Utility of the Future

• The utility of the future
  – Emphasis on service (not throughput)
  – Emphasis on customers and service area
    • Public policy an important guide
  – Emphasis on risk management
  – Emphasis on local energy resources
  – Regulation focuses on whatever is most important and has consistent focus
Myths
Myth: There is a cost to decoupling

- Decoupling adds no cost
  - It is not an annual rate increase
- Price (rate) changes up or down to reconcile revenues to previously determined formula based on actual sales
- Decoupling can save money if overall risk is reduced and it promotes more cost-effective energy efficiency
Myth: Utility Incentive to Control Cost is Diminished

• Rate cases still occur periodically to check utility cost behavior
• Between rate cases, utility may have increased opportunity to reduce costs compared with forecast
  – Consumers will benefit from this in the long run
  – If utility allows costs to rise, it suffers reduced earnings
Myth: Decoupling violates “matching principle”

• Matching Principle: Costs, Sales and Revenues will move together
• Significant Use of Energy Efficiency Disrupts this Relationship, times changed
  – Sales reductions with little or no corresponding reductions in short run fixed costs sparks the throughput incentive
Myth: Decoupling Rewards Utility for Doing what is Required

- There is no reward in decoupling
  - The regulator can add a reward (performance incentive) if it wants
- Rather, decoupling is a way to clear away disincentives that may cause the utility to give less than its best effort, or (much) worse
1989 NARUC Resolution

• “Reform regulation so that successful implementation of a utility’s least-cost plan is its most profitable course of action”
“... 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 it 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.”
Other Strategies

• Energy efficiency performance (or portfolio) standard
  – Target savings as % of sales or % of growth
• A commitment to zero or negative sales growth
• Statutory changes to clarify role of demand resources in commission oversight
Vermont
(third party EE administration)

- Both IOUs under a decoupling plan
- Revenue cap (forecasted for future years)
  - Dead band, adjustable for exogenous factors
  - Adjustments triggered if actual revenues are outside a dead band
- Partial decoupling
- Earnings sharing outside a collar
- Dead band for power cost variation
- Rate change capped
- ROE adjustment
Maryland

• Full decoupling for PEPCO and BGE
• Revenue per customer
• True up monthly
  – Cap of 10%
• ROE adjustment
California

• Decoupling in place for all four electric and gas IOUs

• Revenue cap
  – Future test year
  – Attrition case captures inflation, productivity
Oregon (third party EE administration)

- Portland General Electric, 2 years (2009-10)
  - Approved coincident with a rate case
  - Evaluation required, discussion encouraged
- Revenue per customer
- Deferrals at a risk free (Treasury) rate
- Small ROE reduction (10 basis points)
Other State Implementation

• Minnesota
• Massachusetts
• Connecticut
• New York
  – In these states, there is a recent legislative or commission directive to adopt or consider decoupling. The implementing activities are in varying stages.

• Idaho
  – Commission approved a three-year pilot, now ended. Workshops are planned to discuss potential new program.
Finally

• Decoupling
  – Respects the rate and revenue investigation and commitment to service and reliability
  – Ends the throughput incentive
    • That discourages EE
    • That promotes load building
  – Is manageable
  – Prompts a conversation on what is most important from utility service and allows for regulation to recognize these
Decoupling Resources

• Forthcoming from RAP – Revenue Regulation and Decoupling: A Guide to Theory and Application

• LBNL report on utility business models

• RAP Report to Minnesota Commission

• Profits and Progress through Distributed Resources
  – [http://www.raponline.org/Pubs/General/ProfitsandProgressdr.pdf](http://www.raponline.org/Pubs/General/ProfitsandProgressdr.pdf)

• Rate Impacts and Key Design Elements of Decoupling (Lesh)
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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