Flexible and Customizable: Designing Decoupling for Your State

Presented by Richard Sedano and Janine Migden-Ostrander

March 1, 2017

The Regulatory Assistance Project (RAP)®
Our Experts

Richard Sedano  
Janine Migden-Ostrander
Please send questions through the Questions pane.
Revenue Regulation and Decoupling: A Guide to Theory and Application
What Did We Cover?

• How decoupling works
• Full, partial, limited decoupling
• Revenue functions
• Rate design and decoupling
• Current v. accrual methods
• Weather, economy, other risks
• Earnings volatility risks/costs of capital
• Other measures and how they relate to decoupling
• Concerns over decoupling
• Communicating with customers about decoupling
• More . . .
Decoupling Case Studies: Revenue Regulation Implementation in Six States

Authors
Janine Migden-Ostrander, Betty Watson, Dave Lamont, Richard Sedano
Decoupling Design: Customizing Revenue Regulation to Your State’s Priorities

Authors
Janine Migden-Ostrander and Rich Sedano
What Are We Focused On?

• The throughput incentive
  – A part of traditional regulation
    • As practiced in a majority of states, most munis and coops
  – Utility revenue driven by sales
  – Utility motivated to discourage sales reductions, to encourage load building
    • Effect on margins is magnified
What’s the Problem?

• The throughput incentive
  – Discourages end use energy efficiency
  – Discourages customer-sited resources
  – Discourages system efficiency
    • Investments that lower costs while lowering sales
  – Is a Risk Factor, promoting revenue volatility
What’s the Problem?

• How to align regulation with a distributed resource-oriented power system?
  – The throughput incentive seems in conflict
  – How government can send consistent signals with policy AND regulation
<table>
<thead>
<tr>
<th>% Change in Sales</th>
<th>Revenue Change</th>
<th>Impact on Earnings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-tax</td>
<td>After-tax</td>
<td>Net Earnings</td>
</tr>
<tr>
<td>5.00%</td>
<td>$9,047,538</td>
<td>$5,880,900</td>
<td>$15,780,900</td>
</tr>
<tr>
<td>4.00%</td>
<td>$7,238,031</td>
<td>$4,704,720</td>
<td>$14,604,720</td>
</tr>
<tr>
<td>3.00%</td>
<td>$5,428,523</td>
<td>$3,528,540</td>
<td>$13,428,540</td>
</tr>
<tr>
<td>2.00%</td>
<td>$3,619,015</td>
<td>$2,352,360</td>
<td>$12,252,360</td>
</tr>
<tr>
<td>1.00%</td>
<td>$1,809,508</td>
<td>$1,176,180</td>
<td>$11,076,180</td>
</tr>
<tr>
<td>0.00%</td>
<td>$0</td>
<td>$0</td>
<td>$9,900,000</td>
</tr>
<tr>
<td>-1.00%</td>
<td>-$1,809,508</td>
<td>-$1,176,180</td>
<td>$8,723,820</td>
</tr>
<tr>
<td>-2.00%</td>
<td>-$3,619,015</td>
<td>-$2,352,360</td>
<td>$7,547,640</td>
</tr>
<tr>
<td>-3.00%</td>
<td>-$5,428,523</td>
<td>-$3,528,540</td>
<td>$6,371,460</td>
</tr>
<tr>
<td>-4.00%</td>
<td>-$7,238,031</td>
<td>-$4,704,720</td>
<td>$5,195,280</td>
</tr>
<tr>
<td>-5.00%</td>
<td>-$9,047,538</td>
<td>-$5,880,900</td>
<td>$4,019,100</td>
</tr>
</tbody>
</table>
Decoupling

• A solution to the throughput incentive
  – Focuses on allowed revenue
  – Effective at solving the throughput incentive
  – No change in retail rate design
• ... is really a vehicle with many choices that PUCs can make
  – To achieve important outcomes
Revenue Requirement

= Test Year Expenses + Depreciation + Taxes + (Rate of Return * Rate Base)
Rate of Return Regulation Refresher

Revenue Requirement recovered from:

\[ (\text{# of Customers} \times \text{Customer Charge}) + (\text{Projected Sales} \times \text{Price/kWh}) \]
Rate of Return Regulation Refresher

Price/kWh

= 

(Revenue Requirement – Customer Service Charge Revenue)/Projected Sales

- Price/kWh collects all fuel costs and, generally, non-customer-specific fixed costs
Decoupling Design: Customizing Revenue Regulation to Your State’s Priorities

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Designing Decoupling

1. Decide what’s covered
   Decoupling can be applied to:
   - Distribution alone
   - Distribution and transmission
   - Distribution, transmission, and generation
   It can cover residential, commercial, and industrial customers or apply selectively. Exclude fuel or power purchase costs if they are already covered in a rider, fuel adjustment mechanism, etc.

2. Choose how to adjust utility revenue
   There are about a half-dozen options for “Revenue Adjustment Mechanisms” (RAMs) to adjust utility revenue to provide stability to utilities and customers. Among them:
   - Revenue per customer
   - Annual review decoupling
   - No adjustment at all

3. Select how to handle refunds or surcharges
   Truing up actual utility revenues with what utilities are allowed to earn can be done monthly or at longer intervals. Refunds or charges can be applied to all customers evenly or be allocated to customer classes. They can also be directed to encourage a particular policy goal, like rewarding low energy usage.

Customer Considerations

- Refunds if utilities over-collect
- Caps on rate increases or decreases?
- More energy efficiency
- Reducing cost of capital

Energy solutions for a changing world
Decide what’s covered

Decoupling can be applied to:
• Distribution alone
• Distribution and transmission
• Distribution, transmission, and generation

It can cover residential, commercial, and industrial customers or apply selectively. Exclude fuel or power purchase costs if they are already covered in a rider, fuel adjustment mechanism, etc.
What’s Covered?

Decide What’s Covered

Applicability of Utility Function
- Transmission & Distribution
- Transmission, Distribution, & Generation

Applicability of Revenue Regulation to Customer Classes
- Residential and Small Commercial
  - All

Costs Included in Decoupling Mechanism
- Base Rates Only
  - Riders
- Some Riders, Not Others
- All Costs Including All Riders

Energy solutions for a changing world
What’s Covered?

- Applicability of Utility Function
- Transmission & Distribution
- Transmission, Distribution, & Generation

Energy solutions for a changing world
What’s Covered?

Application of Revenue Regulation by Utility Function

What Type of Utility is It?

- Vertically Integrated
- Distribution Only

What Costs are Being Included in the Decoupling Mechanism?

- Wires and Power Supply Costs
- Wires
What’s Covered?

Applicability of Revenue Regulation to Customer Classes

Residential and Small Commercial

All
What’s Covered?

Costs Included in Decoupling Mechanism

Base Rates Only

Watch out for Double Recovery

Riders

All Costs Including All Riders

Some Riders, Not Others
Double Recovery Issue

• Concern if generation costs are included in the decoupling mechanism that uses RPC.
  o Risk - number of customers increases while generation costs decrease due to depreciation;
  o Fuel, purchase power costs recovered in fuel adjustment mechanisms without an offset of declining investment cost which would be captured in a rate case.
    ▪ If regulators retain FAC, then FAC must account for changes in investment and operating costs if rate cases are not occurring to adjust. Otherwise, the value of generation is overstated.
<table>
<thead>
<tr>
<th>Costs</th>
<th>Amount</th>
<th>What it Covers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base rates for power for vertically</td>
<td>$0.04/kWh</td>
<td>Investment costs in power plants and transmission lines; non-fuel O&amp;M for power</td>
</tr>
<tr>
<td>integrated utilities only</td>
<td></td>
<td>plants and transmission lines</td>
</tr>
<tr>
<td>Base rates (delivery)</td>
<td>$0.04/kWh</td>
<td>Investment costs in distribution facilities; O&amp;M for distribution facilities;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>all overhead costs (often including those attributable to power supply)</td>
</tr>
<tr>
<td>Fuel rate (subject to adjustment in the</td>
<td>$0.02/kWh</td>
<td>All fuel and purchased power expense, net of sales for resale, plus transmission</td>
</tr>
<tr>
<td>fuel adjustment clause [FAC]) – applicable to vertically integrated utilities</td>
<td></td>
<td>by others</td>
</tr>
<tr>
<td>Total rate to consumer</td>
<td>$0.10/kWh</td>
<td>For vertically integrated utilities; $0.04 for distribution-only utilities</td>
</tr>
</tbody>
</table>
Choose how to adjust utility revenue

There are about a half-dozen options for “Revenue Adjustment Mechanisms” (RAMs) to adjust utility revenue to provide stability to utilities and customers. Among them:

- Revenue per customer
- Annual review decoupling
- No adjustment at all
Choose How to Adjust Utility Revenue

**January 1**

**Frequency of Rate Cases to Determine Revenue Requirement**
- Rate Case as Needed
- Mini or Full Rate Case Annually
- Rate Case Every 3 to 5 Years

**Ex Ante Adjustment to ROE/Capital Structure**
- Yes
- No

**Choosing The Revenue Adjustment Mechanism**
- None
- Stair/Indexing
- Revenue Per Customer
- Attrition
- K Factor
How to Adjust Revenue?

- Frequency of Rate Cases to Determine Revenue Requirement
  - Rate Case as Needed
  - Mini or Full Rate Case Annually
  - Rate Case Every 3 to 5 Years
How to Adjust Revenue?

Ex Ante Adjustment to ROE/Capital Structure

Yes

No
<table>
<thead>
<tr>
<th>Without Decoupling</th>
<th>Ratio</th>
<th>Cost</th>
<th>Weighted with-tax cost of capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>48%</td>
<td>10%</td>
<td>7.38%</td>
</tr>
<tr>
<td>Debt</td>
<td>52%</td>
<td>7%</td>
<td>2.37%</td>
</tr>
<tr>
<td>Weighted cost</td>
<td></td>
<td></td>
<td>9.75%</td>
</tr>
<tr>
<td>Revenue requirement: $1 Billion Rate Base</td>
<td>$97,506.154</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>With Decoupling</th>
<th>Ratio</th>
<th>Cost</th>
<th>Weighted with-tax cost of capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>45%</td>
<td>10%</td>
<td>6.92%</td>
</tr>
<tr>
<td>Debt</td>
<td>55%</td>
<td>7%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Weighted cost</td>
<td></td>
<td></td>
<td>9.43%</td>
</tr>
<tr>
<td>Revenue Requirement: $1 Billion Rate Base</td>
<td>$94,255,769</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Savings Due to Decoupling Cost of Capital Benefit:** $3,250,385
Questions

Please send questions through the Questions pane.
How to Adjust Revenue?

Choosing The Revenue Adjustment Mechanism

- None
- Stair/Indexing
- Revenue Per Customer
- Attrition
- K Factor
The Revenue Adjustment Mechanisms

- **No RAM** – No adjustment made to revenue requirements. Rates are not adjusted until the next rate case.

- **Stair-Step** – These are predetermined adjustments made in the last rate case based on forecasts of projected cost increases.

- **Indexing** – Adjustments to the revenue requirements are tied to factors such as inflation, industry productivity, customer growth.
The Revenue Adjustment Mechanisms

• **Revenue Per Customer** – Revenue requirement determined on a per customer basis and is adjusted for the total number of customers served.

• **Annual Review Decoupling (aka Attrition Decoupling)** – Rates are periodically adjusted for incremental and decremental known and measurable changes to rate base and operating expenses.
The Revenue Adjustment Mechanisms

- **K Factor** – an adjustment used to increase or decrease overall growth in revenues between rate cases
- **Hybrid** – Allows regulators to combine various RAM mechanisms to adjust rates.
Revenue Per Customer or Attrition Decoupling?

What Type of Utility is It?
- Vertically Integrated
- Distribution Only

What Costs are Being Included in the Decoupling Mechanism?
- Distribution and Power Supply Costs
- Distribution Costs Only

What Type of Decoupling Mechanism Should Be Considered?
- Attrition Decoupling
- Attrition or Revenue Per Customer Decoupling
# Periodic Decoupling Calculation

## From the Rate Case

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Revenues</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>Test Year Unit Sales</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Price</td>
<td>$0.100000</td>
</tr>
</tbody>
</table>

## Post Rate Case Calculation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Unit Sales</td>
<td>99,500,000</td>
</tr>
<tr>
<td>Required Total Price</td>
<td>$0.1005025</td>
</tr>
<tr>
<td>Decoupling Price Adjustment</td>
<td>$0.0005025</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Revenue Per Customer</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Periodic Decoupling Calculation</strong></td>
<td></td>
</tr>
<tr>
<td>From the Rate Case</td>
<td></td>
</tr>
<tr>
<td>Target Revenues</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>Test Year Unit Sales</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Price</td>
<td>$0.10000</td>
</tr>
<tr>
<td>Number of Customers</td>
<td>200,000</td>
</tr>
<tr>
<td>Revenue per Customer (RPC)</td>
<td>$50.00</td>
</tr>
<tr>
<td>Post Rate Case Calculation</td>
<td></td>
</tr>
<tr>
<td>Number of Customers</td>
<td>200,500</td>
</tr>
<tr>
<td>Target Revenues ($50 x 200,500)</td>
<td>$10,025,000</td>
</tr>
<tr>
<td>Actual Unit Sales</td>
<td>99,750,000</td>
</tr>
<tr>
<td>Required Total Price</td>
<td>$0.1005013</td>
</tr>
<tr>
<td>Decoupling Price “Adjustment”</td>
<td>$0.0005013</td>
</tr>
</tbody>
</table>
3.

Select how to handle refunds or surcharges

Truing up actual utility revenues with what utilities are allowed to earn can be done monthly or at longer intervals. Refunds or charges can be applied to all customers evenly or be allocated to customer classes. They can also be directed to encourage a particular policy goal, like rewarding low energy usage.
How to Handle Refunds/Surcharges
Changes in Rates From Decoupling Mechanisms 2005 to 2011

How to Handle Refunds/Surcharges

Allocation Of Over And Under Recovery To All Rate Elements

- Across the Board
- By Class
- By Rate Element
How to Handle Refunds/Surcharges

Choosing A Rate Adjustment Method

Via a Rider
Via Base Rate
How to Handle Refunds/Surcharges
How to Handle Refunds/Surcharges

Caps on the Size of Decoupling Adjustment

- None
- Yes
  - Revenue
  - Rates

Energy solutions for a changing world
How to Handle Refunds/Surcharges

Carrying Charges for Decoupling Deferrals

- Risk-Free Rate
- Weighted Average Cost of Capital
- Symmetry
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- Caps on rate increases or decreases?
- More energy efficiency
- Reducing cost of capital
Customer Considerations

- Refunds if utilities over-collect
- Caps on rate increases or decreases?
- More energy efficiency
- Reducing cost of capital
## Customer Considerations

### Using Rate Design and Decoupling Surcharges to Effect Policy Goals

<table>
<thead>
<tr>
<th></th>
<th>Summer</th>
<th>Winter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Charge</td>
<td>$7.00</td>
<td>$7.00</td>
<td></td>
</tr>
<tr>
<td>First 500 kWh</td>
<td>$0.80</td>
<td>$0.073</td>
<td>Minus any decoupling credit</td>
</tr>
<tr>
<td>Next 2,500 kWh</td>
<td>$0.102</td>
<td>$0.093</td>
<td>Plus any decoupling surcharge</td>
</tr>
<tr>
<td>Over 3,000 kWh</td>
<td>$0.120</td>
<td>$0.113</td>
<td>Plus any decoupling surcharge</td>
</tr>
</tbody>
</table>
Design Approaches to Protect Customers

• Symmetry – ensure that credits are provided.
• Stability: cap on rate changes
• Changes to capitalization ratio to reflect risk reductions
• Bill simplification
Design Approaches to Protect Customers

• Direct more energy efficiency/DERs
  o Decoupling conditioned on comprehensive programs

• Direct more distribution efficiency

• Low income provisions
  o Rate design approaches
  o EE programs directed towards LI
<table>
<thead>
<tr>
<th>Element</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
<th>Option 6</th>
<th>Option 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Distribution</td>
<td>Distribution and transmission</td>
<td>All functions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Class</td>
<td>Residential and small commercial</td>
<td>All but large industrial</td>
<td>All classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excluded Costs</td>
<td>Costs in riders</td>
<td>Riders plus production costs</td>
<td>All variable costs</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate Case Frequency</td>
<td>No requirement</td>
<td>Annually</td>
<td>Every 3 to 5 years</td>
<td>Mini rate cases</td>
<td>Every 4 to 7 years</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>How Established</td>
<td>Negotiations in rate case</td>
<td>Statute</td>
<td>Rulemaking</td>
<td>Commission order</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAM</td>
<td>None</td>
<td>Stair-step</td>
<td>Indexing</td>
<td>RPC</td>
<td>Annual review decoupling</td>
<td>K Factor</td>
<td>Hybrid</td>
</tr>
<tr>
<td>Symmetry</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery Allocation</td>
<td>Across the board equally</td>
<td>Customer class contribution</td>
<td>Credit in first block</td>
<td>Surcharge in last block</td>
<td>Combination between options 1 and 4</td>
<td>Other, such as judgments on which rate elements receive surcharges and credits and which do not</td>
<td>Other</td>
</tr>
<tr>
<td>How Recovered</td>
<td>Rate case</td>
<td>Rider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of True-Ups</td>
<td>Annually</td>
<td>Quarterly</td>
<td>Monthly</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrying Costs</td>
<td>No</td>
<td>Yes, short-term debt</td>
<td>Yes, customer deposit</td>
<td>Yes, other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap Methodology(^{54})</td>
<td>None</td>
<td>Percentage rate increase</td>
<td>Percentage revenue increase</td>
<td>Dollar amount</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory Conditions</td>
<td>None</td>
<td>Energy efficiency requirement</td>
<td>Customer service</td>
<td>Distributed generation interconnection</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate Design</td>
<td>Maintain customer connection-based fixed charge</td>
<td>Coupled with inclining block</td>
<td>Coupled with time-of-use</td>
<td>Combination</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of Return</td>
<td>No adjustment (wait for effects to play out)</td>
<td>ROE reduction ex ante</td>
<td>Capital structure adjustment ex ante</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance Metrics</td>
<td>Applied to decoupling</td>
<td>Not applied</td>
<td>Negative only</td>
<td>Positive and negative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Decoupling Mechanisms for Your Consideration

• Policy directions suggests increasing stress from the throughput incentive
• Rate design: increasing emphasis on price signals
• Decoupling works, aligns to policy
• Consumer welfare can be protected and furthered in decoupling
• Decoupling provides mechanism to ensure against utility over-recovery and excessive earnings
• Innovation: suited to support performance
Resources

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Decoupling Case Studies: Revenue Regulation Implementation in Six States

Decoupling Design: Customizing Revenue Regulation to Your State’s Priorities

raponline.org
Questions

Please send questions through the Questions pane.
Decoupling: Key Take-Aways

• It’s flexible, customizable
• It’s been done before, so models exist
• It can serve the policy goals of most states
• It can be designed to protect consumers
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 sector. 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](http://www.raponline.org)

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jmigden@raponline.org
```