The Challenges of Ratemaking for State Utility Commissions

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Questions Addressed

- Why is NRRI doing this study now?
- What do we mean by traditional and new rate mechanisms?
- Why is it important to address the topic of this study objectively and comprehensively?
- How should regulators evaluate different rate mechanisms?
- What are the new rate mechanisms under discussion?
- What are their expected outcomes in terms of advancing and impeding different regulatory objectives?
- How can state commissions use the information in this study for decision-making?
- What have been the experiences of new rate mechanisms?
History of Utility Ratemaking

- Legal underpinnings
- Evolution of utility rate mechanisms over the past several decades
- Objective of state utility commissions to achieve a “balancing act”
- Commission adaptability to a changed market and political environment
- Constant challenges for state utility commissions to advance the public interest
- Changing perspective of “just and reasonable” rates, and no definite criteria except for “boundary” conditions (e.g., no confiscation of investors’ property, no undue price discrimination)
Reasons for New Rate Mechanisms

- Questioning of the tenets and underlying assumptions of traditional ratemaking
- Much of the push comes from stakeholders (e.g., utilities, environmentalists, large utility customers) that want to advance their own self-interests
- Incidentally, throughout the history of public utility regulation, stakeholders have petitioned commissions to revisit old rate mechanisms and consider new ones (e.g., late 1960s and early 1970s)

- Added regulatory objectives, including the advancement of energy efficiency and renewable energy, and utility service affordability
- New market and operating conditions (e.g., rising average costs, slowdown of demand growth)
- Large capital expenditures, some of which is non-revenue producing
- The challenge for commissions is to evaluate whether new rate mechanisms are in the public interest
Objectives of New Rate Mechanisms

- Reduce risk to utilities and financial deterioration (e.g., improve utility credit and financial indicators in line with Wall Street wishes)
- Promote certain social goals (e.g., affordability)
- Facilitate new investments, especially those that don’t generate additional utility revenues
- Promote new technologies (e.g., solar and other renewable energy, smart grid)
- Foster energy efficiency
- Increase public benefits from utility investments and other activities
- Reduce the frequency of rate cases
- Mitigate regulatory lag
**New Rate Mechanisms: Grouping by Objective**

<table>
<thead>
<tr>
<th><strong>Objective</strong></th>
<th><strong>New Rate Mechanism</strong></th>
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<tbody>
<tr>
<td>Reduce utility financial risk</td>
<td>Cost trackers, infrastructure surcharges</td>
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<td>Reduce regulatory lag</td>
<td>Future test years, CWIP, multiyear rate plans, cost trackers, formula rates, infrastructure surcharges</td>
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<tr>
<td>Reduce the frequency of rate cases</td>
<td>Formula rates, multiyear rate plans, future test years</td>
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<td>Eliminate utility disincentive for energy efficiency by reducing the risk of revenue erosion</td>
<td>Revenue decoupling, straight fixed-variable rates</td>
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<td>Make utility service more affordable to all customers</td>
<td>Inverted rates, discounted rates, percentage-of-income mechanisms</td>
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<td>Promote renewable energy</td>
<td>Net metering rates, feed-in tariffs, green pricing</td>
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<td>Prevent uneconomic bypass and ease the ability of the utility to compete in certain markets</td>
<td>Flexible rates, special contracts</td>
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<td>Optimize energy usage over different times</td>
<td>Time-of-use rates, critical peak pricing, real-time rates, seasonal rates</td>
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<td>Lessen the rigidity of regulation</td>
<td>Price caps, flexible rates</td>
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<td>Avoid rate shock</td>
<td>Infrastructure surcharges, CWIP, phase-in</td>
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<td>Promote specific activities</td>
<td>Special incentives for energy efficiency, pipeline capacity release, off-system sales</td>
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Challenges for Commissions

- Multiple regulatory objectives
- Conflicting objectives and inevitable tradeoffs
- Objectives difficult or impossible to quantify, and impossible to identify empirically the contribution of individual objectives to the public interest
- No consensus on the definition of the public interest
- Uncertainty of outcomes
- Difficulty of interpreting biased information
Traditional and New Regulatory Objectives

- Affordable utility service
- Energy efficiency
- Power diversity that includes renewable energy
- Innovations
- Reliability
- Safety
- Price predictability
- Price stability
- Revenue stability
- Timely cost recovery
- Economic efficiency
- Clean environment
- Level playing field in competitive markets
- Infrequent general rate cases
Three Essential Steps for Effective Ratemaking

- **Defining the public interest in terms of the regulatory objectives**
  - What are the underlying regulatory objectives?
  - The public interest relates to regulatory objectives and the weights applied to each

- **Understanding the effect of each ratemaking proposal on the different objectives**
  - Regulators should have access to unbiased information
  - Otherwise they will react to biased information by making incorrect decisions even when they are fair-minded

- **Processing all the information systematically**
  - For example, regulators have to account for the inevitable tradeoffs in addition to assessing the public-interest effect of individual rate mechanisms
  - A regulator’s decision is akin to purchasing a car, where a person must balance power, safety, fuel economy, appearance, maintenance costs, purchase price, reliability and other features to reach a decision that maximizes her well-being
Evaluation of Individual Rate Mechanisms

✓ This task is the core of the NRRI paper
✓ Within the context of regulatory objectives (e.g., real time prices can make customer bills highly volatile)
✓ Expected outcomes based on economics and real-world experiences (e.g., revenue decoupling removing disincentives for utility-initiated energy efficiency)
✓ The study does not make recommendations on whether a particular rate mechanism is good or bad
Different Effects of Rate Mechanisms On Regulatory Objectives
<table>
<thead>
<tr>
<th>Rate Mechanism</th>
<th>Positive</th>
<th>Negative</th>
<th>General Comments</th>
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</table>
| Traditional ROR ratemaking | • Emphasis on due process  
• Focus on utility prudence  
• Simple for public to understand  
• Perception of fairness  
• Avoidance of undue price discrimination  
• Rate stability  
• Strong utility incentive for cost management between rate cases  
• Long-standing core ratemaking paradigm | • Pricing rigidity  
• Disincentives for promoting certain social goals, such as utility-initiated energy efficiency  
• Excessive regulatory lag under inflationary and stagnant sales growth  
• Inefficient average-cost pricing  
• Weak long-term utility incentives for cost management  
• Weak utility incentive for innovations (assuming rigid profit controls)  
• Frequent rate cases in a dynamic environment  
• Incentive for excessive capital | • Strongest justification under stable market and utility operating conditions  
• Problems arise in a dynamic environment  
• Throughout its history, traditional ROR ratemaking has endured attacks from different stakeholders  
• Although changes around the edges, traditional ROR ratemaking still dominates state utility ratemaking  
• Most other countries reject U.S.-style traditional ROR ratemaking |
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| Standard two-part tariff | • Public acceptability  
• Protection of low-usage utility customers  
• Utility incentive for managing costs to increase sales | • Prevention of utilities recovering their prudent fixed costs  
• Disincentive for utilities to advance energy efficiency  
• Cross-subsidy of low-usage customers by high-usage customers  
• Economically inefficient  
• Lessened utility competitiveness in certain markets because of higher marginal price  
• Negative hedging effect on utility customers | • Utilities and conservationists alike have questioned (for different reasons) the merits of the standard two-part tariff  
• The reason for interest in modifying the rate structure is that it conflicts with other regulatory objectives  
• Some headway in recent years in gradually shifting more of the fixed costs out of the volumetric charge  
• Much resistance to make a wholesale shifting of fixed costs to a customer or service charge  
• A few examples where gas and electric utilities have gone to SFV rates |
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| **Infrastructure surcharge** | • Avoidance of rate shock or large one-time rate increases  
• Mitigation of cash flow and other utility financial problems  
• More timely cost recovery without a rate case  
• Appropriateness especially for non revenue-creating investments | • Potential for imprudent utility performance  
• Risk shifting to utility customers | • Surcharges have proliferated in recent years  
• Increasingly, state legislatures have allowed or mandated commissions to use surcharges  
• They are more appropriate for new projects, such as gas pipeline replacement programs, that do not create additional utility revenues  
• Commissions generally require the meeting of milestones and other benchmarks for early cost recovery |
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<tr>
<td>Straight fixed-variable rate</td>
<td>• Efficient rate structure that gives utility customers good price signals</td>
<td>• Adverse effect on low-usage customers, some of whom may be low-income households</td>
<td>• SFV is less popular than revenue decoupling in removing utility disincentives for energy efficiency</td>
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<td></td>
<td>• Enhanced utility-earnings stability</td>
<td>• Disincentive for price-induced energy efficiency</td>
<td>• SFV has a definite image problem</td>
</tr>
<tr>
<td></td>
<td>• More levelized utility bills across seasons</td>
<td>• Questionable public acceptability</td>
<td>• Generally, SFV faces intense opposition by different groups</td>
</tr>
<tr>
<td></td>
<td>• Positive hedging effect on utility customers</td>
<td></td>
<td>• Although not accepting of a SFV rate design, over the past several years many commissions have moved toward this rate design via an increase in the customer charge</td>
</tr>
<tr>
<td></td>
<td>• Removal of utility disincentives for energy efficiency</td>
<td></td>
<td>• SFV can have an “equity” problem in that it could cause some customers to see dramatically higher bills</td>
</tr>
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<td></td>
<td>• Removal of inequities caused by intra-class subsidies</td>
<td></td>
<td>• Although SFV has a number of favorite traits, the negative traits have dominated the debate in regulatory proceeding</td>
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<tr>
<td></td>
<td>• Consistent with the pricing of many other goods and services</td>
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| Special rates to low-income households | - Affordability of utility service to more customers  
- Improvement of utility arrearage/bad debt problem  
- Reduced utility costs for disconnections  
- Increased reconnections | - Higher rates for general ratepayers  
- Excessive consumption by targeted customers  
- Price discrimination | - Several states have special rates for eligible low-income households  
- They vary considerably across states, with some having percentage-of-income plans while others have a fixed discounts off the normal tariff  
- Some rate structures are more effective in minimizing distortions or producing higher benefits per dollar funded by general ratepayers  
- Although discriminatory, special rates to low-income households pass muster in most states because they serve some social purpose |
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<td>Formula rate plan</td>
<td>• Reduced utility financial risk</td>
<td>• Questionable incentives for utility cost management because of (1)</td>
<td>• Formula rates are concentrated in the Southeast for setting rates for both</td>
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<td></td>
<td>• Sharing of abnormal profits between rate cases</td>
<td>reduced regulatory lag and (2) scrutiny of utility costs</td>
<td>electric and gas utilities</td>
</tr>
<tr>
<td></td>
<td>• Less frequent general rate cases</td>
<td>• Downsides of less frequent general rate cases</td>
<td>• Existing plans have generally met with satisfaction from stakeholders as</td>
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<tr>
<td></td>
<td>• Avoidance of single-issue ratemaking and distorted incentive problems</td>
<td>• Additional reporting and monitoring requirements</td>
<td>well as the commissions</td>
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<tr>
<td></td>
<td>with cost trackers</td>
<td></td>
<td>• It is somewhat surprising that we don’t observe more formula rate plans to</td>
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<td></td>
<td>• More moderate rate changes compared with traditional ROR ratemaking</td>
<td></td>
<td>replace the large number of cost trackers that many utilities have</td>
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<td></td>
<td>• Increased utility incentive to promote social goods</td>
<td></td>
<td>• Some economists favor price caps and multiyear rate plans over formula rates,</td>
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<td></td>
<td></td>
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<td>largely because of the incentive effect</td>
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Regulatory Objectives and Rate Mechanisms
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<tr>
<th>Regulatory Objective</th>
<th>Rate Mechanisms with Tendency toward Positive Effect</th>
<th>Rate Mechanisms with Tendency toward Negative Effect</th>
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<tr>
<td>Revenue sufficiency</td>
<td>Revenue decoupling, straight fixed-variable rates, formula rates, future test year, declining-block rates</td>
<td>Inverted rate, standard two-part rates, subsidized prices, historical test year</td>
</tr>
<tr>
<td>Profit stability</td>
<td>Revenue decoupling, straight fixed-variable rates, formula rates, declining-block rates</td>
<td>Inverted rate, standard two-part rates</td>
</tr>
<tr>
<td>Public acceptability</td>
<td>Standard two-part rates, subsidized rates</td>
<td>Revenue decoupling, straight fixed-variable rates, discriminatory prices, time-of-use rates</td>
</tr>
<tr>
<td>Proper price signals</td>
<td>Marginal-cost pricing, straight fixed-variable rates</td>
<td>Standard two-part rates, subsidized rates</td>
</tr>
<tr>
<td>Fair sharing of fixed costs</td>
<td>Embedded-cost pricing</td>
<td>Special contracts, discriminatory prices</td>
</tr>
<tr>
<td>Fair sharing of risk</td>
<td>Standard two-part rates, formula rates</td>
<td>Cost trackers, infrastructure surcharges, CWIP in rate base</td>
</tr>
<tr>
<td>Regulatory Objective</td>
<td>Rate Mechanisms with Tendency toward Positive Effect</td>
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<tr>
<td>Promotion of utility innovations</td>
<td>Targeted incentives, preapproval of project and costs, regulatory lag (for utility retention of cost savings), upfront regulatory commitment, accelerated depreciation, infrastructure surcharges</td>
<td>Traditional ratemaking, cost-based rates, regulatory lag (for utility recovery of investment costs), 20/20 hindsight reviews, book depreciation, entry restrictions for new firms</td>
</tr>
<tr>
<td>Encouragement of new investments</td>
<td>CWIP in rate base, future test year, infrastructure surcharges, formula rates, multiyear rate plans, subsidies, preapproval of project and costs, accelerated depreciation</td>
<td>“Used and useful” standard, 20-20 hindsight reviews, cost recovery only in general rate cases</td>
</tr>
<tr>
<td>Efficient competition (&quot;level playing field&quot;)</td>
<td>Flexible rates special contracts, value of service rates, unbundled pricing</td>
<td>Rigid embedded-cost rates, non-cost based rates, rates above marginal cost</td>
</tr>
<tr>
<td>Efficient consumption</td>
<td>Marginal-cost rates, time-of-use rates</td>
<td>Subsidies to certain customers, standard two-part rates, average-cost rates</td>
</tr>
<tr>
<td>Promotion of energy efficiency</td>
<td>Inverted rates, revenue decoupling, straight fixed-variable rates (utility initiated), performance incentives</td>
<td>Standard two-part rates, straight fixed-variable rates (customer-initiated), declining-block rates</td>
</tr>
<tr>
<td>Affordability</td>
<td>Inverted rates, rate discounts, percentage-of-income plans, low-income weatherization programs</td>
<td>Strictly cost-based rates, high customer charge, straight fixed-variable rates</td>
</tr>
<tr>
<td>Promotion of social objectives</td>
<td>Infrastructure surcharges or system benefits charges, above-cost rates to some customers</td>
<td>Strictly cost-based prices, no rate favoritism or other subsidies</td>
</tr>
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Case Studies of Seven Nontraditional Rate Mechanisms

- Maine’s Alternative Rate Plan
- Alabama’s Rate Stabilization Plan
- Atlanta Gas Light’s STRIDE program
- Wisconsin’s future test year
- Utah’s (Questar’s) revenue decoupling plan
- Ohio gas utilities’ straight fixed-variable rates
- California’s inverted rates
• Generally favorable outcomes
• Two instances of where the commissions (Maine and California) are revisiting the rate mechanisms
• Some transitional challenges, which are expected
• Little empirical evidence on their overall effects over time