OVERVIEW OF PERFORMANCE-BASED REGULATION BEFORE THE NEVADA PUBLIC UTILITIES COMMISSION

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Director of Electricity Policy

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THE POWER SECTOR HAS EVOLVED

Old Goals:
- Meet growing demand
- *Build* new infrastructure
- *Build* to deliver universal service
- Affordability, Reliability, Safety

Old Options:
- Centralized power plants
- Transmission lines
- Distribution system
THE POWER SECTOR HAS EVOLVED

Old Goals:
- Meet growing demand
- Build new infrastructure
- Build to deliver universal service
- Affordability, Reliability, Safety

New Goals:
- Build → Maintain
- Reliability → Resilience
- Clean power
- Customer satisfaction & choice
- Affordability, Safety

Old Options:
- Centralized power plants
- Transmission lines
- Distribution system

New Options:
- All the old stuff, plus:
  - Innovative distributed energy resources (EE, DR, PV, EVs, etc.)
  - Advanced IT & rate designs
THIS CREATES TWO NEW ISSUES

1. **Increasing options** for power system optimization leads to greater information asymmetry between utility and regulator

2. **New goals** for the power system mean regulators must reexamine existing incentives to build more capital and maintain existing investments
REGULATION CAN EVOLVE TOO

Old Methods:
• Line-by-line investment review
• Capital investment and sales growth drive shareholder value
• Infrequent rate cases
• Operational expenses largely a pass-through not subject to review

New Methods:
• Focus on outcomes to help sort through complexity
• Create incentives to optimize the system including customer-side resources, third-party providers
• Multi-year rate plans with capital efficiency incentives
• Meet customer demands for clean energy, lower bills, enhanced reliability & resilience
PERFORMANCE-BASED REGULATION

Changes the central question...

From:  “Did we pay the right amount for what we got?”

To:    “Are we paying (the right amount) for what we want?”
1. WHY
2. HOW
3. EXAMPLES
Revenue = \([O + T + D]\) + (Capital Costs – D) * ROR

As utility investment increases...
Revenue = [pass-throughs] + (Capital Expenditures) * ROR

ELEMENTS OF COST OF SERVICE EQUATION

Greatest opportunity for affecting overall shareholder value creation
HERE COMES SOME FINANCE....

Alfred Kahn
THE SHAREHOLDER VALUE ENGINE (1)

Stock Price = BV + \frac{(r - k)BV}{k - g}

Neither the absolute level of a company’s revenue, nor its rate of return, directly drive shareholder value.

It’s all about the difference between the ROR and the underlying cost of capital.

This difference creates the value opportunity that drives stock price.

The provision of incentives and the wherewithal for dynamic improvement in efficiency and innovations in service may require allowing returns to exceed [the cost of equity]...
The rate of return must fulfill an institutional function: it somehow must provide the incentives to private management that competition and profit-maximization are supposed to provide in the nonregulated private economy.”

Alfred Kahn, 1970
SHAREHOLDER VALUE SHOULD BE TIED TO PERFORMANCE

Merely permitting all regulated companies as a matter of course to earn rates of return in excess of the cost of capital does not supply the answer;

There has to be some means of seeing to it that those supernormal returns are earned,

Some means, for example, of identifying the companies that have been unusually enterprising or efficient and offering higher profits to them while denying them to others.

Alfred Kahn, again!
Revenue = [Pass-throughs] + (Capital Costs) * ROR ± Performance

Revenue increases...  Closer to the cost of capital

...As utility investment increases performance improves
Revenue = [Revenue Cap] + K ± Performance

Revenue increases... ...As utility investment increases performance improves

But there are risks . . . More counterfactuals means more forecast error
MOVING FROM COST OF SERVICE TO PERFORMANCE-BASED REGULATION

Traditional Model
(r>k); value derived from all investment activities

Opex (including depreciation & taxes)

ROR

Revenue

Performance Value Model
value derived from both investments and performance

Totex

Incentives available for value-creating activities*

*Overall costs may actually decrease; but potential returns to shareholders should grow commensurate with the additional risk shifted to utilities. 
1. **WHY**

2. **HOW**

3. **EXAMPLES**
**EXAMPLES OF COMMON PBR MECHANISMS ALREADY COMMONLY IN USE**

<table>
<thead>
<tr>
<th>Performance Area</th>
<th>Performance Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable</td>
<td>• Multi-year rate plans&lt;br&gt;• Revenue decoupling</td>
</tr>
<tr>
<td>Clean</td>
<td>• RPS alternative compliance payments&lt;br&gt;• Efficiency performance incentives</td>
</tr>
<tr>
<td>Reliable</td>
<td>• Reliability standards and penalties</td>
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## Key Areas of Performance & Where Performance-Based Regulation Fits

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<tr>
<td>Affordable</td>
<td>• Multi-year rate plans / Decoupling</td>
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<tr>
<td></td>
<td>• Revenue caps or revenue per customer</td>
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<tr>
<td></td>
<td>• Shared savings mechanisms</td>
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<td>• Participation in time-of-use rates</td>
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<td></td>
<td>• Load factor improvements</td>
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<tr>
<td>Clean</td>
<td>• RPS, and efficiency incentives</td>
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<td></td>
<td>• Customer access to clean energy</td>
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<td></td>
<td>• CO₂ per kWh or customer</td>
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<td>Reliable</td>
<td>• Reliability standards and penalties</td>
</tr>
<tr>
<td></td>
<td>• Resilience – reliability for critical infrastructure or rapid system recovery</td>
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</table>
THANK YOU
PIM Compensation Options

Nevada PUC Workshop, Carson City NV

Carl Linvill, PhD, Principal
The Regulatory Assistance Project (RAP)®
No Deadband, Symmetric Compensation

- Based on a compliant result at the origin
- Utility wins or loses revenue based on performance
- Dollar for unit, no limits

Note pressure on measurement and verification of savings
Symmetric Deadband & Compensation

- Based on a compliant result around a deadband at the origin
- Utility wins or loses revenue based on performance
- Dollar for unit
- No limits

Note pressure on measurement and verification of savings
One-sided Penalty

- No upside
- Deadband from adequate performance
- Severe penalty for poor performance
Asymmetric Compensation

- Upside
- Capped, for superior performance
- Deadband from adequate performance
- Severe penalty for poor performance
One-sided Reward

- Upside
- Capped for superior performance above present level
- No penalty
Hit the Target, Get the Toy

- Upside bonus
- Capped for significant specific superior performance
- No penalty
Favorite Examples
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org