Performance-Based Regulation for Utility Efficiency: Multi-Year Rate Plans

NARUC
PBR Staff Working Group

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Overview

- Performance-based regulation background (only questions)
- Quick Look at how different PBR approaches alter the basic revenue requirement and rate calculations
  - Multi-Year Rate Plan
  - Performance Incentives
  - Riders
  - Decoupling
- PBR for Efficiency: Multi-Year Rate Plans
1 Performance-Based Regulation Basics
Performance-based regulation (PBR) is…

- A regulatory framework to connect achievement of specified objectives to utility financial performance and executive compensation

- A PBR plan can include a collection of performance incentive mechanisms (PIMs), namely, metrics and formulas that determine the levels of financial rewards or penalties (i.e., adjustments to allowed revenues) for achievement of the specified objectives
States’ progress in grappling with PBR is uneven

Various combinations of drivers are advancing PBR in 19 states and D.C.

- **Early Exploration**: Initial inquiries often marked by a report examining PBR options
- **Initial Stakeholder Engagement**: Soliciting comments and/or conducting workshops assessing PBR options
- **Advanced Stakeholder Engagement**: Soliciting comments and/or conducting workshops in discussing specifics of PBR options
- **Implementation**: Decisions have been made or are close to being made to deploy PBR options
- **Conclusion of Inquiry**: Decisions have been made not to consider the PBR framework

Source: EnerKnol and Wood Mackenzie Power & Renewables; Tracking of the proceedings available on the EnerKnol Platform
Set guiding goals
From the goals consider performance criteria (directional targets)

Guiding goal: improve distribution system reliability

Directional target: 5% improvement in SAIFI from baseline value

Photo: Shirley Niv Marton
Expressing targets with measurable performance criteria, expressed in standard metrics is a best practice.
Metrics

• Quantifiable measure of a specified performance
• Typically expressed as standard power system measures or consumer impact measures
Performance criteria to metrics

- Quantifiable measure of a specified performance
- Typically expressed as standard power system measures or consumer impact measures
- Examples:
  - Service quality: improved customer service time
  - EE savings: measure % EE savings of utility sales or reduced consumer bills
  - Reduced outages: SAIDI / SAIFI / CAIDI / CAIFI
Public Metrics Only

- Metrics are publicized on a publically available "dashboard."

Public Metrics with Ranking

- Metrics are publicized and ranked
- Examples: Denmark DSO efficiency ranking, RIIO

Public Metrics with Financial Incentives

- Metrics are publically available, and utilities receive financial awards or penalties depending on achievement of the metrics.
- Examples: NY REV
Multi-Year Rate Plans in the U.S. (2017)

Multi-Year Rate Plans in Canada (2017)

Performance-Based Regulation Alters Traditional Cost of Service Revenue Requirement or Rate Calculations
Mechanics of Revenue Requirements for a Vertically Integrated Utility

\[
\text{Expenses} + \text{Return} + \text{Tax} = \text{Revenue Requirement}
\]

\[
\text{Rate Base} \times \text{Rate of Return} + \text{OPS & M} + \text{Fuel} + \text{Purchased Power} + \text{Depreciation Amortization} + \text{Other taxes} + \text{Income tax} = \text{Test Year Revenue Requirement}
\]

Source: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
What Happens Between Rate Cases – Historic way utilities did well

<table>
<thead>
<tr>
<th>O&amp;M + Fuel P.Power + Depr. Amort.</th>
<th>R.Base x R.O.R</th>
<th>Income tax + Other taxes</th>
<th>Test Year Rev. Req.</th>
<th>At set:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ / kWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ / kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ / Cust</td>
</tr>
</tbody>
</table>

Changes During Period of Effective Rates as Sales, Demand, or Customers Grow

- + Sales => +$
- +Demand => +$
- +Customers => +$

= + $ of Collected Revenues

Based on: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
What Happens Between Rate Cases – Fuel Adjustment Clause

Fuel or PP Adjustment Mechanism

\[ \text{O&M} + \text{Fuel or PP Adjustment Mechanism} \]

\[ \text{R.Base} \times \text{R.O.R} + \text{Income tax} + \text{Other taxes} \]

\[ \frac{\text{Sales}}{\text{Demand}} + \text{Custs} \]

\[ = \text{Collected Revenues} \]

Source: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
# Mechanics of an MYRP for a Vertically-Integrated Utility

<table>
<thead>
<tr>
<th>Expenses + Return + Tax</th>
<th>+ ARM = Revenue Requirement = Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPS &amp; M</td>
<td>+ inflation – productivity index</td>
</tr>
<tr>
<td>+ Fuel Purchased Power</td>
<td>+ or- staiirstep %</td>
</tr>
<tr>
<td>+ Depreciation Amortization</td>
<td>+ or- tracker - or- hybrid - or- freeze</td>
</tr>
</tbody>
</table>

Test Year Rev. Req. $ / kWh
$ / kW
$ / Cust

Based on: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
PERFORMANCE INCENTIVE MECHANISMS


Target Revenue

$ / kWh  $ / kW  $ / Cust

Period of Effective Rates

Sales => $  +  Demand => $  +  Custo => $

Collected Revenues

Shared Savings PIMs or Achievement PIM

Make Annual Adjustments to Target Revenues

Based on: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
What Happens Between Rate Cases - Decoupling

REVENUE DECOUPLING


Target Revenue

$ / kWh

Rev. Tax

Sales => $

+ Demand => $

+ Custo => $

Collected Revenues

Decoupling Functions to make Collected Revenues Equal to Approved Revenue Requirement

Based on: C. Freeman, Existing Reg. Elements for HI Electric Companies, HI PUC PBR Workshop II, Sept. 2018
3 Performance-Based Regulation For Utility Efficiency: Multi-Year Rate Plans
Why consider a Multi-Year Rate Plan?

A good MYRP aligns interests of utilities, regulators, customers – in contrast to traditional cost-of-service regulation

Reduce frequency of rate cases, freeing up Commission for other needs

Improve culture of utility management

Improve utility performance and lower utility costs

Strengthen incentives for utilities to improve performance & take for initiatives to yield results

Graphics credit: RAP & Rocky Mountain Institute (RMI)
Carte blanche for cost cutting is not the way to improve performance

Pacific Northwest Bell

Result:
- Cut customer service
- Charged for customer service phone access
- Incentive to keep customers on hold

Lesson:
- Need customer service and reliability metrics

Photo credit: Quino Al on Unsplash
Productivity Growth of CMP with MYRP(s) vs. U.S. Utilities, 1992-2014

What is a Multi-Year Rate Plan?

Key Components:

- Rate case moratorium (usually a 3-5 year rate case cycle)
- Attrition Relief Mechanism (ARM) allows for automatic relief from cost pressures, but is not linked to actual costs
- Incentivizes cost containment: allow utility to keep some/all savings if efficient
- Earnings Sharing Mechanisms can mitigate risk
- Performance incentive mechanisms can be linked to MYRPs to ensure service quality
- Other components can work simultaneously with a MYRP (e.g., decoupling, cost trackers, additional PIMs)

Graphics credit: RAP & Rocky Mountain Institute (RMI)
## Multi-Year Rate Plans Feature Different Types of ARMs

### Four Well-Established Methods

<table>
<thead>
<tr>
<th>Forecasts</th>
<th>Indexing</th>
<th>Hybrids</th>
<th>Rate Freeze</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rate adjustments during the MYRP period are based on cost forecasts</td>
<td>• An indexed ARM uses industry cost trend research to develop a base productivity trend that is then combined with other factors to arrive at a revenue cap index</td>
<td>• Uses a combination of methods</td>
<td>• ARM provides no rate escalation; growth depends on billing determinants or tracked costs</td>
</tr>
<tr>
<td>• Adjustments typically increase revenue on predetermined percentage in a stairstep fashion each year</td>
<td>• In the U.S., has been used so OpEx is indexed while revenue related to CapEx has a stairstep approach</td>
<td></td>
<td>• Can exacerbate the throughput incentive unless combined with revenue regulation</td>
</tr>
</tbody>
</table>

Indexed attrition relief mechanisms (ARMs) tie utility revenues to external market factors instead of utility costs.

**Attrition Relief Mechanism**

- **Inflation**
  - Often represented by a macro-economic price index such as the GDP Price Index ("GDPPI")
  - Custom indexes of utility input price inflation also are sometimes used in ARM design

- **Productivity Factor ("X")**
  - Reflects the average historical multifactor productivity trend of a peer group of utilities
  - Can be based on broad regional or national peer groups
  - Peer group can in principle be customized to mirror special circumstances of the subject utility

- **Exogenous Events ("Z Factor")**
  - Accounts for uncontrolled exogenous events that affect a utility's costs (e.g., the "2017 Tax Cut and Jobs Act")

- **Stretch Factor (Consumer Dividend)**
  - A stretch factor can be included to share with customers the benefit of stronger cost containment incentives expected under the MYRP

Graphics credit: RAP & Rocky Mountain Institute (RMI)
Cost Trackers in MYRPs

Cost trackers used for expedited recovery of costs - recovered in riders

Cost trackers can challenge PBR because they weaken incentives to improve performance

However, sometimes still used in conjunction with MYRPs to allow for recovery of costs that are difficult to control, and that are hard for the ARM to address

For example, CapEx trackers may be used to compensate to address for annual costs that capex can create, and which are hard to address with an ARM
Earnings Sharing Mechanisms share surplus/deficit earnings between utilities and their customers to mitigate upside and downside risk

- An Earnings Sharing Mechanism (ESM) can provide both “upside” and “downside” sharing of earnings between the utility and customers.
- This results when the rate of return on equity (ROE) deviates significantly from a public utility commission-approved target.
- ESMs often have “deadbands” (neutral zones around the target) in which earnings variances are not shared with customers.
- Some argue that ESMs may mitigate utility cost containment incentives.

Efficiency Carryover Mechanisms (ECMs) allow utilities to benefit from efficiency gains throughout and across MYRP periods.

ECMs maintain the utility’s incentive to control costs and optimize spending throughout the MYRP period by allowing the utility to carry forward a portion of savings from one MYRP period into the next.

Without an ECM, a utility has a greater incentive to implement cost-saving measures in the beginning of an MYRP period. Utilities also may be incentivized to defer certain expenditures in the early years of an MYRP period to increase the revenue levels reflected in an MYRP’s test year.

ECMs also can have a sharing component that allows customers to benefit from savings achieved or bear a portion of cost overruns.

Efficiency gains are calculated using benchmarks. Can compare a proposed revenue requirement for a new MYRP to the revenue requirement established by an expiring MYRP. Alternatively, a benchmark can be based on statistical cost research.

Efficiency Carryover Mechanisms

Graphics credit: RAP & Rocky Mountain Institute (RMI)
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
Resources

- Next-Generation Performance-Based Regulation: Volume 1 (Introduction—Global Lessons for Success)
- Next-Generation Performance-Based Regulation: Volume 2 (Primer—Essential Elements of Design and Implementation)
- Next-Generation Performance-Based Regulation: Volume 3 (Innovative Examples from Around the World)
- Performance Incentives for Cost-Effective Distribution System Investments
- Protecting Customers from Utility Information System and Technology Failures
- Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration