Fundamentals of Performance-Based Regulation

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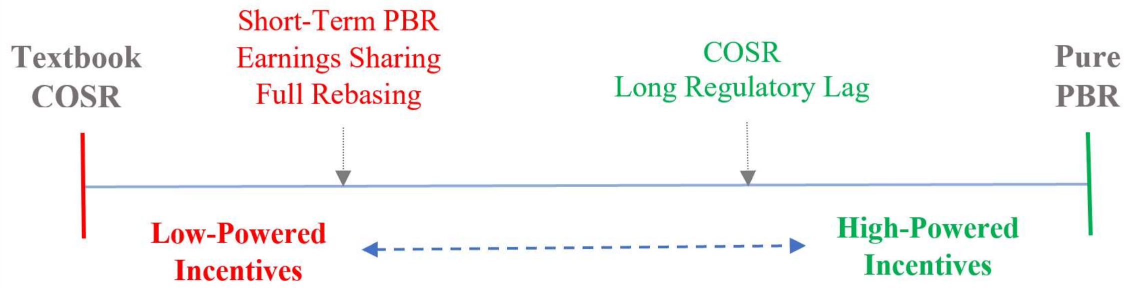
- Defining performance-based regulation
- Revenue caps and the “I-X” formula
  - Allows for inflation and industry productivity change
- Determining the elements of the formula

Defining Performance-Based Regulation

The intent of PBR is to provide stronger efficiency incentives compared to traditional cost of service regulation (COSR)

- "Continuum of PBR"
  - BC Hydro already has elements of PBR in its current regulatory regime
- Multi-year rate plans
  - Indexed cap formulas – e.g., price caps, revenue caps
  - Forecast approach – predetermined increases in rates or revenues
  - Hybrid approach, which combines the indexed cap and forecast approach



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Theoretical PBR Improvements over COS

When set up correctly, PBR can provide benefits to customers, the regulator, and the utility

- PBR breaks the link between costs and revenues
  - Breaking this link creates a motive for the utility to operate more efficiently
- Streamlined, more efficient form of regulation
  - Lower regulatory costs for both utility and regulator
  - However, startup costs can be high
- Consumer benefits
  - Rate stability
  - Share in efficiency gains
- However, not a one-size-fits-all solution

Guiding Principles of PBR

This list comes from BCUC Decision and Orders G-165-20 and G-166-20 (FortisBC MRP, June 22, 2020)

- The PBR plan should, to the greatest extent possible, align the interests of customers and the utility; customers and the utility should share in the benefits of the PBR plan.
- The PBR plan must provide the utility with a reasonable opportunity to recover its prudently incurred costs including a fair rate of return.
- The PBR plan should recognize the unique circumstances of the Company that are relevant to the PBR design.
- The PBR plan should maintain the utility's focus on maintaining safe, reliable service quality while creating the efficiency incentives to continue with its productivity improvement culture.
- The PBR plan should be easy to understand, implement and administer and should reduce the regulatory burden over time.

Defining Revenue Caps

Revenue caps provide incentives through longer regulatory lag

- Allowed revenue growth is capped using the “I-X” formula:
  - Inflation minus X-factor
  - Revenue caps often include growth factors, which are implicit in price caps
- PBR often contains a “rate stay-out period”
  - Often 5 years; sometimes as long as 10 years or as short as 3 years
  - This allows the utility time to capture efficiencies

The I – X + G Cap Formula

The cap is a ceiling on changes to allowed revenue

- I – X + G determines the year-to-year percent change in the cap
- Formula elements based on exogenous data
    - I and X are not company-specific

$$\textbf{Total Revenue}_t = \textbf{Capped Revenue}_{t-1} * (1 + I_{t-1} - X + G_t) + Y_t + Z_t$$

I = Inflation
X = Productivity Adjustment
G= Growth Factor
Y = Costs forecast & recovered from customers
Z = Costs for one-time exogenous events

The Inflation Factor

Provides an annual revenue adjustment based on utility input prices

- Based on utility input prices
- Among PBR plans in Canada, inflation factors are composites of labour and non-labour indexes
  - Labour price index: Province-specific Average Weekly Earnings (AWE)
  - Non-labour price index: Province-specific CPI
- By itself, inflation is an incomplete mechanism for adjusting allowed revenue
  - % Δ Revenue = % Δ Prices + % Δ Quantity

The Productivity Factor

The productivity (X) factor adjusts the inflation rate for industry productivity

- The X factor reflects utility industry conditions
  - Productivity is something that can be measured
  - Total Factor Productivity (TFP) calculated by:
    - $\%\Delta TFP = \%\ \Delta$ Billable Outputs - $\%\Delta$Inputs
- If productivity increases, the revenue cap increases at a rate lower than inflation

The Growth Factor

- Based on company-specific customer growth
- Often included in revenue cap plans to adjust allowed revenue with contemporary, company-specific data
- Implicit in price caps
- Growth factors are common across PBR plans in Canada

Summary

- PBR generally offers cost efficiency incentives, but does not provide a guarantee
- Revenue caps adjust allowable revenues each year based on empirical factors beyond the utility's control

Questions or Comments?