

Performance Based Regulation for Electric and Gas Distributors

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Rate cases are expensive to conduct and can distract utility management from its primary objective of keeping costs low and service quality high. Performance Based Regulation (PBR) is a regulatory approach that has the potential to reduce the frequency of rate cases, assure ratepayers of rate increases that are lower than inflation, and increase utility incentives to locate and enact cost saving measures. The primary drawback of a PBR plan is the introduction of more risk for utility finances. This stems from the explicit agreement between stakeholders to not initiate a new rate case until the plan expires.

There are three major approaches to rate setting; PBR, Cost of Service (COS), and formula rates. The most popular regulatory approach in North America has been the COS approach. This approach sets allowed rates at the conclusion of a rate case. These rates remain constant until a new rate case is initiated and concluded. An alternative form of regulation is the use of formula rates. Formula rates provide nearly automatic rate adjustments based on the actual costs of the utility.

There are advantages and disadvantages to all three approaches. The COS approach is relatively simple, well-understood, and assures that a full examination of the utility is conducted before rates are allowed to increase. However, the COS approach, in most jurisdictions, suffers from considerable regulatory lag as rate cases can take up to a year or more before rates are allowed to change. Formula rates solve the regulatory lag issue by providing an automatic means for rate increases based on the costs or financial position of the firm. The downside of formula rates is they provide limited incentives for the company to improve cost efficiency.

The table below describes the three regulatory approaches and their key attributes.

Plan Attributes	COS	PBR	Formula Rates
Risk to Ratepayers	Moderate	Low	High
Risk to Utility Finances	Moderate	High	Low
Regulatory Lag	Long	Short	Short
Frequency of Rate Cases	High	Low	Low
Cost Containment Incentives	Moderate	Strong	Weak
Understandability	Simple	More Complex	More Complex
Potential for Large One-time Increases in Rates	High	Low	Moderate

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The General Mechanics of PBR Plans

A PBR rate plan begins with a cost of service study that recommends fair and reasonable rates on the basis of the utility's costs in a given test year.² These rates are then automatically adjusted, normally annually, based on a pre-set adjustment mechanism. This pre-set adjustment is based on economic theory of the anticipated unit cost increases the utility will experience and is comprised of items that are external to the firm (e.g., U.S. Consumer Price Index (CPI)).

A PBR plan can be enacted for a specified time period. A minimum of three years is needed to make the plan effective in providing incentives and reducing regulatory burdens on utilities and consumers. PBR plans have been enacted in North American regulation for three, five, and up to ten years. The basic PBR formula is comprised of the previous year's rates, an inflation measure for that year, and an "X-factor." If we assume the inflation measure is the CPI, then the PBR adjustment mechanism is:

PBR Adjustment Mechanism

The X-factor is primarily based on a calculation of the total factor productivity (TFP) trend of the industry. This follows the economic logic that, in a competitive industry, prices will increase by input price inflation minus productivity improvements. An X-factor can also include the expected differential between the CPI and industry input prices, and sometimes includes a consumer dividend (or stretch factor). The stretch factor is usually based on performance benchmarking evaluations which estimate the cost efficiency of the firm.

The adjustment mechanism provides a reasonable opportunity for the utility to maintain margins during the interim years of the rate plan. Likewise, it assures consumers of relatively small and predictable increases in rates that are below inflation rates for an extended period of time.³ Regulatory burden and distractions are reduced for all parties, and the utility is free to identify and implement efficiency improvements.

PBR plans can also include other provisions that mitigate risks for utilities and ratepayers. One of these is known as a "Z-factor." A Z-factor can be included in the adjustment formula that enables a correction for unforeseen and uncontrollable costs or savings. Examples include changes in federal, state, or local tax rates, regulations, or laws, or storm related damages that are above and beyond a given threshold. With a Z-factor, the adjustment mechanism becomes:

PBR Adjustment Mechanism with a Z-Factor

Other provisions can also be incorporated into the adjustment formula to mitigate risk. These include earnings sharing mechanisms and off-ramps. With an earnings sharing mechanism, if a

² This test year can either be based on a historic or forward test year.

³ This assumes the X-factor is greater than zero, which is typical in PBR plans.

utility's return on equity is above or below a certain threshold (e.g., +/- 100 basis points), a certain percentage of margin surplus or deficit can be shared with consumers. This will automatically adjust rates to bring the return on equity more in-line with what was agreed upon during the initiation of the PBR plan.⁴ An off-ramp provision permits the triggering of a new COS re-basing of rates, if the utility's return on equity is grossly out of line with the previously agreed-upon level (e.g., +/- 350 basis points).

Other hybrid versions of PBR can include capital cost trackers or forecasted capital expenditures, with only the O&M portion of expenses subject to the adjustment mechanism. PBR can also be formulated into a revenue cap, essentially acting as a revenue decoupling mechanism. This combines the incentive power and reduction of regulatory burdens of a PBR rate plan with the improved alignment of utility incentives with energy efficiency and conservation goals found in revenue decoupling.

Conclusion & How PSE Can Help

Given the somewhat predictable nature of electric and gas distribution expenses, PBR rate plans normally work well in forecasting the needed rate adjustments during the life of the plan. These plans have the potential of reducing rate cases, improving incentives, providing consumers with rate changes that beat inflation, and providing utilities with a reasonable opportunity to maintain the agreed-upon return on equity. These benefits should be weighed with the risks and complexity of a PBR plan.

PSE's team of experts can help to explain the pros and cons of PBR, its possible financial implications, and navigate the process of designing a plan that is based on economic theory and makes sense for both the utility and its ratepayers. PSE has extensive experience in the design and formulation of PBR, COS, and formula rate plans. Regarding PBR, our team has calculated TFP trends, input price differentials, and researched stretch factors that are used in PBR plans across the world.

⁴ Keep in mind that a strict earnings sharing mechanism will reduce the incentive benefits of the PBR plan.