FUTURE TRENDS IN
PERFORMANCE-BASED REGULATION
FOR U.S. INVESTOR-OWNED ELECTRIC UTILITIES

by

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THE CONTEXT

The U.S. electric power sector has undergone dramatic change, transforming from a highly monopolistic, heavily regulated industry to an industry where competitive forces will play a larger role in determining prices and firms' behavior. It is generally agreed that not all functions of the electric power industry will be adequately competitive to rely on market forces to protect the public interest. For the foreseeable future, the "wires" services, transmission and distribution will retain features of a natural monopoly. Other services, although potentially competitive in nature, will move through a transitional phase during which price regulation will likely be continued to protect consumers against the potential abuse of market power by incumbent electric utilities.

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2 According to one common interpretation, the public interest refers to the long-term interests of retail electricity consumers.

3 In telecommunications-industry parlance, these services are labeled "emerging competitive services." A report prepared for the National Association of Regulatory Utility Commissioners commented that "as long as a distribution utility continues to provide generation services to customers (either through a standard order, as the provider of last resort, or because it has not divested in generation assets), it may be appropriate to apply some form of PBR to the generation aspect of the business. This type of regulation of the generation portion of a distribution utility would be justified on the grounds that the generation business has not yet become sufficiently competitive to be completely deregulated." See, Bruce Biewald et al., Performance-Based Regulation in a Restructured Electric Industry, prepared for the National Association of Regulatory Utility Commissioners, November 8, 1997, 6-7.

One possible service where PBR could be applied is standard offer service. This service would be available to those retail customers who decide to not choose a competitive power provider or who are unable to purchase power in the open market at reasonable terms. The service would be comparable to that currently available from a utility.

One commission proposed to its legislature that it would "cap the standard offer so that its price plus the regulated rates of the T&D service... would not, on average, be higher than total electricity rates just before the beginning of retail competition. The Commission would consider whether the cap should escalate at an inflation-based index or by another mechanism." Incidentally, the standard order-cap was not included in the new legislation. (Maine Public Utilities Commission, Electricity Utility Industry Restructuring, Docket No. 95-462, Report and Recommended Plan, December 31, 1996, 59.)
Performance-based regulation (PBR) in the U.S. has been advanced as a superior pricing mechanism to rate-of-return (ROR), or what this report calls traditional, regulation in accommodating increasingly competitive forces in the electric power industry. Under PBR, a utility’s profits become a more direct function of performance — namely, poor performance results in less profits, superior performance results in higher profits.\(^4\) Up-front or before-the-fact rules are established, with no retrospective review of a utility’s performance, which could occur under traditional regulation.\(^5\) Although for many years PBR mechanisms have been widely applied to U.S. electric utilities, they have operated in an environment where utilities held monopoly power in all of their functional areas.\(^6\) Future PBR plans in the U.S. will be instituted with the objective of either accommodating or responding to increased competitive forces in the industry.

This report attempts to look at the future of PBR in the U.S. electric power industry. The focus will be on those functions of the industry regulated by state public utility commissions (PUCs).\(^7\) Specifically, it will provide an assessment based on the opinions and positions of interest groups (electric utilities, consumer groups), state

\(^4\) A National Association of Regulatory Utility Commissioners publication defines PBR as “[a]ny rate-setting mechanism which attempts to link rewards (generally profits) to desired results or targets. PBR sets rates, or components of rates, for a period of time based on external indices rather than a utility’s cost of service. Other definitions include light-handed regulation which is less costly and less subject to debate and litigation; [a] form of rate regulation which provides utilities with better incentives to reduce their costs than does cost-of-service regulation.”

\(^5\) Under traditional regulation, as practiced in the U.S. over the past twenty or so years, state public utility regulators have increasingly become involved with the micro-management of utility expenses and decisions.

\(^6\) See, for example, Robert J. Graniere, the Effects of Fuel-Related Incentives on the Costs of Electric Utilities (Columbus, OH: The National Regulatory Research Institute, 1993); and Biewald et al., Performance-Based Regulation in a Restructured Electric Industry.

\(^7\) Those functions are retail in nature, excluding such functions as transmission and wholesale electric power which are either deregulated or regulated by the Federal Energy Regulatory Commission (FERC).
PUCs, legislatures, and analysts/economists. Although any prediction of the direction and prevalence of PBR in the future has its uncertainties, discernible trends based on current activities and recent past actions are starting to emerge. These trends are a product of either state-legislature mandates or state regulators' decisions on the structure and implementation of PBR. PBR in the U.S. electric power industry will most certainly take a different form than past PBR mechanisms. The fundamental reason for this transformation lies with the restructuring of the U.S. electric power industry. One can look at the U.S. telecommunications industry or even the U.S. natural gas industry for guidance. These industries have relied more on PBR-type mechanisms that explicitly recognize the new environment under which regulated firms operate. It is reasonable to expect similar mechanisms will follow for the electric power industry.

Any prediction of the direction and form of PBR requires knowledge of the future structure of an industry. In the case of the U.S. electric power industry, it seems fairly clear that service unbundling, with the possibility of vertical disintegration will transpire. Functions such as electric generation and certain retail services will be provided in a competitive environment, while “wires” services will remain regulated. Under this scenario, prices for transmission and distribution services will remain regulated.

What specific PBR mechanisms will be applied to these services constitutes the underlying question for this report. Much interest and discussion has centered on the application of PBR to regulate “wires” services, especially for distribution services. As discussed later, traditional regulation is seen by many (but not everyone) as inherently flawed in meeting new regulatory objectives under a restructured electric power industry. These objectives include the protection of small retail consumers from cost-shifting and anti-competitive actions, the encouragement of cost-minimizing behavior by electric utilities, and the maintenance of high service quality and reliability for distribution service.
RECENTLY IMPLEMENTED AND PROPOSED PBR MECHANISMS

Over the last several years, PBR in the U.S. electric power industry has evolved from targeted plans (e.g., plant availability, fuel costs) to more comprehensive plans (e.g., price caps, earnings sharing). As the industry restructures to accommodate competition, PBR plans allowing utilities flexibility in pricing and the offering of new products and services will become more commonplace. Price caps first come to mind as falling within this category of PBR plans.\(^8\) In fact, a review of recent plans shows increased popularity in price-cap regulation of distribution service. For example, legislation in Rhode Island requires price caps (i.e., allowable annual price changes to equal the Consumer Price Index) for distribution service. The PBR mandate, in addition to price caps, includes earnings-sharing and service-quality mechanisms. The earnings-sharing component acts as a safety net to avoid circumstances where a utility earns excessively high or excessively low returns.\(^9\) As discussed later, state legislatures and, even more so, state PUCs tend to favor the inclusion of an earnings-sharing component in a price-cap plan. This is an example of where a policymaker is willing to trade-off some potential productive efficiency gains for the avoidance of extreme or politically untenable outcomes.\(^10\) The Rhode Island legislation also requires that a PBR component be applied to service quality. The state’s PUC has approved a

\(^{8}\) A generic price-cap mechanism can be written as

\[
\text{Allowable Price Change} = \text{Price Index (PI)} - \text{X-Factor} \\
\pm \text{Exogenous Costs (Z-Factor)}.
\]

\(^{9}\) The Rhode Island legislation, the Utility Restructuring Act of 1996, and signed by the governor on August 7, 1996, is unique in specifying the parameters of a price-cap plan and, by doing so, omitting the inclusion of an X-factor or productivity offset.

\(^{10}\) A more detailed discussion of earnings sharing follows later in this report.
reward-penalty plan that attempts to maintain historical performance in the areas of reliability, customer service, and employee safety.  

In Massachusetts, the legislature gave the commission more leeway in implementing PBR. Specifically, it granted the state’s public utility regulator the authority to employ PBR for distribution service without mandating that it should or how it should do so. (This is typical for states that have enacted industry restructuring legislation.) The one exception is the requirement that if the regulator mandates PBR, it must include service-quality standards for different distribution and retail functions. With regard to rates, the legislation requires an initial 10 percent and then an additional 5 percent rate reduction. These mandatory reductions can be considered a variant of price caps.

California has probably seen the most activity in terms of PBR. Since 1997, Southern California Edison has had a hybrid price-cap/earnings-sharing plan for distribution service. In addition, its plan contains an incentive component to discourage deterioration of service quality (measured as customer satisfaction and system reliability). The price-cap formula includes a Consumer Price Index and an X-factor that over time increases from 1.2 to 1.6. The formula also includes a Z-factor that accounts for major cost impacts outside the control of the utility. Overall, the

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12 In December 1998 the state regulator began conducting generic hearings on PBR for electric utilities.

price-cap component resembles those applied to the telecommunications industry.\textsuperscript{14} To be discussed in more detail later, the Southern California Edison plan represents the "new age" or prototype PBR in a restructured U.S. electric power industry. In response to concerns about deteriorated service quality and exorbitant profits, the evidence so far seems pretty clear that state commissions and legislatures will reject the idea of a pure price-cap plan.\textsuperscript{15} Instead, they will require that any price-cap plan be supplemented by both earnings-sharing and service-quality components.

Also in California, San Diego Gas and Electric is currently proposing a PBR plan for distribution service based on rate indexing (i.e., price caps). Unlike the Southern California Edison plan, the San Diego plan uses an input price-escalation index offset by a productivity index. Like the Southern California Edison plan, it includes an earnings-sharing and a service-quality component.\textsuperscript{16} Both plans have the objective of promoting economic efficiency in a natural monopoly market with the objective of passing a political test.\textsuperscript{17}


\textsuperscript{15} The support for this prediction is contained in the next section of this report.


San Diego Gas and Electric had PBR plans prior to electric industry restructuring in California. These plans can be classified as partial (in the sense of applying to an individual aspect of a utility's operation) or traditional forms of PBR. See San Diego Gas and Electric Company, "Performance-Based Ratemaking at San Diego Gas and Electric Company,\textsuperscript{15} unpublished paper, 1994.

\textsuperscript{17} Almost universally across states, it seems mandatory that passing a political test requires assurance against deterioration of service quality and utility retention of what can be regarded as exorbitant profits. This observation, which is reiterated in this report, is a major factor rationalizing the future trend of PBR in the form of a \textit{modified} price-cap plan applied to a restructured U.S. electric power industry.

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Another example of a recent PBR plan is the hybrid plan approved by the Maine Public Utilities Commission for Central Maine Power. This plan, which has been in place since 1995, covers *bundled sales service*.\(^{18}\) The Commission articulated several benefits of the plan, relative to traditional regulation: (1) greater price predictability and stability, (2) reduction of regulatory costs, (3) shifting of risks away from consumers, (4) greater incentives for cost control, and (5) better accommodation of growing competitive pressures in the industry.\(^{19}\) Like the previously mentioned plans, the Central Maine Power plan represents a hybrid plan with price caps as the primary component supplemented by earnings-sharing and service-quality factors.\(^{20}\) A decline in service quality, which is measured as an index combining customer service and reliability, results in the utility being penalized based on a specified formula. Results so far from the plan are encouraging.\(^{21}\) Price increases have been modest with no reporting of service-quality problems. The company’s profits have been held down by the unexpected closing of a nuclear power plant, but the company has made substantial efforts to find ways to increase its efficiency. (Because the company has no fuel adjustment clause, it is unable to pass along to consumers the cost of replacement power.) Subsequent to implementation of the plan, the company increased the number of special, discounted rates offered to customers, partly because of the streamlined

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\(^{18}\) The Central Maine Power plan is one of the first price-caps mechanisms for a U.S. electric utility; the plan was implemented prior to the passage of major electric industry restructuring legislation in Maine.

\(^{19}\) See the Maine Public Utilities Commission Order in Docket No. 92-345, December 1994.

\(^{20}\) A different but equivalent characterization of the mechanism is a modified price-cap plan.

\(^{21}\) Telephone conversation with a former staff member of the Maine Public Utilities Commission.
process. Another outcome of the plan has been a decline in the number of contentious hearings, allowing both the commission and company personnel more time for other activities. Finally, the company has reduced its costs and, in the opinion of in-state observers, has made major strides in becoming more efficient.
VARIOUS VIEWS ON PBR AND ITS FUTURE

No consensus exists on the future direction of PBR in the U.S. electric power industry. Disagreement even lies over the basic question of whether PBR should be implemented. Consumer groups, in particular, are skeptical of PBR. The electric utility industry seems a bit hesitant toward PBR — not so much as a theoretical construct but in a litigated setting where an actual plan with all the “numbers” in place may be unfavorable to a utility. Analysts/economists generally support PBR, largely because of the cross-subsidization and efficiency-distorting problems, in a mixed competitive-regulated environment, that are likely to arise under traditional regulation.

Overall, PBR will likely become more prevalent in the U.S. electric power industry. A consensus among the various interest groups will, however, not be easily achieved. Where state legislation requires PBR but provides few specifics and little guidance, a “fight” before the state PUC on the structure and implementation of an acceptable PBR plan seems inevitable. In the case where state legislation grants the PUC only the authority to implement PBR, the “fight” will be expanded in scope to include debate over the merits of PBR relative to traditional regulation.²²

State PUCs and Legislatures

A primary objective of state PUCs, as well as state legislatures, in a restructured electric power industry is to have utilities operate as efficiently as possible while

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²² Two examples are Massachusetts and Nevada. Nevada legislation requires that non-competitive services remain subject to current (traditional) regulatory provisions unless the state commission approves what it calls an “innovative pricing plan.” Such a plan, which can include PBR, may be implemented only upon a finding that it would improve performance or lower the cost of providing such services.
maintaining their current service quality and reliability.\textsuperscript{23} Widespread concern exists over whether the existing regulatory system instills distorted incentives for the utilities of a restructured industry to warrant serious consideration of non-traditional pricing methods such as PBR.\textsuperscript{24}

A survey of state restructuring legislation, commission reports, and commission orders shows a common thread among states. First, deterioration of service quality and reliability will have a zero tolerance. Oklahoma legislation, for example, placed reliable and safe service as compulsory in a restructured industry.\textsuperscript{25} Guidelines drafted by the staff of the Georgia Public Service Commission argued that "reliable, safe, and adequate electric service is essential and must be maintained at current or improved levels."\textsuperscript{26} Montana legislation included the section that "[u]tilities shall maintain standards of safety and reliability of the electric delivery system and existing customer service requirements."\textsuperscript{27} In a report to the governor of New Mexico and the state legislature, the state PUC expressed the position "in our view...as a condition of restructuring, transmission and distribution system reliability must, at a minimum, be

\textsuperscript{23} This statement is based on the author's reading of industry restructuring legislation, commission orders, and policy statements across a large number of states.

\textsuperscript{24} The Public Service Commission of Wisconsin, for example, commented in a report on industry restructuring, prepared for the State Legislature, that "[m]ore innovative practices, such as performance-based ratemaking, could provide better incentives for the utility to deliver low-cost quality products and service."

\textsuperscript{25} Oklahoma State Senate, \textit{Senate Bill 500}, enacted on April 25, 1997.


maintained and in certain circumstances, enhanced. The New York Public Service Commission publicly announced that "[t]he integrity, safety, reliability, and quality of the bulk electric system should not be jeopardized." A 1996 resolution approved by the National Association of Regulatory Utility Commissioners (NARUC) stated that "[r]estructuring should not jeopardize the safety, reliability or quality of electric service. The importance of a reliable electric system cannot be overemphasized." Restructuring legislation in Rhode Island requires the state PUC to establish performance standards to maintain historical levels of safety, reliability and customer service. The Massachusetts public utility regulator is required to approve PBR plans based on service quality indicators. A staff report recommended that a price-cap mechanism should include performance standards for reliability, quality of service and safety. Overall, almost all of the states considering industry restructuring place top priority on maintaining service reliability and service quality. PBR has been

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31 See Tumidajski, "PBR to Support Distribution Service Quality."

32 See the earlier discussion.


34 One typical position is contained in Minnesota Public Utilities Commission, "Restructuring Principles and Action Steps," adopted on May 14, 1996. The commission remarked that "there must exist quantifiable performance standards for safety, reliability and service quality in order to set requirements for future industry safety and reliability and to measure any impacts of competition on safety, reliability, and service quality (p. 54)."
considered as one mechanism for achieving this objective, especially in view of the stronger incentives that utilities will have in controlling their cost of service in a more competitive environment.

A second common thread of most states' position on PBR is the requirement that consumers must benefit. A staff-report by the Indiana Commission expressed the view that "[t]he challenge is to develop a regulatory structure that aligns the interests of shareholders and customers. Of primary importance is the mechanism through which shareholders and customers share the benefits of improved utility performance."35 A report by the staff of the Virginia Commission recommended that "if the Commission determines that a new regulatory approach is warranted, we would suggest consideration of a(n) . . . earnings-band mechanism whereby ratepayers would share in the cost savings achieved."36 On several other occasions, state commissions have looked unfavorably upon PBR plans that failed to demonstrate benefits to consumers.37

A third common view among state commissions is that PBR should primarily be considered for the "wires" services. At the state level, this means that PBR may be

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35 Indiana Utility Regulatory Commission, *Energy Report: Public Policy Consideration*, prepared for the Regulatory Flexibility Committee of the Indiana General Assembly, November 1997. The report also noted that "[a]lthough targeted incentives have a long history, there is very little empirical evidence showing that these incentives increase the overall efficiency performance of utilities. Consequently, the type of PBR plans proposed today generally are the broad-based variety." (Chapter 4, p. 1).


37 Mostly, these occasions are commissions' orders on PBR plans proposed by a utility. Because it is difficult to quantify the benefits, commissions exercise judgment based on the features, structure, and parameters of a proposed plan. For price-cap plans proposed by energy utilities, commissions have been particularly concerned over whether the value of the X-factor or productivity offset is set high enough to sufficiently distribute future efficiency gains to consumers.
most appropriate for pricing power distribution service. Georgia Commission staff guidelines recommended that “[w]here rate regulation remains [for distribution service], performance-based ratemaking should be considered.”38 The Delaware Commission echoed the same sentiment.39 Montana legislation gave the commission the authority to “approve rates and charges for electricity distribution based on alternative forms of ratemaking such as performance-based ratemaking.”40 The New York Commission expressed the position that “[w]here monopoly remains, emphasis on performance-based regulation should continue.”41 The Rhode Island legislature requires PBR methods (namely, price caps) for pricing distribution service.42 A Maine Commission report to the legislature predicted that “[transmission and distribution] utility regulation is likely to occur through PBR, such as price caps, not return-based regulation.”43 The evidence we have so far strongly indicates that PBR is being seriously considered by

38 Staff of the Georgia Public Service Commission, Staff Report on Electric Industry Restructuring.


40 Montana State Legislature, Senate Bill 390, 23.


42 See the earlier discussion.

state legislatures and commissions as a candidate for pricing unbundled distribution service in a restructured electric power industry.\textsuperscript{44}

**Electric Utilities**

Although electric utilities as a group have not publicly taken an official position on PBR, individual utilities have expressed various views. A September 1998 workshop on PBR, conducted by the Edison Electric Institute (EEI) reveals these views, which can be interpreted to reasonably reflect the prevailing if not the universal position of the industry.\textsuperscript{45}

First, general agreement seems to exist that in theory PBR can be beneficial to utilities as a reform tool and in addressing new issues resulting from industry restructuring. For example, PBR can allow utilities more flexibility in pricing their services and give them more opportunities to profit from exceptional performance. PBR in the form of price caps may also provide utilities with a potentially more

\textsuperscript{44} In addition, the Michigan Public Service Commission document, *Staff Report on Electric Industry Restructuring*, December 19, 1996, noted that

[A] properly designed PBR system provides incentives to the utility while protecting the customers from excessive price increases limited to the regulated [transmission and distribution] services (at 4).

\textsuperscript{45} Discussions with an EEI staff person in October 1998 identified the four points presented below.
administratively convenient and efficient way to handle cost-shifting issues (e.g., more efficient than cost allocation manuals and audits).\textsuperscript{46}

Second, PBR, particularly price caps, can have high up-front costs in development and negotiation. Utilities that have proposed price caps found that much time and effort were required to formulate a price-cap plan acceptable to all the parties. The resultant litigation or negotiation may be as contentious and as arduous as that for a general rate case.\textsuperscript{47}

Third, the utilities identified regulatory risks associated with a PBR. For example, a price-cap plan, although presumably acceptable in theory because of the increased flexibility it gives a utility, may in practice be unfavorable to a utility. As a result of litigation or negotiation, a utility may find itself in a position where it is difficult to come out ahead or even attain the same profits as under traditional regulation, especially when a plan includes such elements as "stretch factors" to increase the X-factor, up-front "sweeteners" (e.g., initial rate reduction, public-program subsidies), and asymmetrical reward/penalty components. One concern of many utilities is that most state restructuring legislation is vague about the specifics of PBR general guidelines: state commissions have much discretion in deciding upon the structure and specific parameters of a PBR plan.

\textsuperscript{46} By severing regulated prices from a utility's reported costs, as the argument goes, price caps would give utilities or their parent companies less incentive and ability (relative to traditional regulation) to shift costs and transfer excessive prices from affiliate transactions to the consumers of regulated services. In practice, however, price caps may not produce the desired results. Pure price caps, as argued in this report may not be politically palatable, requiring an earnings-sharing component that produces the profit-constraining results of traditional regulation. In addition, price caps may not eliminate cross-subsidization or cost-shifting when the service baskets are excessively broad, or when the starting prices for different services depart from the cost of service.

\textsuperscript{47} Experience has shown this to be the case in jurisdictions where energy utilities have proposed price-cap plans (e.g., California, Georgia, Maine, Massachusetts, New York).
Fourth, utilities need to effectively manage their long-term strategies for increasing productivity. Although PBR gives utilities more profit opportunities, it also imposes more risks on them. Just as in most non-regulated markets firms suffer when performing poorly, a utility under PBR could be worse off, relative to traditional regulation, when performing below a certain threshold.

A recent (1998) report conducted by an industry consultant for EEI discusses how price-cap regulation can be applied to power distribution service. The report, among other things, makes several salient points pertinent to predicting the future trend of PBR in the electric power industry:

1. Price caps can be attractive to utilities as a “key component of a business strategy that features top performance in distribution operations and involvement in unregulated markets for related goods and services.” For regulators, price caps can also be attractive “since they provide incentives for superior distribution performance and can protect utility customers from cross-subsidization.”

2. Utilities will look unfavorably upon price caps unless they see reasonable opportunity for higher profits, especially in view of the higher risk they would face.

3. Traditional regulation poses potential problems (e.g., cost-shifting, affiliate transactions) for regulators when utilities operate in mixed competitive-

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non-competitive markets. This suggests that price caps may be attractive to regulators if only because of their ability to mitigate these problems.\textsuperscript{49}

4. Utilities should communicate to regulators the benefits of price caps to alleviate concerns about diversification.

5. The application of prices charged by competing distribution providers as an inflation index (“benchmarking”) may not be feasible because of the current lack of unbundled price data on power distribution services.

6. In the United States compared to the United Kingdom, regulators devote more attention to the success of price-cap indices in tracking the industry’s unit-cost trend. U.S. regulators are more inclined to depart from the industry’s unit-cost standard when evaluating a price-cap plan if the utility had acquired windfall gains under the previous plan.

7. Price caps can help to redesign rates (“rate rebalancing”) for power distribution services gradually and automatically.

8. Earnings-sharing mechanisms have been the general rule in price-cap plans for North American energy utilities.\textsuperscript{50}

9. Utilities are at risk under an asymmetric earnings-sharing mechanism in which “earnings” shortfalls are not shared with consumers.

\textsuperscript{49} There is evidence that this partly explains the widespread use of price caps in the U.S. telecommunications industry.

\textsuperscript{50} The main reason for this is the low tolerance of regulators for a utility to earn exorbitant profits (see other sections of this report).
10. Earnings-sharing mechanisms may be necessary during the initial periods for political acceptability but may be phased out over time for energy utilities as regulators become comfortable with price caps.\textsuperscript{51}

11. Service-quality incentives mirror the widespread perception that price caps reduce the incentive of a utility to provide high quality of service (since the utility can benefit from lowering its costs). Service-quality incentives can be incorporated into the price-cap plan as a "Q-factor," which leads to a secondary price adjustment when actual performance falls outside a specified "deadband."

Discussions by the author with utility managers reveals consistency with the above-mentioned comments. One executive of a large U.S. electric utility anticipates PBR for unbundled distribution service. A manager from another large utility expressed the view that a price-cap plan will require an earnings-sharing component for appeasing special interest groups and in responding to political pressures. He also pointed out that a service-quality component will be needed for the same reason.

Several electric utilities expressed the general position that since the electric power industry will become more competitive, they should be given more flexibility, justifying alternatives to traditional regulation. Utilities particularly favor the aspect of PBR that gives them more pricing flexibility.

**Consumer Groups**

From the perspective of most consumer groups that intervene before state PUCs, PBR is not necessarily a superior alternative to traditional regulation. They

\textsuperscript{51} This seems to be true for the U.S. telecommunications industry.
generally consider PBR as giving utilities excessive flexibility and opportunities to earn what they call "windfall profits" at the expense of consumers.

One active industrial intervener told the author that prices for distribution service and other regulated services should be strictly based on cost of service (i.e., traditional regulation principles). He added that if a service is a natural monopoly, its prices should coincide with actual costs, with service provided on a non-discriminatory and comparable basis to all consumers. He also argued that utilities are currently given reasonable opportunities to earn adequate profits under traditional regulation. The representative contended that consumers and the general public can better understand traditional regulation than PBR. He particularly criticized price-cap regulation for setting initial prices too high, for aggravating the problem of regulation by not being punitive enough to utilities, and for leading to rampant discriminatory pricing. Overall, he discredited PBR as a scheme that utilities will exploit to their advantage and at the expense of consumers.

A major consumer group in California, Utility Consumers Action Network (UCAN), severely criticized a distribution PBR plan proposed by San Diego Gas and Electric. As mentioned earlier in this report, the plan is a hybrid price-cap/earnings-sharing mechanism. The group’s biggest concern is that the utility could game the plan to increase its profits without having to share excess earnings with its customers. UCAN argues that most PBRs contain loopholes that a utility can exploit to its

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advantage. In comments before the California Public Utilities Commission, the consumer group argued that "[an earnings-sharing mechanism] acts as a safeguard to ensure that utility profits will be reasonable, emulates a competitive market and insures that ratepayers receive a fair share of the rewards of improved productivity."

The group also articulated the position that a PBR plan should benefit consumers by reducing prices: "Monitoring and review of a PBR mechanism should not only explore the extent to which efficiency has been achieved, but also the extent to which ratepayers have shared in the benefits of increased efficiency."

Another consumer advocate, representing small consumers, echoes the positions of his colleagues. He opposes PBR for a declining-cost industry, arguing that only utilities stand to gain. The representative sees PBR (especially price caps) as a sure way for utilities to earn excessive profits and to price discriminate against small consumers. He admits that a well-structured PBR plan can benefit consumers, but he adds that in practice it rarely will. His preference is for a rate freeze that, he argues, will adequately protect consumers from utility abuses.

Finally, a staff person from another state's consumer advocate expressed deep skepticism for PBR. He believes that PBR would fail in lowering prices for consumers, an outcome that one should expect in a declining-cost industry (which, incidentally, may not correctly characterize the future U.S. electric power sector) with increasing competition. He also expressed concern for price caps in reducing service quality and reliability and in establishing excessive starting-point prices. Overall, the staff person

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53 Ibid.

54 Ibid.
believes that the general public will be opposed to price caps because of these adverse consequences.\textsuperscript{55}

**Analysts/Economists**

Most analysts/economists predict the application of PBR, particularly price caps, in the remaining regulated sectors of a restructured electric power industry. They generally believe that PBR will avoid some of the problems that would likely arise under traditional regulation.

Makholm and Quinn, associated with the consulting group National Economic Research Associates (NERA), assessed that "[u]nlike electricity generation, electricity distribution will remain a regulated business. But the form of regulation likely will change to price caps, mirroring events in telecommunications regulation here [in the U.S.] and energy regulation abroad."\textsuperscript{56}

The 1996 Economic Report of the President noted that price-cap regulation or any suitably designed PBR "can create better incentives than pure cost-based regulation, ultimately benefitting both the firm and consumers. . . [M]any states are moving toward PBR in telephone service and in the transmission and distribution of

\textsuperscript{55} In a recent proceeding in Georgia (Docket No. 8390-U), a natural gas company’s proposed hybrid price-cap/earnings-sharing plan was strongly opposed by consumer groups. Their comments included (1) the plan is unworkable and would harm consumers, (2) the plan should include a service quality/safety penalty component, (3) the plan’s X-factor is too low, and (4) a rate freeze would be preferred.

electricity."57 A 1998 U.S. Department of Energy report argued that any PBR plan for the electric power industry must include a requirement that cost savings will not occur at the expense of system reliability or customer service.58 The report observed that "[s]ome state regulatory authorities support PBR as a measure that propels the industry toward efficiency and cost reduction without compromising goals of safe, reliable, and least-cost service."59

Sappington looked favorably upon PBR, or as he called it incentive regulation, in providing gains to both consumers and firms.60 But he warned that "gains for regulated producers not be viewed as losses for customers; such a perspective can lead to lost opportunities for all parties."61

Costello and Jones observed that in the future state PUCs will be looking at new rate-making paradigms, including PBR, that are more compatible with a mixed competitive-monopoly environment under which U.S. electric utilities will operate.62

They identified the major features of a new paradigm, relative to traditional regulation, as: (1) greater pricing flexibility, (2) more risk shifting to utilities, (3) greater profit opportunities for utilities, and (4) less frequent rate reviews. They argued that


59 Ibid., 73.


61 Ibid., 269.

regulatory reforms tend to arise when market realities depart from existing regulatory practices. In fact, if traditional regulation falls out of line with a restructured industry, they predicted that a new rate-making paradigm will inevitably emerge and be accepted by regulators.

Zajac argued that alternatives to traditional regulation, although not expected to achieve the “incentive compatibility characteristics of competition,” are superior to traditional regulation. He attributed this superiority to the great “infirmities” of traditional regulation. Zajac believed that any regulatory scheme will be susceptible to the “usual strategic uses of fairness arguments in order for stakeholders to gain political advantage.”

Finally, Stelzer advocated the replacement of traditional regulation with PBR, where rewards will hinge on actual performance rather than the level of investments. He recommended moving ahead with PBR instead of delaying action because of the concern over so-called “windfall profits.”

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64 Ibid., 275.


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AN OVERALL ASSESSMENT OF THE FUTURE OF PBR

If one looks ahead five years, one can reasonably envision many PBR plans for power distribution service. This is contingent on states restructuring their electric utilities to offer retail consumers unbundled services. It is plausible to predict, however, that traditional regulation will remain in place for some if not many electric utilities. What structure PBR plans will exhibit is not at all certain. Yet, one can speculate with plausibility that the kinds of plans we are starting to see in states that have passed electric restructuring legislation or where the PUCs have recently approved of utility-initiated plans are forerunners of the future. The odds are in favor of a modified price-cap mechanism to represent the preferred PBR plan of the future (see Table 1).66

Legislatures’ and commissions’ insistence that service quality should not be compromised may necessitate the inclusion of a separate component within a PBR plan. We have already seen this in the few examples where distribution service has become unbundled and priced on the basis of a PBR plan.67

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66 Some observers of the industry may argue that revenue caps, rather than price caps, will become more commonplace. (For a comparison of revenue caps and price caps, see José A. Rotger, "New Directions for PBR," presented at the Edison Electric Institute PBR Workshop, Newport, Rhode Island, September 30, 1996.) It is our opinion that revenue caps contain serious flaws that make them ill-suited for a restructured electric power industry and unacceptable by state legislatures and regulators. (See Kenneth W. Costello, "Revenue Caps or Price Caps? Robust Competition Later Means Healthy Choices Now," Public Utilities Fortnightly, May 1, 1996: 28-33.) This is reinforced by the recent actions of California, Maine, and Washington to abolish revenue-cap-type plans.

67 See the earlier discussion on the new kinds of PBR plans being implemented for U.S. electric utilities in California, Maine, and Rhode Island.

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Almost universally, state PUCs believe they have an obligation to design PBR plans that emphasize the importance of service quality, especially in an environment where a utility has a strong incentive to cut costs. A question arises as to whether a utility should be penalized for failing some threshold (e.g., historical) performance level, but not rewarded for exceeding the threshold.\textsuperscript{66} With regard to price-cap plans for U.S.

\textsuperscript{66}See, for example, Peter Navarro, “The Simple Analytics of Performance-Based Ratemaking: A Guide for the PBR Regulator,” \textit{Yale Journal on Regulation} 13, 1 (Winter 1996): 105-61. Navarro argued that service-quality incentives should be asymmetrical in penalizing a utility for sub-par performance. The rationale for a penalty-only incentive is that because a utility is already rewarded for cost-cutting under an alternative-regulation mechanism (e.g., price caps), it should only be punished when failing to perform satisfactorily in service quality.
energy utilities, most plans have a separate component to discourage service-quality
deterioration.\textsuperscript{69} We expect this trend to continue as distribution service is unbundled
and priced on the basis of a price-cap formula.

PBR plans, at least for the initial years of operation, will probably include some
earnings-sharing component. This is what we observe up to now and expect this trend
to continue where price caps are first being implemented for an electric utility. As
mentioned elsewhere in this report, earnings sharing acts as a safety net for regulators
in preventing utilities from earning excessively high (or symmetrically, excessively low)
profits between formal rate reviews. Technically, this component of a PBR plan would
further adjust rates from the levels allowed under the price-cap mechanism. As an
example, where excessive earnings exist, a utility could reimburse customers with an
annual rebate check.

Some local exchange telephone companies (although greatly diminished in
number over the past several years) and most of the energy utilities in the U.S.
operating under price caps include an earnings-sharing component. The primary
reason for this can probably be explained by the high degree of uncertainty of future
profits under a pure price-cap mechanism. Errors in a price-cap equation could cause
serious distortions, including the taking of benefits from consumers. These errors could
very well be systematic, meaning they would cumulate and persist over time. Because
such errors are not self-correcting, regulators may feel obligated to include a
supplemental component such as earnings sharing in a price-cap plan. In the absence
of earnings sharing, a utility could retain until the next formal rate review what some
would regard as excessive profits — a situation that has existed in the U.K. utility

\textsuperscript{69} This includes natural gas utilities. Boston Gas and Southern California Gas (which is operating
under a revenue-cap mechanism) have separate incentives for service quality.
industries, for example, which over the last several years have been operating under price caps without an earnings-sharing component.\textsuperscript{70}

Although diminishing the utility incentive for cost efficiency (relative to a pure price-cap plan), earnings-sharing plans have benefits that are appealing to regulators.\textsuperscript{71} First, they tend to mute consumer and political objections to a pure price-cap plan. Earnings sharing may be necessary to avoid those objections and, consequently, help assure a regulator’s commitment to a price-cap plan.\textsuperscript{72} In the absence of commitment, which involves a regulator allowing a PBR plan to operate undisturbed, except for annual reviews, until the next scheduled rate review, the utility’s incentive for controlling costs and obtaining higher productivity is seriously undermined when unexpected outcomes transpire (e.g., the utility is earning high profits). Regulators would then be under great pressure to change the rules of the game, for example adjust the X-factor upward during the interim for a price-cap plan, in effect giving back to consumers some of the profits earned by the utility. For utilities, earnings-sharing mechanisms can be appealing, if they operate as an alternative to increasing the value of the X-factor.

Second, earnings sharing would allow customers to visibly and directly benefit, prior to the next formal rate review, from a utility earning high profits. Finally, economic analyses have shown that earnings-sharing-type mechanisms may be superior to pure

\textsuperscript{70} Some U.K. analysts have argued ex post that the regulators should not have approved of pure price-cap plans. But this criticism may be no more than second-guessing the regulators’ decisions based on actual outcomes.

\textsuperscript{71} The limited evidence for the energy utilities supports this view.

\textsuperscript{72} Commissions in California, Georgia, Maine, and Massachusetts, for example, have spoken about the deficiencies of price caps that exclude an earnings-sharing component as a “back-stop.”
price caps for improving the long-term economic welfare of consumers. Taking everything into account, earnings sharing may satisfy both an economic and political test.

The experiences of PBR, particularly price-cap plans, in the U.S. telecommunications industry offer instructive guidance to the electric power industry. First, price caps in the telecommunications industry were accepted largely because of emerging problems with traditional regulation. These problems impeded different interest groups in addition to distorting and discouraging emerging competitive forces in the industry. Regional Bell Operating Companies (RBOCs) were allowed to enter non-regulated lines of businesses at the same time technology was changing rapidly. In response, state PUCs were looking for a more streamlined and effective method of regulation.

Second, price caps in the telecommunications industry evolved in a changed environment where regulated firms were offering both competitive services and monopoly services. Price caps helped to liberalize profit constraints and pricing/marketing practices in encouraging competition and promoting allocative efficiency. Pricing flexibility was widely granted to what the regulators called "emerging competitive services," while no or little pricing flexibility was granted to those services deemed monopoly or essential — namely, local or basic service.

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Third, state PUCs generally continued to oversee service quality. Explicit penalties were (and still are) sometimes integrated with the price-cap formula; but more frequently they were (and are) incorporated outside the formula. Most telecommunications price-cap plans recognize the need to adequately monitor and enforce service quality standards. The primary reason for this oversight is the widespread perception among regulators and other consumer groups that under price caps a regulated firm would tend to cut costs and, consequently, provide lower service quality to so-called “captive” customers.

Fourth, over the last several years pure price caps have replaced the hybrid price-cap/earnings-sharing plans that were common during earlier years. Instead, state PUCs have resorted more to the use of “stretch factors” or initial rate cuts for benefit-sharing purposes.\(^7\)

The experiences of the U.S. natural gas industry can also be instructive for predicting the trends of PBR in the electric power industry.\(^8\) Until recently, restructuring of the natural gas industry has advanced further than for the electric power industry. PBR has received much attention in the natural gas sector, with several PBR plans currently in place. These plans target various functions, including distribution service, gas procurement, capacity release, service quality, demand-side management, and gas storage. PBR is viewed by many in the industry as an integral part of the restructuring

\(^7\) Stretch factors attempt to lower the risk to consumers by increasing the size of the X-factor. With a higher X-factor, consumers benefit more until the next formal rate review from the productivity gains actually achieved by a utility.

of retail gas services. The recent PBR plans of Boston Gas and Southern California Gas in addition to the proposed plan of Atlanta Gas Light may be harbingers of future plans as retail service unbundling evolves at the state level. These plans combine price caps (or revenue caps in the case of Southern California Gas) with both earnings-sharing and service-quality components (with the exception of Atlanta Gas Light). Each plan applies to unbundled natural gas local distribution service.

It should be noted that the Atlanta Gas Light proposed plan was rejected by the Georgia Public Service Commission. The Commission’s order articulated its concern of the plan — (1) the company could earn windfall profits violating consumer protection, (2) the company did not demonstrate that its plan would benefit consumers, and (3) the plan contained no service quality measures.\(^7^7\)

A prediction that PBR will proliferate in the U.S. electric power industry is no sure bet. Through the years the author of this report has heard many comments for why PBR should not supplant traditional regulation. Sources for these comments include state public utility commissioners, commission staff, and consumer interveners in commission proceedings. The persons making the comments were cognizant of the restructuring movement in the U.S. electric power industry. A list of the comments follows.

* We do not need PBR; we can instead modify traditional regulation around the edges (e.g., eliminate automatic cost passthroughs) to provide utilities with better incentives.

Future Trends in Performance-Based Regulation

- The electric power industry is currently not competitive enough to abolish traditional regulation; especially for distribution service, why do we need PBR for a service that will remain a natural monopoly?
- The British experience has demonstrated that PBR in the form of price caps benefits regulated firms more than consumers.
- Under price caps, we can expect discriminatory pricing to proliferate.
- The benefits of switching from traditional regulation to PBR do not justify the high transition costs that would ensue.
- Stronger incentives for utilities to cut costs will impair service quality and reliability.
- Utilities will always game a PBR plan to earn exorbitant profits.
- Under price caps, small price-inelastic customers will likely pay higher prices.

While not judging the merits of these arguments, opposition to PBR seems rather deep in some regulatory quarters. In circumstances where state PUCs have the discretion whether or not to implement PBR, they may well decide not to. State industry restructuring legislation typically gives state PUCs the authority to implement PBR (e.g., Massachusetts) but not require it. Even where legislation mandates PBR, in most instances the state PUC has discretion over the structure of a plan and how it should be implemented.

In the U.S., various interest groups want different outcomes from PBR. Consumers, of course, want lower prices and better service or, in the case of small customers being captive to their local utility, protection from cost-shifting and price discrimination. Utility shareholders hope to have greater profit opportunities, while utility managers want their companies to be compensated for incurring increased market risk and the chance to compete. Society wants a more efficient utility industry. Finally, most of all regulators want a "no-losers" outcome where both utility
shareholders and consumers benefit. The future challenge lies with the design of a PBR plan that would satisfy these demands — undeniably, no easy task but one, at least based on limited experience so far in the U.S. electric power industry, that is achievable under the right conditions.
COMPARISON OF PBR WITH TRADITIONAL REGULATION

The last section predicted the proliferation of modified price-cap mechanisms in a restructured U.S. electric power industry. At the state level over time, this mechanism will likely be confined to distribution service, which for an indefinite period will remain non-competitive. An instinctive question arises as to: Why is traditional (rate-of-return) regulation deficient for pricing distribution service or any service provided under monopolistic conditions (for example, bundled sales service)? A related question is: Assuming a vertically integrated industry, what improvements in performance would be expected under PBR relative to traditional regulation? These questions are also pertinent to countries that are embarking on formalized regulation of their electric utilities, which may be either vertically integrated or disintegrated.

A straightforward argument for why PBR may be superior in a vertically integrated electric power sector lies with the tendency of traditional regulation to give utilities weak incentives to minimize their costs of service. These incentives originate from what economists call the Averch-Johnson (A-J) effect and X-inefficiency. The A-J effect induces a utility to use excessive capital input relative to other inputs such as labor, fuel, and materials. X-inefficiency occurs when the utility wastes resources by operating above its cost frontier. The underlying cause of both kinds of inefficiencies stems from the utility lacking the strong incentives of non-regulated firms to control costs.

Traditional regulation has also been criticized for its pricing rigidity and high regulatory costs.\textsuperscript{79} Pricing rigidity prevents a utility from responding in a timely fashion to changing market conditions. These conditions can arise from general inflation, new technological developments, and changes in the intensity of competitive forces and in consumer demand; allocative inefficiencies result, with existing prices moving farther away from marginal costs and consumers' willingness to pay for utility service. Where the utility is the sole provider, for example in the power distribution market, pricing rigidity becomes less problematic. In this environment, the benefit of flexible pricing to meet the competition is non-existent.

The regulatory costs of traditional regulation include the expenses incurred by utilities, interveners, and regulators for rate filings, rulemakings, and other matters falling under regulatory jurisdiction. As practiced in the U.S., traditional regulation requires regulators to have access to a great deal of information for making informed decisions. The difficult job for regulators is to take the conflicting information provided by different parties, "unscramble" it, and ultimately reach a decision balancing the welfare of the various interest groups.

The benefits of PBR are best measured in terms of its ability to eliminate or mitigate the inherent problems linked to traditional regulation. Of course, PBR can create new problems of its own, which must be netted against the benefits. With regard to the modified price-cap mechanism, these problems stem largely from incorrect parameters incorporated into the specified equations.\textsuperscript{80}

\textsuperscript{79} See, for example, Paul L. Joskow and Richard Schmalensee, "Incentive Regulation for Electric Utilities," Yale Journal on Regulation 4, 1 (Fall 1986): 1-49.

\textsuperscript{80} The most important parameters include the X-factor, the deadband region, and the sharing ratio applied to profits falling outside the deadband region.
A theoretical argument can be made that the modified price-cap mechanism is more conducive to producing efficient outcomes than is traditional regulation. Where the "devil is in the details," the modified price-cap mechanism can in practice effect inferior results, however. They include: (1) excessive price discrimination, although when applied to distribution service or bundled sales service, both of which represent monopoly services, the utility may have less incentive to price discriminate than if it were operating in non-monopoly markets where consumers face varying opportunities to choose different service providers, and (2) small gains to consumers from improvement in utility efficiency; this can be avoided by setting a sufficiently high X-factor to assure consumers their "fair" share of the efficiency gains that would be expected under a price-cap regime.

The experiences with price caps in regulated U.S. industries and in other countries are somewhat mixed. Although it is false to say that price caps have been an overwhelming success, it is probably correct to say that in most applications they have reduced the costs of regulated services to which they have been applied.\(^1\) The limited empirical evidence on price caps suggests that they are likely to benefit both regulated firms and their customers in the long run.

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Several lessons can be learned from the U.K. experience with price caps for the electric power industry.82 First, the price of electricity adjusted for inflation should be expected to fall for all customer classes, except those that previously were subsidized.83

Second, price caps can be overly generous to utilities. During the early years, the British regulator set the "X-factor" offset too low, resulting in utilities earning what some regard as excessively high profits (although to a large degree these profits reflect efficiency gains by the privatized utilities). Since the U.K. price-cap plan includes no earnings-sharing component, the utilities were able to retain these profits until the next formal rate review. It was probably true that early-year efficiency gains were easier to attain than later-year gains.

Third, tied to the second lesson, the British regulator was probably handicapped by information asymmetry. This means that the regulator has less knowledge of a utility's costs and potential for future reductions than the utility has itself. Information asymmetry seems, therefore, not just problematic to traditional regulation.84


83 By design, price caps limit price increases to the general rate of inflation minus the X-factor, which accounts for expected productivity gains and other factors affecting the future financial condition of utilities.

84 Information asymmetry lies at the heart of the incentive problem underlying price regulation. It prevents the regulators from knowing where the utility is actually operating relative to its cost frontier.
Fourth, political and public pressures can interfere with the integrity of price-cap regulation. Price caps or any PBR mechanism for that matter converge closer to the less robust incentives facing utilities under traditional regulation.

Fifth, price caps were probably one contributing factor in the dramatic increase in the productivity of the newly privatized British electric power industry. Of course, industry restructuring and privatization per se were other factors, whose combined contribution may have far exceeded the contribution of price caps. Electric power reforms in the U.K. were expected to improve productivity for three distinct reasons: (1) changes in incentives from privatization, (2) incentives to cut costs from the application of price caps for transmission, distribution, and power supplies to the franchised monopoly market, and (3) competition in generation and power supplies to the non-franchised market.

Traditional regulation is premised on the desirability of achieving certain outcomes: fair and reasonable price, highly reliable service, affordable service to all customers, financially healthy utilities, limited price discrimination (e.g., for purposes of "equity" and economic development), and entry restrictions to preserve scale economies. Traditional regulation succeeds best in effectuating these outcomes when the general economy is stable and the regulated firm has monopoly power over all of its services or products.

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55 The U.K. regulator has found it necessary to review utilities’ performance every two years or so, rather than the originally planned five years.

56 See Charles G. Stalon and Reinier H.J.H. Lock, “State-Federal Relations in the Economic Regulation of Energy,” Yale Journal on Regulation 7,2 (Summer 1990): 427-97. The authors point to the changed macroeconomic and energy-market conditions (for example, high interest and inflation rates, stagnant technological progress in the electric power sector, and volatile fuel prices) starting during the 1970s, to which, according to the authors, rate-of-return regulation could not adequately answer.
In the author’s opinion, traditional regulation elicits distorted behavior in any market environment, although greater distortion occurs in a mixed competitive-monopolistic marketplace. Under traditional regulation, a firm faces weak, and often distorted, incentives for efficient performance. Further, the intensive information and high regulatory costs associated with successfully carrying out traditional regulation further buttress a persuasive argument in favor of alternative forms of regulation such as PBR.

Although the modified price-cap mechanism or any PBR plan is not problem-free, they are likely to inflict less harm and are more correctable over time with the availability of new information.\textsuperscript{67} Traditional regulation is an American invention that can arguably serve the public interest under certain conditions. These conditions may be so limited as to greatly restrict the successful application of traditional regulation. One such exception may have been the regulation of U.S. and Canadian electric utilities during a time (e.g., the 1950s and 1960s) of stable general economic performance and a highly monopolistic electric-power sector. The author is unaware of other settings involving electric utilities where traditional regulation has been successfully applied.

Perhaps the most convincing argument for a modified price-cap mechanism, or any PBR mechanism, over traditional regulation rests with its closer compatibility to the incentives of firms in competitive markets. Specifically, price caps require a regulated firm to shoulder the brunt of inefficiencies but allow it to benefit from efficient actions.

\textsuperscript{67} The presumption is that traditional regulation contains fundamental flaws that are not mitigable over time. One major flaw lies with the economic incentives given to a utility for operating, and adding capital resources to, its electric power system.
Although traditional regulation accomplishes this to a lesser degree, it is premised on the principle of setting prices on the basis of costs for an individual utility — that is, a cost-plus contract between a utility and its customers.

For an electric power sector that continues to be vertically integrated, PBR can be applied in different ways. One alternative is to develop a PBR plan for unbundled sales service, similar to the modified price-cap plan for Central Maine Power.

Another alternative is to develop some kind of cost-sharing mechanism for fuel purchases and purchased power in addition to a separate modified price-cap mechanism for distribution service. Under this scheme, regulators can set a benchmark and sharing ratio to allow a utility to profit from “beating” the benchmark for fuel acquisitions and purchased power.

In sum, PBR plans for non-competitive services deserve serious consideration irrespective of industry structure. Traditional regulation has inherent flaws, as discussed earlier, that make it undesirable as a ratemaking paradigm. Although PBR can improve the performance of the electric power industry, it must be implemented carefully to assure benefits to consumers.

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88 With regulatory lag, a utility can benefit in the short run from improved efficiency. But, unlike price caps, the utility does not know how long it can retain these benefits before distributing them to consumers.

89 See section two, “Recently Implemented and Proposed PBR Mechanisms” of this report.

90 For example, if the regulator sets a benchmark for the price of purchased power at 4 cents per kilowatthour, the utility could keep some pre-specified share (e.g., 25 percent) of the difference between 4 cents and the price it actually pays.
CONCLUSION

In a restructured U.S. electric power industry, PBR may play a dominant role in the pricing of regulated unbundled services, especially distribution service. “May” implies the possibility that many state PUCs will decide that traditional regulation is as effective, if not more so, than PBR plans in serving consumer interests. The evidence so far indicates that regulators may not be unanimously supportive of PBR plans. Their primary criterion for evaluating a PBR proposal is whether consumers will benefit. Opposition of PBR from consumer groups and others may sway some state regulators to oppose PBR plans and continue with traditional regulation for non-competitive or emerging competitive service in a restructured electric power sector.

In states where PBR is either required by legislation or is looked upon favorably by the PUC, a modified price-cap plan seems most probable. Under this plan, a utility would be motivated to control costs and not impair its existing level of service quality. State regulators widely believe that when faced with strong incentives to cut costs, utilities would have a tendency to compromise service quality.

A modified price-cap plan would also limit the ability of a utility to earn excessive profits on its regulated services. State regulators, at least initially, will likely lack confidence that a pure price-cap plan would benefit consumers and not simply enrich utility investors. For a utility to propose a PBR plan acceptable to its PUC, it must demonstrate that the plan would not only offer potential benefits to utility investors but also real benefits to consumers. This may require that the plan directly and prior to the next formal rate review distributes efficiency gains between these two groups. An earnings-sharing component contained within a proposed PBR plan would help to assure such an outcome.
Finally, price caps seem superior to other PBR plans in coping with the different problems that state PUCs will want to avert during the transitional phases of electric-power-industry restructuring. These problems include cross-subsidization, cost-shifting, and affiliate-transaction abuses, all of which could be extenuated under price caps. Price-cap plans in the telecommunications industry were created partly if not largely because of these problems.