



The Expansion of Incentive (Performance Based) Regulation of Electricity Distribution and Transmission in the United States

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This paper examines the dynamic landscape of incentive regulation mechanisms within the U.S. electric power industry, commonly denoted as performance-based regulation (PBR) or alternative regulatory mechanisms (ARM) in U.S. policy discussions. Emphasis is placed on recognizing PBR as a complementary set of regulatory mechanisms alongside Cost of Service Regulation (COSR) applied to electricity distribution and transmission. A comparative analysis between the advanced state of PBR in Great Britain and the slower progress observed in the U.S. is performed. The study found that despite significant regulatory resource constraints, the growing interest by state regulators in PBR and changes in PBR mechanism designs applied to distribution companies reflect efforts to support state decarbonization and cost containment policies. Little progress has been made in developing and applying PBR mechanisms to the transmission sector by the Federal Energy Regulatory Commission (FERC).

Incentive regulation mechanisms have been applied for many years to the regulation of electric utilities in countries other than the U.S., including Great Britain, Chile, Argentina, Japan, New Zealand, Australia, and Canada. In an earlier paper (Joskow 2014, p. 310), Joskow concluded “Formal comprehensive incentive regulation mechanisms have been slow to spread in the U.S. electric power industry [reference omitted], though rate freezes, rate case moratoria, and other alternative regulatory mechanisms have been adopted in many states, sometimes informally, since the mid-1990s.” The early applications of incentive regulation principles in the electric power sector tended to be very partial (e.g. focused on the performance of generating plants, Joskow and Schmalensee, 1986, p. 39), quasi-automatic

adjustment mechanisms in response to high rates of inflation in the 1970s and early 1980s, or were temporary de facto price cap mechanisms (e.g. short-term rate freezes) that emerged as settlements of rate cases, often in connection with vertical and horizontal restructuring, stranded cost recovery and mergers, especially in the late 1990s and early 2000s as industry restructuring occurred. Since 2015, the situation regarding the applications of incentive regulation mechanisms to electric distribution companies in the United States has changed considerably. Incentive regulation mechanisms of some type have now been introduced into the electricity distribution regulatory process in a growing number of U.S. states.

Comprehensive incentive regulation mechanisms have been or are now being introduced or evaluated in about a dozen states. But these initiatives are never called “incentive regulation” by regulators and policy makers in the U.S. The policy phrases used routinely now are “performance-based regulation” (PBR) or “alternative regulatory mechanisms (ARM).” Despite the extensive theoretical literature and details of optimal regulatory mechanism design in different contexts that has emerged from it, there are very few clearly visible footprints in the policy discussion and the design of PBR mechanisms in practice in the U.S. Nevertheless, several of the more comprehensive mechanisms introduced to regulate electricity distribution in the U.S. have features that can be readily found in the theoretical incentive regulation literature even if the relationships between the theory and applications are not specified clearly.

The goals of mitigating the regulated monopoly’s market power, stimulating cost efficiencies and innovation, while meeting economic and legal constraints that require regulatory mechanisms to allow regulated firms to cover their “reasonable” costs, continue to guide the evolution of PBR mechanisms for electric distribution utilities in the U.S. Efforts to provide incentives to distribution companies to support state decarbonization goals have now been added to this list. Overall, PBR applied to electricity distribution in the U.S. is best viewed as a complement to cost of service regulation (COSR), not a complete substitute, as Laffont and Tirole (1993) recognize.

The use of standard theoretical and empirical PBR concepts in the regulation of electricity distribution has not extended to the regulation of transmission owners and independent system operators by the Federal Energy Regulatory Commission (FERC). The state of PBR applied to transmission companies and the system operator are far more advanced in Great Britain, both during the “RPI-X” (a price cap that is adjusted for general movements in input prices and an assumed target rate of productivity growth) (Joskow, 2014, pp. 305) period (Joskow, 2014, pp. 326-332), and under the more recent RIIO (Revenue = Inputs + Innovation + Outputs) reforms. This is despite, or perhaps because of, the dramatic shift of regulatory responsibility for transmission rates and services from state regulators to the Federal Energy Regulatory

Commission (FERC) since the late 1990s, especially where vertically integrated utilities have unbundled transmission service from distribution and generation. Moreover, non-profit independent system operators (single state ISOs or multi-state RTOs) now manage the operation of both organized competitive wholesale markets for electricity in conjunction with the management of the operation of the transmission networks serving about 2/3 of the retail customers in the U.S. They also have responsibility for transmission planning in their regions and, in principle, across ISO/RTO boundaries. While FERC has introduced a set of targeted incentives to encourage more investment in transmission networks, transmission service price regulation still relies primarily on traditional COSR in a form that is antithetical to the goals of PBR.

There has been a tendency in the incentive regulation literature to characterize regulatory mechanisms as either/or choices. That is, regulated firms either are or are not subject to COSR or PBR. This is a false dichotomy as introducing PBR is not an either/or decision. Finally, the nature of the obligations being placed on electricity distribution and transmission companies in the U.S. have changed considerably, reflecting decarbonization policies, competition policies, and changes in the technologies used in all segments of the electric power sector. This has increased the administrative burdens on state regulatory agencies. The expectation that PBR mechanisms can reduce this burden, whether this is a reasonable assumption or not, has increased [regulatory agencies] interest in PBR mechanisms.

The primary conclusions of this paper are as follows. The design and application of PBR to electric distribution companies in the U.S. has been slow to make progress. However, the pace of change has picked up and PBR mechanisms of one kind or another are being adopted more rapidly by state regulators. It is important to view PBR applied to the distribution of electricity as being composed of a set of “building blocks” that can be applied individually or combined to create a comprehensive PBR plan. These building blocks are often adopted sequentially as regulators become more comfortable with PBR mechanisms. U.S. regulators have now learned that the phrase “PBR” does not necessarily imply a simple forever dynamic price cap



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mechanism. Rather, a dynamic price cap mechanism is one component of a comprehensive PBR mechanism. With uncertainty, asymmetric information, moral hazard, rent extraction goals, budget balance constraints, etc., a simple forever price cap mechanism for electric distribution and transmission companies is optimal only under a very stringent and implausible set of assumptions. These considerations naturally lead to ratchets, performance benchmarking, profit sharing mechanisms, menus of contracts, quality incentives, and targeted incentives consistent with the broader set of policy goals beyond prices and costs.

Overall, the expansion of PBR has been gradual for a number of reasons. These reasons include the limited staff and budgetary resources available to state regulators and misunderstandings by U.S. policymakers of how so-called RPI-X mechanisms applied to electricity distribution and transmission evolved over time in Great Britain to be much more than a simple price cap mechanism.

The changes in the responsibilities of distribution companies in the last two decades have made PBR mechanisms more important and potentially more attractive, especially since the resources state commissions have at their disposal to manage frequent formal rate cases are limited. These changes have also made designing and applying good PBR plans more challenging. Resource limitations have also made it attractive for state regulatory commissions to learn

from each other, to learn from other countries, especially Great Britain, and to rely on a variety of advisors and consultants for education and assistance. State regulatory agencies are now becoming more comfortable with PBR because the packages of PBR initiatives they are now seeing are better aligned with the regulatory challenges they face.

Finally, largely due to the decentralized and heterogeneous structure of the ownership of transmission companies and the reliance on non-profit system operators, there has been little effort to apply PBR mechanisms to the operating costs, investments costs, planning or other performance criteria for either transmission or system operations in the U.S. This is quite different from the experience in Great Britain where PBR, including the more recent RIIO framework, has been applied to transmission owners and the system operator for almost 25 years. The Federal Energy Regulatory Commission (FERC) has used a set of targeted incentives to stimulate investment in new transmission facilities, to create separate transmission companies, and to join ISO/RTOs. Initiatives to expand competitive opportunities for the development of new transmission facilities may be a partial substitute for PBR for transmission owners, but progress here has been slow. Nevertheless, there are a number of options for improving the regulation of transmission owners and system operators that require further evaluation, drawing on the now long experience in Great Britain and other countries.



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References

Link to the full working paper discussed in this brief:

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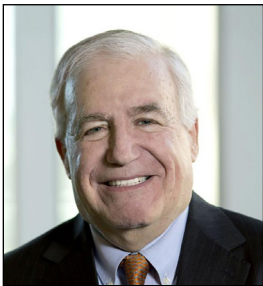
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Joskow P.L. (2014). Incentive Regulation in Theory and Practice: Electric Distribution and Transmission Networks in N. Rose (ed.) Economic Regulation and Its Reform, chapter 5, 291-343, University of Chicago Press.

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