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Multi-Utility Issues at a Glance

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Multi-Utility Issues at a Glance

NRRI's "Issues at a Glance" papers ground regulators in the basics of the electricity, gas, telecommunications, and water utilities. Since so much regulatory activity is driven by individual utility requests, there is a risk of regulation-by-silo: focusing on one industry at a time, creating staff and commissioners with expertise only in individual industries, missing the relationships and commonalities among all four infrastructures.

Many regulatory challenges are in fact common to all infrastructural industries. Mastery of these challenges will aid the cross-fertilization of learning and experience, as well as consistency among regulatory approaches within a single commission. With this goal in mind, we present here thoughts on seven of these common challenges:

1. Monopolies, Competition or Both: What is the "Best Possible Mix of Inevitably Imperfect Regulation and Inevitably Imperfect Competition"?

2. Utility Performance: Are We Insisting on Excellence?

3. Infrastructure Sufficiency: Do Our Policies Plan for the Future?

4. Rate Design: Are We Charging the Right Prices?

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I. Monopolies, Competition, or Both: What is the "Best Possible Mix of Inevitably Imperfect Regulation and Inevitably Imperfect Competition"?

Market structure is the study of "who sells, what they sell, and the rules according to which" they sell. Determining the appropriate market structure, the "best possible mix," is the "central, continuing responsibility" of legislatures and commissions.[1] For most of the 20th century, the market structure for the sale of electricity, gas, telecommunications, and water services was a monopoly, partially or fully integrated. Over the past 30 years, the electricity, gas, and telecommunications industries have probed this question, with differing outcomes and

[1] A. Kahn, *The Economics of Regulation: Principles and Institutions*, Introduction at xxxvii; Volume II at 114 (1970; 1988 edition).

differing levels of satisfaction. At any point in time, in any industry and in any region, this probing continues within commissions and legislatures. Among the questions asked:

1. Does some aspect of the industry's activity constitute a "natural monopoly," meaning that efficiency is maximized by having a single regulated company taking advantage of economies of scale?

2. Does this natural monopoly condition apply only to one product or activity, or are there economies of scope or economies of integration arguing for the economic bundling of various activities, assets, or services?

3. Is it possible that technological change will eliminate the natural monopoly? How do we encourage such change? How do we recognize it? How do we prevent incumbents from blocking the change?

4. Even where a natural monopoly exists, is it possible that the benefits from dynamic efficiency associated with competition will exceed the loss of static efficiency resulting from the breakup of a natural monopoly?

5. If we do authorize competition in a historically monopolistic industry, does the incumbent have advantages that will distort competition? And do regulators have the legislative authority—and political stature—necessary to eliminate these advantages? What monitoring processes are necessary to ensure that experiments with competition produce useful data and responsible evaluations?

The aim of this continuous questioning is to identify each product or service that can be efficiently and feasibly subjected to competition. This assessment must address both economic and technical questions. Economic assessment addresses whether it is more efficient for a product or group of products to be provided by a single competitor or by multiple competitors. Technical assessment addresses whether and how the reliability of a service, especially an interconnected network, would be maintained with multiple providers of a particular service. [2]

[2] For an example of academic investigation into some of these questions, see the following writings of John Kwoka, Neal F. Finnegan Distinguished Professor of Economics at Northeastern University: "Electric Power Distribution: Economies of Scale, Mergers, and Restructuring," *Applied Economics* (Nov. 2005); "Vertical Economies in Electric Power: Evidence on Integration and Its Alternatives," *International Journal of Industrial Organization* (May 2002); "The Comparative Advantage of Public Ownership: Evidence from U.S. Electric Utilities," *Canadian Journal of Economics* (May 2005); "Mergers and Efficiency: Evidence from the U.S. Electricity Industry," with M. Pollitt, Northeastern University Economics Discussion Paper, August 2006.

II. Utility Performance: Are We Insisting on Excellence?

In regulated retail monopoly markets, cost recovery and service quality are determined by state regulators. To be eligible for recovery, costs must be reasonable. And to maintain the privilege of serving the public, quality of service must be reasonable.

Those words are easy to write but difficult to apply. What constitutes effective practices in each industry? Do regulators regularly require utilities to implement these practices? Do they enforce standards by applying consistently a clear set of rewards and penalties? Does the law give us clarity on what standards to apply?[3]

III. Infrastructure Sufficiency: Do Our Policies Plan for the Future?

Our regulated infrastructures are aging—in both chronological and technological terms. The utilities' duty is to replace and modernize; the regulators' duty is to ensure reasonable financing for prudent infrastructure costs.

This situation poses several challenges for utilities and regulatory commissions. One challenge is how to finance the necessary infrastructure replacements such that (a) rates increase gradually (as opposed to sudden spikes in rates), while (b) maintaining the utilities' financial stability. A second challenge is ensuring that the large expenditures are made prudently, so as to win and sustain customer trust and political credibility. Adding to the challenge is the absence, for most utilities, of a designated fund available to replace aging infrastructure—an absence attributable to ratemaking practices that have kept depreciation rates low and have disallowed or discouraged rate recovery of contributions in aid of construction.

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[3] Compare these cases:

> *El Paso Natural Gas Co. v. FPC*, 281 F.2d 567, 573 (5th Cir.) ("It is the obligation of all regulated public utilities to operate with all reasonable economies."), cert. denied, 366 U.S. 912 (1960).
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> *Midwestern Gas Transmission Co.*, 36 F.P.C. 61 (1966) (while "[m]anagements of unregulated businesses ... have no alternative to efficiency," utility management "does not have quite the same incentive;" therefore, regulatory scrutiny must ensure that all costs are "necessary and prudent"), *aff'd sub nom., Midwestern Gas Transmission Co. v. FPC*, 388 F.2d 444 (7th Cir.), cert. denied, 392 U.S. 928 (1968).
>
> *Potomac Electric Power Co. v. Public Service Comm'n*, 661 A.2d 131, 138 (D.C. App. 1995) (statute requires service at "lowest feasible cost").

Consider the water industry. Surveys conducted by the U.S. Environmental Protection Agency (U.S. EPA) suggest that the need for water and wastewater infrastructure improvement and replacement over the next 20 years is between $500 billion and $1 trillion. This dollar level reflects a growing need across the nation to replace water and sewer pipes and other water and wastewater facilities as they approach the end of their useful lives. The reason for this surge in infrastructure needs stems from the population boom and economic growth that took place at the end of World War II. Those postwar years witnessed unprecedented industrial, business, commercial, and residential development, along with the development of water and wastewater infrastructure to support it. That infrastructure is now reaching the age when it is beginning to wear out and needs to be upgraded or replaced.

Now consider natural gas. Some studies project market requirements of over $150 billion in new capital investments for distribution, storage, and pipelines over the next 20 years. Delays in gas infrastructure development could have a significant effect on future natural gas market conditions. (See http://www.npc.org/ and http://www.ingaa.org/cms/31/43/678/45.aspx.) A conspicuous trend in the natural gas industry over the past twenty years has been the predominance of short-term commercial transactions for both gas supplies and gas delivery services. This trend has increased the uncertainty of their future revenue stream.

The questions for regulators are difficult. How should commissions establish clear expectations for utilities' prudent conduct and implementation of infrastructure replacement and asset management plans? What should those expectations be? Recognizing the need for utilities to raise the funds necessary for the increased investment in infrastructure, what financial resources are available to utilities? What rate design options are available? Rate design options include, without limitation, distribution system investment charges, surcharges for non-revenue-producing investment, and single-tariff pricing. What advance commitments, if any, should regulators or legislators make concerning cost recovery so that investors can reduce their risks (thus lowering finance costs) without weakening the accountability necessary to ensure that expenditures are prudent?

IV. Rate Design: Are We Charging the Right Prices?

For most of a century, we have set prices for utility services based on a dominant purpose: providing the utility with a reasonable opportunity to recover its "revenue requirement," i.e., its reasonable costs and a reasonable return on investment. A subordinate theme has been to design prices that induce consumers to consume efficiently. While these two purposes are not inherently inconsistent, they have not enjoyed equivalent emphasis.

Two major pressures have caused regulators to focus more on consumption efficiency. Concerns about climate change and greenhouse gas regulation have spurred the discussion of rate designs that encourage efficiency. The need to replace aging infrastructure has caused regulators to think about the future effects of short-term ratemaking decisions; i.e., just as prior generations invested in our future, when will we start paying for the next generation's future?

We would formulate the key question bluntly: When will we judge rate levels not by whether they are high or low, but whether they are right or wrong?

V. Mergers, Acquisitions, and Corporate Structure: Is Regulation Ready?

Over the past century, our citizens have paid trillions of dollars to support the infrastructure of our nation's electric and gas industries. Corporate structure regulation seeks to make the recipients of those trillions—owners, financiers, and operators of that infrastructure—accountable to the public. To that end, legislators and regulators have asked five questions:

1. Who can acquire and own electric and gas utilities?

2. What business activities may exist within the utility's corporate family?

3. What corporate structure may these corporate families have?

4. What financial structure may these corporate families have?

5. What interactions may occur among the members of the corporate family?

These five questions share a common purpose: to encourage efficient transactions and discourage inefficient ones. But when one views the numerous regulatory decisions in this area, the most frequently unanswered question is the most important: ***In evaluating proposed corporate couplings, how do we ensure that the benefits justify the costs?*** After dozens of mergers, the fundamental economic analysis of whether a merger is, from the consumers' perspective, "worth it," remains unsettled.

Mergers and acquisitions can have at least four possible effects on industry structure: they (a) expand the geographic territory and markets in which a company operates; (b) increase the number and types of products sold by the merged company relative to the pre-merger situation; (c) consolidate the control of infrastructural assets in the affected market, if the merger involves horizontal competitors or providers of essential vertical inputs; and (d) where there is a high acquisition premium, increase the debt borne by the merged entity. While the pace of consolidation ebbs from time to time, since the mid-1980s utilities with interests in all regulated industries have been merging, or acquiring other utilities. Mergers of previously merged companies are not uncommon. The 2005 repeal of the Public Utility Holding Company Act of 1935 introduces more complexity, by allowing electric and gas utilities to participate in conglomerate transactions in which non-utility companies acquire utility companies and vice versa, through new financial arrangements such as private equity buyouts.

The resulting changes to industry structure pose multiple challenges. Multistate mergers make regulatory accountability difficult in our regulatory system, where multiple state commissions and federal commissions have responsibility for differing aspects of the transaction and where there is not a formal means of coordinating these regulatory reviews. Consolidation also raises risks of market power, especially in markets in which competition has not matured.

Indeed, legislative and regulatory efforts to introduce retail and wholesale competition have occurred simultaneously with utility proposals to reduce competition through consolidation trends, raising questions about the consistency of public policy in this area. Merger proponents cite "synergies" from mergers to justify the proposed consolidations, but the analytical methods for measuring these benefits and the regulatory tools for ensuring that promises are kept are underdeveloped.

The synergies issue focuses regulatory attention on the short-term consequences of a merger, such as the possibility of near-term rate reductions. Often the synergies question dominates commission proceedings, pushing aside such larger issues as determining the optimal size and corporate structure of a regulated utility in the state. At the same time, the answer to the question of how much consumers can expect in the way of synergy savings is often elusive. There is no industry standard for estimating likely merger synergies, and typically there is no track record of proven synergies from other mergers by which to forecast likely results from the proposal under review.

Acquisitions of U.S. utilities by foreign firms[4] raise additional questions. Utilities based outside the U.S. may have unfamiliar corporate cultures based on the business practices of their home country. Regulators in the U.S. must understand these corporate cultures in order to evaluate the proposed acquisition of utilities under their jurisdiction. Some of the more obvious differences in practice and outlook come in the area of customer service and customer rights and duties. For example, in the U.K., prepayment meters for energy utilities are common, and are used to hold down defaults by nonpaying customers. In the U.S., prepayment meters are not common—indeed, paid-after-the-fact electric and gas service are some of the only ways that low-income households can establish credit.

Similar issues may arise in the area of service quality standards, affiliate relations, planning assumptions, and the like. Regulators also are concerned with the remoteness of new management taking over a local utility, and the difficulty of gaining access to books, records, and other information about affiliate relations and the parent utility's doings. Such concerns are magnified when the new management lives in a different country, not only physically far away, with a different culture, but perhaps also subject to different rules for regulatory access.

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[4] Examples: Hydro Quebec's parent company bought two Vermont utilities: Green Mountain Power and Vermont Gas Systems. Thames Water Aqua Holdings Gmbh ("Thames"), based in London, England, bought American Water Works, parent of water utilities in approximately 25 states. Thames was the third largest water utility in the world. At the time, Thames was a wholly owned subsidiary of RWE Ag, a worldwide utility conglomerate based in Essen, Germany. Three years later, in 2006, RWE sold Thames Water Holdings plc to Kemble Water Limited, a consortium led by Macquarie's European Infrastructure Funds. As a result, water utilities in 25 U.S. states are now owned by an Australian securities firm. National Grid of the U.K. bought New England Electric System, Eastern Edison Company, and Niagara Mohawk in 2001. Deutsche Telecom bought VoiceStream, a U.S. wireless provider with 300,000 customers.

Regulators must be prepared to process a merger application, understanding the types of issues that routinely arise, the scope of information needed to address the issues, and the options for regulatory action in the face of a proposed merger. Even better, rather than wait for such transactions, regulators should develop their own answer to the question "What type of company should provide essential service in my state?" and then establish standards and procedures that encourage such results.

VI. Technological Change: Should Regulators Support and Stimulate?

When should regulators bless utility investments in specific technologies where the technology involved is rapidly evolving and changing? Telecom regulators have grappled with the challenges of rapidly changing technology and the role of regulation for the last several decades. Outside of telecommunications, utility regulators have faced the introduction of such new technologies as combined cycle generation, different materials for gas pipes, and new filtration and treatment options and requirements in water utilities.

The need to react quickly to rapidly changing information technologies is now spreading beyond telecommunications to other regulated utility industries. Beyond Automated Meter Reading, such utilities are now faced with the option of replacing legacy customer service, metering, billing, and other data management systems with any number of new combinations of software, firmware, hardware, communications technologies, and Internet-based solutions. The industry is working on standards for such applications as two-way communications to advanced meters and communications protocols for home-area networks.

How can a regulator decide? Should a regulator decide? What is the downside of failure to step in and approve one or another technology path? What is the upside? How can regulators maximize the chance that the utilities they supervise will introduce value-adding and cost-saving technologies, and avoid spending money on risky ventures with poor chances of success in the competition for new technologies? Are there principles specific to the area of rapidly changing technology that should be added to the general principles for deciding the timing and scope of regulatory approval of investments in rapidly evolving technologies? Are there rules of thumb (such as maximum payback periods for automatic approval and minimum payback periods for automatic rejection) that a regulator can use to decide whether to intervene and push for or against a particular technology?

VII. Graying of the Work Force: Are Utilities and Commissions Growing and Recruiting the Necessary New Talent?

As the baby boomer generation passes into retirement age, utilities of all kinds face severe reductions in their skilled workforce.[5] Every state commission has a statutory mandate to ensure that utilities provide safe, reliable, and high-quality utility services. Since utility satisfaction of this obligation requires both an adequate and properly trained workforce and sufficient physical plant facilities, workforce staffing and training questions are at the core of any state commission's obligations.

These facts raise two central questions for regulators. First, what is the utility's obligation to identify likely worker shortages and plan for them? Alert utilities have stepped up recruitment and training efforts, realizing that it will take time for them to develop the experience and skills needed to replace recent retirees. These actions have included funding university programs and even reaching into high schools to introduce students to the utility professions.

Second, what is the regulator's responsibility when it comes to gathering facts, establishing performance standards for recruitment and readiness, and evaluating utility performance? What reliable methods exist for commissions to determine whether utilities have met their legal obligations to ensure a properly staffed and trained workforce? What actions are available to regulators to ensure that utilities meet those obligations?

Similar questions apply within state commissions. We must analyze the regulatory challenges likely to arise in the next few generations, and ask: What skill sets and resources are necessary within state commissions to influence developments, hold providers accountable, and ensure effective regulation? To answer this question and to implement the answers requires the attention and cooperation of regulators, utilities, legislatures, governors, and the citizenry.

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[5] Carnegie Mellon University's Electric Industry Center has found that in the electric industry, (i) since 1990, 40% of the workforce has left; and (ii) half are eligible to retire in the next 10 years. Dr. Dennis Ray of the Power Systems Engineering Research Center has stated that "College bachelor's degree programs turn out about 500 power engineers a year vs. nearly 2,000 in the 1980s." *USA Today*, May 17, 2007, Section B.