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Chapter 7

USA Developments: An Overview

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A single frame of a movie provides a snapshot of what is going on. However, multiple frames give a better sense of what is happening over time. By focusing on regulatory developments in 1994 and early 1995, we gain some insights on the technological, political, and strategic forces at work. However, the longer view also warrants some attention so these recent developments in telecommunications and energy can be placed in perspective.

One generation's conventional wisdom becomes another's myth of the past. Interventionist liberal ideology emphasized the fragility and unfairness of markets. Only government regulation could ensure low prices and universal service in capital-intensive infrastructure industries. This view of markets and government is swinging to the other extreme in the USA. New technologies are viewed as eroding incumbent market power everywhere, even protecting small customers from undue price discrimination. Continued government intervention is perceived as protecting inefficient suppliers and providing transfers to politically powerful groups via mandated cross-subsidies. Of course, the truth is somewhere in between these caricatures of markets and governments. The extreme all-or-nothing views of command-and-control regulators and *laissez faire* free marketers are each deficient, although the latter approach identifies important policy lessons regarding incentives and the achievement of innovative efficiency.

Although this chapter describes recent developments in telecommunications and electricity, regulators face challenges in other industries as well. The natural gas, rail, and water industries are undergoing transformation to different degrees. In late 1985, the Federal Energy Regulatory Commission's Order 636 restructured the first industry as it instituted an open-access natural gas transportation program. Unbundling transportation has introduced new risks and opportunities for local gas distribution companies. State commissions are now addressing retail competition at the local level. In the second industry, railways have been permitted greater pricing flexibility since the Staggers Rail Act of 1980. The Interstate Commerce Commission monitors the financial condition of railroads, consolidations, abandonments, and other activities, but it does not impose rate of return regulation on private railways. Trucking has been substantially deregulated. Water utilities represent the most fragmented and pluralistic industry, with thousands of private and municipal suppliers. Water quality standards related to pollution and wastewater are

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established under the U.S. Environmental Protection Agency. In addition, one state agency might regulate environmental impacts while another issues permits regarding withdrawals from groundwater. The state public utility commission regulates rate of return and prices of investor-owned utilities -- only a portion of the total. The fragmented regulatory authority limits opportunities for integrated resource planning. There is evidence that real water prices are rising more rapidly than income (Rubin, 1994, p. 79). Clearly, these three industries present policy-makers with a wide range of issues.

The fundamental issue facing policy-makers in telecommunications and electricity involves ensuring that the benefits of competition flow to those who successfully commercialize new services and introduce new production processes and to consumers who desire those services. Addressing residual market power in these two industries remains a key problem. Examples are presented below to illustrate regulatory trends in the USA. The irony is that the transition to greater competition involves new types of regulation rather than less regulation.

Telecommunications

The U.S. Federal Communications Commission is the independent regulatory agency responsible for regulating all interstate and foreign communication by means of radio, television, wire, cable, or satellite. The FCC requires common carriers to furnish service upon request and at reasonable rates. Common carriers must file tariff schedules (lists describing services and charges) for review and regulation by the commission. The carriers must show that all charges, practices, classifications, and regulations are just and reasonable. If the commission concludes that the rates are too high or provide an excessive rate of return, it may suspend the terms of the filing. Among other responsibilities, the FCC regulates with price-caps AT&T and the portions of local exchange companies (LECs) affecting interexchange competition, monitors the reallocation of costs of telephone service between local and long-distance customers, ensures equal access to the long-distance network, monitors the degree of competition among cable operators, and (currently) oversees their rates.¹

With AT&T divestiture, Local Access and Transport Areas (LATAs) were created to delimit the geographic areas; the LECs could transport telephone calls within broadly matched standard metropolitan statistical areas (SMSAs) and adjacent rural regions. Interexchange companies (IXCs) such as ATT, MCI, and Sprint interconnect with LECs to provide long distance (interLATA) service. Today LATAs do not necessarily mesh with cellular or PCS territories or cable TV franchises, yet firms using these technologies are likely entrants into telephony service. Furthermore, extended area service (EAS) is expanding the size of "local" calling areas, as communities with substantial economic and

¹Note that LEC regulation involves the sharing of profits, while the AT&T price caps do not.

social ties are brought into the same local calling territory. Such bundling could also be viewed as enabling LECs to expand their markets under existing regulatory arrangements.

The markets for intraLATA and local communications are primarily state regulated, with Federal regulators retaining authority over parts of the local carriers that influence interexchange competition, such as access, interconnection, transport, and switching. Every state has some agency responsible for telecommunications regulation of LECs. Public service commission (PSC) authority, resources, and regulatory policies vary widely by state. The 1993 U.S. local communications market was \$97.7 billion in revenues. Local Exchange Carriers (LECs) account for approximately \$91 billion (93.2%), Competitive Access Providers (CAPs) \$0.2 billion (0.2%), and Cellular \$6.5 billion (6.7%).² In the intraLATA toll market, state regulators may allow resale and/or facilities-based competition for intraLATA toll services. Some states prohibit intraLATA competition, which may hold down local rates since this policy reduces the likelihood of revenue-erosion induced by competition. In states where competition is not prohibited, state regulatory policies still affect the degree of competition, e.g., type and quality of transmission, switching, and access available to competitors.

In the market for local communications, states are clearly adapting to technological and economic changes, dropping rate of return (ROR) regulation and permitting entry against the incumbent LEC. According to a recent study by Davis, Zearfoss, and Reed (1995), thirty-five states have alternatives to traditional ROR regulation. For example, 11 states have implemented price caps and another ten have them under formal consideration. Others have revenue sharing (Idaho and Oregon) and profit sharing (Florida and Nevada) mechanisms or make distinctions between basic and competitive services. Sharing mechanisms often result in revenues being retained by the supplier. Sometimes revenues are allocated to network investment or directly to consumers via rebates. Competition in switched local service has been allowed in 13 states, with 16 more formally considering full local competition. Of course, the terms and conditions of interconnection access will ultimately determine the rate of entry, but the trend is clear. In addition to state regulation, municipalities may levy franchise fees and right-of-way charges that affect entry and competition. A regulatory concern is that these fees may be discriminatory.

A fundamental goal of the FCC has been to encourage universal telephone service (UTS). The carrier common line charges and residual interconnection charges paid to LECs by IXCs per minute of access provide about \$10 billion per year towards keeping local service prices low.³ To the extent that these per minute charges exceed incremental costs, uneconomic bypass is encouraged. These cross-subsidies are at the heart of current

² Jamison (1993).

³The estimates are from Jamison (1994). The effectiveness of such transfers in promoting universal service is questioned by many. See Kaserman, Mayo, and Flynn (1990).

regulatory concerns for competition in local exchange and the potential re-entry of the regional Bell operating companies (RBOCs) into interexchange markets. Since divestiture, the regional holding companies have faced line-of-business restrictions that prohibit them from offering interLATA services. Several proposals currently before the U.S. Congress may drastically alter the present market structure by reducing the line-of-business restrictions on the RBOCs and setting new rules for interconnection and unbundling of the network. These proposals may pave the way for direct competition among LECs, cable carriers and IXC. With these proposals and continued adoption of new technologies, the LATA definitions that currently partition the local and long-distance markets will become obsolete. State and Federal regulatory authorities will overlap to a greater extent. Many states have assumed a reactive stance, waiting for the outcome of Federal regulatory change. Some states, such as New York and California have taken a more proactive approach, testing the competitive waters. Paramount among Federal regulatory concerns is the need for an equitable, consistent, unified policy that fosters competition and innovation, and results in compatible technologies with minimal inefficient duplication of facilities. Translating these concerns into a coherent and consistent policy has not come easily.

Jurisdictional issues arise to complicate policy-making. For example, New York, California and other states have filed appeals on the October 18, 1994 Ninth Circuit Court decision upholding the FCC's preemption of state rules regarding customer proprietary information and structural separations rules for BOC provision of "jurisdictionally mixed" enhanced services. At the national level, state regulators are very concerned that federal telecommunications legislation will shift oversight to the FCC of carrier of last resort obligations, intrastate regulations for unbundling, competitive entry into rural areas, and some local rate adjustments.

A series of New York Public Service Commission (NYPSC) decisions has created what may be the first competitive market in local service. The Rochester Telephone Corporation (RTC) restructured itself into a basic network services company and a competitive company, Frontier Communications -- regulated as a nondominant carrier by the NYPSC. Rochester provides unbundled services (loop, switching, and transport functions) as well as interstate access. The FCC approved waivers of the Part 69 Rule to enable Rochester to recover access charges in a manner appropriate in a competitive marketplace involving resellers. Some potential entrants, including AT&T, question whether those rates facilitate entry. The Rochester Plan provides one model for introducing competition into the local loop.

In May 1994, Maryland became the second state to open the local market. Metropolitan Fiber Systems (MFS) was allowed interconnection to compete for business and government customers. Thus, MFS moves from being a competitive access provider to a full service supplier, including long distance, local, and other services. Within days, a local cable company owned by Southwestern Bell Corp. filed with the state PSC to provide telephony service to residents.

To illustrate how other state PSCs are beginning to promote competition, we note that 6 commissions have implemented intraLATA toll presubscription, 7 have required network unbundling, and 15 have established collocation standards. Each of these points raises important issues. The first addresses how intraLATA service providers are selected when competition is initiated. Network unbundling determines the network services and functions available to entrants. Collocation involves competitors' ability to physically locate switching and other equipment inside or near LEC facilities. Formal consideration of these three issues is occurring in over one-quarter of the states. For example, after the FCC's 1993 order allowing competitors to interconnect with LEC networks for interstate switched access services, a major competitive access provider (MFS) received co-carrier status in New York, Illinois, Maryland, Washington and Massachusetts. It had applied in 8 others by mid 1995. Similarly, panels and task forces are studying distance learning, telemedicine, and other aspects of advanced telecommunications infrastructure in almost every state. For example, in September 1994, Texas PUC proposed that health facilities experimenting with telemedicine receive a 25% discount on ISDN services.

Public policy continues to evolve in response to innovations and commercial opportunities. The trend has been towards deregulation and flexible pricing for competitive services. As noted earlier, if a firm or market is deregulated, it is not necessarily unregulated. States (and cities) often extract commitments for specific types of network modernization. Thus, entry conditions differ widely across states and even within state regulatory jurisdictions. Dyslexic fans of acronyms observe that state PSCs (Public Service Commissions) may be reconstituted into CSPs (Competitive Service Police)!

State commissions also tend to have fairly broad responsibility for ensuring that service quality standards are met. For example, the Idaho Commission ruled (December 1994) that 25% of US West's regulated revenue would be placed at risk until service quality decline was reversed. Similarly The Colorado PUC reached an agreement with US West to provide \$4 million for public service projects as "reparations" for service quality violations occurring in 1993 and 1994. Monitoring and encouraging quality becomes especially important under price cap regimes (Berg and Lynch, 1992).

In October 1994, the FCC passed an order on Video dialtone (VDT) to facilitate increased LEC involvement in the videoservices market. However, it retained the common carrier aspects of the platform, so other programming suppliers have access to VDT. It renounced its prior assertion of exclusive jurisdiction -- recognizing a role for states. The statement also reiterated a desire to avoid cross-subsidization from telephone ratepayers and prevent predation against cable systems.

Telecommunications markets are in transition. Policy-makers recognize that they can limit excessive profits by depending on competitive pressures or on regulations. There is widespread agreement that traditional return on rate base regulation (and associated cost allocation procedures) diminish incentives for efficiency. However, price caps are no panacea. Periodic reviews of price-cap plans tend to result in tighter regulation in response

to revealed firm profitability (i.e., a "ratchet effect"). When this happens, incentives to reduce costs and price efficiently are diminished. The composition of baskets, the baseline prices, the productivity X-adjustment, adjustments for exogenous developments, and plan duration represent other points for debate.

Long distance contributions to covering costs of the local loop (via access charges) comprise over half the "cost" of interstate calls and encourage bypass -- through alternative access providers. The price caps applied to LEC access charges have been under review by the FCC. In May 1995, the FCC issued a Report and Order with an "interim" plan allowing LEC's to choose one of three productivity ("X") factors: 4.0, 4.7, or 5.3 percent. The low performance targets are linked to lower rewards, with the 5.3 factor involving no sharing or rate of return caps. Additional downward pricing flexibility was facilitated. Furthermore, a decrease in base rates of up to 2.8 % was ordered, applied to the index, rather than rates -- since actual prices are less than the index in some jurisdictions. The reinitialization of access prices looks like a "ratchet" effect -- tightening regulation when profit (or productivity) performance turns out to be higher than had been previously expected.

There is much concern over creating a "level playing field" during this transitional phase. For example, the FCC has rules that limit BOCs use of Customer Propriety Network Information (CPNI) in marketing services to customers. Customers can request that information regarding calling patterns be denied to marketing personnel. Potential demands for enhanced services and telephony appliances (customer premises equipment -- CPE) can be gauged using these data bases. Balancing customer privacy with efficiency and competitive fairness has raised this concern within state and national jurisdictions. Currently, third parties must obtain permission from customers to obtain billing or other information from LECs. Given the strategic alliances developing between LECs and other suppliers, the FCC is continuing to examine alternatives to current rules.

The common thread through Congressional hearings and proposed legislation, National Telephone and Information Administration (NTIA) recommendations state initiatives, and FCC opinions and policies is the need for a modern national telecommunications infrastructure. In the debates over transitional regulation, six issues warrant particular attention:

- 1) In the transition to competitive markets, are price caps or sharing rules superior for encouraging cost reductions and the introduction of new services? Does frequent price cap review equate with ROR?
- 2) Are there "essential facilities" in telecommunications; and what are the economies and problems associated with vertical integration? What concentration ratios and entry conditions are likely to characterize deregulated telecommunications markets?

3) Should the goal of universal basic (dial-tone) service be replaced by a goal of universal broadband service?⁴ Is the issue one of timing or actual access to two-way video communication? How will lives be affected by the presence (or absence) of particular enhanced telecommunications services?

4) What are the levels of subsidies currently in place? Are there more efficient ways of obtaining revenues to promote universal service? Should one carrier be required to provide ubiquitous service, serving as a supplier of last resort?

5) What kinds of market structures are most likely to promote innovation? Who should bear the risks associated with the massive infrastructure investments expected over the next two decades?

6) Do we really need a "national" infrastructure policy at all? Given the uncertainties about the optimal configuration of suppliers, would it be better to allow different approaches to emerge, so that the diffusion of the best ideas arises via the competitive marketplace instead of through bureaucratic processes?

Another issue is number portability. In January 1995, the FCC identified key principles for the administration of the North American Numbering Plan and applied them to an area code proposal by Ameritech for dealing with scarce numbers for the Chicago area. The proposal would have required that cellular and paging carriers to surrender the 708 code currently assigned (and created a new "overlay" area code). The FCC saw this "take-back" as unjust and unreasonable. Such discrimination among technologies or carriers raises concerns regarding open entry and access. The declaratory ruling illustrates the fundamental importance of interconnection issues.

Similarly, taxes and other jurisdictional issues arise with entry that erases traditional geographic boundaries. Property taxes will be paid by all firms. Also, sales taxes are often levied on CATV and other services. There is a concern that the information superhighway could be adversely affected by local authorities. Are requirements that a PCS tower on a public building involve exceedingly high payments to the city a legitimate use of local power? Are requirements to improve a city park a reasonable quid pro quo? The information superhighway issue has been labeled one of Highway Beautification vs. Highway Robbery. A similar problem surrounds payments for pole attachments -- whether owned by a municipal utility, an investor owned electric utility, or a LEC. The FCC has oversight for pole attachments, but the issue of PCS stations is quite similar.

Political pressures influence public policy. Congress recently re-regulated cable TV in response to extensive consumer complaints about poor service and exorbitant rates.

⁴Broadband technology supports data rates in excess of 45 Mbps (Megabits per second): "...an integrated, all-fiber, all-digital, two-way, high-speed network." (Egan, 1991, p. 4)

Some view the FCC's ultimate goal as fostering competition by allowing telephone companies to enter cable television. However, the FCC seems willing to defer to the courts on this issue. A clear directive from Congress could alter the situation. Several Congressional proposals may drastically alter the present market structure in telecommunications and cable. The proposals involve

- i) lowering the line-of-business restrictions on the regional Bell operating companies (RBOCs),
- ii) establishing a test for appropriate RBOC entry into new lines of business, and
- iii) setting procedures for establishing rules for interconnection and unbundling of the network.

In addition, electric utilities are urging Congress to pass legislation that allows them to compete in telecommunications using their fiberoptic networks.

Even without new national legislation, regulatory agencies change and evolve. Reflecting the auctioning of the Personal Communications Systems (PCS) licenses, in December 1994, the FCC Wireless Telecommunications Task Force officially became a "Bureau", overseeing policy and the administration of resource-spectrum auctions, cellular, paging, PCS, and other services. The \$7 billion raised from the auction should serve as a catalyst for additional auctions in the future. As entry into the local exchange market occurs via this technology, deregulation of telephony will have an even more significant impact on prices and new services. There will likely be multiple lanes (technological platforms) on the information superhighway -- but establishing different rules for each lane is likely to be highly inefficient. In another development, in September 1994, the FCC granted ATT's request to transfer control of McCaw's more than 400 radio licenses (including 30% of the nation's top 200 urban areas). FCC approval of the merger was justified in terms of increasing consumer choice (via the promotion of competition) and enhancing the nation's capabilities for operating in the global marketplace.

Emerging technological developments will continue to condition regulatory and corporate activities. The dramatic success of Internet and its progeny illustrates the ability of innovative applications to elude regulatory constraints. Voice e-mail substitutes for local and long distance calls. Mosaic has integrated a range of Internet Services, including the World Wide Web -- defined by the National Institute of Standards and Technology (Framework, 1994, p. 6-13) as "a collection of interconnected information hypertext servers and repositories". Portions of the information superhighway are actively utilized by scientists, high-tech researchers, and large businesses.

Recent partnerships and strategic alliances are transforming the industry. They tend to link transport and content providers, often using a variety of technologies:

MCI announced in May 1995 that it can invest up to \$2 billion for 13.5% of Rupert Murdoch's News Corp (which owns Delphi Internet Services, Fox television network, and Sky and Star satellite services, to list a few).

British Telecom paid \$4.3 billion for 20% of MCI, gaining access to the US market and adding to its global capabilities.

Sprint established a joint venture with three major CATV systems (TCI, Cox and Comcast) to provide wireless PCS. It is also forming a global alliance with France Telecom and Deutsche Telekom.

US West purchased a 25% share in Time Warner's entertainment unit -- providing content for US West and local telephony capabilities for Time Warner's cable systems.

Tele-TV Venture was formed by Bell Atlantic, NYNEX and Pacific Telesis for the development and acquisition of programming.

Ameritech, Bell South, and SBC established a programming project with Disney.

Bell Atlantic and NYNex merged their cellular operations and joined with USWest and AirTouch Communications to offer PCS.

AT&T paid \$11.5 billion for McCaw Cellular Communications.

IBM and GTE have teamed up to provide IBM data services via GTE cellular remote laptops.

The pace and pattern of new services will be influenced by national and state regulatory constraints, but fundamental economic forces will ultimately reconfigure the industry in ways that are consistent with the emerging technologies and commercial opportunities.

Electricity

The electric energy industry lags behind telecommunications in terms of competitive pressures, but regulatory roadblocks to competition at various stages of production are beginning to fall. Traditionally, most regulatory authority has been vested in the states, so the system is conducive to regulatory innovation. However, for the past two decades, national legislation has been a major factor shaping entry conditions. The process of evolution within the American regulatory environment is driven by wider adoption of approaches that have been successfully implemented in a few states. This heterogeneity also results in confusing and sometimes contradictory state regulatory regimes. ROR on rate base regulation has characterized the industry, with customer-class cost allocation rules, fuel adjustment clauses, and management audits further constraining prices and revenue requirements.

The evolution of US regulatory policy illustrates changing attitudes towards the efficacy of competition in promoting efficiency. At the same time, concern over environmental impacts has placed new objectives onto the regulatory agenda; the new instruments for achieving new objectives raise complex issues. For example, state-mandated (utility-funded) conservation programs may be inconsistent with competition at the generation stage, especially if retail wheeling is widely adopted. As price is driven towards incremental cost, funds for programs dry up. Nevertheless, most industry observers expect vertical disintegration and partial deregulation to continue.

The interests of various constituencies are tough to reconcile. Independent power producers (IPPs) are highly leveraged; there is concern that financial and operating risks will be shifted to consumers who have few alternatives. The National Association of Regulatory Utility Commissioners (NARUC) wants to preserve the flexibility of states so that state PSCs can craft policies which fit their unique circumstances. Groups benefiting from current state regulations also want to retain "local" control -- preserving their relative benefits.

The American Public Power Association (APPA) supports the agenda of municipally-owned utilities. The National Rural Electric Cooperative Association (NRECA) seeks retention of rules that assist rural electric utilities. At the national level, FERC oversees wholesale and transmission issues, while state PSC regulate facility additions and retail rates. The conflicting pressures and overlapping jurisdictions make coherent policy development very difficult. For a description of New York's policies and burdens borne by incumbent utilities, see Okure (1995).

Price signals are being given greater prominence, although regulators tend to avoid dramatic changes in rate design for fear of political repercussions. Running counter to the role of prices as signals is another regulatory innovation: Electric Rate Adjustment Mechanisms (ERAMs). One such ERAM is the revenue decoupling mechanism (RDM) which attempts to sever the link between incremental utility sales and incremental utility profits. Thus, RDMs have been adopted in several states as a way to neutralize the disincentive for utilities to offer conservation programs when price is greater than incremental cost. Suffice it to note that authorized (rather than realized) revenues drive profitability -- leading to a potential for corporate gaming and inefficiencies. Most states continue to use the more traditional price calculation mechanisms, while designing specific policies to encourage conservation.

Historically, prices for different customer groups were set using cost allocation procedures. Revenue "requirements" were determined from top down -- with minimal attention to incremental cost causation. Today, prices and incumbent investments in generating capacity are constrained by competitive alternatives -- induced by regulatory promotion of cogeneration and independent power producers (IPPs). Thus, in non-core (industrial) markets, customers have alternatives in the form of self-generation or geographic re-location. When revenues from some customer groups fall short of "allocated" costs, utilities experience financial pressures. Core (residential) customers can flex their political

muscle to avoid rate increases, resulting in realized returns becoming a residual. Rates of return were never "guaranteed"; rather, they were "allowed". However, they have they have become more problematic in a world where traditional entry restrictions are being set aside.

Shifts among fuels and between electricity and fuels characterize the energy sector at all times. Relative prices change, and technologies (including appliances) for using alternative forms of energy also change. Deregulation will tend to promote least cost supply (which may involve seasonal fuel-switching). The bottom line will be determined by whether gas contracts, coal supplies, or renewable resources offer advantages for real savings.

Nonutilities supply almost ten percent of all electric power in the U.S., and between 1991 and 1994, they built over half of all new capacity. Barriers to effective competition were dramatically lowered by the Energy Act of 1992. The courts and regulatory agencies will mediate its impact, but the trends are clear. As layers of regulations have accrued, and some deregulation has occurred, the overall incentive impacts are difficult to untangle. Both increased and decreased flexibility occur for managers, depending on the particular decision variable. For example, rate design (including decoupling) and environmental issues are investigated in generic workshops (often collaborative processes) and utility-specific hearings.

National regulatory policy has leaned in the direction of pro-competitive market structures at the generation level. Since PURPA's promotion of cogeneration via qualifying facilities (QFs) and of IPPs, national policy has continued to view wholesale competition as stimulating real savings for final demanders. Vertically integrated firms under ROR regulation will be greatly affected by new options available to them (and their customers). The Energy Act of 1992 created Exempt Wholesale Generators (EWGs) owned by holding companies with regulated subsidiaries. This serves as another vehicle for introducing new players into new geographic areas. Access to transmission can be mandated by FERC. Terms and conditions of transmission access has become a significant regulatory issue. When large buyers gain access to alternative suppliers via the transmission network, retail markets change dramatically. The problems for network coordination, construction, reliability, and pricing are substantial.

In 1994, both California and Michigan established programs designed to promote retail wheeling. The regulatory problems are substantial. Larger customers who have the ability to shop will tend to pay market-based (incremental cost) prices, leaving core (residential) customers at risk for covering the costs associated with higher cost capacity. The fear of so-called "stranded investment" blunts efforts to open up local markets. The short run impacts of competition differ from the long run impacts. In the short run, the efficiency gains may not be substantial, given the demand elasticities. However, the monetary transfers could be significant. Over the long run, the movement away from cost-based regulation is likely to further stimulate cost-containment and improved price signals.

PURPA-induced competition in the wholesale market for electricity has increased the importance of transmission access as utilities try to find the lowest cost suppliers whose

generating facilities may be located far from the utilities' retail markets. The use of one utility's transmission network to facilitate a trade between two other utilities is called "wheeling." The provision of EPAct (1992) requiring utilities to offer wheeling to third parties for a fee is possibly the biggest change in the industry in more than fifty years.

In April 1994, the California Public Utilities Commission's (CPUC) proposed to allow big and medium sized electricity buyers to buy power from any source while requiring utilities to transmit that power. By 2002 even homeowners could be permitted to choose their power company. The CPUC proposal also included plans to supplant the current investment and cost based ratemaking regime with one designed to reward utilities for operational, managerial, and investment efficiency judged against a series of benchmarks.

After a hearing process of over a year, the California PUC announced what some have termed as an "interim" electricity plan. Commissioners rejected a plan which would have required vertical disintegration of the investor-owned firms, separating transmission and distribution companies from generation companies. Under this "free market reform" scenario, even household customers would have had choice of supplier by 1997. The "moderate restructuring" alternative which was adopted in May 1995 allows continuation of vertical integration, with IPPs, EWGs, and utilities providing power to a pool. The plan includes provisions for addressing stranded capacity (generating capacity whose book value exceeds its true economic value in a competitive setting). On the same day, the PUC approved a plan by PG&E (the nation's largest electric utility) which will reduce prices for power produced at its Diablo Canyon nuclear plant. The compromise plan reduces PG&E revenues by \$2.1 billion relative to that obtained under a 1988 agreement. Stranded capacity gets addressed (with investors taking a hit)!

In the current California Pool Plan, generators and buyers would generally sell and purchase electricity at single rates, with transmission and distribution costs included in the final retail price. Long term supply contracts would be available to some large power users ("virtual direct access" -- similar to retail wheeling). However, the state legislature has held related hearings and threatens to be the final arbiter of industry restructuring. Implementation issues are still under review and continue to breed controversy.

As in telecommunications, the courts, regulators, and legislators represent points at which major changes can be blocked by powerful economic constituencies. Environmental groups, industrial demanders, small customers, and the utilities themselves all vie for advantage in the transition to more competitive markets. Resolution of the issues such as funds for conservation, rate restructuring, and stranded capacity are seldom "resolved" -- they just get passed on to the next set of decision-makers. Of course, this leaves lobbyists with plenty to do under whatever scenario is "temporarily" adopted. Thus, while various groups may propose comprehensive plans, the most likely changes are incremental in nature.

Continued regulatory and legislative debate can be expected on transmission access and pricing, bidding procedures, and alternative regulatory constraints. We can already see

the outlines of changes that are altering the regulatory landscape. Some believe that competition has become an objective -- rather than a mechanism for achieving economic objectives. Certainly, national legislation and FERC have promoted entry into generation markets as a way to keep energy costs down. With this thrust has come pressure for transmission access at a fair price. In addition, we continue to have pressure to expand conservation side programs which partly obviate the need for new capacity -- whatever the ownership.

Environmental concerns have been addressed by trying to curtail the growth in the demand for electricity on the one hand and by limiting emissions on the other. Most state agencies take environmental externalities into account while making their decisions. The Clean Air Act Amendments (1990) limited sulphur dioxide emissions, leading to a system of tradeable emission allowances. However, to date only about a quarter of the state PSCs have established policies for accounting treatment of emission allowances for rate-making purposes. The issue remains fraught with uncertainty regarding regulatory treatment (Rose, 1995). This use of market processes rather than mandates means that emissions will be reduced at far less cost than would have been the case. The Energy Policy Act (EPAct) of 1992 provides tax incentives to generators that use wind and closed-loop biomass systems. It also allows tax-exempt bonds to be issued to finance mitigation of environmental damage from government owned and operated hydro-electric facilities.

Because of environmental concerns, several state jurisdictions have implemented environmental adders when comparing supply options with demand side management (DSM) options. That is, a specific number for external costs is used when selecting a generating capacity option and when choosing between new capacity and DSM programs. Environmental concerns will continue to raise issues, including the appropriate calculations for incremental environmental damages. New mechanisms for addressing the benefits and costs of conservation need to be developed. With competition continuing to put traditional utilities under severe pressures, regulation as usual is brought into question.

PURPA and failed investments in nuclear energy have played significant roles in the once staid electric industry's dramatic and sometimes painful transition since the early seventies. Nuclear plants were plagued with safety problems and cost-overruns that the regulators were unwilling to pass on to the consumers. PURPA, on the other hand, has shown that there are viable economical alternatives to utility owned generating capacity. Recently, a number of states have moved to replace the avoided costs method by competitive bidding for supply contracts.

Reduced demand growth, nuclear plant cost overruns, environmental costs, and continued low natural gas prices have led to excess and high cost capacity whose economic value is lower than book value. The resolution of the stranded investment problem has been linked by some to the terms and conditions of transmission access. There had been a "regulatory compact" under which capacity was built: some argue that changing the rules of the game is unfair. As Costello, Burns, and Hegazy (1994) note, vertically-integrated

utilities, conservationists, and environmentalists tend to oppose retail wheeling. For the former, monopoly franchises are lost as competitors threaten to take away customers. The two latter groups fear reductions in (or elimination of) utility-funded Demand-Side Management (DSM) programs. Also, competition threatens the forms of Integrated Resource Planning (IRP) which emphasize environmental costs above and beyond those addressed in national laws. Those supporting retail wheeling argue that sunk costs ought to be ignored for policy purposes -- leaving investors holding the bag. Large industrial and commercial customers do not want to bear transition costs. Certainly, when competitive pressures are allowed to emerge, regulators are affecting both efficiency and fairness.

The future will continue to yield regulatory experiments in different states and regions of the country. Cullen et. al. (1994) have outlined the policy options facing states -- focusing on Wisconsin. They conclude that different degrees of competition can be fostered under three alternative scenarios: the flexible-regulation model, the incremental-change model, and the commercial (or marketplace) model. Unless states are pre-empted by federal initiatives, we can expect to see a wide range of policies emerging in various states.

Over time, the identification of additional regulatory objectives has led to the introduction of additional instruments (or rules) to enable those issues to be addressed. Some of the new policies reduced the likelihood that "old" objectives could be met. Because of this, more attention is being given to avoiding potentially incompatible goals. In some states, for example, the requirement to buy IPP output at relatively high prices promoted the entry of new suppliers - but conflicted with other objectives. Commissions are beginning to recognize problems with such mandates.

The regulatory community today is the scene of a lively discussion on the possible ways of making the system more efficient without harming core customers who face few alternatives. Rapid changes in technology as well as in the structure of the electric industry may well cause substantial changes in the not too distant future. In the short term, the industry is likely to move towards increased competition wherever possible. The recent California proposal for phasing in retail wheeling illustrates this trend.

Concluding Observations

Some read the history of regulation, and conclude that new initiatives are *not* called for. Shepherd (1992) states, "The 1980s search for a mechanical, automatic method of 'incentive regulation' was largely illusory. In complex situations, there is no easy substitute for sophisticated, effective regulation." (p. 71) In contrast to Shepherd, Strasser and Kohler (1989) describe the overlapping command and control mechanisms comprising cost of service regulation as tools which are ". . . at best blunt and crude, preventing the worst abuses, but not sharp enough to encourage anything better. An incentive approach promises more." (p. 137) Later they state, "Controls can keep managers from doing specific things, but they cannot command managers to use management processes energetically and

creatively to tackle the problem of more efficient operation, although improved processes are essential to improved performance." (p. 169) Movements away from cost-of-service regulation are illustrated by profit sharing via banded returns and various forms of incentive regulation. Generalized incentive regulation could be characterized as decoupling prices from costs via new regimes, such as yardstick regulation or price caps. As regulators move away from command and control micromanagement, they are lowering entry barriers (especially in telecommunications) and utilizing incentive regulation in those markets with residual market power.

References

- Berg, Sanford and John Lynch, "The Measurement and Encouragement of Telephone Service Quality," *Telecommunications Policy*, April 1992, pp. 210-224.
- Berg, Sanford and John Tschirhart. *Natural Monopoly Regulation: Principles and Practice*, NY: Cambridge University Press, 1988, pp. xii-564.
- Costello, K. W., R. E. Burns, and Y. Hegazy, "Overview of Issues Relating to the Retail Wheeling of Electricity," National Regulatory Research Institute, May 1994.
- Cullen, L., G. Mathis, D. Ray, and R. Stevenson, "Policy Options for Competition in Wisconsin's Electric Power Industry," Wisconsin Public Utility Institute, September 1994.
- Davis, V. W., N. Zearfoss, C. E. Reed, "Aspects of Telecommunications Reform: Results of a Survey of State Regulatory Commissions," National Regulatory Research Institute, February 1995.
- Egan, Bruce L. *Information Superhighway: The Economics of Advanced Public Communication Networks*, U.S.A.: Artech House, pp. vii-187.
- "Framework for National Information Infrastructure Services," U.S. Department of Commerce, National Institute of Standards and Technology, NISTIR 5478, July 1994.
- Jamison, Mark A., "An Introduction to the Pricing of Telecommunications Service," NARUC Annual Regulatory Studies Program, 1994.
- Kaserman, D.L., J.W. Mayo, and J.E. Flynn, "Cross Subsidization in Telecommunications: Beyond the Universal Service Fairy Tale," *Journal of Regulatory Economics*, 2(3), September 1990, pp. 231-249.
- Rubin, Scott, "Are Water Rates Becoming Unaffordable?" *American Water Works Association Journal*, 86 (2), February 1994.
- Shepherd, William G., "Regulation and Efficiency: A Reappraisal of Research and Policies," NRRI Occasional Paper, July 1992, pp. xvii-85.
- Strasser, Kurt A. and Mark F. Kohler. *Regulating Utilities with Management Incentives: A Strategy for Improved Performances*, NY: Quorum Books, 1989.
- Kenneth Rose, "Twelve Myths of Allowance Trading," *The Electricity Journal*, May 1995, pp. 64-65.

Wayne Olson and Ken Costello, "Electricity Matters: a New Incentives Approach for a Changing Electric Industry," *The Electricity Journal*, January 1995, pp. 28-40.

Tom Okure, "Competitive Pricing of Energy Services in New York State: Current Trends and Issues," *The Electricity Journal*, January 1995, pp. 41-53.