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# Special Report



Washington Research Council

November 7, 1997

## Unscrambling Telecommunications Policy

### Introduction

With the Telecommunications Act of 1996, Congress intended to redirect national telecommunications policy and promote competition to accelerate technological development. The Act altered the responsibilities of state regulators, who will now manage the transition to competitive markets. State legislatures must determine the proper role of government in the new competitive era.

In many ways, the Act was inevitable. Competition, spurred by technological advances, had been building for more than 20 years. The convergence of computer and telecommunications technologies had transformed their role in the economy. Increasingly, policy makers have come to see the quality of these industries as a key determinant of economic growth. The stakes are high and the pace of change rapid. A fundamental restatement of telecommunications policy was required.

In Washington state, our economic future depends upon our telecommunications networks. Anticipating innovation — assuring adequate telecommunications infrastructure in a competitive market — challenges politicians anxious to preserve this region's competitive advantage. The transportation of information is as important to the health of the state economy as the transportation of goods and people; the state's telecommunications infrastructure is as vital as its railroads, ports, and highways. The Technology Alliance, a statewide network of industry and research groups, observes:

#### Important Dates in Telecommunications History

- 1876** - Alexander Graham Bell invents the telephone.
- 1893-94** - Key Bell patents expire.
- 1894 to 1907** - More than 3,000 non-Bell firms capture 51% of local markets and Bell's average return drops from 46% to 8%.
- 1913** - First antitrust case. AT&T and the federal government sign the Kingsbury agreement.
- 1934** - Communications Act of 1934
- 1943** - World War II - Interstate long distance subsidy of local service begins.
- 1956** - Consent decree ends second antitrust case.
- 1956 and 1968** - "Hush-a-Phone" and Carterfone decisions set the stage for customer premises competition.
- 1969 and 1971** - MCI and "Specialized Common Carriers" decisions plant the seeds of competition in long distance.
- 1982** - U.S. District Court signs the Modified Final Judgment, requiring divestiture of AT&T's seven regional holding companies.
- 1984** - Cellular service begins.
- 1996** - Telecommunications Act of 1996

“Advanced communications networks have become a critical tool for states in the competition for new businesses and jobs. Firms increasingly consider communications infrastructure as much as skilled labor, roads or airports, in selecting a new site. New businesses are also far better incubated in an environment containing advanced communications networks . . . . Information is becoming increasingly essential to all those things we associate with quality of life: economic opportunity, education, health care and public services.”

## Joseph Schumpeter on competition:

As soon as quality competition and sales effort are admitted into the sacred precincts of theory, the price variable is ousted from its dominant position. However, it is still competition within a rigid pattern of invariant conditions, methods of production and forms of industrial organization in particular, that practically monopolizes attention. But in capitalist reality as distinguished from its textbook picture, it is not that kind of competition that counts, but the competition from the new commodity, the new technology, the new source of supply, the new type of organization (the largest scale unit of control, for instance) — competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives. This kind of competition is as much more effective than the other as a bombardment is in comparison with forcing a door, and so much more important that it becomes a matter of comparative indifference whether competition in the ordinary sense functions more or less promptly; the powerful lever that in the long run expands output and brings down prices is in any case made of other stuff.

Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy*. 3rd ed., 1950: Harper and Row, Harper Torchbooks 1976. pp 84-85.

The upheaval in the telecommunications industry exemplifies the power — and uncertainty — of the process of creative destruction described by the economist Joseph Schumpeter. The essence of competition, Schumpeter stressed, is “the competition from the new commodity, the new technology, the new type of organization.”

Competition invigorates and reconstructs the marketplace. Consider the now-ubiquitous cellular telephone or the fax machines and computer modems that have doubled and tripled the number of phone lines into many homes. Or try to decipher the various long-distance pricing schemes. The world of telecommunications has changed, and as it has, it has changed the way we live and do business. This kind of competition, in Schumpeter’s words, “strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives.” Each of us, relying as we do on reliable, efficient, state-of-the-art communications, has a stake in the outcome.

Remarkable as the events of the last decade appear, even greater advances are on the horizon. How regulators and lawmakers respond to the challenges posed by statutory and technological changes will significantly affect the competitiveness and quality of life of Washington businesses and citizens.

## Current Policy Issues Framed at the Turn of the Century

To understand the current issues, it is necessary to look at the evolution of the telecommunications industry.

Traditionally, most telecommunications services have been provided by monopolies, subject to state and federal regulation. As Alfred Kahn, the dean of American regulatory economists, notes “regulation is ill-equipped to treat the more important aspects of performance — efficiency, service innovation, risk taking.” In its pre-regulated infancy, the rough-and-tumble competitive market both spurred and inhibited the industry’s development.

In the 1880s, the future of Alexander Graham Bell’s telephone was hard to foresee. Growth in telephone use was slow in the early years while the American Bell Company retained rights under the basic telephone patents.

When the crucial Bell patents expired in 1893-94, the growth picture changed dramatically. Competitors rushed to enter the market. The first entrants focused on areas not yet served by licensees of American Bell, but competitors soon moved into Bell territory, especially into areas where customers were dissatisfied with the quality of Bell service. In 1894, some 80 new phone companies held 5 percent of the market. By 1907, more than 3,000 non-Bell firms were serving 51 percent of the local markets. Telephone usage swelled to 391 calls daily per 1,000 people by 1910. From 1.1 telephones per 1,000 people in 1880, the number had grown to 82 per 1,000 people in 1910.

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## Birth of the Bell Monopoly

It was a vigorous, but messy, competition. In those days, competing systems did not interconnect. The subscribers of competitors were unable to talk to Bell subscribers. In 1907 Theodore Vail was named president of the American Telephone and Telegraph Company (“AT&T”), by then the parent company for the Bell system. Vail reorganized the company and launched a campaign to establish a unified national telephone system under AT&T’s control.

Corporate self-interest was involved. Prices and profits had fallen dramatically in the early years of the 20th Century. Working with the federal government, Vail and AT&T established the Bell system monopoly. The result, realized over the next half century, would be the most technologically advanced and far-reaching telephone system in the world.

## The Regulators

A number of federal and state institutions have regulatory responsibilities over the telecommunications industry. Congress and state legislatures, while seldom involving themselves in the day-to-day operations of the industry, are key regulatory entities: They define the regulatory framework.

The chief federal regulator, the FCC, was established by the Communications Act of 1934. The FCC is an independent federal agency with responsibility for developing and implementing policy towards interstate and international radio, television, wire, satellite, and cable communications. It defines its mission as "to encourage competition in all communications markets and to protect the public interest."

The work of the FCC is overseen by five commissioners, nominated by the President and confirmed by the Senate, serving fixed terms of five years. The President appoints one of the commissioners to serve as chair. As a rule, the sitting chair resigns upon the election of a new president. Although the commission operates by simple majority rule, the chair has considerably more power than the other commissioners since he appoints the staff and sets the commission's agenda.

In Washington state, the Washington Utilities and Transportation Commission ("WUTC") regulates privately owned utility and transportation companies. Utilities regulated by the WUTC include electricity, telephone, natural gas distribution, water, and solid waste collection. (Cable TV companies are not regulated by the WUTC.) The commission approves the terms under which these companies offer services and the rates that they charge.

The commission has three members, who serve six-year terms. The governor appoints commission members, subject to senate confirmation, and designates the chair. The WUTC blends administrative, legislative, and judicial decision-making modes as it implements state legislation, adopts rules, and decides cases.

Vail argued that the public interest would be best served if there were a single national network, coordinated and controlled by a single entity, AT&T, with wasteful duplication eliminated. (This concept was promoted by AT&T under the slogan, "One Policy, One System, Universal Service.") There would be no need for a tangle of wires coming to a business or a home that needed to communicate with users of different phone systems. In return, the company would accept government regulation of its rates and service.

In the meantime, the company was acting to assert and expand its market dominance. When AT&T moved to acquire a number of its independent competitors as well as telegraph giant Western Union, the federal government became concerned. It eventually charged AT&T with violating the Sherman Antitrust Act.

A landmark settlement (the "Kingsbury Commitment") was reached in 1913. The deal framed the conditions for the telephone industry for decades to come. The company embraced federal regulation (as it would state regulation over the next several years) and committed itself to:

- Dispose of its Western Union holdings;
- Discontinue acquiring other telephone companies operating in competition with the Bell System, with certain exceptions;
- Allow competitors to interconnect with the Bell system for long-distance toll calls.

AT&T's acceptance of regulation marked the beginning of the end of competition. Federal officials adopted AT&T's view of competition as "duplicative," "destructive," and "wasteful" and of telephone service as a "natural monopoly." Soon, they and industry leaders began promoting the idea of a unified telecommunications system.

In 1921 Congress passed the Willis-Graham Act to permit the consolidation of overlapping phone systems. By the mid-1920s, the era of competition had ended. Each community had a monopoly provider of local service, most often a subsidiary of AT&T, but in some cases an independent company. Long-distance service was provided by the Long Lines Department of AT&T.

The Communications Act of 1934 established the Federal Communication Commission ("FCC"), consolidating federal regulatory authorities previously exercised by the Interstate Commerce Commission and the Federal Radio Commission. This New Deal legislation did not fundamentally change federal policy toward telephones. The FCC was given authority over interstate telephone service; state commissions retained responsibility for intrastate activity. This basic framework remained intact until the Telecommunications Act of 1996.

Over the next several decades, industry changes and evolving regulatory policy created the conditions leading to the 1996 Act. Challenges dating from the earliest days of the industry — for example, interconnection — continued to plague regulators and providers. In addition, technological advances began to erode the basic logic, always questionable, that justified treating the industry as a natural monopoly.

A series of decisions and events, outlined below, documents the inexorable march toward market competition and deregulation.

## Subsidized Local Service

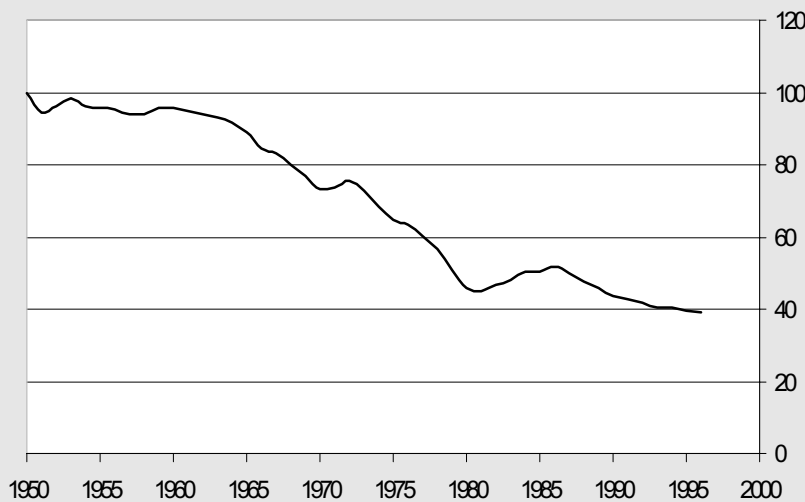
In 1943, the FCC began a system of cross-subsidies from long-distance to local service. Through the "separations" process, portions of the local operating costs and capital stock were allocated to long-distance rates based on the amount of long-distance traffic that passed through the local exchanges. Some long-distance revenue was thus retained by local operating companies. Over time the FCC modified the formulas, increasing local revenues far beyond the level justified by costs. In 1981, just before the breakup of AT&T, local operating companies retained over \$7 billion, more than 35% of total long-distance charges.

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By the mid-1950s, more than 70 percent of American households had phones, connected to all others by AT&T long-distance service. AT&T had accomplished its early goal of “One Policy, One System, Universal Service” and had grown to be the largest company in the world.

**Adjusting for inflation in the general price level, the real price of consumer telephone service fell by 60 percent from 1950 to 1996**



This index of the relative price of phone service is constructed as the ratio of the consumer price index for telephone service to the consumer price index for all goods, with the value for 1950 set equal to 100.

*The market for customer premises equipment, such as telephones, answering machines, and PBXs, was effectively opened to competition.*

AT&T's position, but two important decisions relaxed the company's exclusive hold on its network: In the “Hush-a-Phone” case (1956), the U.S. Appeals Court concluded that “blanket restrictions” to hooking up terminal equipment were discriminatory. In the Carterfone decision (1968), the FCC ruled that AT&T had to prove harm to its network in order to prevent the use of ancillary devices. Not long after the Carterfone decision, computerized data were being sent over the Bell network. The market for customer premises equipment, such as telephones, answering machines, and private branch exchanges (“PBXs”), was effectively opened to competition.

In 1956 AT&T signed a consent decree that terminated an antitrust suit the Department of Justice had initiated in 1949. The Department had sought to force AT&T to divest its manufacturing subsidiary, Western Electric. The agreement, vindicating Vail's vision, allowed AT&T to retain Western Electric. But the monopoly was soon to weaken under competitive pressures.

## Terminal Interconnection

To maintain control, AT&T prohibited customers from connecting non-Bell equipment to the network. Throughout the 1950s and 1960s, this “interconnection” prohibition was repeatedly challenged. The FCC regularly upheld

## Long-Distance Competition

Next came the challenge to the long-distance monopoly. In 1969 the FCC approved the application of Microwave Communications Inc. ("MCI") for permission to build a private microwave line between Chicago and St. Louis. MCI intended to sell capacity on the line to other users. FCC regulations had reserved this business for AT&T. Although the MCI line would offer only "interplant and interoffice communications with unique and specialized characteristics" and would not connect to the switched network, the FCC's approval marked the beginning of the end of AT&T's long-distance monopoly. Soon the FCC was flooded with applications to build private microwave lines. In 1971 the FCC consolidated these applications in a single regulatory proceeding, Specialized Common Carriers, and approved them all. The private-line market was open for competition. Shortly thereafter, the federal courts ruled that Specialized Common Carriers had also opened the door to competition in the switched market.

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## The Big Break-up, Competition Accelerates

In 1974 the Justice Department filed a new antitrust suit against AT&T, charging that the company used its monopoly in local service to suppress competition in long-distance and customer-premises equipment. Following nearly a decade of litigation, the parties agreed to a settlement. AT&T would spin off seven companies (the regional Bell operating companies, or "RBOCs", including U S WEST) to provide local exchange telephone service around the country. AT&T itself would retain the corporation's competitive long-distance and equipment-manufacturing businesses. (See box)

### Bell System Dismembered

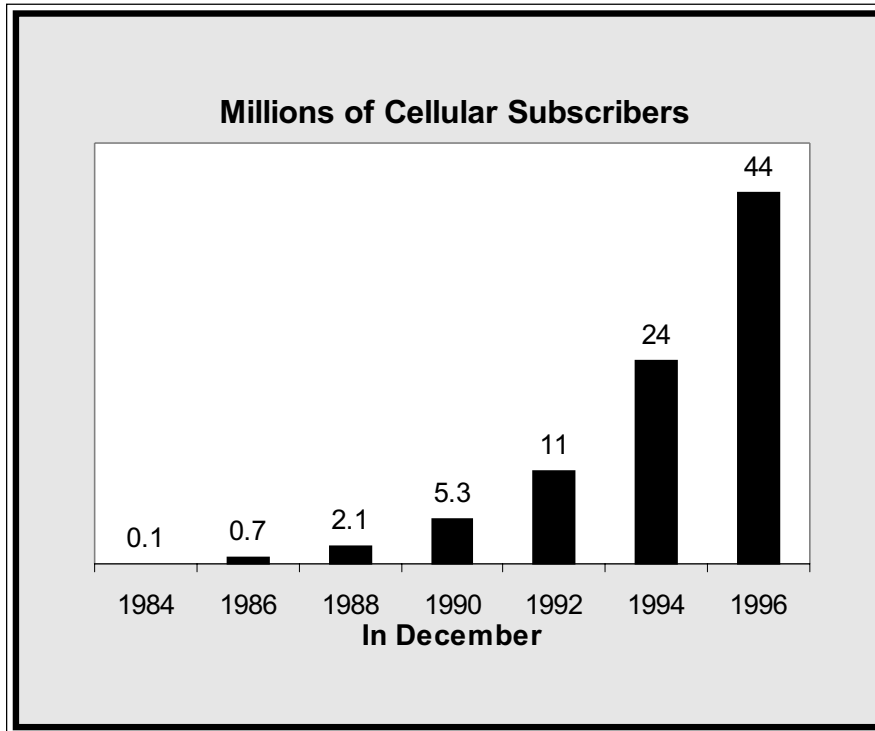
Known as the "Modified Final Judgment" ("MFJ"), the agreement to dismember AT&T was signed by the U.S. District Court on January 8, 1982, and became effective January 1, 1984. The agreement formally modified the 1956 consent decree.

Mergers have reduced from seven to five the number of RBOCs. Together they provide 77% of the local telephone service in the United States. The remainder is provided by a number of "independent" telephone companies. The largest of these, GTE, provides 12% of the local phone service nationally.

The MFJ prohibited the RBOCs from entering the long distance market. The RBOCs' service areas were divided into a total of 160 Local Access and Transport Areas ("LATAs") to define the boundary between local and long-distance calls. The independent local telephone companies, notably GTE, were not prohibited from entering the long-distance market since they were not parties to the MFJ.

In the new competitive market for long distance, the separations process was no longer available to subsidize local service. Although the FCC initially wanted to do away with the subsidies, it ultimately

responded to congressional pressure to avoid a large increase in local phone rates. To maintain the subsidies, the local exchanges were allowed to charge the long-distance carriers interconnection fees which significantly exceeded costs.



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awarded to the existing local phone company, while the second was awarded through a lottery. Service began in 1984, and the growth of the market has been spectacular. By the end of 1996 cellular subscribers numbered 44 million.

States saw that the growing competition and new technologies were changing the regulatory environment. In the Regulatory Flexibility Act, the 1985 Washington Legislature declared it state policy to “promote diversity in the supply of telecommunications services and products” and to “permit flexible regulation of competitive telecommunications companies and services.” One of the main purposes of the Act was to pave the way for competition in the market for intrastate long-distance service. As amended in 1989, however, the Act allows the commission to use alternative forms of regulation (“AFOR”) in place of the traditional rate of return regulation.

These interconnection fees (or access charges) could be avoided by customers who connected directly to their long-distance companies, bypassing the local exchange. A new group of companies, the competitive access providers (“CAPs”), emerged to provide such connections to high-volume customers. By 1994 CAPs operated in 72 U.S. cities, including the 25 largest.

Competition further accelerated with the emergence of the cellular telephone. The technology for cellular telephones was developed in the 1970s. Believing competition would bring lower prices and higher service quality to customers, the FCC in 1981 decided to license two operators in each market. One license was



## Recognizing the Market: The 1996 Act

By the 1990s, Vail's monolithic Bell system was only a distant memory. In long-distance and customer-premises services, competition reigned, as it did in the market for wireless phones and pagers. In some central business districts, CAPS began offering switched local phone service. Many cable TV operators indicated an interest in offering phone service to their customers, and most of the RBOCs became investors in cable TV outside of their home regions.

In 1996 Congress decided it was time to sweep the last vestiges of the Vail monopoly from the local market. The result was the Telecommunications Act of 1996. The Act represented the first major rewriting of federal communications law since 1934. While the Act included a number of significant policy changes for broadcast and cable TV and for radio, the key reform was the introduction of competition into local telephone service. Further, the Act created additional pressure on regulators to develop market-sensitive approaches to rate regulation.

## Technology Is Transforming Telecommunications.

Telecommunications technology is advancing rapidly, and the computer and telecommunications industries are converging. Digital electronics have dramatically expanded the capabilities of the telecommunications network. Telephone switches, the machines descended from operator-staffed switchboards, are now digital computers. These modern switches have made possible a range of new services (e.g., call waiting and caller ID). In the near future, advances in data compression will greatly increase the capacity of the local exchanges' existing "twisted wire" networks. For example, asymmetrical digital subscribe line (ADSL) systems will in the near future permit much better Internet connections and may allow phone companies to compete with cable TV operators.

Not only are new technologies broadening the range of services available, they are also increasing the opportunities for competition. For example, optical fiber can transport signals long distances at low cost. As a result, switch locations can be further from customers, making local markets more naturally competitive. A new generation of switches allows the integration of voice, data, and video traffic over the high-speed backbone segments of data networks. Thus backbone networks that once served distinct markets will be competitors.

Cellular was the first major wireless service to be introduced. The great success of cellular service encouraged the FCC to provide additional radio channels for wireless "personal communications services" ("PCS"). And companies such as Nextel are entering the wireless phone market using channels originally allocated to radio dispatch services.

Economists Ingo Vogelsang and Bridger Mitchell observe that "declining costs of radio terminals, the greatly increased capacity made possible by digital technology, and the entry of new types of wireless suppliers can be expected to reduce prices and broaden service offerings to the point that wireless services will compete directly with fixed-line telephone service for basic service."

## Alternatives to Rate-of-Return Regulation

Recent years have seen regulatory commissions experiment with a number of alternatives to standard rate-of-return regulation. They can be grouped together under the broad category of incentive regulation. Notable among these are the following:

**Banded Rate-of-Return Regulation.** Banded rate-of-return regulation specifies a range of returns that a company is allowed to earn. Some commissions set narrow bands to avoid continual price adjustments to meet a specific rate-of-return target. Other commissions have set wider bands, taking the position that the higher rates of return possible through cost savings create incentives for greater efficiency.

**Rate Case Moratoriums.** Under a moratorium, the commission agrees to suspend investigation of a utility's costs and prices. The utility thus knows that, during the moratorium, cost savings can flow to the firm rather than to customers.

**Profit Sharing.** Under these plans, a utility's rate of return is allowed to vary, but profits above a specified threshold are shared with its customers. Thus, these plans are a variant of banded rate-of-return regulation. In some cases, the customer share of earnings is returned in rate reductions. In other cases, customers receive a dividend.

**Revenue Sharing.** Revenue sharing specifies thresholds for both rate of return and total revenue. If the utility's rate of return exceeds its threshold, customers receive a share of the increment.

**Price Caps.** In recent years, price caps have become increasingly popular. The British government originally adopted price-cap regulation for the newly privatized British Telecom in 1984. The FCC adopted price-cap regulation for AT&T in 1989. With price caps, regulation ceases to focus on a utility's earnings, refocusing instead on its prices. The firm is often allowed considerable flexibility to set prices for individual services, as long as average prices fall under specified maximums.

See David E. M. Sappington and Dennis Weisman, *Designing Incentive Regulation for the Telecommunications Industry*, The MIT Press and the AEI Press, 1996; and Glenn Blackmon, *Incentive Regulation and the Regulation of Incentives*, Kluwer Academic Publishers, 1994

## Changing Approaches to Rate Regulation

Congress recognized that competition is much more effective than regulation in managing markets where technology is changing rapidly. Most public utility commissions, including Washington's, have traditionally used "rate-of-return" regulation: The commissions set the utility's prices so that revenue covers actual operating costs, plus a specified return on invested capital.

Economists believe that this form of rate regulation distorts utility incentives. With its return assured, the regulated firm has little reason to hold down costs. The "cost-plus" nature of the method allows the firm to pass unnecessary costs to its customers in the form of higher prices. The firm has little incentive to introduce improved products or services; regulation prevents it from receiving the profits normally associated with success.

This lack of incentive can be particularly damaging in an environment characterized by rapid technological change (see box) and the risks associated with such change. In a market economy, the greater the risk, the greater the potential reward. Policy makers interested in enhancing a region's telecommunications capacity also want to encourage industry investment. To do so, they are reconsidering their approaches to rate regulation.

State legislatures and public utility commissions have begun to move away from rate-of-return regulation. Some states and the FCC have tried various types of “incentive regulation” to encourage regulated firms to introduce new services and to operate in a cost-effective manner (see box page 10).

The WUTC has been able to experiment with alternative forms of regulation since 1989, and U S WEST operated under an AFOR from 1990 to 1994. Nonetheless, rate-of-return regulation remains the standard practice in the state. Some states have encouraged a limited degree of competition in the local market. Nebraska essentially deregulated its local market in 1987. By the date that Congress passed the Telecommunications Act, the WUTC had approved applications by five companies to provide competitive local phone service.

Under the 1996 Act, state and local laws that limit entry into telecommunications markets are preempted. In addition, phone companies are required to interconnect with their competitors and customers who change local carriers are able to retain their telephone numbers.

## Local Competition

To speed entry of competitors into the local exchange market, the Act requires that the local exchange carrier provide competitive providers access to its network at wholesale prices. A competitor may enter the local market in one of three ways: (1) by constructing a complete set of facilities, including switches and wire, to serve its customers, (2) by reselling local service purchased from the incumbent at wholesale rates, or (3) by combining its own facilities with discrete elements of the incumbent’s network.

The Act removes the MFJ’s blanket prohibition against the RBOCs’ offering long-distance service. But to protect against the possibility that they might leverage their monopoly position in the local market to compete unfairly in long-distance, the Act requires the regional Bells meet a stringent test before they may offer long-distance in their home region. No RBOC has yet been granted permission.

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## PENDING ISSUES IN WASHINGTON

Over the next several years, the WUTC and state policy makers face a number of important issues related to telecommunications. Below, we highlight five of these: rate regulation, the pricing of interconnection, universal service, municipal provision, and access to rights-of-way.

## Rate Regulation

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A pair of rate cases involving U S WEST, the dominant local exchange provider in Washington, raise issues that go beyond the firm's immediate concerns. Two issues, in particular, are involved: the implications for future infrastructure investment by the firm and the ramifications for the pricing of interconnection.

In February 1995 U S WEST filed a rate proposal with the WUTC, seeking an increase in revenues of about \$205 million, phased in over four years. The firm also sought to rebalance rates between the business and residential sectors, decreasing the former while increasing the latter. Rural residential customers would have seen larger increases than urban ones. The proposal would have moved the prices of individual services closer to actual costs, an action prompted by increased competition in the business market.

In April 1996, after reviewing the firm's proposal, the WUTC ordered that revenues be reduced by \$91.5 million. And it rejected the rebalancing of rates, stating that "effective or price-constraining competition does not exist." U S WEST appealed the decision, and the case is now before the State Supreme Court.

On August 29, 1997, U S WEST, with its supreme court appeal pending, filed a second tariff revision with the WUTC. U S WEST based this request on revised depreciation rates approved for the firm by the WUTC and on a review of 1996 financial results showing that the firm earned less than the rate-of-return authorized in the 1996 WUTC decision. On October 24, 1997, WUTC staff recommended increases in local rates that would raise U S WEST's annual revenue by \$70.3 million. Residential rates would rise by \$2.60 per month under the staff proposal; business rates, by \$2. The charge for a call to directory assistance would rise to \$.60, with one free directory call per month, from the current \$.35 and two free calls. The commission will hold public hearings on the rate proposals and may announce a decision in early January, 1998.

In the 1996 decision, the WUTC noted that "it will indeed be necessary to shift regulatory focus from costs to market prices." U S WEST will surely continue to raise questions concerning the adequacy of its revenue and the structure of its rates in the face of competition. According to U S WEST, at current rates, the firm cannot justify making the full range of investments that its Washington customers demand. While the WUTC and others — including competitors and major telecommunications consumers — challenge the assertion, significant investment decisions remain on hold.

One of the options given to new competitors by the Telecommunications Act, as noted above, is to resell local services purchased from the existing local exchange carrier. The Act specifies that the wholesale price should equal the retail price that the incumbent receives for the service less its marketing and billing costs. Thus the retail rates set for U S WEST by the WUTC directly influence competitors' decisions to construct their own facilities rather than resell U S WEST's local services.

## Interconnection

Interconnection between carriers is critical to the development of a competitive telecommunications market. The 1996 Act requires interconnection, saying that each carrier has the duty to interconnect with other carriers. More extensive duties are prescribed for the incumbent local exchange carriers, which must provide interconnection for any requesting carrier at "rates, terms and conditions that are just, reasonable, and nondiscriminatory."

The Act envisions that carriers will negotiate interconnection agreements. The state commissions are to oversee the agreements and arbitrate any questions unresolved by the negotiations. In this new era, the oversight activities of public utility commissions will increasingly involve establishing the framework for competition, rather than regulating monopolies.

In response to the Act's requirement that it prescribe implementation procedures for interconnection, the FCC issued the local competition order "Implementation of the Local Competition Provisions of the Telecommunications Act of 1996." At nearly 700 pages, the order constitutes an extensive set of economic guidelines. Among these guidelines, the order identifies points at which the incumbent local exchange carrier must allow interconnection with its network and identifies the discrete, or "unbundled," network elements that must be available to competitors.

The most contentious aspects of the local competition order involve the pricing of interconnection and unbundled elements. In each case in which interconnecting carriers fail to agree to terms, the Act specifies that state commissions set a price "based on the cost . . . of providing the interconnection or network element." The FCC's local competition order instructs state commissions to use a particular cost concept, the total element long-run incremental cost ("TELRIC"), in arbitrating prices of unbundled elements. TELRIC is forward-looking: It asks what it would cost to provide the element with the best technology available today, ignoring the historical cost of the carrier's existing facilities. TELRIC

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assumes that all of the firm's costs are variable, and it measures the incremental cost associated with providing the element. TELRIC roughly corresponds to an economist's notion of long-run marginal cost. In a competitive market, price levels will generally approximate these costs.

The basic TELRIC, as the incremental cost of a single element, will not capture common costs (i.e., costs that are common to producing several different elements and that cannot be avoided unless all these elements are not produced). The FCC instructs the state commissions to adjust the basic TELRIC to cover a reasonable share of forward-looking common costs.

The prices set for unbundled elements will determine whether competitors choose to construct their own facilities or make use of the incumbent's. The FCC wants prices based on long-run incremental costs, so that these decisions will be cost-effective from the perspective of the network as a whole. Overpricing unbundled elements can lead competitors to build unnecessary facilities. Underpricing elements discourages appropriate investments by competitors while giving the incumbent carrier, forced to sell below cost, little incentive to maintain or enhance the facilities.

*Local exchange companies have challenged the substance of the order, including a challenge to the constitutionality of TELRIC pricing.*

Although setting prices on the basis of TELRICs may appear quite similar to the traditional cost-plus regulation, in fact it represents a significant break with past practice. Because TELRIC is not based on the regulated firm's historical cost, TELRIC pricing may avoid the adverse incentives associated with rate-of-return regulation. But the shift away from pricing based on historical costs raises an issue of equity. Regulated firms argue that in exchange for submitting to regulation of their prices, they have been promised the right to recover their costs, prudently incurred, plus a fair rate of profit. TELRIC pricing threatens to break this "regulatory compact."

The implementation of TELRIC pricing is likely to be quite controversial. The WUTC is currently conducting a generic cost investigation to determine the TELRIC model it will use in future arbitration. As the WUTC has noted, there is "a lack of consensus about the specifics of the cost calculations. Parties disagree about virtually every aspect of the cost study process, notably what constitutes an incremental cost, what costs should be included in a cost study, and what analytic model should be used to calculate costs."

The court challenges have begun.

Appeals of the FCC order have been filed in federal court by state commissions and by incumbent local exchange carriers appealing various aspects of the FCC order. State utility commissions contend that the FCC order usurps state jurisdiction over the intrastate market by specifying the cost estimation methodology that they must use. Local exchange compa-

nies have challenged the substance of the order, including a challenge to the constitutionality of TELRIC pricing.

As of October 31, the WUTC had approved 20 wireline and 12 wireless interconnection agreements. Six of the wireline and one of the wireless agreements had required commission arbitration. In seven of the wireline and one of the wireless cases, the parties reached fully negotiated agreements. In the remaining cases the carrier requesting interconnection opted to accept terms of an agreement previously approved by the WUTC. Five additional wireless agreements are pending.

Carriers are usually able to agree on the points and manner of interconnection. When the WUTC is asked to arbitrate, the issue generally is one of price. The Governor's Telecommunications Policy Task Force notes, "three prices are commonly disputed: (1) the rate for unbundled loops; (2) the price paid for a service the new entrant will eventually resell; and (3) the rate for exchange of traffic between networks of the two carriers."

## Universal Service

Fearing that competition may result in higher local-service prices for some customers, Congress authorized the FCC and the states to develop universal service policies so that "quality services" will be available to all "at just, reasonable, and affordable rates." The meaning of the universal service goal has changed since Theodore Vail's time, from the original sense that all phones should be part of a single network to the current sense that all regions and all people should be served, no matter how remotely or uniquely located. To achieve this goal, public utility commissions set rates so that total revenues cover total costs, with no tie between revenues received for specific service (e.g., serving a remote site) and the cost of that service. The result has been a web of cross-subsidies, with some services priced significantly below actual costs. Losses are offset by overcharging other services. Generally, long-distance customers subsidize local service, urban customers subsidize rural, and businesses subsidize residential service.

Applied to a regulated monopoly, the system can be managed with relative ease. But it breaks down as competition is introduced. New competitors will be willing to sell at prices that reflect long-run marginal costs and

## Local Loop

The local loop is the circuit that connects a customer's premises to the local switch. Loops are expensive to construct, and some question the extent to which the incumbent local exchange carriers will face competition in providing wire connection to residential customers. Hence, the Telecommunications Act requires that the incumbent carriers allow competitors to purchase access to the loop as a discrete element, i.e., to provide unbundled access to the local loop.

*Fearing that competition may result in higher local-service prices for some customers, Congress authorized the FCC and the states to develop universal service policies so that "quality services" will be available to all "at just, reasonable, and affordable rates."*

“skim the cream.” The incumbent will be unable to continue charging higher prices. If cross-subsidies are to continue, new mechanisms must be developed that are competitively neutral.

There is good reason to consider eliminating cross-subsidies entirely, an outcome desired by many economists. Robert Crandall of the Brookings Institution, for one, argued that to impose a new mechanism of cross-subsidization will simply perpetuate “the very rate distortions that one would hope would be eliminated by competition.”

*In implementing the Act, the FCC has required that telecommunications providers “contribute” to a universal-service fund.*

Regardless, the Act calls for the FCC and the state commissions to develop new mechanisms to support universal service and sets forth principles that they should follow. These principles strongly suggest a continuation of the existing subsidy pattern. For example: “Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.”

The FCC appointed a Federal-State Joint Board to recommend regulations to implement universal service. One of the Joint Board’s primary tasks was to propose a definition of universal service. The Joint Board’s recommendations formed the basis for the Order on Universal Service issued by the FCC on May 7.

In implementing the Act, the FCC has required that telecommunications providers “contribute” to a universal-service fund. Several categories of customer are eligible for assistance through the federal universal-service fund, including customers in high-cost service areas, low-income customers, rural health-care providers, and schools and libraries — especially those serving disadvantaged populations.

**Under the Federal Program for Schools & Libraries, the discount on telecommunications services depends on the neediness of the population defined as the percentage of local students eligible for the National School Lunch Program**

Percentage of students eligible for National School Lunch Program	Discount	
	Urban Schools & Libraries	Rural Schools & Libraries
Less than 1%	20%	25%
Between 1% and 19%	40%	50%
Between 20% and 34%	50%	60%
Between 35% and 49%	60%	70%
Between 50% and 75%	80%	80%
Over 75%	90%	90%

In July, the WUTC, through an emergency order, established a state program of universal service for schools and libraries, so that these institutions would be able to receive the federal support beginning January 1998. Legislation will be required if Washington is to establish a more general state universal-service program analogous to the federal program. The WUTC is preparing a report on universal service for the Legislature. Two issues in the design of the plan



are critical: definition of the services to be available to everyone, and the means for promoting competition.

Over time, there is sure to be great pressure to expand the scope of universal service. The Act specifies that “universal service is an evolving level of telecommunications services that the Commission shall establish periodically . . . taking into account advances in telecommunications and information technologies and services.”

The whole scheme may be destined to fail. As telecommunications authority Milton Mueller writes, “the new law overlooks what is, from the standpoint of truly universal telecommunications, the most promising feature of the new competitive marketplace: the ability to tailor the price and capacity of service to specific user needs and socioeconomic constraints. No single form of telecommunications access can be classified as absolutely necessary for all people.”

Communications technology is seen as the key to economic competitiveness in the 21st century. The goal of the universal-service programs is to assure that this technology is affordable. Because these programs are funded through mandatory contributions from telecommunications providers, however, they cannot lower the overall cost of telecommunications services to users. The programs simply redistribute costs.

*Communications technology is seen as the key to economic competitiveness in the 21st century.*

## Taxation

Telecommunications providers and their customers are subject to a number of taxes, including the following:

- State and local property taxes
- State and local retail sales taxes
- State business and occupation tax (B&O)
- Local public utility taxes
- Cable TV franchise fees
- Dedicated taxes for 911 systems, services for the hearing impaired, and phone service for public assistance recipients

Local exchange carriers, wireless, and cable TV providers are all taxed differently. As the lines blur between these industries and they begin to compete directly with each other, changes will be necessary in order for the tax code to be competitively neutral. The issues associated with each tax are summarized below.

**Property Taxes.** The State Constitution requires that the property tax be applied uniformly, so it may be surprising that there could be unequal treatment of the different telecommunications industries. The problem arises because those wireline and wireless telephone companies that operate in more than one county are centrally assessed by the State. Cable TV companies are locally assessed by the county assessors. The Governor's Telecommunications Policy Coordination Task Force concludes that "when cable TV companies become centrally assessed, it is probable that property tax assessments will increase." Local assessors typically use the historical-cost approach when valuing cable TV companies. The Task Force believes that the assessors fail to identify the full range of property owned by cable TV companies and that they depreciate that property too rapidly.

**Retail Sales Taxes.** Wireline and wireless telephone services are subject to the state and local sales taxes, with exemptions for local calls made by residential customers and coin-operated pay phones. Cable TV services are not subject to the sales tax.

**Business and Occupation Tax.** Wireline and wireless telephone services are taxed at the retail B&O rate of 0.471%. Cable TV is taxed at the "Service and Other Activities" rate of 1.75% (1.5% after 7/1/98), while Internet service providers are taxed at the "Selected Business Services" rate of 2% (1.5% after 7/1/98).

**Local Taxes.** Cities are allowed to impose a public utility tax of up to 6% on the gross receipts of telephone companies, with higher rates possible upon voter approval. They are also allowed to impose a gross receipts tax of up to 2% on general business activities. This tax applies to cable TV. Cities and counties may also impose a franchise fee on cable TV, which federal law caps at 5% of gross revenue.

**Enhanced 911.** The State levies a tax of \$0.20 per switched line on wireline telephones to fund enhanced 911 service. Local governments can levy a tax of up to \$0.50 per line on wireline phones and \$0.25 on wireless lines.

*Across the country, state and local governments are emerging as new telecommunications competitors.*

## Municipalization

Across the country, state and local governments are emerging as new telecommunications competitors. Local officials, in particular, have been aggressive advocates of "municipalization," government provision of telecommunications service. Noting the growing importance of advanced telecommunications technology to economic development, they suggest that private providers may be unwilling or unable to deliver such service in a timely fashion, particularly to smaller, rural communities. They contend that the costs for advanced service could be lower if government

were the provider, and they point to popular, social objectives, such as telecommunications service to schools and libraries, that they say could be achieved more quickly and with greater certainty. Currently, local governments have some regulatory and tax privileges that give them a competitive advantage over private telecommunications providers, including permitting and control of right-of-way access, condemnation power, and access to low-interest loans and tax-preferenced bonding authority.

Tacoma has embarked on an experiment in municipal provision of cable TV which, while as yet unresolved, is instructive. A consultant's report to Tacoma Public Utilities suggested the city could compete profitably with TCI, which provides local cable service in Tacoma. The proposal developed in response involved stringing 1,100 miles of fiber optic cable from the city's existing utility poles. This new fiber would also allow the city-owned utility to deliver high-quality telecommunications services to its 11,000 electricity customers.

The consultant originally estimated that a \$40 million investment would be required, which it anticipated could be recaptured in just a few years. City staff adjusted these early estimates upward in price and outward in recovery. But as recently as September of 1997, city staff acknowledge they erred in their own estimates and that costs were likely to be closer to \$96 million — nearly 45 percent more than their working assumptions.

Underestimating costs is not unique to government projects; neither is it uncommon. With telecommunications, the level of required investment, together with the rapidly changing nature of the environment, combine to make an extremely risky situation for the public shareholders involved. For this reason, perhaps, the President's Council of Economic Advisors in 1996 said: "With so much uncertainty about the shape of the communications networks of the future and with significant potential for competition, the best course is to leave their evolution to be determined by the private sector."

Certainly, competitive neutrality requires a level playing field.

## Rights-of-Way

As competition in telecommunications grows, state officials are rethinking policy regarding access to rights-of-way ("ROW"). Wireline and wireless telecommunications carriers desire access to Washington State Department of Transportation ("WSDOT") lands to run cables and site cellular towers. WSDOT has a clear interest in managing access to assure that such siting does not compromise transportation safety or mobility. Some believe that WSDOT should, in addition, manage access as a source of additional transportation funding.

*With telecommunications, the level of required investment, together with the rapidly changing nature of the environment, combine to make an extremely risky situation for the public shareholders involved.*

*Current state law allows the State to receive compensation for administrative costs associated with granting rights-of-way, as well as to recover actual costs for repairs and improvements. Might it be fair and reasonable to charge more?*

The 1996 Telecommunications Act permits state and local governments to receive “fair and reasonable compensation” for use of public ROW. Current state law allows the State to receive compensation for administrative costs associated with granting rights-of-way, as well as to recover actual costs for repairs and improvements. Might it be fair and reasonable to charge more? According to a report by Cambridge Systematics, Inc. for the Legislative Transportation Committee “the pragmatic answer [to the question of the fair and reasonable value of ROW] is it is worth whatever you can convince someone to pay for it.” In other words, the report says, the fair and reasonable value is whatever the market will bear.

For many years, Federal Highway Administration regulations prohibited utility access to rights-of-way along the state’s limited access highways (e.g., the Interstates), but this has changed recently in response to the Telecommunications Act. State regulations still reflect the old federal prohibition. Opening access to these highways provides an opportunity to rethink state policy on compensation. WSDOT is currently working with the Telecommunications Right-of-Way Advisory Panel to develop recommendations to the legislature.

In considering ROW, two sets of issues must be addressed:

First, if the desire is to move from the present compensation strategy to a “fair market value” (“FMV”) system, how will fair market value be determined? Wireless and wireline cases present very different valuation problems. A competitive market exists for the siting of wireless towers, and wireless providers have not strenuously objected to a FMV pricing structure. The market for wireline right-of-way, however, is not competitive. The rights-of-way along state highways are often unique, with no comparable private transactions from which to gauge value.

Second, the state possesses considerable monopoly power with respect to these assets: Assembling alternative routes across land held by numerous property owners would involve substantial transaction costs. Should fair market value include the monopoly premium? Or, rather, should fair market value be set assuming that there existed a competitive market for ROW?

As the FCC and the WUTC are implementing the Telecommunications Act, private parties with monopoly power are being forced to price based on long run incremental costs, in the belief that this approximates competitive pricing. Should the same standard apply to state rights-of-way? In fact, the current legal standard requires telecommunications carriers pay the long-run incremental costs imposed by their use of rights-of-way.

The critical issue is this: The full cost of ROW purchased at FMV (however determined) is certain to be passed through to consumers as an indirect telecommunications tax to benefit transportation — a particularly asymmetric form of earmarking. Some transportation advocates anticipate that FMV will be considerably higher than administrative costs, high enough, that is, to make an impact on funding transportation projects. Presumably, the costs to the telecommunications industry will therefore be high enough to adversely affect investment decisions.

Policy makers may wish to be wary in introducing a new cost element into the emerging competitive telecommunications arena. Increasing the costs to consumers will dampen telecommunications investment and inhibit the development of the industry in Washington. A recent article in the Seattle Post-Intelligencer describes the rebirth of Klamath Falls, Oregon, after it obtained a fiber-optic link to the information superhighway. Cheap right-of-way was a key factor in U S WEST's decision to construct this link. Those who are concerned that the new technologies not bypass the rural parts of the state should be particularly worried about the pricing of access to right-of-way.

Local governments may similarly be tempted to view access to right-of-way as a revenue source. Current state law limits the compensation that cities can receive to administrative and repair costs; thus legislative approval would be necessary for higher fees. Counties are not restricted. As in the case of state right-of-way, pricing above cost will raise the cost of telecommunications services to customers. Harmonizing right-of-way regulations between jurisdictions would result in lower costs and encourage the development of competition.

## Critical Decisions Ahead

Rapidly changing telecommunications technology presents tremendous opportunities for the local economy. But if these opportunities are to be fully exploited, policy makers must assure a smart transition to a competitive telecommunications market.

Alexander Graham Bell's first telephone transmitted voices through wires as electric analogs to sound waves, and for a hundred years telephones continued to rely on this principle. Analog is now giving way to digital. Voices can be encoded as numbers, and the networks that carry telephone conversations can carry video and text also. This digital revolution in telecommunications technology is transforming the ways in which people work and live.

Poised on the edge of the Pacific Rim, this state has always recognized that its economic future depends on its link to the global economy.

*Rapidly changing telecommunications technology presents tremendous opportunities for the local economy. But if these opportunities are to be fully exploited, policy makers must assure a smart transition to a competitive telecommunications market.*

*If Washington is to prosper in the twenty-first century it must have a state-of-the-art telecommunications infrastructure.*

Telecommunications networks allow the integration of business activities on a global scale in ways unanticipated 20 years ago. Today's critical links involve flows of digital information, which do not respect state lines or national borders. There are few assured geographical advantages in a global information economy.

If Washington is to prosper in the twenty-first century it must have a state-of-the-art telecommunications infrastructure. This is not simply an issue for the metropolitan centers that are home to high-technology firms. Telecommunications reduce the economic isolation of rural communities. WUTC Commissioner William Gillis notes that for rural communities "advances in telecommunications means hope that maybe — just maybe — their children may not have to move out of the area to find a living wage job."

Achieving and retaining a regional competitive advantage in a dynamic, global market represents an ongoing challenge to policy makers, who have a limited array of tools available to influence business decisions. Clearly, it is tempting to tinker with policy, to practice the industrial policy craft of targeted incentives and selective preferences. In this arena, however, neither legislators nor regulators can be nimble enough to intervene swiftly and accurately. It's a temptation best avoided.

Complex as the issues surrounding telecommunications may appear, policy makers need not be distracted by exotic technologies and arcane terminology. The principles governing public policy in this arena remain basic and fundamental. With respect to the economy and economic development, as the Washington Research Council has maintained consistently, state policy must provide proper incentives, maintain competitive neutrality, and avoid excessive tax and regulatory burdens.

Application of these principles to telecommunications policy will pose difficult challenges. For example:

Rate-of-return regulation will eventually be replaced by market competition. During the transition, regulators must be sensitive to the incentive opportunities provided by alternative forms of regulation. Commitments made to incumbent firms under the "regulatory compact" will be balanced by the desire to realize the efficiency of the marketplace. Policymakers face difficult decisions in attempting to maintain competitive neutrality in the midst of competing claims regarding the adequacy of current returns on investment.

With market competition, interconnection issues become critical. Determining reasonable compensation for interconnection means regulators will remain involved in telecommunications for the foreseeable future. The scope of their involvement, however, will be more sharply focused. Assuring reasonable compensation, protecting and enhancing infrastructure, and guaranteeing open competitive access to local exchanges will require regulators to establish a clear, consistent standard. Setting appropriate prices for unbundled loops will be especially important.

Tax policies established in an earlier era must be reconciled to maintain neutrality in a competitive marketplace. Regulatory requirements, as well, have placed telecommunications providers in different categories, and emerging technologies have eroded the categorical distinctions.

Similarly, municipalization efforts invite a reconsideration of a host of tax and regulatory policies affecting competition with the private sector. Such a reconsideration is outside the scope of regulatory commissions; ultimately, legislative consideration of the issue will be required.

Substantial employment and revenue growth will attend regions able to nurture and sustain a vibrant telecommunications sector. Washington's business and governments will benefit from innovation and access to advanced technology.

Important choices will be made in the coming months. Consistent application of market-sensitive principles provides the best assurance of a successful transition.

*Consistent application of market-sensitive principles provides the best assurance of a successful transition.*

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## Selected readings

The web sites of the Federal Communications Commission <<http://www.fcc.gov/>> and the Washington Utilities and Transportation Commission <<http://www.washington.edu/wutc/>> provide a great deal of information on the Telecommunications Act of 1996 and its implementation in Washington state.

A nice overview of the benefits and difficulties in bringing competition to the telecommunications and electricity industries is provided by:

Council of Economic Advisors, "Promoting Competition in Traditionally Regulated Industries," Chapter 6 in *Economic Report of the President*, February 1996.

The classic text on regulation is:

Alfred E. Kahn, *The Economics of Regulation*, The MIT Press, 1988.

For more on the history of the industry see:

Milton L. Mueller, Jr., *Universal Service: Competition, Interconnection and Monopoly in the Making of the American Telephone System*, The MIT Press and the AEI Press, 1997;

Peter Temin, *The Fall of the Bell System*, Cambridge University Press 1987; and

Adam D. Theiner, "Unnatural Monopoly: Critical Moments in the Development of the Bell System Monopoly," *Cato Journal*, Fall 1994.

For information on the nuts and bolts of local competition see:

Ingo Vogelsang and Bridger M. Mitchell, *Telecommunications Competition: The Last Ten Miles*, The MIT Press and the AEI Press, 1997.

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The reports of the Governor's Telecommunications Policy Coordination Task Force provide useful information on the implementation of the Telecommunications Act in Washington state and are available via the Internet <<http://www.wa.gov/ttf/telecom.htm>>.

The Technology Alliance has prepared a report on Telecommunications in Washington state: Technology Alliance, "Washington State's Network Future Report and Recommendations of the Technology Alliance," at <<http://www.seattlechamber.com/technologyalliance/>> via Internet.

Right-of-way issues are discussed in: Cambridge Systematics, Inc. with the Washington State Department of Transportation, "Telecommunications Access to Limited-Access Highway Rights-of-Way," January 1997.

For more on the issue of municipal provision see: Elaine and Richard Davis, "Municipalization and Subsidized Utility Competition: the Taxpayers' Perspective," *The Cal-Tax Digest*, April 1997.

For a less sanguine view of the Telecommunications Act see: Robert W. Crandall, "Are We Deregulating Telephone Services? Think Again," the Brookings Institution, Brookings Policy Brief No. 13, March 1997.

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