

## Can States Face the Future?

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# A NEW AGENDA FOR TELECOMMUNICATIONS POLICY

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*Telecommunications has become a major factor in economic development. The challenge to the states is to forge a policy that allows both business and government to use new information technologies effectively and to become a partner in shaping the new telecommunications infrastructure.*

States have a vital stake in the changing telecommunications environment. Although the national effects of Federal communication deregulation have been the focus of most public attention, deregulation and the divestiture of AT&T has had an equally great impact on states. Before deregulation, Federal and state governments traditionally followed a policy of "coregulation," characterized by "a high degree of commonality in Federal and state goals. ... As the 1970s unfolded, however, the divergence in goals between the Federal and state levels of government became pronounced. The Federal redistributory or equity goal became secondary to a pursuit of economic efficiency through reliance on a change in markets and competition."<sup>1</sup>

Federal telecommunications policy was guided initially by the principle of "universal service" expressed in the Communications Act of 1934: "to make available, so far as possible, to all the people of the United States a rapid, efficient, nationwide, and worldwide wire and radio communication service with adequate facilities at reasonable charges." Federal deregulation has shifted the demand for universal service to the state level. Through the political process, state governments remain tied to the traditional goals of keeping residential rates low, providing universal service in outlying areas, and maintaining an economically viable public telecommunications network. At the same time, states must assure that advanced, competitively priced telecommunications services are available to the individuals and firms doing business within the state. Thus states must forge a policy that ensures universal service while simultaneously allowing business users the benefits of technological innovation and competitive pricing.

Currently, states are involved in telecommunications in three areas: managerial, as major users of telephone systems and related computer equipment; regulatory, as the governmental entity with authority over telephone rates, taxes, public rights-of-way and cable television; and policy-making, as a formulator of economic development policies for attracting and retaining industries that rely increasingly on information technology. New demands on state government are appearing on several fronts. The emerging telecommunications infrastructure in the United States is altering the availability of telecommunications to consumers and businesses. Both the public

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<sup>1</sup> Noam 1983; This article provides a good discussion of changing Federal and state regulatory policies.

and private sectors are participating in the development of new telecommunications systems, and each sector has diverse interests in developing and managing these systems. Finally, the emerging telecommunications infrastructure has profound economic consequences for the nation as a whole.

### **The Changing Telecommunications Industry**

Until 1984, the provision of voice and data services was largely the business of AT&T, a fully-integrated communications company that consisted of AT&T Long Lines, 22 local telephone companies, Bell Laboratories, Western Electric and several independent companies. AT&T provided what was known as "end-to-end service." This service included leasing consumers the highly reliable, if uninspired, telephone manufactured by Western Electric. More importantly, AT&T subsidiaries provided local service from homes or businesses to a central office. From this point calls were either routed to their local destination, or long-distance service was provided to any point in the United States.

Unlike the local power utility that simply provided electrical current, AT&T provided the telephone line plus the equipment attached to it. This would be equivalent to a local electrical utility providing not only electricity but also the toaster, refrigerator and other appliances that could be plugged into home outlets. In contrast with electrical appliances which have witnessed considerable innovation, consumers' choice of telephone equipment was highly restricted, with a premium paid for anything but the basic black rotary telephone. AT&T's control was so extensive that telephone answering machines (once they were allowed to be used) initially had to be registered with the local telephone company. Not surprisingly, in 1968 telephone equipment became the first part of AT&T's business to be deregulated. This was followed by long-distance service in 1969, when MCI was authorized to provide long-distance business service between St. Louis and Chicago.

A series of additional deregulatory rulings by the Federal Communications Commission and the courts led to further competition in the telecommunications industry. These rulings culminated in the divestiture of AT&T in 1984, which brought about the ultimate separation of local from long-distance telephone service. Under the terms of the break-up, AT&T now provides long-distance service and can manufacture and sell telecommunications and computer equipment and services. The seven regional holding companies, a consolidation of the 22 local telephone companies, are responsible for local telephone service within local jurisdictions known as Local Access and Transport Areas (LATA). In addition, they handle traditional local services like publishing the yellow pages and are allowed to launch a variety of new ventures, including computer equipment sales, directory publishing and cellular mobile telephony. Consumers who once relied on AT&T for telecommunications planning and procurement now face an unparalleled set of choices. For any user, new choices concerning telecommunications equipment and long-distance service are now available. For large communication users, the choices are far greater and include alternatives in the transmission of local telephone traffic.

### **The Emerging Telecommunications Infrastructure**

There are three main components to the telecommunications infrastructure in the United States: long distance or inter-city systems; regional or local distribution systems; and intra-building or intra-complex communications systems, such as local area networks or "smart building" systems

(Moss 1986b). At each level, the predominant communications carriers (AT&T and the seven regional holding companies) are facing serious competition. While competition appeared first in the provision of long-distance service, deregulation and technological innovation also are leading to competition at the local and regional level. For states like New York that are centers for information and financial services, understanding how the new infrastructure will help or under their capacity to attract and retain growing information-intensive industries has enormous importance.

**Long-Distance and Fiber Optic Systems.** The development of long-distance fiber optic systems illustrates the high stakes in new technology. This infrastructure is being built to meet the information intensive demands of major metropolitan areas. At the national level, competition in long-distance service is leading to construction of several fiber optic networks that will provide high-speed, long-distance communications across the country. These fiber networks are supplementing the existing grid of microwave relay systems, satellites, and earth stations currently in use. The popularity of these systems is tied to their superior technological advantages, which include:

**Large capacity:** The Office of Technology Assessment estimates that "a quarter-inch diameter optical fiber with two fibers carries as much data as a 3-inch copper cable with 2,000 wires."

**High security:** Fiber is resistant to wiretaps or interference from external sources.

**Declining cost:** Compared with other telecommunications technologies, the cost per channel of communication over fiber is decreasing rapidly. Within the next few years, the cost of fiber alone will be approximately a few cents per meter.

**Signal strength:** Fewer repeaters are needed to regenerate signals with fiber than with copper systems and thus maintenance and installation costs are reduced.

**Minimal delay:** Unlike satellite communication, information on fiber travels directly between points. Thus there is no time delay, an important factor for the digital networks of the future.

By purchasing the rights-of-way of railroads, turnpikes, and even bike paths, the costs of installation are greatly reduced. This is a good example of adapting an older transportation system to provide an infrastructure for another purpose. For example, MCI has used Amtrak's right-of-way for its Northeast fiber system; and in Texas, the right-of-way of the Missouri-Kansas-Texas Railroad Company is being used for a fiber optic system that will link Austin, Houston, Dallas/Fort Worth and San Antonio, RCI, a subsidiary of Rochester Telephone, is developing a fiber optic system from Chicago to New York City that uses Conrail's right-of-way.

As these examples show, the largest and most information intensive cities are being linked first. These cities, with their information intensive firms and economies, are best suited to utilize the economic and technological advantages of fiber optics. Fiber optic systems are used to transmit information among and within the nation's major urban centers because fiber optic systems are most effective in carrying large volumes of information over long distances. Thus, investment in the new telecommunications infrastructure is concentrated heavily in large metropolitan areas.

New investment is feeding the demands of information producers and users based in a handful of regional, national and international information capitals.

As a result, there is likely to be a growing gap between the telecommunications services available in major urban centers and those available in small towns and rural areas. Just as airline deregulation has weakened transportation service to many outlying communities, so may communications deregulation lead to greater disparities between large metropolitan areas and the hinterland. Further, as Paul MacAvoy and Kenneth Robinson presciently predicted prior to AT&T's divestiture, "There could be increasing disparities in the quality of telephone service, with business subscribers benefiting while home subscribers in high-cost cities experience reduced service quality" (MacAvoy and Robinson 1983, p. 39). The nation's telecommunications infrastructure is no longer determined by a public policy based upon universal service and cross-subsidies from long-distance to local service, but by market forces that are creating new technological systems in areas that are important sources of telecommunications traffic and revenue.

***Regional Telecommunications Systems.*** This scenario also is being played out at the state level. Here, the regional holding companies created through the divestiture of AT&T remain the predominant communications carriers. They are also the leaders in shifting from twisted pairs of copper wire to fiber optics for intra-city communications. Presently, New York Telephone has more than 57,600 miles of fiber optic cable in service throughout the state. They have built three separate fiber systems around Manhattan and most recently completed an Interborough Fiber Network linking the counties adjacent to Manhattan. New York Telephone also has built fiber optic systems in the state's other major urban areas such as Albany, Syracuse, Buffalo, Long Island and the Hudson Valley.

Building long-distance and regional fiber systems to serve large metropolitan regions reflects the intense competition among communications carriers seeking to attract large information users based in cities. In the New York-New Jersey region, Teleport Communications has installed 150 miles of fiber that provides access to their communication satellite park and also serves as a means of intra-urban communications. In Chicago, a three-mile fiber system to serve the downtown loop area is being built and Los Angeles is reviewing a fiber system to serve the Wilshire Boulevard corridor.

Regional holding companies are also being challenged by large private firms that are building their own telecommunications systems for transmitting information among their facilities located in different regions. By doing this, firms "bypass" the public-switched network operated by the local telephone company. Seven of the 12 members of the New York Clearinghouse Association (an association of major banks) have their own separate systems for high speed data transmission. Citicorp's MICRONET system, for example, uses fiber optics to link its offices in lower Manhattan with its midtown headquarters. Although these systems bypass the local public network, the major banks still rely on New York Telephone for a substantial part of their telecommunications needs (such as Citicorp's extensive network of automatic teller machines, which depend on leased telephone lines for computer-to-computer transmission).

***"Smart Buildings" and Local Area Networks.*** Although the telephone is best known for its remarkable ability to extend geographic boundaries, the vast bulk of telecommunications is highly localized. In Manhattan, almost 75 percent of the telephone calls are to other points within

the borough. As Dale Hatfield has pointed out: "Most business machine communications travel only a relatively short distance. Only about eight percent of communications traffic travels more than 500 miles. Thirty-two percent travels between facilities less than 500 miles apart. The remaining 60 percent is intrafacility" (U.S. House 1981, p. 227).

Modern office buildings are not just places of employment, but structures where information is generated, processed and disseminated. As a result, there is a growing recognition of the need to design buildings that can accommodate modern information systems, that is, "smart buildings." Based on this need, an emerging industry is trying to provide telecommunications services to office developers and their tenants, known as "shared tenant services" (Downs 1985). As with other emerging telecommunications systems, a small number of large metropolitan areas account for most of the development. In January 1985, 51 shared tenant service buildings were in use; half were located in four metropolitan areas - New York, Washington, D.C., Chicago, and Dallas-Fort Worth (Urban Land Institute 1985, pp. 28-29).

### **State Use of Telecommunications**

Most states are major users of telecommunication systems. Deregulation is forcing states to consider new ways of managing their communications systems. (Similar pressures are placed on private users.) Government and business have historically relied on the local telephone company to do telecommunications planning for them. Just as private firms have begun to do their own telecommunications planning, states are realizing that they must take on this task as well. Although states have built up considerable expertise in data processing and information systems, an equivalent organizational capacity has yet to be developed in the area of state telecommunications management (Howe 1985).

With the advent of divestiture, public and private organizations can no longer afford to rely solely on one firm to provide planning, equipment, local telephone service and long-distance service. Given the rising demand for equipment and telephone lines, it will be essential that policymakers and managers of telecommunications systems become an integral part of all government operations. This is particularly true because government services are information intensive, encompassing wide-ranging activities like registration of motor vehicles, the operation of libraries and schools and the collection of taxes and fees.

A recent survey of five states highlights the new challenges facing government. The survey revealed that these states "had no idea of what their exact annual telecommunications expenses are. Many states still rent or lease large quantities of old-fashioned rotary phones from the operating companies. Indeed, a few states are just beginning to find out exactly how many of the phones for which they are paying are actually on hand" (Howe 1985, p. 30). Neither New York State nor New York City, which are the two largest customers of New York Telephone, has a comprehensive and up-to-date knowledge of its telecommunications capital plant and operating costs.

Many public services could be improved through the use of new communications technologies: state lotteries are one of the most innovative examples of a public-private collaboration in the use of computer-based communications. Regardless of one's judgment on the propriety of gambling, lotteries demonstrate one way in which telecommunications can be used to provide all citizens with an opportunity to participate in a state activity. In many states, it is far easier for the average

citizen to buy a lottery ticket than to apply for unemployment insurance, register to vote, or obtain a driver's license. States have been far more innovative in contracting with computer firms to operate lotteries in conjunction with storekeepers than in applying similar technology to traditional public services. This may reflect the higher value citizens place on spending to win rather than voting to spend.

It is essential for states to recognize, as more and more private firms do, that telecommunications is not just a cost of doing business: it is a strategic asset in meeting an organization's goals and serving clients. For most nonprofit and public entities, increased pressure to control telephone costs may force reconsideration of their approaches to telecommunications management and more efficient performance of their functions. For example, New York State has 240 circuits between New York City and Albany that are unused after 5 p.m. but are not leased to other users. These circuits could theoretically provide facsimile ("fax") service between the state capitol and the state's largest city for services such as an intra-state "zap mail" service.

### **Telecommunications and Economic Development**

The telecommunications infrastructure in the United States has been designed and managed largely by private firms (AT&T, independent telephone companies and numerous rural telephone companies). Today, the boundaries between telecommunications firms and other types of business have broken down. General Motors owns Hughes Communications and Electronic Data Systems; Citicorp operates a global satellite system; IBM owns part of MCI; and General Electric is about to acquire RCA. Further, many private firms are actively engaged in creating new telecommunications systems. Though invisible to the general public, these systems are the highways of the future. Unlike other critical components of the nation's infrastructure such as water supply, roads and waste treatment facilities, the communications infrastructure has been and will continue to be designed, built and managed by the private sector. In a technologically-intensive industry such as telecommunications, it is important to understand the private sector's role as the source of innovation and development while recognizing the limited, but essential, tasks of government.

Ironically, state governments know far more about the location of water and gas mains than about the location of satellite dishes, fiber optic systems, and microwave transmission paths in their jurisdiction. Yet information about a state's telecommunications infrastructure is of importance to public agencies concerned with environmental hazards, emergency communications, and office park or industrial development. It is particularly important that state governments recognize the role of communications technologies in the location of private firms. The new telecommunications infrastructure opens up new development opportunities in areas that offer skilled labor, good transportation access and high quality public services.

***New York State: A Case in Point.*** Changes in telecommunications can be illustrated by the case of New York State. Advances in telecommunications technologies are critical to New York State's economy because of the state's large concentration of international and information intensive industries. For more than a decade, service employment has been higher in New York State than manufacturing employment. This growing service sector is far more reliant on the wires and ducts that move information than the roads and harbors that move goods. New York's preeminence as an information state is underscored by the fact that 9 of the state's 10 largest private employers either are major users or developers of advanced communications systems.

Moreover, the state is the headquarters for 13 of the nation's 50 largest banks, 10 of the 50 largest diversified financial service firms, 8 of the 50 largest insurance companies, and the nation's 3 largest television broadcasters. Almost two-thirds of the state's total private employment is in information intensive industries, accounting for more than 4,680,000 jobs. For the United States as a whole, the information sector accounts for 56 percent of total private employment.

Information handling and processing is not confined to information-based firms; it touches all economic activities. Advanced communications systems not only have allowed New York State firms to extend their geographic reach and serve global markets, but these systems have also encouraged the growing presence of foreign and domestic banks in New York State. In addition, the day-to-day activities of department stores, hotels, and local shopkeepers depend on reliable, high quality telephone systems. Telecommunications is no longer just an expense of doing business; it is a critical component of a firm's operations, strategic orientation and growth potential. The development and widespread use of "800" telephone numbers, electronic credit verification, remote work, and computer-based communication underscore this point.

Advanced information technology firms are dispersed throughout New York State. For instance, the nation's largest computer manufacturer (IBM) is headquartered in the Hudson Valley; Eastman Kodak, the nation's leading manufacturer of information retrieval systems is located in Rochester; and Grumman, the nation's foremost manufacturer of airborne electronic devices is based on Long Island. While advanced technological systems are manufactured in upstate New York and on Long Island, the most intensive use of new telecommunications technologies occurs in New York City. New York City is the international communications capital of the United States; more than 20 percent of the nation's overseas message units originate in New York City, more than twice the number that originate in Los Angeles, the nation's second largest source of overseas telephone traffic.<sup>2</sup> New York Telephone has built the nation's busiest switching center in lower Manhattan, capable of handling one million calls per hour.

***The Role of Telecommunications in Economic Development.*** A recent British study outlined the three factors that influence telecommunications' role in development:

The stock of knowledge of the...labor force and of its enterprises, which are essentially products of the education and training system.

The quality and intensiveness of information networks within the region, which enable the stock of knowledge to be rapidly drawn upon and utilized to advantage.

The nature and variety of the region's communication and information links with the rest of the world, which determine whether the region's stock of knowledge becomes enriched over time or whether it atrophies (North of England County Councils' Association 1985, p. 7).

Economic development in telecommunications is not only a matter of hardware. In formulating economic development policies, an educated and productive workforce is as important as an advanced telecommunications infrastructure in retaining and attracting the growing information-

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<sup>2</sup> For a detailed discussion of telecommunication in a major city, see Moss 1986a.

intensive industries. It is especially striking that the private sector in New York City is building the most advanced telecommunications systems in the nation, while the last innovation in the typical public school classroom was the blackboard and chalk. Telecommunications policy-making must now extend beyond the confines of regulation. Social and economic demands will require state government to assume a new role: that of partner in shaping the new telecommunications infrastructure and building a skilled labor force. As Anne Branscomb has said, "It seems unlikely that the information infrastructure for converged electronic media will develop its full potential solely fueled by private interests, entrepreneurial spirit, and profit-centered motives. There is ample room for public will to find its way into a full-service electronic information marketplace" (1982, p. 172). This does not mean that state governments should finance and build new telecommunications systems, but rather that the public sector needs to be creative in fostering private sector initiatives in the development of new telecommunication systems that serve important economic purposes.

***Public-Private Collaboration: The Teleport.*** The Teleport, a joint venture involving the Port Authority of New York and New Jersey, the City of New York, Merrill Lynch Telecommunications and Western Union Communications Systems, demonstrates the changing role of business and government in the development of new telecommunications systems. The Teleport consists of three elements: a fiber optic network, satellite facilities and an office park. The 150-mile regional fiber optic network serves New York and New Jersey and is linked to an interference-free satellite facility on Staten Island that can accommodate 17 earth stations. The land on the adjacent 100-acre office park is leased by the City to the Port Authority of New York and New Jersey, which has responsibility for land development and the technological infrastructure. A private firm, Teleport Communications, Inc.,<sup>3</sup> is responsible for the design, marketing, and operation of the telecommunications systems. Before it even began operation in 1985, the Teleport had become a prototype for other regions throughout the country seeking to stimulate economic development with new communications technology.

Teleport has been notably successful in providing an alternative means of local communications service within the New York-New Jersey region. Teleport's fiber network is used by Dow Jones, Bankers Trust, Merrill Lynch, and several communications carriers.<sup>4</sup> Four earth stations already are in operation, and the satellite facilities are being used by the Catholic Telecommunications Network of America, the Financial News Network, and the European Broadcasting Union. Since its inception, Teleport has been able to capture satellite traffic previously transmitted from Satellite Gateway in Carteret, New Jersey. In an era when much public attention is given to firms relocating from New York to New Jersey, the Teleport has proven to be a strategic factor in attracting telecommunications transmission services from New Jersey to New York.

Although Teleport was conceived as a project to assure access to communications satellites, the success of Teleport's fiber network as a supplier of local communications demonstrates the importance of advanced communications systems for moving information within metropolitan regions. Moreover, Teleport's fiber network is linked to downtown Brooklyn, Jamaica, and the

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<sup>3</sup> Ninety-five percent of Teleport Communications, Inc. is owned by Merrill Lynch Telecommunications, Inc., and 5 percent by Western Union Communications Systems, Inc.

<sup>4</sup> Including AT&T, U.S. Telecom, Cable and Wireless, Allnet Communications Services Inc., Satellite Business Systems, ITT and Argo Communications.

Astoria Studios, enhancing the telecommunications infrastructure for economic development in those locations.

***A Digital Thruway: Telecommunications and Rights-of-Way.*** Public rights-of-way are valuable and often underused strategic economic development assets for most states and local governments. For example, one of the most promising opportunities to strengthen New York State's telecommunication infrastructure is by using the right-of-way along the Governor Thomas E. Dewey Thruway. Almost every major railroad in the United States has allowed its rights-of-way to be used for new optical fiber systems, and government right-of-ways are equally valuable. A fiber optic cable placed alongside this road would easily link upstate and downstate metropolitan areas. Although Governor Cuomo first proposed such a "Digital Thruway" in his 1985 "State of the State" address, implementation has been delayed by the Federal Highway Administration. The Thruway's right-of-way provides several distinctive advantages for a fiber optic communications system: it is in close proximity to more than 80 percent of the state's population; it lowers the cost of construction since existing roads and sidewalks do not have to be torn up; and it provides a simple one-stop method of obtaining a right-of-way, rather than requiring approval from numerous governmental agencies and private landowners. Further, leasing the Thruway right-of-way for a fiber optic system would spread the geographic benefits of an advanced telecommunications infrastructure while simultaneously generating revenue for the state government. The recent decision of the Metropolitan Transportation Authority to seek bids for using its rights-of-way in the New York metropolitan region is a good example of the active role government can and should provide. Selling or leasing these rights-of-way will strengthen the telecommunications infrastructure in the nation's largest metropolitan area at little or no public expense.

***Implications for Urban and Rural Communications Systems.*** The deregulation of telecommunications in the United States will heighten differences between the large metropolitan regions and rural areas. Large cities are benefiting from early access to the new long-distance fiber systems and improved regional and intra-building communications systems. Economist Benjamin Chinitz has argued that advances in communications technologies have increased the "holding capacity" of cities for processing and moving information. Just as the telephone and elevator made possible the concentration of offices in a skyscraper, the new telecommunications technologies are having a similar concentration effect (Chinitz 1984). Although new communications technologies permit geographic dispersal in theory, the most intense demand for this new infrastructure is oriented towards those large metropolitan regions that are major information centers. The economics of the situation have been starkly noted by Joseph Vellone, Special Counsel to the National Telephone Cooperative Association. According to him, urban phone systems can link up with thousands of customers per mile, compared with Rural Electrification Administration borrowers' ability to link up only on an average 5.8 customers per mile of line, with an average investment cost of \$1,954 per rural customer in 1983 (Vestal 1986, pp. 26-28). This will present a future challenge to state policymakers concerned with assuring access to advanced telecommunications throughout a state.

For policymakers seeking to foster economic development in outlying areas, it is vital to understand the importance of information processing and an advanced telecommunications infrastructure. The success of mail-order businesses based in small towns, such as L.L. Bean and Land's End, has been partially due to their ability to overcome limited local markets through a combination of catalogues and "800" telephone numbers. For communities with a skilled labor

force and strong manufacturing enterprises, telecommunications creates opportunities for growth by extending market reach.

Public officials concerned with economic development traditionally have emphasized the availability of labor, access to transportation arteries, and provision of tax abatements. State telecommunications infrastructure has rarely been incorporated into economic development policy-making. Yet telecommunications systems are integral components in manufacturing and service sector industries. Advanced communications systems permit large firms to concentrate their headquarters in one central location while facilitating the dispersal of manufacturing and routine information processing to suburban locations and small towns that offer better amenities and skilled labor.

***Economic Development and Taxation.*** When telecommunications was a highly regulated industry, states often relied on it as a revenue source, treating it as a captive, immobile utility. With the growth of telecommunications systems in banking and financial services and the use of electronic delivery systems, a serious challenge is being posed for state tax policy. For instance, New York State imposes gross receipts taxes on telecommunications carriers, subjects certain telephone equipment to real property taxation and has a sales tax on information services. In all three cases, advances or changes in technology will have important effects on the sources and amount of revenue generated.

In 1985, New York passed legislation reducing the gross earnings tax rate on telephone revenues within New York and amending the Real Property Tax Law<sup>5</sup> to impose real property taxes on telecommunications equipment owned by major users and communications companies. The State Board of Equalization and Assessment has criticized the taxation of telecommunications equipment as real property, and it is widely believed that such a tax represents a disincentive for the location of communications equipment and operation in New York State (New York State Board of Equalization and Assessment 1985). As Governor Cuomo warned in his approval message, "There is uncertainty as to the bill's effects on the competitive position of the telecommunications industry in New York State ... and the extension of the real property tax by the legislature to additional participants in the telecommunications industry raises economic development and tax policy issues which deserve additional study" (New York State Executive Chamber 1985). In order to address this problem, New York's Department of Commerce is initiating a major study to assess the economic effects of state taxes on the telecommunications industry.

As more firms become providers of communications services in New York and other states, it will also be necessary to determine whether taxes such as the gross receipts tax provide an adequate framework for generating revenue on the communications activities of private corporations, many of which are being conducted in-house. Further, as the electronic delivery of information services replaces the physical delivery of information, enforcing sales taxes on such services will be increasingly difficult in all states.

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<sup>5</sup> Section 1102.

## **Challenges to Policymakers**

Changes in the telecommunications industry present a variety of challenges to state governments. Although the private sector plays the key role in constructing the nation's new telecommunications infrastructure, deregulation and divestiture impose new demands on state government for telecommunications policy-making and management. The effects of new communications technologies are not confined to just one aspect of state government, but involve new approaches to public management, regulation, and economic development.

Because the Federal government's current policy relies on marketplace competition in the telecommunications industry, state governments across the country face new challenges to their traditional regulatory goals of low and averaged residential rates, universal service in outlying areas and maintenance of a viable public telecommunications network. The New York Public Service Commission, for example, has pressed to open the state's telecommunications markets to competition to assure high quality service and rapid innovation at low rates. New York was one of the first states (there are now 18) to allow inter-exchange carriers such as AT&T, MCI, and Sprint to provide intra-LATA as well as inter-LATA services, thus increasing the companies' interest in expanding in-state operations and helping to keep both long-distance and private line rates down.

In coming years, states will find themselves faced with new issues concerning telecommunications policy-making. Metropolitan areas, with their large concentration of customers, have traditionally and unknowingly subsidized telephone rates in rural, low-density areas. It is conceivable that deregulation will lead to new urban-rural conflict over the formulation of telephone rates and provision of services. Some state governments already are confronting the choice between encouraging a competitively priced, advanced telecommunications infrastructure essential to economic development or continuing cross-subsidized telephone services for low-income and rural populations. State governments also will face pressures to finance new telecommunications infrastructure as a purported means to stimulate economic development. Just as sports stadiums and convention centers have been popular economic development projects in the 1970s and 1980s, it is possible that telecommunications facilities will be the "technological fixes" of the 1990s.

Until now, state telecommunications policy was regarded as a technical matter best left to engineers and regulators. Elected officials relied on public service commissions to protect consumer interests and respond to industry interests. That narrow telecommunications agenda is no longer viable. The challenge for the future is to recognize the limits of public intervention in a technologically-driven industry. At the same time, states must understand the social and economic implications of telecommunications systems, and the need to incorporate telecommunications in the management of public services and in formulating economic development strategies.

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