

ELEMENTS AFFECTING TELECOMMUNICATIONS POLICY

by

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Telecommunications policy has been receiving increased attention during the past few years. The policy debates are focusing on infrastructure development, regulatory issues, competition, and equity. These debates will not end soon. Policy issues associated with the development and deployment of new telecommunications technologies will continue to be discussed in the years ahead. Development in the industry will continue to amaze us for we are just beginning to get a sense of the tremendous impact telecommunications technology will have on our personal and professional lives.

To discuss the topic of elements affecting telecommunications policy, I want to do several things. First, I want to define policy and provide a framework for the policy decision-making process. Second, I want to review some of the information that is being generated on telecommunications infrastructure and its increasing importance in rural economic development activities. Third, I will look at the various types of competition and conflict that are emerging on the telecommunication scene. Finally, I will conclude my presentation with a brief review of the key rural telecommunications policy issues facing us today.

POLICY AS A DECISION-MAKING PROCESS

There are three factors that impact policy decisions: political, economic, and equity. The political factor involves the key players like government, business and industry, and consumers. The economic factor focuses on the benefits and costs of policy decisions. The equity factor is concerned with the distribution of benefits and costs for those who may be impacted by alternative policy options. Policy is defined as a "definite course or method of action selected to guide and determine current and future decisions." A good policy decision-making process should do three things. First, it should address critical

problems and issues facing both public and private sectors, and individuals and communities. Second, it should clearly define the issues and identify the potential impacts associated with alternative policy choices. Third, it should attempt to maximize the benefits and minimize the costs to potential winners and losers. The analysis of alternative policy choices depends to a great extent on what questions are asked. For example, with regard to the topic at hand, should telecommunications policy discussions focus on regulation, competition, economic development, information access, universal service, education, health care, or costs to individual consumers? Each one of these topics can generate wide-ranging discussions and policy alternative specific to each issue. Or should the questions and discussions attempt to address all of these areas in a more general sense? The answer to these questions is a policy decision in and of itself.

TELECOMMUNICATIONS INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

Telecommunications infrastructure refers to copper wire, switching facilities, fiber optic cable, coaxial cable, switching equipment, and satellites. This infrastructure is used to move voice, data, and video from one place to another. The public switched network refers to the telecommunications infrastructure that makes telephone services accessible to all. It is being compared to rails, roads, power lines, bridges, and canals. "highways" that have been so important in the past. These "highways" moved people, raw materials, and finished products in the industrial era. Telecommunications represents a new "highway" that will move information and expertise. This new "highway" and the new information products and services that are available on it are becoming more critical to the ability to compete in the global economy. This highway is equally capable of contributing to the quality of life that individuals and communities want and desire.

We can get an idea of just how important telecommunications is for rural economic development today by examining the topics of recent conferences and studies that have focused on the importance of telecommunications for rural economic development.

In January 1991, the National Governors Association held a conference on Rural America in the '90s. A key session focused on telecommunications and was entitled "Distance in a New Light: Telecommunications and Rural America. What's next for rural communities? How can states respond?" The focus of this session was on the new infrastructure paradigm that is made possible through telecommunications technology — the concept of the highway of the future.

In many ways, the structure of the rural economy helps to drive this new paradigm. In rural areas, the service economy predominates and manufacturing remains very important. Insurance, real estate, and financial companies can easily locate in rural areas. Retail firms can service national markets from rural areas with the appropriate telecommunications technology. The U. S. manufacturing sector is becoming increasingly dependent on telecommunications technology, especially with lower cost factors in rural areas. Just-in-time inventory control is increasingly important and possible through telecommunications technology. Increasingly, the link between telecommunications and the global economy is impacting the ability of firms to compete in international markets. In short, new opportunities available through telecommunications can help rural communities remove barriers of distance, time and geography, and compete in the global economy. From the demand side, rural communities, businesses and consumers need to develop a better appreciation for uses of telecommunications technology.

Regulatory and economic policy questions were also raised at the conference. States, for example, can influence such things as the cost and quality of telecommunications services through their responsibility for setting rates of depreciation. While large businesses have many more options in telecommunications to reduce their costs regardless of rates or locations, states can influence rural areas by setting rates that encourage small businesses to locate in rural communities.

Nine months later, in September 1991, the Economic Development Administration, GTE, and the National Council for Urban Economic Development sponsored a conference entitled "Telecommunications and Rural Economic Development: Improving Local Competitiveness." This conference focused on policy questions for local leaders: How can telecommunications aid

rural development? How can local leaders have an impact on the regulatory process? How can rural communities benefit from local applications of telecommunications? With a theme of advocating telecommunications as an economic development tool, the conference promoted ideas like telecommuting using multi-tenanted telework centers, telecottages, smart buildings and information parks. Other suggestions included attracting information department industries to rural areas, and developing telecommunications networks for educational and health care uses that could also be used for private companies.

In October 1991, two regional conferences were held. One was sponsored by the Council of Great Lakes Governors and was titled "Great Lakes Telecommunications: Rural Opportunity, Regional Advantages." This conference looked at regional priorities, telecommunications as a key development tool, telecommunications solutions to rural problems, new networks for telecommunications based rural economic development, strategic technology alliances for improving the region's telecommunications advantage, and promoting telecommunications in rural areas.

The second regional conference was sponsored by the Appalachian Regional Commission. Entitled "Telecommunications, Connections for Rural Competitiveness," this conference looked at the importance of telecommunications for business and industry, education and training, government services, and medical and health care applications.

Two national studies were made available recently. One was conducted by the National Telecommunications Information Agency and was entitled "Telecommunications in the Age of Information (NTIA, 1991)." This study looked at the importance of telecommunications infrastructure as a factor of production, the relationships between telecommunications, economic development, and the delivery of services, the increasing importance of public and private networks, the evolution of standards and technology trends, international comparisons, the relationship between government policy and infrastructure development, and the continued importance of updating the universal service concept to keep pace with new and advanced telecommunications technologies.

"Rural America at the Crossroads, Networking for the Future" was conducted by the Office of Technology Assessment of the U. S. Congress (1991). This study focused on the potential benefits for Rural America of advances in telecommunications technology and promoted the concept of RANs or Rural Area Networks in rural communities. By including government, business and industry, education, health care, and residential users in community-based Rural Area Networks, it becomes economically feasible to deploy state-of-the-art technology in rural communities. The report also stressed the need to develop appropriate public policies that are flexible, creative, and capable of meeting the diverse telecommunication needs of rural America.

These conferences and studies were national and regional in scope. Many similar events occurred at the state level as well. In Pennsylvania, for example, telecommunications has been the key subject of several conferences and studies.

In April 1990, the Pennsylvania Public Television Network held a conference entitled "Rural Telecommunications: Exploring the Opportunities. A Focus on education and Economic Development Policy Options." Speakers stressed the need for policy intervention to improve rural economic performance, mitigate the effects of deregulation and reduce the inequities of opportunities. Important policy questions were raised such as "Can rural communities afford digital switching and fiber optics?" and "Who pays for these enhancements?" Key economic policy issues were identified that dealt with rate of return regulations, depreciation policies that reflect forward looking capital recovery, and cable TV cross ownership which is currently not allowed.

The Pennsylvania Economic Development Association's conference held during March 1991, included a presentation on "Telecommunications and Economic Development: Pathways to the Future." (Mazziotti, 1991). Shortly after this conference, the Pennsylvania Chamber of Business and Industry launched a study on the importance of telecommunications to economic development activities. The report, "Electronic Highways: Providing the Telecommunication Infrastructure for Pennsylvania's Economic Future" (1991) examined economic and regulatory issues in detailing the important relationship between telecommunications infrastructure and economic development.

The Governor's Economic Development Partnership Committee on Telecommunications undertook a similar study that focused on the following areas:

- ♦ telecommunications as a rural development tool;
- ♦ expanding education opportunities through telecommunications;
- ♦ opportunities to improve the delivery of health care services using telecommunications
- ♦ impact of changes in telecommunications technology on business activities; and
- ♦ nonregulatory obstacles and solutions that could impact telecommunications infrastructure development.

Finally, the Pennsylvania Public Utility Commission developed an RFP to look at the relationship between telecommunications and economic development.

Let's consider the role telecommunications plays in several areas that impact on economic development: business and industry, education and training, government services, and health care. First the importance of telecommunications for business and industry is growing. The data communications market is growing about 15 percent a year, compared to the 3 percent growth rate for traditional telephony (Dorros, 1992). Telecommunications has become one of the most significant criteria corporations use in making location, relocation, and expansion decisions. Today, nearly 80% of corporations say telecommunications is important or very important in facility planning. Ten years ago, only 30% of corporations said so. A recent MIT study reported that telecommunications is one of the five most important factors to future business start-up and location decisions, ranking along side of an available labor force and a reasonable tax structure.

More and more, companies talk about telecommunications first before talking about rental rates, design, parking and all other things associated with a relocation decision. Business and industry are spending over 40 percent of their equipment expenditures on telecommunications and computers today

compared to 20 percent ten years ago, and by 1995, it is expected that nine of ten white collar jobs will involve computer work stations (Dillman et al., 1989). A McGraw Hill study found that for every dollar invested in telecommunications, consumers can expect three dollars in economic resource savings.

Here are a few examples of how telecommunications technologies are benefiting business and industry. Texas Instruments uses a satellite network to hold weekly news briefings for employees around the world, showing latest products, competitor's products, sales targets and product applications. TI also uses satellite downlinks of university courses from the National Technical University to keep their electrical engineers technically current.

Creating jobs, providing public services, and keeping current with the latest technology are constant challenges for rural communities. Economic developers in Kentucky are exploring the concept of telework centers that would be equipped with telecommunications technology to support a wide range of users through an electronic highway into rural communities. These electronic highways would support research, economic development, and education efforts.

Video conferencing saved JC Penny \$500,000 in annual travel costs. Electronic data interchange enabled Chrysler to reduce paperwork by 20 percent. Citing telecommunications as a primary factor, the American Automobile Association moved its headquarters to Heathrow, Florida, an all fiber community. The U. S. Department of Defense chose Carnegie Mellon University as the site for its \$103 million Software Engineering Institute, largely because of the university's leadership role in artificial intelligence and robotics. Walmart has its own satellite communication system for up-to-date inventories and information on consumer purchasing patterns.

The importance of telecommunications for rural industry is also growing. Increasingly, rural industries need to be connected to the outside through advanced telecommunications technologies to ensure their survival and enable them to compete in the global marketplace. A recent study by Parker and Hudson (1992) established a link between outdated telephone systems and declining rural economies. The authors report that 59 percent of government-

supported rural phone companies still use analog switches and private companies in rural areas are slow in converting to digital switches. They conclude from national data that investments in high quality telecommunications infrastructure are critical to long-term economic growth.

For rural areas to be successful in gaining access to and using advanced telecommunications technology, they are going to have to encourage a range of potential users to commit to using that technology. Otherwise, the costs of providing advance telecommunications technology will be prohibitive for many rural communities. This means that government, business and industry, schools, health care providers, residents and other parties must cooperate in developing and demonstrating the demand for an area network. If these different institutional partners can do this, they can provide the telecommunications providers with the financial incentive to bring the necessary service into the community.

Next, let's consider education and training applications of telecommunications. Land based networks are being developed that can connect research-oriented firms, government agencies, health research centers and institutions of higher education with each other and with national networks like InterNET and NSFnet. Satellite networks are being used increasingly in distance learning to provide rural students access to courses and subjects not available locally. Five years ago, less than ten states had invested in distance learning. Today, almost every state has invested or at least developed an interest in distance learning technology. Estimates predict that by 1995, 95% of all learning institutions will be using distance learning. Since education and economic development go together, rural areas that utilize distance learning will have an advantage over those areas that don't.

Government services are also being impacted by telecommunications. State governments are looking to telecommunications technology to improve productivity. State governments are also designing, developing and using statewide networks to link government agencies with regional and district offices. In Pennsylvania, for example, the Department of Education uses Penn State University's statewide telecommunications network to interact with the state's 501 school districts. County level job service and human service agencies

are exploring the feasibility and benefits of establishing a telecommunications-based central data base for clients. With such a system, client involvement and progress with participating referral agencies can be tracked and service delivery can be improved. It is important that policy makers involved in the design and development of statewide and regional networks keep in mind the next generation of technology. Changes will occur and upgrades will be needed to stay current.

Medical and health care applications of telecommunications are also increasing. The health care industry is a prime candidate for telecommunications technology. Through telecommunications, specialized expertise can be moved from one place to another cheaper and easier than moving the specialist.

More and more applications of advanced telecommunications technology are being used to connect rural health care professionals with major medical systems and specialists to improve diagnosis and assist in less routine procedures.

Telecommunications technology is also providing easier access to medical information needed to keep rural health care professionals up-to-date with the latest published research results. Likewise, health care professionals in remote areas can find it easier to participate in continuing medical education programs through telecommunications.

COMPETITION AND CONFLICT IN THE TELECOMMUNICATIONS INDUSTRY

With all this focus on new opportunities through telecommunications technology comes competition and conflict. States and nations are competing with each other to be the first to capture the benefits of telecommunications in a variety of ways.

Attracting new industries and supporting and assisting the growth of existing businesses and industries is one area states are targeting to promote the use of telecommunications. Some states are promoting the use of telecommunications in their economic development activities. Other states are develop-

ing and supporting efforts to increase the use of telecommunications in educational activities like distance learning. Still other states are encouraging and facilitating the development and use of high-speed data networks that benefit university education and research activities as well as private sector research activities. States are also addressing regulatory issues that impact the deployment of new telecommunications technologies and infrastructure. And some states are funding the construction of telecommunications infrastructure.

Competition is also occurring among countries. While the U. S. currently has the best telecommunications infrastructure in the world, the gap is narrowing (EDP report). Japan has committed to deploy an Integrated Services Digital Network, or ISDN, to every business and home by the end of the decade and fiber to the home by 2015. The ISDN allows voice, data, and video images to be transmitted over the same telephone line at the same time. Japan has also initiated programs which will support development of "smart cities" and create regional information hubs that serve as administrative centers and platforms for economic growth. Key components of Japanese telecommunications policy are infrastructure investment and research and development of a broad range of applications. In the European Community, Britain, France, and Germany have ISDN services, and other countries are developing metropolitan area and international network capabilities.

A major battle is currently being waged between the telephone, cable and print industries. The debate is focusing on the potential entry of telephone companies into the video and information services markets. The U. S. congress and numerous state legislatures are considering various pieces of legislation which would allow telephone companies to compete with cable companies in providing video and information services.

The telephone companies are seeking legislation that would allow local exchange carriers (LECs) to offer cable TV services. They are promoting policies that encourage the sharing of telecommunications infrastructure. They are calling for fewer restrictions on cable cross-ownership, accelerated depreciation rates, and incentive regulation to support the accelerated deployment of new technology.

The telephone industry argues that its proposals would help to create a telecommunications infrastructure that is competitive with other states and countries, and result in more jobs as well. Through the deregulation of competitive services, accelerated depreciation schedules, and the accelerated deployment of a fiber-based broadband telecommunications network, telephone companies are pointing to numerous anticipated benefits that would impact consumers, small and large businesses, rural and urban areas, and the total economy.

The newspaper industry is opposed to these proposals. As information providers through the printed media, newspaper companies have a lot to gain by maintaining control over the distribution of the information they provide. In fact, many members of the newspaper industry are also involved in the cable and broadcast businesses. Many newspapers are also diversifying into interactive telephone services and on-line access to full text databases of their newspapers. Telephone companies are quick to point out that the newspaper industry also opposed the entry of radio broadcasters into the news business in the 1930s.

The cable industry is also opposed to allowing telephone companies to provide video and information services. Their opposition is based on several concerns. Telephone companies, with significant capital at their disposal, could eliminate competitors and reduce the public's freedom of choice. With the accelerated depreciation and deployment of new infrastructure, questions arise about who will pay for the improvements.

The telephone industry's response to these issues is that cable and newspaper companies are afraid of competition and with appropriate safeguards, consumers can still expect reasonable rates for universal basic services.

In the meantime, cable operators are entering the cellular service market, one of the fastest growing segments of the telecommunications industry. They are involved in bypass companies that target high-volume, low cost voice and data traffic from businesses. Using a fiber optic network, bypass companies link local businesses with branch offices and long distance companies. This strategy allows them to avoid the high costs associated with residential

services. Telephone companies, as the provider of last resort, are left to provide this service.

Cable operators are also entering the Personal Communications Service, or PCS market. Cable systems are used to link PCS pocket phones to the public telephone network from almost anywhere. Some cable companies are already transmitting PCS phone calls across the country using cable TV facilities.

The bottom line in this debate is that under current laws, cable operators and newspaper companies can provide traditional phone services anywhere, and telephone companies are prohibited from providing cable TV and other video services in their franchise areas. If this situation is changed, can consumers expect to benefit from the competition for cable TV and other information service markets, or will they only have access to what the cable industry refers to as a "one-wire world" provided by the local telephone company? How much will consumers have to pay for access to services they may not want or use? How will rural areas be impacted? These are just some of the questions that are being raised as competition increases in the telecommunications industry.

RURAL TELECOMMUNICATIONS POLICY ISSUES

Telecommunications policy making is being impacted by the usual approach to public policy. Public policy decisions are often made in response to a crisis. Most people don't perceive that there is a crisis in telecommunications yet. Tax payers would probably choose to support a new highway to connect key cities before they would support a public data switch network.

A key policy issues stems from the fact that many of our currently regulations and rules governing the telecommunications industry are uneconomic. More direct linkages need to be developed between telecommunications policy and economic development. Regulatory decisions that impact prices and the development and growth of the telecommunications industry usually do not include an analysis of their impact on economic development. Regulatory agencies must be encourage to consider these impacts when changing or establishing new telecommunications policies. Another problem is that there is not a lot of participation in the regulatory policy process by state

development departments. These departments need to encourage improvements in telecommunications just as they do for air and ground transport.

For rural areas, telecommunications technology has the potential to reduce the economic cost of space by allowing easier interaction with urban society (Wilkinson, 1989). Continued improvements to the public switch network are critical if rural American is to benefit from telecommunications. Urban areas have access to both public and private telecommunications networks, but rural areas are dependent on the public switch network.

These are other questions regarding the benefits of telecommunications of rural areas. With less access to the telecommunications technologies available today, rural areas already are at a disadvantage. If regulatory changes are enacted to encourage the deployment of state-of-the-art communications technologies, rural areas could benefit. However, safeguards are needed to ensure that rural areas will benefit from this deployment without having to pay an unfair share of the costs.

In many cases, rural areas will need assistance in determining what technologies are most important, and in organizing themselves to be able to take advantage of the benefits offered through telecommunications technology improvements. Reluctance to change in rural areas will also have to be addressed if rural society is to benefit from access to new telecommunications technologies.

The telecommunications policy issues facing rural America are summed up best by Don Dillman, who has done a lot of work in this area. He says, and I quote "The overriding policy issues are whether rural America gets an adequate telecommunications infrastructure and whether this infrastructure will be used for rural development" (Dillman, 1991). In conclusion, this is a critical time in the evolution of telecommunications policy. Proposed regulatory changes are subject to a lot of scrutiny and analysis, and do not come easily. Competing interests have much at stake and compromises will not come easily. One thing is certain. Policy choices and decisions that are made in the months ahead will impact the telecommunications industry for the next 25 years. For rural America, the stakes are very high.

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