

ISSUES IN
DOMESTIC TELECOMMUNICATIONS:
DIRECTIONS FOR NATIONAL POLICY



special publications

ISSUES IN DOMESTIC TELECOMMUNICATIONS: DIRECTIONS FOR NATIONAL POLICY



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FOREWORD

Under Executive Order 12046, which became effective on March 17, 1978, the Secretary of Commerce was delegated many of the responsibilities that were formerly lodged in the Office of Telecommunications Policy in the Executive Office of the President. Among the duties vested in the Secretary was the responsibility to serve as "the President's principal adviser on telecommunications policies pertaining to the Nation's economic and technological advancement and to the regulation of the telecommunications industry." The Secretary was also instructed to "conduct studies and make recommendations concerning the impact of the convergence of computer and communications technology," and to conduct "economic and technical analyses of telecommunications policies, activities, and opportunities."

It was in recognition of these responsibilities, as well as changes in the industry and its regulation in recent years, that NTIA early in 1985 began a comprehensive review of the telecommunications sector. In 1979, a similar overview was undertaken at a time when the Congress was engrossed in a proposed overhaul of the Communications Act of 1934. Our study then focused on possible legislative changes that, for various reasons, were never forthcoming.

Our present analysis has a different focus. Since 1979, major regulatory and structural changes have occurred without Congressional action (although with the Congress' tacit approval). These events, coupled with an ever-quickenning pace in the development of communications technology, have produced a need for a study that pulls together the diverse elements of change and attempts to anticipate directions and future questions. This is a task that this agency is uniquely equipped to undertake.

In analyzing the questions of tomorrow and the rest of this decade, we have attempted to look at the telecommunications sector from several perspectives.

First, we see no need to go back and reargue past decisions. For instance, while there is much debate over the wisdom of the AT&T divestiture (as there was when it was being considered), it makes little sense to rehash that outcome. Instead, we need to focus now on how best to make that decision work. If there are obvious adjustments that are needed to secure the benefits of that decision, we should get on with advancing them and debating them.

Second, we tried to undertake this analysis from the viewpoint of the consumer, the individual, or the corporation

that needs a modern, reliable, and efficient communications system for convenience, necessity, or business. Are the decisions of the recent past conferring all of the benefits on the consumer that were expected, or do we need adjustments to make sure that these benefits flow? What will matter most to the consumers of the future, and how should regulation be changed to assure that their needs are met? These, and many other questions, were part of our emphasis.

Third, we sought to take into account the impact that recent decisions, such as the AT&T "Modification of Final Judgment" (MFJ) and the Federal Communications Commission's (FCC) Second Computer Inquiry ruling, have had on the U.S. market and on the ability of U.S. firms to compete in global markets. How many foreign firms are now competing in our market for business that before was going to U.S. companies? Are there regulatory changes needed to make our companies more competitive? Are we too restrictive in some cases in prohibiting U.S. companies from competing in foreign markets, or are there good reasons for those restrictions?

Finally, but perhaps most importantly, our study was conceived from the point of view that the telecommunications infrastructure of this country is much more than just a telephone system. The principle of universal service continues to be a cornerstone of our policy. An equally important goal, however, continues to emerge: the need to make our system the best possible "pipeline" for any form of information in the world.

Our telecommunications system in the future will function as the interstate highway system of the "information age." Its impact on our economy, and our ability to have efficient and competitive industrial and service sectors, will continue to grow. No area of the country should be left with a system that hampers economic development; no one group of citizens should be saddled with more of the costs of a modern system than any other. All citizens should continue to have basic services which are within their economic reach; all should also enjoy the choices and advantages that the marriage of the computer and telephone can provide. It is clear that technology will continue to develop and we must encourage it. It is equally clear that rigid regulatory distinctions premised on today's technology will become increasingly obsolete. Our policy die has been cast over the past 15 to 20 years, largely because of the advance of technology; it will not be changed now.

We realize that some of the recommendations of this study will be controversial. There are some who feel that no such analysis is needed. Others will disagree with some, perhaps all, of our conclusions. We have not been able to

deal with every issue. Instead, we have tried to concentrate on significant points of controversy that have already emerged, or which we see on the horizon. Obviously, no changes will occur just because we have noted a need for action. The changes will occur only as they are considered fully in the appropriate forums. In some cases, we have pointed out issues that will be the subject of future study here. In others, we hope that actions will be taken without considerable delay. Beneficial changes can best be accomplished by development of a broad consensus.

Structurally, this report is divided into several parts. In an overview section, causes and results of the changes affecting the telecommunications sector are identified, and attention is focused on a number of related developments and issues. There follow separate chapters dealing with technology, structural and other industry constraints, long-distance competition, Federal-state issues, capital recovery, rural concerns, and trade matters. Finally, the conclusion summarizes major policy concerns which require attention and sets forth a number of recommendations.

CHAPTER I: OVERVIEW

For much of its history, telecommunications technology remained relatively stable and the industry focused on fulfilling predictable demands for basic telephone service. During this period, the U.S. telephone industry, largely unified under the leadership of a single firm, American Telephone and Telegraph Company (AT&T), achieved the important goal of establishing what stands today as the world's finest telecommunications infrastructure. The industry not only wired a continent, it accomplished much more. Through an array of pricing arrangements and internal cross-subsidies nominally sanctioned by regulators, the industry ensured universal availability of basic telephone service at affordable rates. With support from the Rural Electrification Administration and through other subsidies, the industry made it possible for Americans living in even the most remote rural areas to enjoy the telephone services they wanted and needed. Overall economic progress, the social and political integration of the Nation, and our national defense and emergency preparedness were furthered.

Policy Realignments

But that era of relative stability, predictable demand, and pervasively regulated telephone monopoly began changing about two decades ago, chiefly due to advances in the underlying technology. Telecommunications marketplace priorities were altered. Increased attention was accorded to satisfying diverse new customer demands. Furthering market penetration of basic services was no longer the overriding priority. Commendable state and Federal regulatory decisions, as well as sound rulings by the courts, facilitated procompetitive industry initiatives. As the competitive parts of the communications industry achieved critical mass, the pace of change accelerated which, in turn, placed increasing strains on traditional pricing policies and corporate arrangements.

Change brought uncertainty and the need to reform and realign regulatory policies. But it also yielded valuable new service options, stimulated innovation, and created new entrepreneurial opportunities. In the late Seventies and early Eighties, important steps were taken by the FCC to adapt to the new telecommunications environment. These steps included adoption of new rules in conjunction with the Second Computer Inquiry, rules aimed at minimizing potential expansion of regulation, curtailing possible anticompetitive cross-subsidies, and deregulating new service offerings. The FCC, through its "access charges" decisions, also sought to conform traditional pricing practices to today's competitive

realities. Coincident with these regulatory changes, AT&T was restructured in 1984 following the settlement of a Government antitrust action commenced a decade earlier. Like many of the FCC's decisions, this restructuring was intended to facilitate more effective communications competition.

Major Policy Questions

A virtue of the AT&T antitrust settlement was the creation of seven new industry players, the regional holding companies. Each had the human and capital resources to make it a major competitive force. But the AT&T consent decree, as ultimately entered by the judgment court, saddled these firms with a broad range of restrictions. The decree as interpreted and applied created what is, in effect, a new regulatory regime, premised on novel nomenclature and an imposing array of new product and geographic market constraints. An effect, if not the purpose, was sharply to curtail the competitive contribution that these seven large new industry players might otherwise make.

The AT&T consent decree has been controversial since its inception. Perhaps its most important feature is a pervasive "containment" philosophy that runs counter to generally acknowledged industry trends. A primary lesson of the past 20 years of telecommunications policy experience is that Government efforts to delineate domestic markets, to establish "no-trespassing" zones, and otherwise to cartelize this technologically and commercially dynamic industry will impose substantial costs and, most likely, will prove counterproductive. The neat dividing lines which once separated segments of the domestic telecommunications industry functionally and economically are becoming increasingly blurred by the steady advances in the underlying technology. Lines which might once have been plausible and defensible are no longer valid today, given intervening technological and commercial changes.

Recent Industry Changes

Major changes have occurred in the U.S. telecommunications industry since just 1982 when the breakup of the former Bell System was announced. IBM Corporation, for example, has acquired control of a leading supplier of customer premises switching equipment, Rolm Corporation, and is consolidating two of the leading long-distance competitive carriers, MCI and Satellite Business Systems, in which it will have a substantial role. For some \$8 billion, General Motors has acquired a leading data processing company, EDS, and a leading supplier of communications satellites, Hughes. AT&T has proposed selectively to reenter the local telephone business, connecting major customers directly to its

nationwide long-distance network. It has also acquired effective control of one of the world's leading office equipment firms, Olivetti, and established commercial alliances with a number of major multinationals including Philips and Fujitsu. Virtually every major foreign communications equipment supplier, moreover, has aggressively sought to enter the U.S. market since 1982.

Given these and likely future developments, many of the boundaries established under the AT&T consent decree should prove less and less defensible over the next few years. Both the regulatory and opportunity costs of policing these boundaries will continue to grow, without producing commensurate public benefits.

Costs of Restrictions

Preventing the regional companies or their subsidiaries from participating in markets other than some narrowly defined "local telephone exchange" market imposes opportunity costs in two ways. First, users are denied the ability to obtain services which might otherwise be available on an efficient and timely basis. Second, artificially limiting the number of firms which can participate in competitive markets denies users competitive benefits and choices they might otherwise have. Denying these companies, which constitute at least half of the U.S. telecommunications industry, the opportunity to compete against IBM, AT&T, ITT, NEC, and the other very large multinational companies in this field is an approach hard to square with conventional beliefs that competition will best be assured by allowing all to compete.

The costs and difficulties imposed on the public by the AT&T consent decree may be acceptable today as necessary to achieve a more effectively competitive market structure. Once "equal access" is accomplished, however, as mandated by the AT&T and related GTE consent decrees, the public policy case for continuing artificially to constrain the activities of the Bell Operating Companies will diminish.

The long-distance services market is fast approaching conditions of effective competition, as discussed in this report, and is likely to remain so. The public policy case for barring firms from participating in effectively competitive markets, subject to any appropriate safeguards, is very difficult to make. Similarly, preventing companies from participating fully in the communications equipment market will also prove increasingly difficult to justify in the future, especially in light of this country's growing communications trade difficulties.

Contributing to Trade Difficulties

Regulatory and judicial actions had the effect of opening up to foreign competition many parts of the U.S. communications equipment market, including customer premises equipment. The AT&T consent decree completed that process by opening up much of the market for network equipment that was previously served chiefly by a single firm, Western Electric. As discussed in the sections of this report dealing with industry constraints and trade issues, these measures, a strong U.S. dollar, and the persistence of foreign barriers to U.S. competitive entry, combined to yield record deficits in the U.S. telecommunications products sectors.

Retaining unwarranted restrictions on the companies that comprise so large a share of the U.S. communications industry almost certainly will continue to aggravate our current trade difficulties. It is not simply the AT&T consent decree which contributes to these difficulties. Under the FCC's Second Computer Inquiry regulations, unwarranted restrictions are imposed on AT&T and the Bell Operating Companies which have the effect, first, of denying consumers service options and, second, of moving "intelligence" out of the telephone network to customer premises equipment where foreign suppliers may predominate.

Government, through the antitrust laws, chose to alter the structure of AT&T on the ground that the size and vertically integrated nature of the former Bell System constituted an impediment to the future efficient development of our telecommunications infrastructure. In taking steps to eliminate the alleged distortions associated with private monopoly arrangements, however, we must also take care not simply to substitute the equally distorting hand of Government. Flexibility and adaptability, and a readiness to remove transitional limitations when they have clearly served their purpose, will be critically important if we are to achieve genuine and effective, not just Government-managed, competition in the telecommunications field.

Transitional Equities

In addition to competitive questions raised by the AT&T consent decree and the FCC's rules, there are important transitional equities which must be considered. Any change in a complicated regulatory system obviously entails certain costs. Public and industry expectations are changed, the value of investments can be affected, and the prices charged for services may be altered. It would be unfair, inequitable, and unsound as a matter of fundamental public

policy to visit upon any one group of communications users a disproportionate share of the costs associated with regulatory changes aimed at benefiting society as a whole. Similarly, the telecommunications industry should not be called upon to bear all of the transitional costs. If industry is obliged to shoulder a disproportionate cost burden, the effect will be to complicate, and perhaps forestall, necessary change. At the same time, it will increase capital costs as the investment community logically seeks to safeguard itself against the risk of unfair and unpredictable Government policy changes.

Rapid and, to some extent, uncontrollable technological and competitive changes in the telecommunications business have also placed strains on the traditional regulatory structure. For much of the past decade, disagreements between Federal and state authorities prevailed. This is far less true today, given changing attitudes at the state level and the greater attention paid to the need to collaborate constructively on the part of the FCC. As discussed in this report, however, further cooperation among regulatory authorities will be required in the future. Issues comparable to those with which the FCC grappled when it sanctioned interstate competitive services are increasingly arising at the state level. Both state and Federal regulators face a common dilemma: how best to ensure maximum competition and innovation by minimizing unnecessary regulation while, at the same time, safeguarding user interests where competition is insufficiently robust to serve as an effective surrogate for sound regulation.

The extent to which regulatory signals to industry and investors can be rationalized has important implications for the future efficient development of telecommunications services, as well as for protecting user concerns and interests. It also has implications for the introduction of new technology. It is important as a matter of fundamental national policy that the efficiency gains inherent in new communications technology not be diluted or forestalled by virtue of the regulatory and other transaction costs associated with its introduction. The ability to introduce new services and choices in some markets but not in others, solely because of regulation, could adversely affect that overall process. It could also result in undesirable differentials in the quality of service and range of choices available to users situated in different geographic locales.

Relatedly, there is the issue of telephone company capital plant and depreciation reserves. To keep residential telephone rates low, the industry traditionally depreciated plant and other investment slowly. Ratepayers benefited in the short-run, as current rates were thus artificially

lowered. This short-term benefit was secured, however, partly at the expense of future ratepayers. The rate base on which future rates would be calculated was kept artificially inflated and the industry did not make all the investment needed to provide for future services and to remain responsive and competitive. Deficiencies in depreciation reserve accounts -- reflected in discrepancies between net book and actual economic values of telephone plant -- developed. Similarly, extended depreciation periods both benefited and harmed shareholders. They too benefited since, in effect, telephone company rate bases were maintained at artificially high levels. They too lost, however, to the extent the rate at which these companies introduced the new technology necessary to maintain productivity and competitiveness was retarded.

The practice of underdepreciating telephone plant may have been sustainable, regardless of its benefits and costs, in a period of relative technological stability, predictable demand, and institutionalized barriers to competitive entry. When these circumstances changed, however, and the range of competitive technologies proliferated, changes in depreciation practices became inevitable. This report, therefore, reviews the changes in these practices which are desirable. It also recommends the equitable apportionment of necessary costs among both ratepayers and shareholders.

In considering issues of equity during this period of transition, imposing any disproportionate transitional cost burden on rural telephone subscribers, which the FCC has sought to avoid, would be unfair. It would also conflict with continuing national universal service goals. As importantly, however, all telephone subscribers should be afforded a reasonable opportunity to capture the benefits of the communications industry changes which are now underway. This report, therefore, in addition to recognizing the importance of reasonable measures aimed at safeguarding rural telephone users, also discusses ways to ensure that rural America realistically can benefit from these changes.

CHAPTER II: TECHNOLOGY -- AN ELEMENT OF CHANGE

Introduction

Technological progress has clearly been, and will continue to be, a major, driving force in the development of the telecommunications market. Technical innovations have created alternative ways to deliver traditional services, expanded the range of new services, and enabled more firms to enter both the equipment and service markets. Consumers already have a greater choice of equipment and services, often at lower prices than previously available. Over the next several years, firms will move quickly to introduce new commercial products that will further exploit the capabilities and efficiencies of modern communications and computer technologies.

The advance of technology is changing the character of the communications market. It is disrupting traditional notions that have guided service development since the inception of the telephone. In response to technical developments and consumer demand for a wider choice of service and equipment options, Federal and some state regulators, as well as the courts, have promoted competitive entry. This entry into traditionally restricted telecommunication markets has prompted reevaluation of traditional regulatory concepts. Policymakers continue to grapple with questions such as: which firms should be regulated and in what manner; what services and equipment should be tariffed; and how should costs be recovered by regulated firms?^{1/} In the future, new technical developments are likely to raise even more questions.

^{1/} The FCC has studied these questions in numerous proceedings, many of which are still open. For example, regarding the issues of which firms should be regulated and in what manner. See the Competitive Carrier Rulemaking, CC Docket No. 79-252 and the Long Run Regulation of AT&T, CC Docket No. 83-1147. Regarding the issue of which services or equipment should be regulated, see, for example, Computer Inquiries I and II, CC Docket Nos. 16979 and 20828, and resale principles discussed in Docket No. 20097 and CC Docket No. 80-54. Cost issues are being examined in various proceedings including CC Docket No. 78-72, CC Docket No. 78-196, and CC Docket No. 83-1145.

A majority of states already allow interLATA, intrastate competition (31 of 38 multiLATA states), while fewer states permit intraLATA competition (8 states). Many states have taken up the difficult issue of shared tenant services. See State Telephone Regulation Report, March 14, 1985, at 1-2.

This chapter sketches the current marketplace and describes the basic technical advances that are driving developments in the industry. It also highlights issues that policymakers, industry, and customers are likely to confront as technical progress continues to provide new choices.

The Benefits of Innovation
in the Telecommunications Marketplace

Innovation in telephone plant can be described in terms of four interrelated subsystems: a) switching, b) signaling, c) transmission, and d) terminal or customer premises equipment. Basically, transmission subsystems connect terminal equipment. The use of switching equipment reduces transmission facility requirements, while signaling equipment allows these elements to work together. Such facilities are subject to an almost continuous evolutionary development. Every day, for example, an average of two electronic switches replaces older electromechanical switches installed in central offices.^{2/}

Some suggest that new telephone plant is too costly and provides services to business customers which are of little use to the basic residential consumer.^{3/} They argue, therefore, that ordinary subscribers, receiving no clear benefits from new investment, should not be obligated to pay for this equipment.

There are actually numerous direct and indirect benefits of new plant innovation, however, which accrue to those who now make use of only basic telephone service as well as those requiring sophisticated telecommunications systems.^{4/} The continued development of telecommunication services which promote business efficiency also provides citizens with many indirect benefits, including employment opportunities, substantial tax revenues, and advantages from the continued competitiveness of local business concerns.^{5/}

^{2/} 1985 U.S. Industrial Outlook, at 30-7.

^{3/} See, for example, Comments of Honorable Gwen Moore, Chairwoman, Utilities and Commerce Committee, California State Assembly, March 29, 1985, at 6.

^{4/} The term, basic telephone service, used throughout this chapter, is also referred to as "plain old telephone service".

^{5/} Over the entire history of the telephone industry, carriers have developed services primarily to meet the needs of business customers. Even today, plant facilities are designed to accommodate peak traffic generated overwhelmingly by business customers.

By introducing new equipment into their facilities, carriers provide a variety of more direct benefits to ratepayers including:^{6/}

- o increased utilization of existing plant;
- o decreased maintenance or operations cost per channel; and,
- o better facility control and increased flexibility.

All telephone consumers benefit from new plant innovation -- those who need only basic voice services as well as customers who require more sophisticated services -- particularly with respect to gains in efficiency and carrier responsiveness. New plant also enables carriers to offer more varied services to customers. Some examples of innovative equipment already in place will illustrate the point.

The installation of electronic switches, controlled by software instructions, has reduced switching costs per user.^{7/} Electronic switches also allow customer service requests to be processed more rapidly than with older electromechanical equipment. For example, service initiation orders, which formerly required almost a full week of wiring changes, can now be handled within one or two days.^{8/} In addition, electronic switching offices enable the carrier to offer customers special call handling features (e.g., speed dialing, conferencing, call forwarding, and call waiting) at a small incremental cost. More importantly, electronic switches, when used with innovative signaling systems, permit

^{6/} Of course, new equipment also permits the creation of new services (e.g., call handling functions) for basic residential telephone consumers.

^{7/} By replacing 4A electromechanical toll switches with 4E electronic toll switches, the cost per voice circuit on interoffice trunks has fallen from \$1100 to \$250, according to AT&T.

Software controlled switches first appeared in 1965. Between 1976 and 1983, 4,200 electronic switching units replaced existing electromechanical units. By 1990, 90 percent of the more than 20,000 switching units in the industry are projected to be electronic. 1983 U.S. Industrial Outlook, at 28-2.

^{8/} Information supplied by Bell Communications Research, Inc.

greater plant utilization possibilities. In general, such increases in plant efficiency will continue to drive user costs down.

The installation of modern signaling equipment has yielded valuable benefits, particularly for long-distance customers. Historically, signaling information was carried on the same path as a voice communication. As a call was established, it would progressively engage trunks between intermediary switching offices and use those trunks to signal adjoining facilities until the entire communication path was dedicated. At that point, the path became a voice communication path. There were several problems with this approach, however, for long-distance customers and carriers:

- o Call setup required trunk channels and switching resources to be engaged and held while signals were in transit to the destination switch. Costly resources were thus wasted during each unsuccessful call attempt, resulting when a called party was engaged or when any busy intermediate office blocked a particular call routing;^{9/}
- o The sequential switching process used in call setup was very costly and time consuming;
- o Voice communications were sometimes erroneously interpreted as signaling instructions, resulting in customer disconnections.

To address these problems, carriers are linking electronic switches with signaling systems that operate independently of the voice trunks. For example, in AT&T's out-of-band system, signaling information is directed to switching offices via separate signaling channels. When a call is being established, the signaling system will ask each switching office on a path between the caller and called party to prepare to make a connection. The call is set up only if all offices have the necessary message trunks available. This technology substantially reduces call setup time, increases plant efficiency, and reduces talker-

^{9/} The industry handles about 400 billion call attempts annually. While 280 billion of these calls are completed, 60 billion are "busies" and an equal number are "no answers." C. Raymond Kraus, "A system in search of an advocate," IEEE Spectrum, June 1985, at 8.

induced signaling malfunctions.^{10/} Out-of-band signaling systems will help interexchange carriers control their transmission costs. Such systems will also permit carriers to offer new services such as enhanced 800 service. Many local exchange companies are developing new out-of-band signaling (also called common channel signaling) systems for introduction in the late 1980s.^{11/}

With processing power and software available at electronic switches which are connected by a separate signaling system, dynamic call routing schemes can be implemented that are not subject to the rigid routing rules used historically.^{12/} The flexibility offered by this routing technique is projected to improve trunk utilization by 15 percent over traditional fixed hierarchical schemes and should save consumers hundreds of millions of dollars in capital costs over the next decade.^{13/} Local exchange companies are also developing dynamic routing alternatives.

New systems are reducing local loop transmission costs rather dramatically. Between 1960 and 1980, the cost per channel has gone from \$1200 to \$400. New technology is also benefiting rural and low-density suburban localities. For example, by digitizing voice messages at remote collection points, it is possible to aggregate traffic and thus to reduce the number of trunks necessary to carry messages to

^{10/} Call setup time has been reduced from several seconds to a few milliseconds, thereby saving both switching and trunking resources.

^{11/} AT&T's Common Channel Interoffice Signalling System (i.e., Signaling System No. 6) was implemented in 1976 to increase the efficiency of toll plant. Local operating companies will use an updated signaling format (i.e., Signaling System No. 7) in their common channel signaling systems.

^{12/} Within the public switched telephone network, the more than 20,000 switching offices have been grouped according to a five-level hierarchy. Older routing plans attempted to make a toll connection at the lowest possible hierarchical level, thereby using the fewest number of message trunks. Using older routing plans, the average toll call used between 3 and 4 trunks. During the heaviest traffic periods, a call required the maximum number of 9 trunks. Newer, dynamic routing procedures will seek even lower trunk usage per call.

^{13/} 1984 U.S. Industrial Outlook, at 46-6; 1985 U.S. Industrial Outlook, at 31-8.

central switching offices. With the use of remote switching and electronics, digital loop carriers are already less expensive than older analog local loop technology for distances over six miles. This transmission medium is also desirable because in-place feeder capacity can be expanded easily with electronics as a service area experiences traffic growth. These factors, along with the low maintenance requirements and relatively distance-insensitive cost characteristics, have stimulated a significant amount of new rural plant investment in these systems. The rapidly improving relative cost performance of digital carriers will make them the preferred alternative for even shorter loop applications.^{14/} For the rural customer, this technology facilitates the development of expanded calling areas for basic rate telephone services. It also permits access to additional services, including those offered by the competitive common carriers.

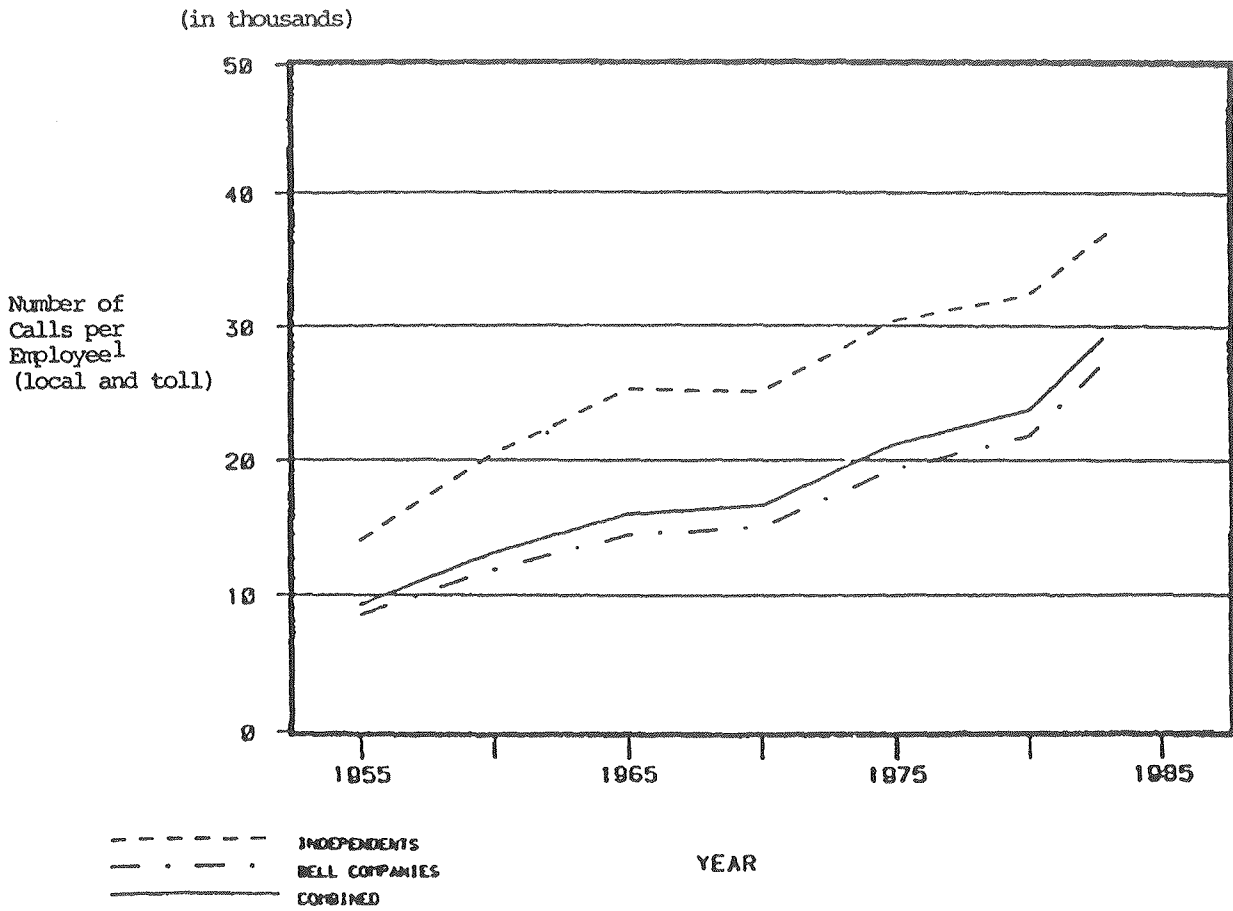
The introduction of new technology in long-distance telephone plant has reduced costs dramatically as well.^{15/} Over the past 30 years, the cost per channel mile of coaxial transmission systems has dropped by 76 percent. Between 1950 and 1976, the cost per circuit mile of microwave transmission fell almost 80 percent. In aggregate, between 1950 and 1980, the cost of toll transmission per circuit mile dropped from \$59 to \$10.90. Such cost-performance trends have had a tremendous impact on the marketplace.

Over the last 30 years, plant investment decisions have allowed the industry to make more efficient use of capital and labor resources. While maintaining a fairly stable annual output of between two and three messages per dollar of capital plant invested, the industry has tripled the number of calls produced per employee. (See Figures 2-1 and 2-2.)

^{14/} One-third of all new local demand may be met by digital carrier systems by 1990. 1985 U.S. Industrial Outlook, at 30-7. Also see R.W. Wyndrum, Jr., "The Electronic Loop Network," Adjusting to Regulatory, Pricing, and Marketing Realities, Michigan State University, 1983, at 109-116.

^{15/} United States v. AT&T, Defendant's Third Statement of Contentions and Proofs, Civ. Action No. 74-1698, D.D.C., submitted March 10, 1980, at 43. Also see O'Neill, E. F., "Radio and Long-Haul Transmissions," Bell Laboratories Record, Vol. 53, No. 1, January 1975, at 50-59 and Bell Communications Research Inc., "The Impact of Access Charges on Bypass and Universal Telephone Service," Appendix B, at 4.

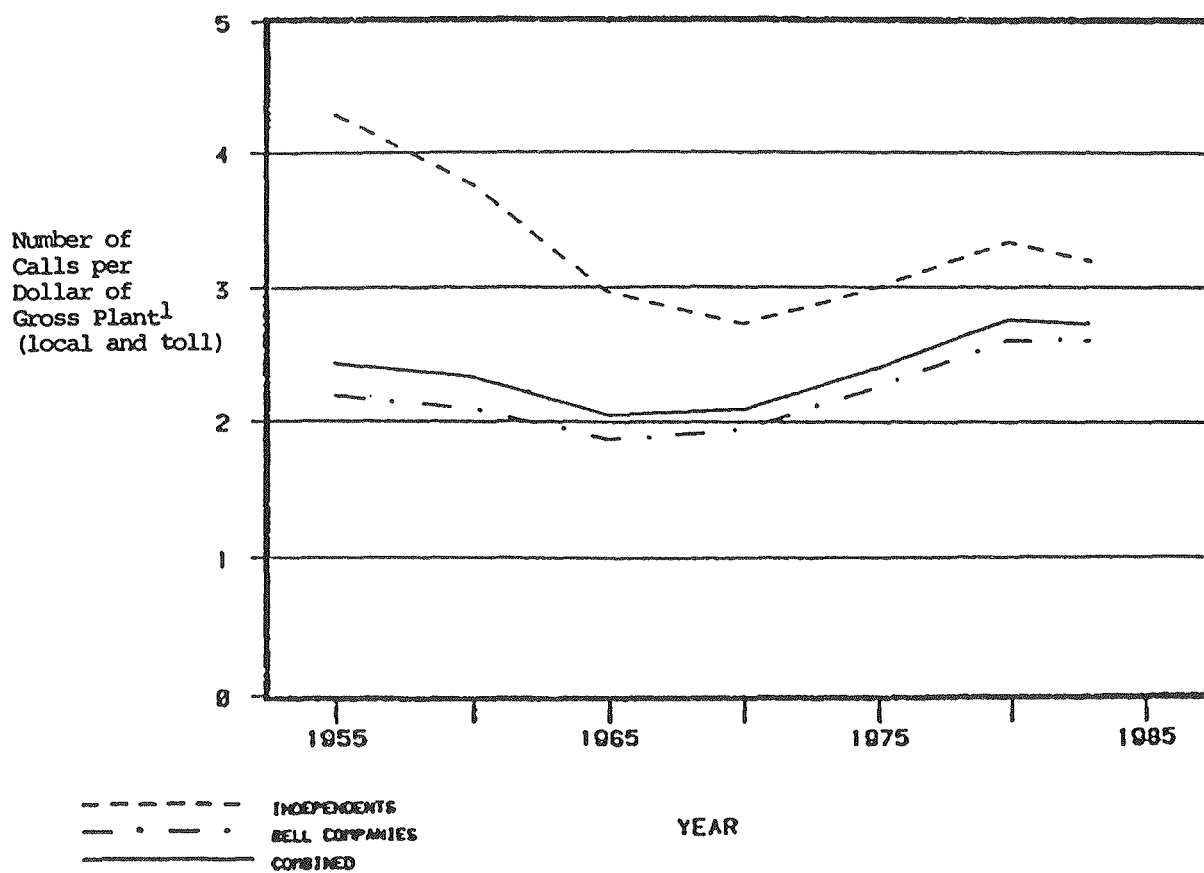
Figure 2-1
Capital Productivity



¹ not including Southern New England Telephone Co. and Cincinnati Bell

source: NTIA, Office of Policy Analysis and Development

Figure 2-2
Labor Productivity



¹plant in 1972 constant dollars

source: NTIA, Office of Policy Analysis and Development

Such productivity gains have helped to contain increasing costs of messages for all consumers, large and small. Figure 2-3 shows the relative drop in residential telephone service cost over a 40 year period. In 1940, six hours of work were required to pay for one month of residential service with 100 local calls. By 1980, only 1.5 hours were required for that same service. And, in many cases, this same plant has been used for additional services. Future investment decisions should continue these trends.

The Underlying Technical Push

A key element underlying innovation in the telecommunications marketplace has been research and development efforts, particularly in three technical areas:

- o New transmission techniques are responsible for both the capacity gains achieved on existing media and the development of new media (e.g., optical fiber and satellite media).
- o Advances in the information sciences have increased the efficiency and flexibility of transmission systems. Coding theory permits information to be conveyed accurately and efficiently. The development of more software controlled equipment delivers unprecedented flexibility in using telephone plant.
- o At the heart of these technical achievements are powerful, low-cost solid-state electronics and very large scale integration circuits that deliver new capabilities.

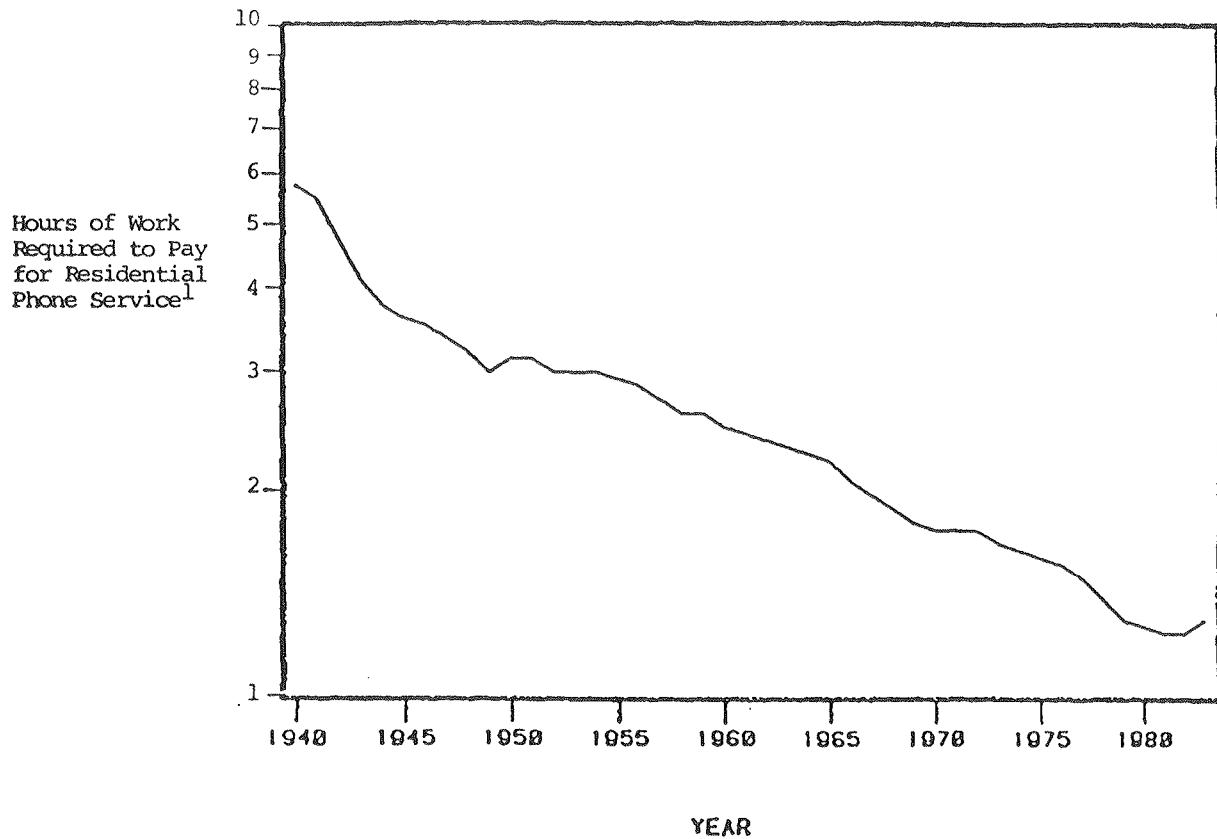
Building upon technical progress in these areas, carriers and equipment manufacturers are able to increase transmission capacity and incorporate more service features for consumers. Such progress will be a key to further improvements in basic services and a determining factor in future service development.

Processing Power in Telephone Plant and Customer Equipment

The declining costs and improved performance of logic and memory circuits have made it practical for customers as well as carriers to incorporate computer processing power

Figure 2-3

Relative Cost of Telephone Service



¹ One month's residential service with 100 local calls.

source: Bell Communications Research, Inc. The Impact of End User Charges on Bypass and Universal Telephone Service, September, 1984 (p. 7 app. B).

in their equipment.^{16/} Inexpensive processing power allows customers numerous options, including the ability to operate low-cost private networks or to pre-process their traffic in an advantageous manner (e.g., integrating voice and data or compressing information) before giving it to a carrier.^{17/} Customers may also choose to have carriers provide desired processing functions.

Inexpensive processing power also offers large benefits for the carriers. With microprocessors, for example, it is practical to aggregate traffic at numerous points remote from central offices and thus to reduce the number of trunks required to carry messages to the central office. Carriers are also able to distribute and decentralize switching and processing functions in a manner that improves plant flexibility or economy. For instance, protocol conversion functions can be offered in centralized facilities, allowing costs to be shared among a large pool of users. Alternatively, such functions can be distributed at fairly low cost to local switching offices in areas with sufficient user demand. Inexpensive processing capabilities are essential to the development of a new generation of system architectures that promote flexible and economic use of telephone plant.

Increasing Transmission Capacity

Most striking are the potential gains in the information transmission capacity of the entire telecommunications industry which may result from technical progress in two areas. Work on wideband transmission systems such as lightwave systems suggests that these new media have a very

^{16/} Between 1971 and 1981, the cost of dynamic random access memory fell from 1.0 to 0.01 cents per bit. Cost trends in microprocessors have been equally dramatic. Between 1979 and 1983, the cost of 16-bit microprocessors fell from \$50 to \$12 per device. During the same period, 8-bit microprocessors fell from \$5 to \$3. See 1985 U.S. Industrial Outlook, at 30-7.

^{17/} The cost of processing has dropped dramatically. For example, between 1955 and 1975, the speed of computer equipment increased fivefold while the cost dropped to 1/200 of the original cost. See International Competitiveness in Electronics, (Washington, D.C.: U.S. Congress, Office of Technology Assessment, OTA-ISC-200, November 1983), at 88.

high capacity.^{18/} Figure 2-4 projects an extremely rapid drop in bandwidth costs over time for fiber optic links. At the same time, new information processing techniques are likely to multiply the amount of information that can be conveyed per unit of transmission. Thus, a substantial increase in aggregate transmission capacity is likely in the future. Such gains could have a major influence on the future price of services.

Exploiting Technical Progress

Technical progress in transmission techniques, information sciences, and electronics is moving at a rapid rate. Government should actively encourage experiments with telecommunication alternatives that could benefit the public and improve national productivity. Promising technical developments that have great potential to serve public needs (e.g., packet voice, spread spectrum transmission and fixed cellular radio) should continue to be exploited for the public benefit as soon as they are feasible.^{19/}

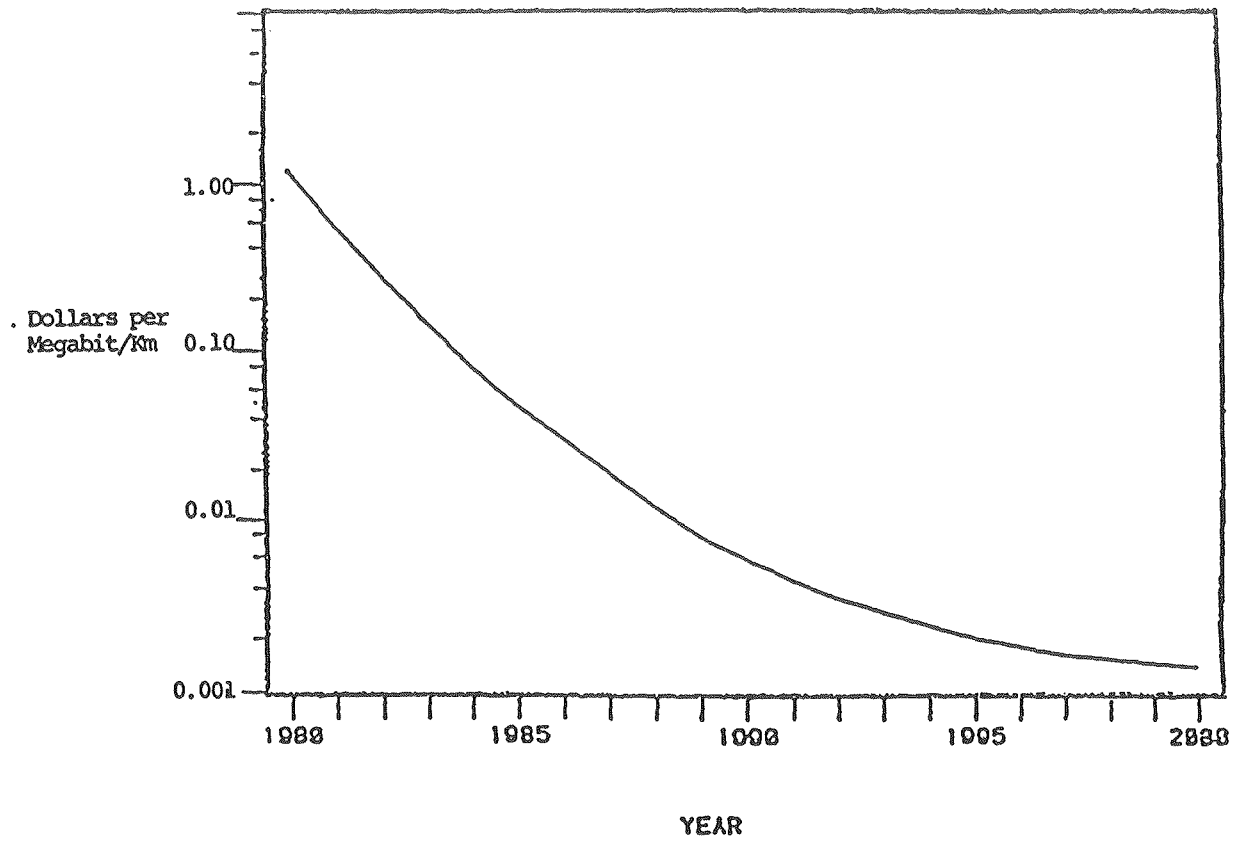
Expanding Technical Options

Technology advance is driving the development of new and improved equipment and services designed to meet consumer demand. Innovation is not only changing state-of-the-art capabilities, it is also changing the manner in which existing services are provided. For the consumer, continued innovation will bring new services and more cost efficient plant utilization. For industry and policymakers, the extended technical possibilities may well alter the character of the marketplace.

^{18/} Already cables containing 144 fibers and measuring only half an inch in diameter can carry over 250,000 conversations simultaneously. 1985 U.S. Industrial Outlook, at 30-3. Also see Comments of Siecor Corporation.

^{19/} The Commission has recently authorized the use of spread spectrum transmission for police radio service and amateur radio service. Further, the Commission has clarified its intent to allow fixed services to be provided by cellular radio service operators. Several commissioners have expressed interest in examining fixed cellular radio as a substitute for or supplement to local exchange telephone service in low population density or rural areas.

Figure 2-4
Fiber Optic Link Cost



source: Montgomery, Jeff, D., "The Bandwidth Revolution,"
Design News, October 14, 1981 (p. 195)

Consumer demand is developing in at least four dimensions in the emerging marketplace. Consumers are demanding:

- o Low cost, greater efficiency, and improved performance of products and services already in the marketplace;
- o Equipment and services that meet growing data communication needs;
- o Technology to meet special user needs (e.g., private network facilities, voice/data integration equipment); and,
- o A wide variety of products and services that satisfy basic telephony and sophisticated user requirements.

Carriers and equipment manufacturers are developing products and implementing services to meet these user needs. Some of the more significant developments are discussed below.

Customer Equipment

Equipment manufacturers are introducing a wide variety of intelligent terminal equipment which offers such features as high-speed facsimile, integrated data and voice capabilities, wireless telephony, customized dialing, and other call-handling options. One of the most innovative developments brought about by new customer equipment has been the emergence of shared service arrangements.

The falling cost of switching equipment and the cost advantages of using high-capacity transmission media have made it increasingly attractive for customers to share services and equipment. Technical progress has opened the way for various user communities to employ cost saving practices similar to those used by large companies. With a PBX switch and associated connection wiring, it is technically possible for any given grouping of users to aggregate their traffic in a manner that will reduce costs. For example, residents of a condominium could connect to a central switching office with a common trunk that could be less costly than individual line configurations. Unrelated firms in a commercial building could benefit from a similar arrangement.

While shared services clearly make economic sense for users, they are creating some issues for policymakers,

particularly at the state level.^{20/} If user communities were to abandon embedded individual local loop plant in favor of sharing larger circuits, local carriers could be faced with sizable stranded investments in wire plant. Exchange carriers could thus lose significant subscriber access revenue from long-distance services. On a larger scale, such a result would exacerbate cost recovery problems that some of the carriers are already facing. In situations dealing with expansion of plant (e.g., new buildings), the issues are less complicated.

New technology clearly makes it feasible for large users or communities of users to create and operate networks independently of the telephone company, complete with switches and a variety of transmission media and interconnection facilities. Such developments are likely to challenge traditional notions about cost recovery, tariffing and interconnection.

Local Distribution Technology

Much research and development activity has focused on reducing the cost and improving the performance of local distribution plant which includes 114 million access lines connecting customers to switching offices. Local exchange companies are already installing the digital carrier technology mentioned previously. Innovative transmission techniques are being used to offer customers more services over the local loop plant. For example, new Data Over Voice (DOV) electronics will allow the embedded copper plant to carry voice and data simultaneously.^{21/} New signal processing electronics will permit existing circuits to expand from a capacity of 24 to 44 voice channels.^{22/} Other electronics permit data to be conveyed without the use of analog/digital conversion equipment. The high capacity and robustness of signal transmission of lightwave systems

^{20/} For a more detailed discussion, see chapter V.

^{21/} For a more elaborate description of data over voice technology, see Memorandum Opinion and Order, FCC 85-101, ENF Nos. 84-15, 84-19, 84-20, 84-21, 84-22, 84-23, 84-24, 84-48, released March 26, 1985, at 28-30.

^{22/} Bit compression multiplexers will allow a T1 circuit with a capacity of 1.544 Mbps to carry 44 instead of 24 voice channels.

show great promise in lowering local distribution costs in the future.^{23/}

In addition, innovative radio transmission techniques are expanding the number of local distribution alternatives. Cellular telephony promotes efficient use of the electromagnetic spectrum through radio frequency reuse, allowing many customers to communicate in an area with only a limited radio spectrum assignment. Digital termination service which uses digital microwave radio channels is another local distribution alternative. In some situations, such as very low density service areas, radio-based local distribution possibilities may be less costly than wire loop technology.

Innovative technology capable of offering new services over the embedded local plant is already being implemented. Additional local distribution research activities may indeed yield new cost characteristics for the "last mile," particularly with respect to very high cost service areas. As a result, policymakers may face additional cost recovery issues when this technology is implemented.

Digital Services

Voice communication needs have essentially dictated telephone plant design specifications since the inception of the industry. While voice messages remain the dominant traffic over the switched telephone plant, data traffic has begun to appear in the local loop. During the last decade, carriers began to develop services that could handle data traffic efficiently. Only recently has a variety of new digital services begun to emerge in all markets.

Since the advent of 56 Kbps private line digital services (e.g., Dataphone Digital Service or DDS in 1974), the industry has developed basic and enhanced packet switched services and expanded its offerings of circuit switched and private line services in both local and long distance markets.^{24/} Interexchange carriers in increasing numbers are

^{23/} While it is not yet practical to bring a fiber optic link directly into the home, lightwave systems may be useful in connecting points with large aggregated traffic volumes.

^{24/} For instance, GTE Telenet has local "dial-up" packet service available from more than 370 cities. Tymnet has service in 130 cities while Uninet has packet service from over 325 cities. AT&T, which must refile its Accunet packet service tariff, plans to expand that service from 7 to 16 locations in 1985.

offering switched, point-to-point, and multipoint digital services of different capacities over both terrestrial and satellite media.^{25/} Much of the growth in digital interexchange plant has been concentrated on 1.544 Mbps services, suggesting that some users want more capacity than available with DDS. Carriers are also designing switched 56 Kbps services for lower volume users.^{26/}

Local exchange companies are developing both switched and point-to-point services that parallel long-haul carrier developments.^{27/} Several local companies already offer 1.544 Mbps private line services. Dial-up 56 Kbps digital services using reconfigured portions of the existing local plant will be available for users who do not want private line service.^{28/} Finally, local companies are modifying analog switched plant to permit data traffic to be carried to regional packet switches.^{29/}

The implication for the consumer is that both local and long-haul digital services will be increasingly available for both large and small users on a dedicated or occasional basis. The large consumer will be able to take advantage of the economies offered by dedicated facilities, while the smaller consumer will be able to use data services without long-term contracts for facilities.

^{25/} Development is quite active in this area. For example, 93 out of 164 LATAs have local access to DDS services. AT&T has proposed to expand its 1.544 Mbps SKYNET satellite digital service to include 56 Kbps up to multiples of 1.544 Mbps. MCI offers digital leased services at speeds of up to 56 Kbps.

^{26/} For example, AT&T now offers a 56 Kbps switched digital service in 34 cities. By the end of 1987, service is expected to be offered in 78 cities. The Report on AT&T, May 20, 1985, at 3.

^{27/} For instance, NYNEX recently announced the introduction of 5 new digital services for 1985, ranging from 56 Kbps to 1.544 Mbps switched and private line services. Communications Daily, May 2, 1985, at 3.

^{28/} Illinois Bell already offers this service in Chicago while Pacific Bell provides service in San Francisco and Los Angeles. Other local exchange companies are now developing such services.

^{29/} At least five Bell Operating Companies are planning to offer local area data transport (LADT) services during 1985. See Telecommunications, May 1985, at 31.

Business interests and local carriers are building additional high-capacity plant to handle areas with high concentrations of voice and data traffic. For example, Illinois Bell's NovaLink in Chicago is a 135 Mbps lightwave system operating within the 70 square block downtown area. Such developments are not merely confined to the traditional carriers. Chicago Fiber Optic Corp. is planning to build Superloop, a separate 3.4 mile network also in Chicago.^{30/} Table 2-1 lists additional fiber optic communication facilities already under construction. In addition, teleports and high-capacity private networks consisting of terrestrial and/or satellite media are being built in several cities.^{31/} Multiple developers in high volume markets may become more prevalent in the future.

For over a decade, carriers and equipment manufacturers have been negotiating international standards for fully digital services that will exploit the capacity of the local copper plant. Integrated Services Digital Network (ISDN) field trials, about to begin in Chicago in 1986, will initiate an entirely new range of service possibilities.^{32/} The powerful ISDN architecture will allow customers to use a family of services, all supplied by a digital customer access line. Many carriers are planning to provide access lines with multiple subchannels, permitting customers to use several services simultaneously for voice, data, image, and telemetry transmission.

Because many of the new digital services will use equipment in common with basic services, there again are likely to be cost allocation questions. Also, high-capacity digital services that remove large volume customers from the local rate base may raise further cost recovery and pricing issues.

^{30/} Telecommunication Reports, March 18, 1985, at 29.

^{31/} For example, Teleport Communications, has a 220 km fiber optic network which links its Teleport to points in New York City and New Jersey. Telecommunications Reports, May 6, 1985, at 27.

Fifteen of 23 current teleport developments are already operational or under construction. See "Teleports: A New Satellite Frontier," Broadcasting, July 8, 1985, at 64-65.

^{32/} Illinois Bell, Wisconsin Bell, and Southern Bell have already announced trials. Other companies are also planning trials.

Table 2-1

Selected Fiber Optic Developments

Company	Area Served	Planned Fiber Optic Investment	Planned Capacity (in circuit miles)	Planned Capacity (in route miles)	Completion Date
AT&T	Nationwide	\$1.3 billion	1.7 billion	10,000	1988
MCI	Nationwide	\$500 million	650 million	18,000	1988
GTE Sprint	Nationwide	\$130 million	110 million	4,000	1989
United Telecom	Nationwide	\$2 billion	1.2 billion	23,000	1988
Fibertrak (Santa Fe Southern Pacific and Norfolk Southern)	Nationwide	\$1.2 billion	2.4 billion	8,100	1987
LDX Net (Kansas City Southern)	Midwest and South	\$110 million	165 million	1,700	1986
Electra Comm. (Cable & Wireless and Missouri-Kansas-Texas R.R.)	Texas	\$40 million	72 million	550	1985
Microtel (Alltel, E.F. Hutton, M/A Com, Centel and Norfolk Southern)	Florida and Georgia	\$60 million	45 million	1,500	1986
Litel Telecom (Centel, Alltel, Pirelli)	Upper Midwest	\$57 million	85 million	1,300	1986
Lightnet (CSX and SNET)	South, East, Midwest	\$500 million	650 million	4,000	1986
SouthernNet (E.F. Hutton, Ind. Telcos)	South-East	\$90 million	50 million	1,600	1986
RCI (Rochester Telephone)	Northeast, Midwest	\$90 million	87 million	900	1986

Source: William B. Johnson, "The Coming Glut of Phone Lines," Fortune, January 7, 1985, Vol. 111, No. 1 pp. 97-100.

Architecture for New and Improved Services

The demand for additional services and the possibility of more efficient use of facilities and resources have led carriers to build more integrated intelligence into their plant. The placement of distributed processing power in carrier facilities has been an evolutionary process, driven by innovative architectural plans or system designs which promise to radically expand service options for business and residential customers alike.

The introduction of software-controlled switching into central offices allowed carriers to process customer service orders and allocate facilities very quickly and to provide call management features such as call waiting, abbreviated dialing, and call forwarding. In addition, software-controlled switching offers unprecedented flexibility and speed in providing new services. Such services now under discussion include "1+ intraLATA" dialing and termination of 1.5 Mbps private line digital circuits into local exchange switching office.^{33/}

To further develop new architecture based upon a distributed processing scheme, carriers are implementing common channel signaling systems which will allow "smart" switches to exchange routing, call progress, and network control information. Building upon these technological developments, several new services are being field tested by local exchange companies. By programming exchange offices to retain both the last number called and the last number received by a telephone, together with a selective listing, residential customers may acquire new call handling possibilities including distinctive ringing for particular calling numbers, selective call forwarding or blocking, automatic repeat dialing, or call return.

The final step in developing this architecture will be to establish centralized service control points with logic and database capabilities accessible to the common channel

^{33/} AT&T and Southern Bell are already involved in a Public Service Commission hearing in South Carolina over the provision of 1+ intraLATA dialing. Neither party suggests that such service cannot be provided. Rather, the disagreement centers on how many lines of new software are required. State Telephone Regulation Report, March 14, 1985, at 4.

Pacific Bell is reported to be working on a plan to terminate T1 circuits in its central offices, a new application of such technology. Data Communications, February, 1985, at 15.

signaling system. This feature will allow distributed functions in central office switches to be centrally coordinated for better management of facilities.

These three elements (software-controlled switching, common channel signaling, and service control points), when tied together in the architecture just described, will provide very powerful capabilities for both the customer and the carrier:

- o The customer will be able to select any digital or analog service and various routing schemes on demand without carrier intervention. This feature provides more convenience for the customer and perhaps less cost for the carrier.
- o Termination of large digital private line circuits in central switching offices will allow customers to direct subchannels to any services desired (e.g., DDS, local, or interexchange public switched facilities).
- o The call recipient can arrange for the call routing and location where the call will be received to vary according to loading, time of day, and access priority considerations. The customer will have more flexibility including the ability to screen and to offer customized attention to priority callers.
- o Information and enhanced services (e.g., alarm, telemetry, information processing services) can be offered on a system-wide basis without installing special features in each central office. Services can be made fully available to all customers quickly without requiring large, system-wide carrier investments. The carrier has less financial risk and the ability to aggregate traffic over the entire system, resulting in higher initial plant utilization.
- o System-wide intelligence will aid the carrier in gathering data for future facilities planning. This intelligence will help diagnose and trace problems and facilitate maintenance and administrative requirements. System capabilities can also be applied to accounting and billing needs.
- o Automatic "1+" dialing can be provided both for interLATA and intraLATA applications.

- o The carrier will be able to establish "virtual" private lines defined by software within the public switched facilities. This option, sometimes referred to as a "Software Defined Network" or "SDN," could allow carriers to achieve higher plant utilization rates.^{34/}

These capabilities are consistent with ISDN plans for the future. Beyond the end-to-end digital connectivity mentioned earlier and the use of common channel signaling to offer extensive user control of facilities discussed above, a fundamental objective of ISDN planning is to make services available over a small family of standardized interfaces (e.g., at the customer premises, interfaces might be defined for voice and data services). With a limited set of interfaces, customer equipment will be compatible with conforming ISDNs. Also, with stable interfaces, carrier plant and customer equipment can evolve independently in directions that make the best use of technical advances in the future.

Carriers are already implementing this intelligent network architecture concept. AT&T is evolving its network in this direction. It has also proposed software-defined telecommunication services. Northern Telecom, Inc., is developing an entire family of switches and products based upon intelligent networks architecture. Common channel

^{34/} Software defined service developments are already very much in the news. Rates for such services may be lower than present rates. For instance, Western Union Telegraph Co. filed tariffs for software defined services which are 50% lower than AT&T's WATS rates. Telecommunications Reports, May 20, 1985, at 33.

On June 4, 1985, the Common Carrier Bureau suspended AT&T's proposed tariff for "Software Defined Network" service, pending further investigation. AT&T is also interested in offering this service on an intrastate, interLATA basis. See State Telephone Regulation Report, April 11, 1985, at 9. Northwestern Bell Telephone's proposed tariff for "Software Network Capability" was also suspended.

Both MCI and US Telecom recently announced details of their virtual private line services. SBS has offered such services since 1984. Communications Daily, May 8, 1985, at 4 and May 9, 1985, at 4-5.

signaling systems and service control units are being installed by local exchange companies as well.^{35/}

Network Integrity and Cost Recovery

The expanding telecommunications marketplace has already had a substantial impact on consumers, industry and regulators. A growing number of companies now offer consumers a wide variety of innovative services and equipment. Consumers need to actively choose among a greater number of alternatives. Policymakers and the industry need to ensure that unaffiliated firms provide a full range of connectible services and equipment at reasonable costs.

Network Integrity

Regulators and the industry need to ensure that users have the benefit of telecommunications services and equipment working together effectively throughout the communication path. For even a typical telephone call in the current marketplace environment, it is quite possible that multiple local and long distance carriers will be utilized to connect very different types of customer equipment. It is obviously in the interest of the industry in general, and certainly the public, to make such arrangements operate smoothly and in a satisfactory manner.^{36/}

By exercising diligence in national standards groups and industry forums, the industry can eliminate the need for imposed regulatory solutions in two important areas: connectivity and service coordination. Internetworking and interconnection standards need to be sufficient to allow customers to choose from among a wide range of equipment and services with the confidence that the particular chosen combination will function together properly. Second, ways need to be found to assist consumers who experience service and equipment difficulties in this multiple-supplier environment. For example, industry should consider coordinated efforts to provide direct assistance to individual consumers and also provide the marketplace with enough information so that consumers can make informed decisions when dealing with their problems. Further

^{35/} Bell Communications Research projects that such services, architecture, and technology will be in place by 1986-1988.

^{36/} For a discussion of potential network coordination issues, see R.M. Alden, "Coordination Workshop October 18-19, 1984, Report of Proceedings", Cambridge, MA: Harvard University Program on Information Resources Policy, 1985.

deregulation may be delayed unless consumer concerns are made a continuing priority.

There are several task forces and trade groups that are working diligently to develop industry standards that deal with the development of digital networks.^{37/} For example, the Exchange Carriers Standards Association (ESCA), comprised of representatives from the local and interexchange carriers and the leading manufacturers, sponsors committee work concerned with standards and quality.

While potential connectivity and service coordination problems were anticipated prior to the AT&T divestiture, a definitive, successful solution has not yet been found. At present, no organization with a single, identifiable point of contact assumes responsibility for the important task of ensuring end-to-end integrity of all services and equipment.

During the course of the AT&T breakup, Judge Harold Greene, in August 1983, identified an integrating role for a "Central Staff Organization" (CSO) that was to become Bell Communications Research, Inc. (Bellcore):

The Central Staff Organization is designed to carry out extremely important responsibilities. Not only will it perform the coordination for national defense and other emergency purposes that is vital to the nation's security, but it will also set standards which will permit telecommunications to continue to operate in an engineering sense as one national network.^{38/}

And then in February 1984, Judge Greene wrote:

The Court has on several occasions expressed its conviction that the CSO represents a very important ingredient in the future of telecommunications in this country -- in regard both to the nation's defense and emergency capabilities and to the quality of operations of the network. In a very real sense the CSO is charged with the responsibility for the protection of the high standards of the American telephone system. As long as it carries out that responsibility without

^{37/} Indeed, the telecommunications industry has already devoted much effort in establishing workable standards. See IEEE Communications Magazine, January 1985, for a brief review of some of these efforts.

^{38/} United States v. Western Electric, 569 F. Supp 1057, 1118 (D.D.C. 1983).

discrimination or unfairness, it will have the Court's unwavering support.^{39/}

As presently constituted, however, Bellcore does not set operational standards affecting the interoperability of the various components of the national telecommunications infrastructure. Rather, Bellcore works with potential equipment suppliers on behalf of the seven regional holding companies which own Bellcore and to which Bellcore provides technical recommendations. Bellcore serves only its owners and cannot perform functions on behalf of other telecommunications entities. Further, because of the restrictions placed upon its owners, Bellcore may be unable to fulfill the responsibilities outlined by Judge Greene in non-defense related areas, since such activity might involve interLATA services.

National security interests are chiefly concerned with interoperability, survivability, restorability, and related network integrity issues. Since the divestiture, Bellcore has been charged with providing research, engineering, and administrative support for the Bell Operating Companies. Bellcore serves as a point of contact for the Bell companies and the Federal Government in matters of national security and emergency preparedness. As members of the National Security Telecommunications Advisory Committee and the National Industry Advisory Committee, Bellcore participates in National Security and Emergency Preparedness (NS/EP) programs. A survivable and restorable network is enhanced by a standardized, high quality telecommunications infrastructure.

In spite of all the activity on the part of existing task forces, trade associations and Bellcore to maintain a standardized high quality and survivable network, many questions remain unanswered. Who is responsible for the quality of service? What role should Government play if members of the various standards groups do not agree? Should there be a master planning organization that will orchestrate the efforts of these groups to provide a unified strategy?

The FCC, working with industry groups, should establish procedures to ensure network connectivity and coordination crucial to the future vitality of the U.S. communications infrastructure. Options are to create a new organization specifically charged with these functions, or to modify an existing one so that membership is open to all exchange carriers, interexchange carriers, and equipment manufacturers. The FCC and the judgment court should look at

^{39/} United States v. AT&T, Civ. Action No. 82-0192, D.D.C. February 6, 1984 at 24-25 (unreported decision).

Bellcore and other existing organizations, such as the Exchange Carriers Standards Association, as possible models as they seek a solution to this very critical issue.

Cost Recovery

Additional areas of concern for regulators and the industry, growing out of technological advances and policy community, include cost allocation and cost recovery. Many new, competitive service offerings are being provided with equipment that serves basic telephone network functions as well. For example, electronic switches obviously provide both basic telephone switching operations and call handling services. Multiple function plant investment decisions increase equipment efficiency, but further complicate cost allocation issues.

Cost recovery for older, more limited telephone plant will also be more difficult as facilities and services "migrate" toward fully digital plant. Because of marked cost-performance advantages, switched networks are gradually adopting entirely digital technology so that long-haul and local loop transmission and switching, as well as customer premises equipment, will eventually be digital (implying, for example, digital voice throughout the entire communication path).^{40/} Carriers considering investments in new plant are likely to favor digital facilities. In other cases, carriers obviously will also need to weigh the costs of replacing analog facilities against the advantages of new digital plant. Some carriers may be slower to adopt digital plant because of capital recovery problems related to prior analog facilities investment. As discussed in more detail in chapter VI, competitive market pressures may force carriers to replace equipment before it is fully depreciated, resulting in large depreciation reserve deficiencies.

Conclusion

The power, increased flexibility, and potential economies of new plant designs, based on innovative architecture, could well have tremendous benefits for both residential and business consumers. The needs of users of

^{40/} The advantages are numerous. For example, digital connectivity will eliminate the need for costly analog/digital conversions now taking place in the present mixed environment. Purely digital traffic can also be aggregated to increase the number of messages that can be carried on a channel. Error protection, encryption, or methods which assure message security and signal processing techniques can be applied conveniently with the use of microelectronics.

low-cost, basic services can be accommodated by this new architecture. But advances in technology are increasing the range of telecommunication services available, altering the manner in which traditional services are provided, and affecting the economics of the telecommunication marketplace. These developments are undermining the traditional regulatory system now in place. Thus, new innovation will exacerbate cost recovery and pricing issues. Service coordination and connectivity issues will be even more important as the marketplace develops, mixing older and more intelligent plant. Software-defined plant will blur distinctions between switched and private line services and distinctions between service markets (i.e., both interLATA and intraLATA). Subsequent chapters deal with many of these questions.

CHAPTER III: STRUCTURAL AND OTHER CONSTRAINTS ON THE
TELECOMMUNICATIONS INDUSTRY

Part 1. AT&T "MODIFICATION OF FINAL JUDGMENT"

Introduction

In November 1974, the Antitrust Division of the U.S. Department of Justice filed suit against AT&T. This antitrust action contended that AT&T's allegedly monopolistic actions stemming from its continued ownership of (a) companies providing about 80 percent of U.S. local telephone service, (b) the dominant long-distance operation, and (c) the principal telephone equipment maker violated the Sherman Act. In January 1982, the Chairman of AT&T and the Assistant Attorney General in charge of the Antitrust Division announced a negotiated settlement of this litigation. Under the settlement, AT&T was permitted to retain most of the former Bell System's long-distance operations, Western Electric (since renamed AT&T Technologies), and its world-renowned research facility, Bell Labs. Provisions of a 1956 consent decree which had limited AT&T to providing regulated telecommunications services were vacated. And the divestiture of some \$100 billion in assets was required.

Under the new AT&T consent decree, AT&T was required to divest its local telephone operations, except for two small nonconsolidated affiliates. Eventually, ownership of 22 Bell Operating Companies was transferred to seven newly-created regional holding companies. Following protracted court proceedings, a "modification of final judgment" differing from the initial settlement agreement was entered by U.S. District Court Judge Harold H. Greene in August 1982. Actual divestiture took place in January 1984.^{1/}

^{1/} The two principal published court rulings regarding the AT&T settlement are: United States v. AT&T Co., 552 F. Supp. 131 (D.D.C. 1982) (text of the decree), aff'd sub nom. Maryland v. United States, 460 U.S. 1001 (1983); and United States v. Western Electric Co., 569 F. Supp. 990 & 1057 (D.D.C. 1983) (approving the plan of reorganization). See generally Grant, Through a Glass Brightly: Consumers and the New Tomorrow, in Disconnecting Bell: The Impact of the AT&T Divestiture (H. Shooshan ed., 1984), at 132; Lavey and Carlton, Economic Goals and Remedies of the AT&T Modified Final Judgment, 71 Geo. L.J. 1497 (1983); MacAvoy and Robinson, Winning by Losing: The AT&T Settlement and Its Impact on Telecommunications, 1 Yale J. Reg 1 (1983).

Because of intervening marketplace events, pro-competitive FCC rulings, and court decisions, two of the principal markets which AT&T in 1974 had been charged with monopolizing -- equipment and toll service -- had become much more competitive by 1982. The Antitrust Division nevertheless maintained, and the court subsequently agreed, that a radical restructuring of the Bell System was required because it would "substantially accelerate the development of competitive markets for interexchange services, customer premises equipment, and telecommunications equipment generally."^{2/}

Key Features of the AT&T Consent Decree

The AT&T consent decree called for a number of steps to accelerate existing competition. Most of these steps entailed the imposition of geographical and product line restrictions on the Bell Operating Companies which had comprised about three-quarters of the former Bell System, and the contemporaneous elimination of almost all restrictions on AT&T. These are some of the key features and requirements of the AT&T consent decree, together with a short analysis of them as they relate to the future of the industry:

Long-Distance Service Restrictions

Pursuant to a "plan of reorganization" developed by AT&T and the Antitrust Division, and modified by the court after public comment, the telephone service areas previously served by the unified Bell System were carved up into some 164 "Local Access and Transport Areas" or "LATAs." The divested Bell Operating Companies were then forbidden from offering long-distance or toll services to the public between these court-prescribed LATAs. Significantly, the AT&T consent decree did not take the Bell Operating Companies out of the long-distance business altogether. In many instances, the LATAs encompassed entire states and were otherwise quite expansive geographically. The Bell Operating Companies were permitted to offer both local and long-distance telephone services within their individual LATAs.

In 1984, for example, the Bell Operating Companies, in aggregate, enjoyed toll revenues of about \$9.6 billion and directly supplied some 18.5 percent of the Nation's total

2/ Antitrust Division Competitive Impact Statement, 47 Fed. Reg. 7170, 7178 (1982).

long-distance service.^{3/} By comparison, the competitive common carriers providing interstate service in 1984 had total revenues of about \$5.2 billion and a 10.1 percent market share. The "local" Bell companies, in other words, last year were nearly twice as large a factor in the U.S. long-distance telephone market as the competitive carriers. Because of the court-imposed limitations on competition, however, the Bell Operating Companies do not now compete with AT&T in providing "interLATA" long-distance services. They compete with AT&T and other firms for "intraLATA" business in some states.

Equal Access

The AT&T consent decree imposed an extensive "equal access" obligation on the Bell Operating Companies. Historically, the competitive common carriers were able to obtain only technically inferior "line-side" connections to local telephone company switches. Consequently, to make use of a competitive toll offering, the customer was required to use a "touch-tone" phone and to dial many digits, while access to AT&T toll services usually entailed dialing only ten or eleven digits on any kind of telephone instrument. Under the consent decree, the Bell Operating Companies were directed by September 1986 to offer the superior "trunk-side" connections to AT&T and all its "interLATA" competitors. Many switching offices in metropolitan areas have already been converted over to "equal access" operations. By September 1985, more than one-third of the Bell companies' exchange access lines will be converted to such operation.

^{3/} Long-distance revenue from their "intraLATA" toll operations constitutes a significant share of the total revenues of several Bell Operating Companies. Ameritech, for example, in 1984 obtained some 11.7 percent of total operating revenues, or about \$976 million, from its own toll operations. Southwestern Bell got about 12.7 percent of its total revenues, or \$912.4 million, from similar toll operations. NYNEX Corporation secured about \$1.3 billion, or 13.6 percent of total firm revenues, from its toll services; one of its constituent operating companies, New England Telephone Company, got about 24 percent of its revenues from its long-distance operations. Pacific Telesis, moreover, reportedly obtained some 23 percent of its total revenues, or about \$1.8 billion, from its own long-distance service offerings. (1984 Annual Reports of Ameritech, Southwestern Bell, NYNEX, and Pacific Telesis.)

Significantly, this equal access obligation was not applied with respect to "intraLATA" long-distance calling. This means that after 1986, most local telephone subscribers will be able to make "interLATA" calls using any long-distance carrier by dialing only a single digit. But to make use of a competitive carrier other than a Bell company for "intraLATA" calls -- in those states where such competition is allowed at all -- far more digits may still be required.

Equipment and "Information Services" Restrictions

Under the original settlement agreement, the Bell Operating Companies would have been relegated to functioning solely as local wireline exchange companies. The court altered this plan, however, and permitted the companies to retail -- but not manufacture -- telephone equipment on the grounds it would further consumer convenience and competition. The court also directed AT&T to transfer to the Bell Operating Companies the lucrative "Yellow Pages" operations it had planned to retain.

The AT&T consent decree as entered by the court imposed a sweeping prohibition on the provision of "information services" by the Bell companies. The consent decree also imposed a seven-year ban on AT&T using its own lines to provide "electronic publishing services." The Bell companies are under a perpetual ban with regard to such services because of the prohibition on "information service" offerings.

The precise scope of these restrictions has not yet been definitively established by the judgment court. Under the FCC's Second Computer Inquiry rules, AT&T and the local Bell Operating Companies are permitted to offer "enhanced services," provided this is done through a separate, arm's length subsidiary.^{4/} Because the definitions in the consent decree were developed independently, however, it is not yet clear whether there is some class of "enhanced services" which does not constitute "information services."^{5/} Further complicating matters, the FCC recently ruled that the Bell

4/ See Final Decision, Amendment of Section 64.702 of the Commission's Rules and Regulations, 77 F.C.C 2d 384, reconsid., 84 F.C.C 2d 50 (1980), further reconsid., 88 F.C.C 2d 512 (1981), aff'd sub nom. Computer and Communications Industry Ass'n v. FCC, 693 F.2d 198 (D.C. Cir. 1982), cert. denied, 461 U.S. 938 (1983).

5/ See Illinois Bell Teleph. Co. v. FCC, 740 F.2d 465, 475 (7th Cir. 1984).

Operating Companies in some limited instances may offer "enhanced services" without making use of a separate subsidiary.^{6/} Similar problems also exist with respect to cable television. FCC regulations for some time have permitted Bell Operating Companies to construct cable television distribution systems for independent entities, provided the requisite construction approval is obtained.^{7/} Some have suggested, however, that any such undertakings may constitute impermissible "information services."

"Line of Business" Restrictions

The AT&T consent decree commendably removed outmoded limits on the scope of AT&T's retail activities which had been imposed under the 1956 consent decree. In so doing, the 1982 consent decree recognized that advances in technology, and changes in the nature of communications services generally, had made the imposition of artificial limitations on AT&T highly undesirable and, indeed, in some instances anticompetitive. While the consent decree thus eliminated the 1956 limitations as they applied to AT&T, it imposed quite similar restrictions on the permissible activities of the Bell Operating Companies.

Among other restrictions, section II(D)(3) of the AT&T consent decree states that no Bell Operating Company shall "provide any other product or service, except exchange telecommunications and exchange access service, that is not a natural monopoly service actually regulated by tariff." This prohibition has been construed to apply to the regional holding companies as well as the Bell Operating Companies.

Section VIII(C) of the decree provides that these "line-of-business" restrictions can be waived by the judgment court "upon a showing by the petitioning BOC that there is no substantial possibility that it could use its monopoly power to impede competition in the market it seeks to enter." This provision could be read as establishing a single waiver standard, namely, the potential competitive effect on the "target" market. The court has ruled, however, that this waiver provision must be read in the context of the overall decree.

^{6/} Memorandum Opinion and Order, In the Matter of Petitions for Waiver of Section 64.702 of the Commission's Rules (Computer II) (Protocol Order), FCC 85-101, released March 26, 1985, at para. 82.

^{7/} 47 CFR Sec. 63.54 et seq. See also Blanket 214 Authorization, 49 Fed. Reg. 21333 (May 21, 1984).

Under a ruling by the judgment court in July 1984, the Bell Operating Companies are now subject to procedures not explicitly contained in the consent decree. Companies are required, first, to submit information on proposed enterprises to the Antitrust Division. After review and processing, the waiver requests, secondly, must be cleared by the court. The court indicated it was unlikely to sanction enterprises completely unrelated to the provision of local exchange services. In addition, the court ruled that the auxiliary enterprises of any regional holding company may not earn, in aggregate, net revenues which exceed 10 percent of the parent firm's total estimated net revenues. Waivers are processed on a project-by-project, company-by-company basis. In the past 18 months, according to the Antitrust Division, more than 50 waiver requests have been received and more than 30 have eventually been approved. The process, however, has resulted in lengthy delays, even in the case of minor business ventures.^{8/}

None of the Bell companies' actual or potential competitors is subject to any comparable regulatory or court-imposed regime. AT&T, for example, has in recent years made significant acquisitions and entered into joint production agreements abroad with virtually no Government interference. In 1983, AT&T established a joint venture with Philips which is projected to generate sales of about \$500 million annually. AT&T acquired 25 percent of Olivetti in 1984 for about \$260 million; it also acquired an option to purchase an additional 15 percent of that firm's stock at a cost of about \$156 million. In 1984, AT&T established a joint venture with the Taiwan Government to produce switching equipment. This will involve about a \$40 million investment by AT&T. AT&T has strengthened its relationships with South Korea's Gold Star Ltd. organization and has acquired interests in new fiber optics and semiconductor manufacturing projects. AT&T has also established a joint venture with the Spanish Telephone Company to produce electronics products. This joint venture reportedly will entail an initial investment by AT&T of about \$200 million and produce some 700 new jobs in Spain. AT&T also recently announced a joint venture with a number of Japanese firms to develop "value-added networks" in Japan.

The theory behind the restrictions on the Bell companies is that they are necessary to prevent cross-subsidization of regulated and unregulated activities and potential abuse of the Bell companies' local telephone exchange "bottlenecks." At present, the overwhelming majority of revenues of both

^{8/} United States v. Western Elec. Co., Inc., 1984-2 Trade Cas. Para. 66, 121 (D.D.C. 1984).

AT&T and the Bell Operating Companies are derived from regulated businesses. There is little evidence, however, that either the Bell Operating Companies or AT&T have burdened regulated ratepayers with the cost of corporate acquisitions and diversification in unregulated areas.

Critical Consent Decree Issues

Many parties submitting comments in response to our Federal Register notice focused extensively on the various restrictions placed on the Bell Operating Companies under the AT&T consent decree and by court rulings regarding possible company diversification. In their comments, virtually all of the Bell Operating Companies understandably recommended immediate major modifications or outright removal of the consent decree's restrictions on the geographic and product markets they may enter.^{9/} Trade associations representing service and equipment vendors and manufacturers generally opposed changes in the limits now imposed on the Bell Operating Companies in the equipment field.^{10/} AT&T, not unexpectedly, filed comments opposing changes in the decree which might increase the prevailing level of competition between its "interLATA" and equipment operations and those of the Bell companies. AT&T maintained that changes in the consent decree are not required at this time. The firm did not oppose any and all changes for all time. But to undertake major alterations in the decree only about 18 months since the decree became effective, they suggest, could be regarded as a signal the initial restrictions on the Bell companies were in error.

The AT&T consent decree superimposes an additional, complicated regulatory regime -- administered by the Antitrust Division and the judgment court -- on companies already regulated by the FCC and public utility commissions in the District of Columbia and the 48 states in which they now do business. The Antitrust Division has indicated that it has been very careful to avoid conflict with the FCC. It

^{9/} See generally Comments of Ameritech, at 11-19 and Southwestern Bell, at 18-21 (change decree generally); Comments of Bell Atlantic, at 25-28 (remove inter-LATA restriction); Comments of U.S. West, at 23-24 and Pacific Telesis, at 23-26 (allow information services); Comments of NYNEX, at 12-14 (allow services unrelated to local exchange); Comments of Bell South, at 6-11 (modify line-of-business restrictions).

^{10/} See Comments of ADAPSO, at 12; IDCMA, at 28; and NATA, at 9, 21 (expressing support for the line-of-business restrictions).

also has indicated that in some instances it focuses on activities by the Bell companies which are not now extensively regulated, if regulated at all, by the FCC and the state agencies. This has provoked some controversies. Regulatory officials have indicated that because the Antitrust Division sometimes deals with Bell companies on a private, bilateral basis, regulators are not always able to comment on proposals until after a decision has essentially been reached. Our intention here, as indicated in the Foreword, is not to debate the merits or wisdom of the AT&T divestiture; nor realistically can we address, much less resolve, all the controversies the decree and its enforcement have engendered. The principal issues, however, and the primary changes we believe are strongly warranted, are discussed individually below.

InterLATA Service and Manufacturing Restrictions

By separating the ownership of "local" telephone exchange facilities and certain long-distance telephone operations, the Antitrust Division plainly sought to reduce or eliminate the ability of local telephone companies to discriminate among toll service providers and thus distort the efficient development of competitive long-distance services. The "equal access" obligations under the decree were intended to further this procompetitive process.

Similarly, by barring the Bell companies from equipment manufacturing and segregating their competitive equipment retailing and monopoly local service functions, the Antitrust Division commendably sought to minimize any potential for anticompetitive cross-subsidization and unfair, discriminatory conduct.

If undertaken with an intent to limit competition or to monopolize any market, such discrimination by the Bell companies would in all likelihood violate the antitrust laws as well as parallel FCC rules and policies. The twin assumptions reflected in these parts of the AT&T consent decree, however, are that "structural separation" constitutes a necessary, more effective safeguard and imposes acceptable economic cost.

These changes may have been desirable three years ago from the standpoint of competition policy. One should not treat the decree, however, as if carved in stone, given continuing changes in technology and the marketplace. As a practical matter, the boundaries established by the AT&T consent decree will decreasingly conform to industry realities, just as many distinctions once drawn by other regulators in other contexts have been rendered obsolete by the forces of technology and market change.

Today, it may be possible to differentiate, for example, between geographically shorter long-distance calls ("intraLATA") and longer long-distance calls ("interLATA"), and to allow the Bell Operating Companies to provide the former type but not the latter. Over time, however, this artificial restriction seems likely to become more and more strained as the discussion of the underlying technologies contained elsewhere in this report makes clear. Indeed, in many instances, "intraLATA" calls are longer than "interLATA" calls, and the sole distinction between these classes of traffic relates to artificial service boundaries drawn by the judgment court.

Those provisions of the consent decree which allow the Bell companies to participate in equipment retailing, but not manufacturing, also seem likely to become less and less justifiable over time. There is today significant substitutability between telephone equipment and telephone circuit expenditures and this competition for the telephone user's dollar is increasing. The greater the "intelligence" or capabilities of a PBX, for example, the fewer circuits required. The greater the "intelligence" available in the telephone network, the less costly and sophisticated need be the terminals on the customer's premises. In an era of increasingly specialized or customized equipment, moreover, many traditional distinctions between retailing and manufacturing activities are likely to blur as well. The Antitrust Division currently is examining whether the independent production of equipment to specifications established by a Bell Operating Company constitutes impermissible "manufacturing." Similar questions undoubtedly could arise with respect to the optional features which a Bell company might incorporate into equipment at the retail customer's request, as that too might be deemed "manufacturing."

While artificial, the limitations on "interLATA" service and prohibitions on equipment manufacturing in the AT&T consent decree do not necessarily deny service to the public (as is, unfortunately, too often the consequence of the limitations on "information services" discussed below). These two restrictions, however, do impose obvious competitive costs. The prohibitions on "interLATA" service shield AT&T and the competitive carriers from significant actual and potential competition that might well be to the benefit of the consumer. The prohibitions on equipment manufacturing, in turn, tend to protect both foreign and domestic equipment companies from competition.

Over time, restrictions on the production of communications equipment to order could have an adverse effect on telephone subscribers. Such restrictions could

limit the ability of the local telephone companies to obtain the optimal equipment to meet local service requirements. They could also force the local telephone companies (as well as some smaller equipment providers) to conform their operations to standards dictated by a few international firms. In this regard, a leading telecommunications equipment manufacturer has stated it favors removal of most restraints on the Bell companies for two reasons: first, it would tend to ensure the long-run financial strength of companies that constitute the manufacturer's prime market and, second, it would tend to minimize the possibility that two companies, namely AT&T and IBM, would be dominant in the establishment of future equipment and systems standards.

Policing the boundaries between categories of toll calling and between related equipment supply functions will become increasingly complicated and costly. If continued, it will necessarily entail a level and intensity of Government involvement in the telecommunications field that is difficult to reconcile with the goal of maximum possible reliance on marketplace competition. It may also result in significant regional service disparities. Customers in Centel, United, or Continental telephone franchise areas, for example, would be able to satisfy all their communications and related needs through the local telephone company, if they so chose. But in Bell company-served areas of the country, customers would be denied this opportunity by Government fiat.

The direct and opportunity costs implicit in these restrictions may be a necessary cost of achieving a more effectively competitive industry structure. Making fundamental changes in the decree at this particular juncture could exacerbate uncertainties which currently prevail while slowing some of the desirable, procompetitive changes the decree envisions.

At present, less than half the Bell Operating Companies' central offices have been converted to "equal access" operation. Problems have arisen in the course of efforts to implement the "equal access" parts of the AT&T consent decree so as to ensure parity of competitive opportunity among toll service providers. Not every end-office will be converted immediately. This is because the decree contemplates liberal waivers in the case of offices serving 10,000 or fewer lines or not yet equipped with electronic, stored-program switches. In many states, furthermore, long-distance competition within the LATA boundaries has not yet been allowed, affording the Bell Operating Companies unwarranted protection from competition.

Until substantial "equal access" to local exchange facilities is achieved and long-distance markets are open to actual or potential competition, a case can be made for continuing to limit the participation of the Bell Operating Companies in the "interLATA" market. Once such "equal access" is achieved, however, these restrictions should be revisited with a view toward their elimination or substantial modification. As of September 1986, moreover, the Bell companies at a minimum should be allowed to resell interLATA services acquired from other carriers. There should be no restrictions on the Bell companies selling an overall package of any equipment and services to major customers as other firms such as AT&T and IBM now do. The ability to offer major users "one-stop shopping" is generally regarded as important to competing for these major accounts and the Bell companies should be given the opportunity to so compete.

We do not recommend immediate major changes in those provisions of the AT&T consent decree governing the participation of the Bell companies in domestic manufacturing. However, the domestic and foreign production by independent companies of equipment to Bell specifications should certainly be allowed. Similarly, any restrictions on the ability of the Bell companies to customize installations for particular customers should not be imposed. The Bell companies should also enjoy considerable flexibility to exploit the extensive array of patent rights which they received as part of the divestiture process and division of Bell System assets.

Given today's increasingly competitive communications equipment market, the likelihood of any hidden and irremediable abuses by the Bell Operating Companies is not great. Maximum weight should thus be accorded customer demands and convenience. If a customer desires to purchase a given product from the Bell companies, he or she should be allowed to do so, and without government intervention. Choice should be primarily a function of marketplace factors and not the result of Government decisionmaking.

It is axiomatic that the economic strengths conferred by protected monopoly markets should not be used to impede competition in unregulated markets. Exclusionary rules, however, are simply not warranted in this case. Any policy of absolute containment may well impose unacceptable economic and social costs, particularly when other workable means are available to minimize the potential for anticompetitive cross-subsidies.

The 1956 AT&T consent decree reflected a policy of absolute containment and the assumption that any competitive risks associated with the diversification of the unified Bell

System outside the gambit of pervasively regulated telecommunications were unacceptable. This containment philosophy has been continued in major regards and unfortunately applied to the Bell Operating Companies. Explicit in judgment court opinions is the view that diversification by the Bell Operating Companies poses risks both for the maintenance of local telephone services and continued competition in unregulated markets.

The notion is that local telephone operations constitute a uniquely lucrative source of revenues to support anticompetitive cross-subsidization in unregulated markets. There is little support for this view in the literature on industry economics. Significant subsidies have flowed particularly from the interstate long-distance to local telephone operations. Indeed, local rates today fail to cover the revenue requirements of a substantial part of local exchange plant. If local companies are unable to support much of their local investment in nontraffic sensitive plant today through local service charges, it is difficult to see how they could fuel anticompetitive cross-subsidies in other markets.

Information Services

While no immediate changes in those provisions of the AT&T consent decree dealing with "interLATA" services and domestic equipment manufacturing are proposed, prompt attention to eliminating the prohibition on "information services" is required. The clearest effect of this prohibition, in too many instances, is to deny the public choices which otherwise would be available. The prohibition is also unfair since it places the Bell Operating Companies at a distinct disadvantage in relationship to AT&T, IBM and its planned affiliate, MCI, and other companies that are increasingly entering the local exchange services market on a selective basis. If AT&T and others are to be allowed to offer customers the convenience of "one-stop shopping" for a diversity of services -- and we strongly believe that should be permitted -- to unfairly hinder the local telephone company in offering similar service clusters will cause marketplace distortions. Success in the marketplace will be dictated not by superior efficiency, diligence, and foresight, but rather by the happenstance of judicial regulations.

One particularly troublesome case demonstrates the practical consequences of the AT&T consent decree's "information services" restrictions. Last fall, Ameritech filed for clarification of these restrictions to allow it to provide voice store-and-forward services in conjunction with the cellular mobile radio services Ameritech offers. At

present, competing "non-wireline" cellular radio companies are providing such store-and-forward services which contribute to the utility (and thus the salability) of this particular competitive offering.

On September 7, 1984, Ameritech filed its request for clarification. On November 21, nearly three months later, the Antitrust Division filed a memorandum with the judgment court objecting to Ameritech's proposal to add this feature to its existing cellular radio operations. In late January 1985, and again later in February, Ameritech filed counter pleadings with the judgment court. In March, the Antitrust Division reiterated its view that curtailing the services Ameritech might offer was necessary to ensure development of a "competitive" cellular radio business. At present, the matter is still pending. Ameritech's cellular customers are denied the option of obtaining this possible service from the company.

The matter of "protocol conversion" is another controversy which has arisen under the "information services" part of the AT&T consent decree. Protocol conversion refers to a technical process by which information can be placed in a form suitable for high-speed transmission, typically involving "packet switching", a sophisticated, computer-controlled means of transferring large amounts of data accurately. Protocol conversion can be accomplished using customer-supplied apparatus, or the process and capability can be associated with the telephone circuit and switching machinery itself.

For the local telephone company, incorporating the protocol conversion capability into the local network switch is attractive since it might alleviate growing demands on the conventional telephone network while also catering to subscriber convenience. The conventional telephone network, typically engineered to handle voice calls averaging some two minutes duration, may not be optimal to handle certain types of data transmissions, such as very short messages (as with credit card verification machines) or very long messages (as with remote data base access). With protocol conversion and available local packet switched networks, telephone companies are in the potential position to reduce demands on the conventional network, demands which might otherwise entail additional, very costly switches or other construction. Protocol conversion capabilities obviously could give the local telephone companies a means of competing against both vendors of protocol conversion apparatus and the packet switched networks other companies are offering in some cities in the country.

In March 1985, the FCC ruled that the public would benefit from Bell company provision of protocol conversion services without resort to the elaborate separate subsidiary requirements the FCC's Second Computer Inquiry rules otherwise require for such "enhanced services." The FCC explicitly found that the "[p]rovision of such services by the BOCs promises to bring to the public lower prices for asynchronous format-compatible packet switched service than are available from existing providers of such services."^{11/} It further found that the nondiscrimination and other conditions placed on the provision of such services by the Bell Operating Companies would forestall any potential competitive problems.

Despite this finding of public benefits by the expert regulatory agency, there is concern that certain kinds of protocol conversion may constitute an impermissible information service. The question of whether "enhanced services" such as protocol conversion constitute forbidden "information services" under the AT&T consent decree remains unresolved. Indications are that few Bell Operating Companies have made the capital commitments necessary to provide this new service. Consequently, the general public has effectively been denied an opportunity to buy services which could prove privately beneficial without being publicly detrimental.

To avoid continuation of these problems, and what appears to be curtailment both of competition and customer service options, the AT&T consent decree's provisions on "information services" should be eliminated. Where the FCC has determined the services involved should be made available to the public by the Bell Operating Companies, that determination should govern. The nondiscrimination provisions of sections II(A) and II(B) of the consent decree make clear the obligation of the Bell Operating Companies to make their basic networks available to all under comparable terms and conditions. It may be appropriate to require the Bell companies to demonstrate the steps they will take to ensure that any competing providers of information services have access to the communications services they need to compete fully with any Bell company information service operations. It may also be appropriate to require the Bell companies to provide "equal access" for all "intraLATA" service competitors as a prerequisite to their entry into the

^{11/} Memorandum Opinion and Order, In the Matter of Petitions for Waiver of Section 64.702 of the Commission's Rules (Computer II) (Protocol Order), FCC 85-101, released March 26, 1985, at para. 82.

information services market. The fundamental point here, however, is that the present flat prohibition is inconsistent with (a) the need to foster a greater diversity of competing customer choices, (b) the efficient use and development of the telephone network, and (c) sound public policy. Nor is it in accord with the powers granted to the Commission by the Congress under the Communications Act of 1934. Accordingly, the "information services" provision in the AT&T consent decree should be eliminated, and the FCC should exercise any appropriate regulatory oversight in this area.

This is not to suggest that we believe the time is ripe to permit the Bell Operating Companies to participate in the so-called "electronic publishing" field. Section VIII (D) of the 1982 decree barred AT&T from engaging in this business over its own transmission facilities for seven years; this prohibition has four years yet to run. The "electronic publishing" prohibitions in the decree were aimed at furthering First Amendment values. The limitations on AT&T and the Bell Operating Companies should be comparable both in scope and duration. Such a specific and limited prohibition on the Bell companies is far more desirable than the present over-inclusive and indefinite ban on their involvement in all "information services," including "electronic publishing."

International Effects

Limitations and unnecessary delays regarding the overseas activities of the Bell companies should not be imposed. The telecommunications market today is worldwide. The policy of our Government is to encourage U.S. companies to compete internationally, particularly since our market has become such an inviting target for foreign concerns. In such an environment, we must reexamine the burdens that are placed on our firms by the Government and make sure that they are consistent with national policy.

The general restrictions placed on the Bell Operating Companies fail this test. The Bell companies include over half of all U.S. telecommunications resources. They are companies with substantial expertise, capital, and human resources which can and should be able to provide services well beyond basic local exchange service. One potential advantage of the divestiture, which has been little noted, was the creation of seven very large corporations with the resources to compete in many markets. They are exactly the kinds of companies we should be encouraging to work on behalf of the Nation in the tough competitive world of international communications.

Instead, the Government, through the court and the AT&T consent decree, seems determined to make these potential

competitors jump through the same hoops to compete in foreign markets that must be negotiated as a prerequisite to competing in the domestic market, without any visible corresponding rationale. No adequate explanation has been given as to how any Bell company's local "bottleneck" might be abused through overseas ventures, or how such ventures could prove other than beneficial to the United States. It is difficult enough to do business in foreign markets without the restrictive regulatory processes imposed on these firms by the consent decree. It seems unlikely any strong consideration was given to the differences between the two markets when the decree was being considered. That is natural considering the primary focus of the antitrust laws and the allegations in the AT&T case concerned violations in domestic markets.

The AT&T consent decree should not be interpreted to require the Bell companies to plead before the Antitrust Division and the court before moving into foreign business ventures. There is every reason to encourage our large American telecommunications firms to engage in joint manufacturing ventures in foreign markets, to assist in the provision of long-distance construction in foreign markets, or to provide any other telecommunications service overseas. At the same time we impose such needless restrictions on U.S. firms, we have opened our markets to all manufacturers and service providers. In fact, it is possible under our laws for a foreign concern to completely own and operate any telecommunications facility as long as the radio spectrum is not licensed to the foreign entity. The contrast on how we treat foreign firms, yet restrict our own, is striking.

If the Antitrust Division and the judgment court believe they cannot interpret the decree freely to allow such foreign ventures, we recommend that the Division seek a change in the provisions at the earliest opportunity. The Bell companies should also request "blanket waivers" to permit activities of any kind overseas. Manufacturing abroad for foreign markets should be allowed. Again, it is clearly the policy of this Government to encourage participation in world markets with as little restriction as possible, and the present implementation of the decree is in direct, counter-productive conflict with that policy.

"Line-of-Business" Restrictions and the Waiver Process

The AT&T consent decree envisions that the primary activity of the Bell Operating Companies will be providing local telephone services subject to regulation. While the decree makes little provision for regional holding companies, they are included within the term "Bell Operating Company." It was apparently contemplated that the regional companies

would be as subject to regulation and to the constraints in the consent decree, as their subsidiaries engaged in providing regulated local exchange telephone service.

Within weeks following divestiture in January 1984, the first requests for waiver of the consent decree's line-of-business restrictions were filed. More requests were filed in succeeding months. In response to a request from the Antitrust Division, the court established a briefing schedule, heard oral argument, and on July 26, 1984, handed down an opinion establishing restrictions and conditions governing waiver requests. Also established by that order, which one regional company (US West) has appealed, was a waiver review and screening process which relies heavily on the recommendations of the Antitrust Division staff.

As currently administered, the line-of-business waiver process bears some resemblance to the regulatory procedures used by the FCC in considering waivers from its rules, except that the Antitrust Division's process is not subject to conventional Administrative Procedures Act safeguards.

The typical waiver review is conducted as follows: when specific requests are first filed with the Antitrust Division, attorneys and executives of the petitioning Bell Operating Company, as a general matter, enter into negotiations with the Antitrust Division staff in an effort to persuade them of the merits of the proposal. The Antitrust Division staff may then issue letters requesting additional information regarding the proposal, followed, if necessary, by further private discussions. The Antitrust Division issues a weekly listing of waiver requests pending and received. These requests also receive publicity in the trade press, and parties opposing the request often submit comments to the Antitrust Division. As in any adversarial regulatory process, the regulated companies -- in this instance, the Bell companies -- often seek considerable latitude, and the agency staff -- in this case, Antitrust Division personnel -- in the past sought to chisel down and narrow the pertinent request. At the end of this process, the waiver request, along with the Division's recommendation, is submitted to the judgment court for consideration. Those requests approved by the Antitrust Division ordinarily are approved by the court, though after some further delay. While the time entailed by this process varies with the nature of the request, it takes at least four months and often far longer to obtain approval first from the Antitrust Division and then from the court.

This process is in addition to already existing regulatory procedures governing the activities of the Bell Operating Companies, procedures administered by both the FCC

and state regulatory agencies. The effect is to impose an extraordinary level of regulation uniquely on the Bell Operating Companies.

Detailed examination of specific waiver requests illustrates the problem. One example involved the attempts of NYNEX Corporation to enter the office equipment market. On February 15, 1984, NYNEX filed a motion with the judgment court requesting permission to enter the market for retailing office equipment and related services including computers, printers, and copiers. In the following month, the North American Telecommunications Association (NATA), MCI, Pacific Telesis, and the Antitrust Division filed responses to NYNEX's motion.

NYNEX then filed two replies, one to the Antitrust Division's response and one to the MCI and NATA comments. Late in April 1984, the Vermont Public Service Board filed a motion asking the judgment court to allow time for oral argument on the NYNEX request. Apparently there was no further action until July 26, 1984, when the court issued its opinion on the general line-of-business waiver issue. The opinion referred all contested waiver requests back to the Antitrust Division, following the procedures under which waivers are now processed.

Earlier, NYNEX had filed with the FCC a petition for waiver of the Computer II rules to allow it to market customer premises communications equipment (CPE) jointly with some basic telephone services through its NYNEX Business Information Systems Company subsidiary, known as BISC.^{12/} On July 11, 1984, the FCC granted the requests of the Bell Operating Companies to allow their equipment subsidiaries to act as sales agents for basic network services, provided certain conditions were met and supplemental capitalization plans were filed.^{13/} With regard to such equipment -- which under the consent decree the Bell companies could provide and which is more closely related to the local telephone network than other office equipment -- the FCC found that

^{12/} NYNEX Petition for Waiver, filed May 22, 1984.

^{13/} Memorandum Opinion and Order, In the Matter of American Information Technologies Corp., BellSouth, NYNEX; Interim Capitalization Plans For the Furnishing of Customer Premises Equipment and Enhanced Services; NYNEX Petition for Waiver of Section 64.702 of the Commission's Rules to Allow Marketing of Network Services by Separate Subsidiary, 98 F.C.C. 2d 943 (1984).

joint marketing with network services within BISC was in the public interest.^{14/}

Later, following negotiations with the Antitrust Division, NYNEX split its line-of-business waiver request into two separate requests, one for marketing office equipment and related services through retail stores and the other for joint marketing of office equipment and basic services through BISC. The Antitrust Division then filed a memorandum in support of the retail store waiver request. On August 27, 1984, however, the Division filed in opposition to the joint marketing proposal.

Under the Antitrust Division's approach, BISC could jointly market basic services and telephone equipment but not basic services and printers or copying machines. There followed a series of comments on NYNEX's proposals and the Antitrust Division's responses to those proposals.^{15/} During this period, NYNEX filed six responses to these pleadings.^{16/} In its November 5 reply to the Division, NYNEX

^{14/} Id., at para. 3.

^{15/} Comments of Bell Atlantic on Proposed Order of the United States Permitting NYNEX to Provide Computer and Office Equipment, filed October 1, 1984; Motion of TRW, Inc., for Extension of Time; Comments of TRW, Inc., in Opposition to Proposed Waivers of Section II(D) of the MFJ to permit Pacific Telesis and NYNEX to Enter the Office Products Business, filed October 10, 1984; Ameritech's Response to the Opposition of the United States to the Motion of NYNEX Corporation to Provide Office Equipment and Related Services to Large Business Customers, filed November 5, 1984; Response of NATA to Department of Justice Memorandum of August 27, 1984 Regarding NYNEX Waiver Request to Provide Office Equipment to Large Business Users, filed November 5, 1984; Further Response of the United States to Motion of NYNEX Corporation to Provide Office Equipment and Related Services, filed November 16, 1984.

^{16/} NYNEX Corporation Opposition to TRW Motion for Extension of Time to Submit Comments, filed October 3, 1984; NYNEX Reply to Responses to Proposed Order of the United States Permitting NYNEX to Provide Office Equipment Through Retail Stores, filed October 10, 1984; NYNEX Reply to TRW Comments Opposing NYNEX's Retail Office Equipment Waiver, filed October 22, 1984; Reply of NYNEX Corporation to the Responses of the United States to NYNEX's Motion to Provide Office Equipment to Large Business Customers, filed November 5, 1984; NYNEX Reply

stated that the office equipment it intended to market jointly with basic services was either telephone equipment or incidental to the provision of such equipment. NYNEX met with the Division staff to discuss its proposal. The Antitrust Division subsequently changed its views, determining that computer equipment could be considered CPE which would thus not need a waiver. These revised views were submitted to the court in the Antitrust Division's Further Response of November 16, 1984. On November 21, 1984, NYNEX filed a Notice of Withdrawal of its motion requesting a waiver of the line-of-business restrictions regarding joint marketing of basic services and office equipment.^{17/}

On December 14, 1984, ten months after NYNEX filed its original waiver request, the judgment court granted NYNEX's waiver regarding the marketing of office equipment through retail stores.^{18/} Four months later, the court also allowed NYNEX to withdraw its other waiver request, accepting the Antitrust Division's view that the equipment NYNEX wanted to market jointly with basic services could be considered as CPE and thus not need a waiver.^{19/} With regard to NYNEX's request, the primary result of the waiver process was roughly a year's delay in NYNEX's entry into the market -- plus advance revelation to its competitors of its business intentions, considerable expense and uncertainty for NYNEX, and diminished options for consumers.

Another illustration of the nature of the waiver process is provided by Ameritech's request for a waiver allowing it to provide consulting services to cellular system operators. Shortly after the divestiture, Ameritech Mobile Communications, Inc., purchased AT&T's cellular radio system control facilities, which had been designed to monitor the

to NATA Response Regarding NYNEX Request to Provide Office Equipment to Large Business Users, filed November 16, 1984; NYNEX Response to Motion of North American Telecommunications Association for Leave to File Comments, filed December 7, 1984.

^{17/} Letter to Judge Harold H. Greene from Mr. G. M. Oscar transmitting Notice of Withdrawal in connection with Motion to Provide Office Equipment and Related Services to Large Business Customers, filed November 21, 1984.

^{18/} Memorandum, filed December 14, 1984, Civil Action No. 82-0192, (D.D.C.); Order, filed December 14, 1984, Civil Action No. 82-0192, (D.D.C.).

^{19/} Memorandum, filed April 22, 1985, Civil Action No. 82-0192, (D.D.C.).

operating companies' cellular systems. Pursuant to the court-approved plan of reorganization of the Bell System, Ameritech could use these facilities to monitor the cellular systems of four other regional companies in addition to its own.

In August 1984, Ameritech asked the Antitrust Division whether a waiver of the line-of-business restrictions would be needed to allow Ameritech to provide these services to cellular operators not affiliated with the Bell companies. The Division's view was that a waiver would be required. Ameritech thus filed its waiver request on September 7, 1984, and at the Division's request served copies of its request on other participants in the cellular consulting industry. On October 2, 1984, NewVector, the cellular subsidiary of US West, filed a waiver request to allow it to enter the market as well.

On October 17, 1984, Jubon Engineering, Inc., filed in opposition to NewVector's request. On November 5, 1984, Cellular Business Systems, Inc., filed in opposition to Ameritech's request. One day later, Celltech, Inc., filed in opposition to both requests.

More than three months elapsed before, on February 14, 1985, the Antitrust Division filed a motion before the judgment court recommending that the two requests be granted. In addition to the conditions specified in the Court's July 26, 1984, opinion, however, the Division recommended two further conditions: that the interexchange lines used to provide the monitoring services must be acquired from interexchange carriers, and that the cellular consulting and monitoring subsidiary could not get software or research and development from affiliated operating companies. Ameritech agreed to these terms.

In the months since the Division's recommendation was forwarded to the court, Southwestern Bell, BellSouth, and Pacific Telesis have also filed requests to enter the cellular consulting and monitoring market. The Division submitted its comments to the court in May 1985. The court, however, has not yet acted on the initial requests by Ameritech and NewVector, nor these other firms. Thus, almost a year after Ameritech began discussions with the Antitrust Division on its entry into this market -- entry which they do not oppose -- Ameritech is still waiting for an answer. Neither Ameritech nor the consumer obviously is served by such delay. The process, rather, has served only to protect other competitors who are not restrained by the cumbersome waiver process.

This process is not only cumbersome, it also places the Antitrust Division and the court in the position of real and potential conflict with the FCC on matters of telecommunications policy. The NYNEX BISC joint marketing proposal is one illustration of this. Also, the Division is now considering whether protocol conversion services are "information services" which, under the consent decree, the BOCs are prohibited from providing, as earlier discussed.^{20/} The FCC has already determined that as a matter of telecommunications policy, the Bell companies should be allowed to provide those services, subject to restrictions.

Some further insight into the consent decree enforcement process is gained by considering the acquisition by Southwestern Bell Corporation, which in 1984 had revenues of about \$7.2 billion, of Electra, a small "interconnect" company with annual sales of less than \$20 million. The acquisition was publicly announced on October 1, 1984, and at the same time the Antitrust Division was provided with both the firm's public statement and advised by letter that Electra was not involved in manufacturing as defined by the AT&T consent decree. Because Electra does, however, on occasion evidently order equipment built to specifications, a letter was received from the Antitrust Division requesting additional information on the acquisition. Southwestern supplied additional information on October 25, 1984.

Further discussion with the Antitrust Division did not take place until April 1985, six months later. A meeting to discuss this acquisition was held between Antitrust Division staff and Southwestern Bell corporate executives on May 15, 1985. No resolution, however, was reached. Instead, the Antitrust Division staff advised that they were still reviewing the issue of whether manufacturing by independent companies to specifications supplied by a Bell Operating Company might not constitute impermissible "manufacturing" under the AT&T consent decree.

In comments to the judgment court, the FCC in 1982 stated that court-imposed, post-divestiture restrictions on the lines of business the Bell companies could enter are unnecessary and unwise. As the Commission stated:

The restrictions apparently are based upon the premise that any company having a local exchange franchise is likely to engage in predatory tactics in any other market it enters. . . .

^{20/} See Comments of Bell Atlantic, at 29-30.

This decree theory bears little resemblance to any theory of the D.C. case that was described in the Justice Department's response to the Rule 41(b) motion to dismiss or the court's opinion denying that motion. Opinion, filed September 11, 1981. The Justice Department did contend that vertical integration into telecommunications manufacturing by a firm with local exchange franchises is inherently anticompetitive; but apparently it did not extend that claim to other markets.

The Justice Department also presented evidence with respect to alleged cross-subsidization by AT&T, primarily among interstate services regulated by the Federal Communications Commission. The Department proceeded on the theory that a firm subject to overall rate of return regulation and an aggregate revenue requirement for all the regulated services has an incentive to underprice the relatively more competitive regulated services and to recoup the difference from the regulated services that face little or no competition. . . .

If the court had entered a judgment of liability on that claim, such a judgment would lend no support whatsoever to the theory that a regulated firm has any special capacity or incentive to subsidize unregulated activities with profits from regulated services. . . .

Even if it would be appropriate to adopt consent decree relief that is designed to guard against dangers that never have been alleged, it would not be appropriate to do so if there is no reason to believe that the dangers are real. We do not perceive any reason for concluding that a properly regulated firm providing local exchange telephone service is more likely to monopolize an unrelated business than any other firm that participates in more than one market.^{21/}

In implementing the consent decree, a new regulatory structure has been created. The procedures that have been adopted are more cumbersome and restrictive than needed. Instead of requiring waiver requests on a case-by-case, company-by-company basis, a generic waiver process could be

^{21/} Brief of the Federal Communications Commission as Amicus Curiae (FCC Brief), Civil Action No. 74-1698, Civil Action No. 82-0192, Misc. No. 82-0025 (P.I.), (D.D.C), filed April 20, 1982, at 32-33.

established. Given the examples above, however, and other similar evidence, this additional layer of regulation for the telephone industry may well be doing the public more harm than good.

The extraordinarily broad restrictions of section II(D)(3) of the AT&T consent decree, therefore, should be eliminated. Any anticompetitive abuses by the BOCs, as with any other firms, can be dealt with through Government or private antitrust action.

The court may decline to take action immediately. In such a case, the court should, at a minimum, be requested to change the current procedure of granting severely limited waivers, substituting instead broad, generic waivers. At present, waivers are granted for very narrow proposals by a specific company, and the BOCs each bear the burden of proving the absence of any possible anticompetitive effects.

This stands normal process and Government-industry relationships on their head. The Bell companies are obliged to prove a negative -- namely, the absence of potential future harms. Usually, it is incumbent on Government to show why potentially beneficial private conduct is undesirable. Not only are the waiver procedures and assumptions thus skewed in Government's favor. If a BOC would like to enter a market for which another BOC has already been granted a waiver, it too must now apply for a waiver and endure the waiver process.

These practices are an unnecessary restraint on private enterprise which should be removed by amending the decree to shift the burden of proof to the Government to show anticompetitive effects and by granting any waiver request to all BOCs at the time the first BOC waiver is granted. The waiver burden should also be reduced by granting waivers for broadly defined markets rather than for narrow proposals.

Summary

We have several areas of concern where we believe changes should be made in the MFJ or in the way it is interpreted and administered.

(1) The present restrictions on domestic manufacture of equipment and the provision of interLATA long-distance service should be retained for the time being. However, when equal access becomes a reality and markets are open to competition, these restrictions should be revisited with a view toward eliminating or, at a minimum, substantially changing them. As of September 1986, moreover, the Bell

companies should be allowed to resell "interLATA" services acquired from other carriers.

(2) The restriction on "information services" (excluding "electronic publishing") will be increasingly difficult to justify, is adverse to the general public interest, and should be eliminated now. Information services typically are logical extensions of basic exchange service and abolishing this restriction will mean the availability of information services to a much broader range of the public. It will, furthermore, lend strength to the basic offerings of the BOCs and allow them to compete in markets that are closely related to basic service. Where access under nondiscriminatory terms for all is assured, it is unfair to put no restrictions on AT&T, IBM-MCI, or other competitors who are and will be advancing further into the local exchange market, and yet hamstringing the local exchange companies. More importantly, this restriction denies customers the maximum possible choice among competing service options. There are readily available ways to ensure that these services are provided so that other competitors will not be disadvantaged. In the case of "electronic publishing" services, the restrictions on AT&T and the Bell companies should be conformed in terms of scope and duration.

(3) There is virtually no strong public policy underpinning for restricting the business of the regional holding companies in foreign markets. Rather, there are strong policies which favor facilitating BOC participation in those markets. The judgment court should not restrict any activity unless it can be demonstrated that such restrictions are necessary. Even in so unlikely a case, any restrictions should be narrowly drawn so as not to unduly interfere with the conduct of international business.

(4) The present process associated with securing waivers of the AT&T consent decree is unduly and needlessly burdensome, bureaucratic, and duplicative of regulatory functions assigned by statute to the FCC and state regulatory agencies. This process has turned the Antitrust Division and the court into a virtual day-to-day regulator of telecommunications. It should be eliminated. The Division and the court at a minimum should attempt to develop a different process more in line with the usual workings of the antitrust laws. In conjunction with this suggestion, we would urge the Division to petition the court to reexamine the order handed down on July 26, 1984, which includes additional restrictions on the operations of the regional holding companies -- including one that purports to limit other lines of business, in aggregate, to 10 percent of overall net revenues and which has no rational basis that we are aware of.

Part 2. SECOND COMPUTER INQUIRY (COMPUTER II)Introduction

Computer and communications technologies (and applications) began converging over two decades ago, and this process has since blurred traditional industry boundaries. Communications was increasingly used to facilitate data processing, and telephone companies made widespread use of computerized switching capable of performing many functions. The computer industry developed outside the gambit of Government economic regulation. Telecommunications, however, was long the monopoly preserve of the telephone industry which, in turn, was subject to pervasive Federal and state price and entry controls (plus, in the case of AT&T, the 1956 consent decree). The convergence of these technologies and the potential collision between different policy approaches led to special proceedings by the FCC.

In two "computer inquiries," the FCC sought to resolve three fundamental regulatory policy questions:

- Which services and equipment should be subject to traditional common carrier regulation?
- How can a line of demarcation between regulated communications and unregulated data processing be established and enforced?
- What terms and conditions should apply when regulated telephone companies participate in the unregulated computer market?

The regulatory regimes established in both the first and second computer inquiries reflect good-faith, progressive efforts on the part of the FCC to strike a reasonable balance among the following goals: (a) assuring continued availability of the best and most efficient computer and telecommunications technologies; (b) minimizing growth of regulation which might otherwise encompass activities where it is plainly not needed; (c) reducing the likelihood of anticompetitive cross-subsidies and unfair cost burdens on basic telephone service customers; and (d) preventing telephone companies from using control over any essential communications facilities to distort competition.

The "separate, arm's length subsidiary" concept was the centerpiece of the FCC's approach in both computer inquiries. By structurally segregating competitive and monopoly activities, and placing severe restrictions on the

dealings among subsidiaries of a corporation, the FCC believed the most reasonable balance would be struck.

The First Computer Inquiry

The FCC's First Computer Inquiry began in 1966 and took over five years to complete.^{22/} Ultimately, the FCC divided service offerings into four parts: data processing, hybrid data processing, hybrid communications, and communications. Telephone companies were allowed to provide the last two services. If they chose to offer the first two services, however, that could only be done through a "maximally separated" subsidiary.

The First Computer Inquiry was a relatively simple proceeding compared to what followed, because AT&T and the Bell System companies at the time were not perceived as actual or potential competitors in the data processing market. Under the 1956 Western Electric consent decree, AT&T was limited essentially to retailing "common carrier communications services . . . the charges for which are subject to regulation. . ." ^{23/} AT&T at the time was the second largest user of computers (after the U.S. Government), held and licensed many of the relevant patents, and, indeed, produced its own hardware and software to meet Bell System and, in some instances, other telephone company needs. AT&T, did not market computer or data processing services directly to the public, however, and the company indicated it was unlikely to do so.

The Second Computer Inquiry

Under the First Computer Inquiry, the FCC policed the gray area between "hybrid data processing" and "hybrid communications" on an ad hoc basis. The commercial advent of

22/ Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services and Facilities, 28 F.C.C. 2d 291 (1970) (Tentative Decision); 28 F.C.C. 2d 267 (1971) (Final Decision and Order), aff'd in part sub nom. GTE Service Corp. v. FCC, 474 F.2d 724 (2d Cir. 1973), decision on remand, 40 F.C.C. 2d 293 (1973).

23/ United States v. Western Elec. Co., 1956 Trade Cas. Para. 68, 246, at 71, 137 (D. N.J. 1956). See, e.g., IBM v. FCC, 570 F.2d 452, 454 n.3 (2d Cir. 1978); NARUC v. FCC, 525 F.2d 630, 637 n. 31 (D.C. Cir. 1976); GTE Service Corp. v. FCC, 474 F.2d 724, 730 n. 7 (2d Cir. 1973).

microcomputer technology and the emergence of the so-called "smart terminal," however, undermined many of the distinctions drawn in the agency's rules. This created the potential for an almost endless series of ad hoc adjudications and in 1976, the FCC issued a public notice proposing substantial changes in its rules.

The new rules that the FCC announced in 1980 accomplished the following things.^{24/} First, and because the FCC believed efforts to differentiate between equipment categories would prove fruitless, the business of selling, leasing, installing, and maintaining customer premises telephone equipment (CPE) was substantially deregulated.^{25/} Second, the FCC abandoned the four-category regime it had established earlier and classified all services as either "basic" or "enhanced." To a degree, the definitions adopted were tautological: "enhanced services," for example, were defined as all services which were not "basic." The FCC's objective, however, was clear: to require that virtually all services (other than the most basic of telephone offerings) would be provided by AT&T and the Bell companies only through "arm's length" subsidiaries. Other companies were not so restrained. Third, the FCC declared that all "enhanced services" were deregulated, and it preempted state regulation in this regard. And, fourth, the FCC provided for near-complete deregulation of the subsidiaries established by the telephone companies to provide terminal equipment and enhanced services.

^{24/} See generally Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), 77 FCC 2d 384 (Final Decision), reconsideration, 84 FCC 2d 50 (1980), further reconsideration, 88 FCC 2d 512 (1981), aff'd sub nom. Computer and Communications Industry Ass'n v. FCC, 693 F.2d 198 (D.C. Cir 1982), cert. denied, 461 U.S. 938 (1983).

^{25/} The FCC technically did not fully "deregulate" customer premises equipment (CPE). Such equipment remains subject to Part 68 of the FCC rules, which implements the "Registration Program" adopted in 1976 to minimize possible technical harm to the telephone network. See Registration Program, 56 FCC 2d 593 (1975), 58 FCC 2d 736 (1976); North Carolina Util. Comm. v. FCC, 537 F.2d 787 (4th Cir. 1976). Nor did the FCC order the immediate "detariffing" of all terminal equipment and its "flash-cut" removal from telephone company rate bases. See, e.g., Detariffing of Embedded CPE, 99 FCC 2d 354 (1984); AT&T Co. (Third ATTIS Report), 56 P. & F. Radio Reg. 2d 1661, 1662 (1984).

Two overriding objectives were reflected throughout the FCC's Second Computer Inquiry rules: maximum possible deregulation and maximum possible separation of the monopoly and competitive activities of the unified Bell System as it moved into the computer and data processing marketplace. The regulatory regime adopted by the FCC tracked communications deregulation legislation then under consideration by Congress.^{26/} AT&T, the principal focus of the rules, agreed to the FCC's approach and moved to establish a separate subsidiary, colloquially referred to as "Baby Bell."

Factors Altering the Cost-Benefit Equation

Not all parties participating in the FCC's Second Computer Inquiry embraced the "separate subsidiary" concept as a sufficient, universal panacea. Comments filed by the U.S. Department of Justice, for example, noted that antitrust policy does not ordinarily attach much weight to how commonly-owned business enterprises are organized or incorporated.^{27/} Interest groups opposing any Bell System participation in the computer and data processing industry testified before Congress on analogous separate subsidiary proposals and indicated a lack of full support for this approach.^{28/}

^{26/} See generally Baker & Baker, Antitrust and Communications Deregulation, 28 Antitr. Bull. 1 (1983); Trienens, Deregulation in the Telecommunications Industry: A Status Report, 50 Antitr. L.J. 409 (1982); Van Deerlin et al., The Proposed Deregulation of Common Carrier Telecommunications, 69 Calif. L. Rev. 446 (1981).

^{27/} See Comments of the U.S. Department of Justice in FCC Docket No. 20828, filed May 26, 1977, at 46 n. 56 (quoting from a 1971 letter from Assistant Attorney General R.W. McLaren to T.J. O'Connell, General Counsel, Federal Reserve Board ("A corporation may establish subsidiaries for various financial, legal, or commercial reasons. Since such multiple corporations have an identical goal -- to earn profits for their common owner -- they should not be expected to act with respect to each other as if they were independent competitors.")). See also Further Comments of the U.S. Department of Justice in FCC Docket No. 20828, filed October 12, 1979, at 10.

^{28/} See, e.g., Hearings on the Telecommunications Competition and Deregulation Act of 1981 Before the Senate Committee on Commerce, Science, and

Historically, there has been a national public policy bias against overly elaborate corporate structures, particularly in the case of public utilities. Section 11(b)(2) of the 1935 Public Utility Holding Company Act, for example, explicitly made it the duty of the Securities and Exchange Commission:

To require by order, after notice and opportunity for hearing, that each registered holding company, and each subsidiary company thereof, shall take such steps as the Commission shall find necessary to ensure that the corporate structure or continued existence of any company in the holding company structure does not unduly or unnecessarily complicate the structure, or unfairly or inequitably distribute voting power among security holders of such holding-company system.^{29/}

This bias against elaborate holding company structures -- such as the FCC's Second Computer Inquiry rules mandate -- reflects the view that complexity can facilitate, not curb, abuses while, at the same time, considerably complicating the tasks of regulators.

It was also unclear why separate incorporation of certain telephone company activities would necessarily prove effective in preventing potential anticompetitive abuses since there already were a significant number of such subsidiaries. The pre-divestiture Bell System, after all, was composed of several dozen subsidiaries. The Western Electric Company was a separate subsidiary which shared no officers or directors with AT&T. Four Bell System companies were so separate that their common stock was traded independently from that of AT&T. It had never before 1980 seriously been contended that these separate subsidiaries were a significant check on alleged joint anticompetitive conduct or made cross-subsidization to detect. That being the case, some wondered why the separate subsidiaries mandated as a result of the Second Computer Inquiry would prove uniquely effective.

Transportation, 97th Cong., 1st Sess. at 432 (1981) [statement of Rolm Corp. Executive Vice President L.J. Chamberlain]; Hearings on Monopolization and Competition in the Telecommunications Industry Before the Senate Judiciary Committee, 97th Cong., 1st Sess. at 202, 236 (1981) [statement of NATA General Counsel Edwin Spievack].

^{29/} 15 U.S.C. Sec. 79k (b)(2)(1980).

It was not even clear why AT&T alone should be subjected to structural controls for fear it was capable of anticompetitive cross-subsidization. Many of the very large corporations with which it was actually or potentially competing had exceedingly deep pockets and, in most instances, their activities were primarily or wholly beyond any direct regulatory control. IBM Corporation, for example, then (as now) enjoyed a commanding share of the world's computer market and substantial liquid assets. Northern Telecom, 25 percent U.S.-owned, was nevertheless majority owned and controlled by the dominant Canadian telephone company. Virtually all of the major multinational corporations with which AT&T was competing had a significant, often highly protected, market and revenue base abroad. As one participant in the FCC's rulemaking noted, many of the firms with which AT&T would compete were "no industrial pygmies."^{30/}

Finally, if separate subsidiaries were so effective a means of forestalling or detecting potential anticompetitive abuses, why were additional steps -- including actual divestiture, as the 1982 AT&T consent decree obviously occasioned -- warranted? Compounding matters, moreover, was the near-total absence of any detailed, empirical analysis of the specific costs and benefits the separate subsidiary requirements of the Second Computer Inquiry rules would entail.

When it adopted its separate subsidiary requirements, the FCC did not completely ignore the obvious costs this approach would impose. It acknowledged costs, but also declared they would be counterbalanced by the public benefits its policies would presumably yield. Five years have now passed, however, since the FCC imposed these requirements. The available evidence indicates that the FCC overestimated the need for its policy of "maximum separation" -- particularly given the subsequent AT&T divestiture -- while underestimating the costs this approach would entail, especially those costs imposed on the general public by virtue of service options foregone, inconvenience, and what today is referred to colloquially as the "hassle factor."

Since divestiture, AT&T has slipped to eighth ranking on the Fortune 500, with 1984 sales of \$33.2 billion, below seventh ranked Dupont (\$34.9 billion in 1984 sales) and substantially below the sixth ranked firm, IBM, with 1984 sales of \$47.3 billion. Each of the divested Bell Operating

^{30/} See Comments of the U.S. Department of Justice in FCC Docket 20828, filed May 26, 1977, at 43.

Companies, which are also subject to the separate subsidiary requirements of the Second Computer Inquiry, is a substantial firm.^{31/} Even the largest of these companies, however, has total assets equal to only about half of IBM's 1984 sales.

The ability of regulated companies to cross-subsidize goods and services, moreover, depends heavily on the presence of protected deep pockets. Since divestiture, almost all the markets in which AT&T and the Bell Operating Companies participate have become actually or potentially competitive. AT&T, for example, competes with the telephone equipment and long-distance services affiliates of IBM, GTE and ITT, among other foreign and domestic companies. While retaining a substantial share of the overall long-distance telephone market, AT&T's share has declined each year since the Second Computer Inquiry rules were adopted. Each of the Bell Operating Companies also confronts increasing competition at the local level, as major customers explore or develop so-called "bypass facilities." Two of the principal customers for local exchange facilities, AT&T and the proposed IBM-MCI affiliation, clearly have the means and resources available to avoid any efforts by the Bell companies to recoup losses incurred in competitive sectors by overcharging for local exchange loops. Cost or revenue shifts by either AT&T or the Bell Operating Companies, moreover, are subject to regulatory scrutiny at both the Federal and state levels.

Not only have the competitive circumstances surrounding the FCC's Second Computer Inquiry rules been radically altered, but there have also been significant changes in communications technology, as reviewed elsewhere in this report. The technical advances which are primarily relevant here include the rapid growth of digital capabilities in telecommunications networks and the proliferation of microprocessors.

31/ The Fortune listing of the 50 largest utilities provides, in relevant part:

<u>Rank</u>	<u>Firm</u>	<u>1984 Assets</u>
1	GTE Corp.	\$26.4 billion
2	Bell South	23.7
3	NYNEX	19.9
4	Bell Atlantic	18.7
5	Pacific Telesis Group	18.1
6	Southwestern Bell	18.0
7	Ameritech	17.6
8	Pacific Gas & Elec. Co.	17.3
9	US West	17.0

The first digital switches were introduced in the United States in 1976, at the same time the FCC was beginning its first computer rulemaking. AT&T's Common Channel Interoffice Signaling (CCIS) was also introduced that year. This system processes call routing information using a separate data channel rather than using signaling over conventional voice or data circuits. By 1990, most customer lines will have access to local offices that use this or comparable systems. These developments, together with the conversion of local subscriber loops to accommodate the new digital environment, mean that the number of new revenue-producing services which can be economically provided using the telephone system could be greatly increased. At the same time, these changes make it possible to provide traditional services more efficiently.

Industry statistics indicate the rapidity of this technical change. The value of installed data communications plant in 1984, for example, was more than two and one-half times the \$3 billion in plant installed in 1978, and this investment is projected to continue growing by at least 8 percent a year, adjusted for inflation. Sales statistics relating to personal computers show the proliferation of subscriber microprocessing capability. World sales of personal computers in 1981, the first full year the FCC's Second Computer Inquiry rules were effective, totaled about \$1.6 billion. Shipments in 1984 in the United States alone totaled about \$13 billion. The local area network business was close to nonexistent in 1980. Yet local area network equipment shipments in 1984 reached about \$225 million and are expected to increase by 50 percent this year, as more corporations establish their own internal communications networks, often to accommodate increased data communications traffic. Data communications revenues generally have grown exponentially in the years since the adoption of the FCC's 1980 computer rules, and amounted to about \$24 billion in 1984, nearly five times the 1981 revenues of \$5.3 billion.^{32/}

Digitizing the telecommunications network dramatically increases the number and type of services which can be offered efficiently. The proliferation of microprocessors should stimulate greater demand for digital and other communications services, to which the rapid increases in data circuit revenues and plant investment attest. From a public policy standpoint, what this means is that the cost-benefit assumptions upon which the Second Computer Inquiry rules were based are less valid today.

32/ 1982 U.S. Industrial Outlook, at 224; 1985 U.S. Industrial Outlook, at 30-6.

In 1980, rigidly segregating traditional basic and modern enhanced services imposed costs. But they may have been acceptable. Regulators denying the telephone industry the opportunity to offer efficiently what it was then technically less able to offer anyway, and denying the public the chance to buy what it then did not seek or want, may not have constituted an intolerable imposition. Today, however, the telephone networks can quite easily provide new services and there obviously is substantial demand for them. Not only have the economic and societal costs of the Second Computer Inquiry rules thus grown, but these costs are likely to continue to increase commensurate with increases in the capabilities of the telephone network and public demand for new services.

Specific Problems With the Rules

The problems which have arisen under the Second Computer Inquiry rules are not merely abstract and theoretical. In addition to the direct costs and the inefficiencies imposed on AT&T and the Bell Operating Companies by separate subsidiary requirements, there have been real costs directly imposed on the public in the form of possible new services that are technically feasible but, chiefly because of regulation, unavailable. Competition between AT&T and companies such as IBM and foreign entrants to our markets has also been constrained. Both AT&T and the Bell Operating Companies have foregone a number of otherwise promising opportunities to exploit the new communications technologies commercially in ways which could yield significant public benefits.

"Custom Calling II"

Modern telephone switching technology makes technically and economically feasible the efficient provision of new services such as voice storage services, automatic telephone "wake-up" and call placement, and other advanced offerings as part of a basic telephone service package. Many of these special services are available in other countries. In large part because of the vicissitudes of the U.S. communications regulatory (and Antitrust Division) process, however, they are not now available on a widespread basis here.

The problem, of course, is that many of these new services do not conform neatly to the FCC's 1980 definition of the "basic services" which a telephone company may offer directly. Because they are typically deemed "enhanced services," and thus can be offered only through a separate arm's length subsidiary, the commercial viability of such offerings is diminished. Attempting to secure waivers from the FCC rules to provide these special services on a

consolidated basis, moreover, usually entails substantial costs and delays.

The 1980 controversy regarding AT&T's proposed offering of "Custom Calling II" services is a good example of how rules and regulatory processes can combine to deny the public the opportunity to buy new telephone services that would otherwise almost certainly be commonplace today. In that proceeding, the pre-divestiture AT&T petitioned the FCC to permit it to offer new services, including "voice storage," as an option for its local telephone service subscribers. Using this particular new service, for example, a subscriber could dial a number, leave an oral message, and instruct the switching machine to call another number at a given time and play back the recording. Alternatively, incoming calls could be diverted to an "electronic mailbox" where messages could be left for later retrieval, as is now accomplished using telephone answering machines. A number of variations are possible.

The AT&T petition for a waiver from the structural separation rules under the Second Computer Inquiry, however, was strongly opposed by a number of companies. They contended that permitting the joint marketing and provision of such new services in conjunction with conventional telephone service would stifle the development of an independent voice storage service business. After reviewing the AT&T waiver petition, the FCC staff determined the firm had failed to make a sufficient case for waiving the computer rules and the full FCC subsequently denied the petition.^{33/}

What has been the practical effect of this ruling? Apparently, at present, only a single firm offers voice storage services to the public, independent of basic telephone service, in the United States. Such voice storage capabilities are available to major corporate users who equip their private branch exchange (PBX) switches with this feature. If one does not have such a switch, however, or access to the sole U.S. firm retailing these services, one must necessarily forego this particular service option. Whether there is significant latent demand for such services on the part of the public is currently uncertain. What is fairly certain, however, is that for most of the people in most of the United States, this particular "high-tech" offering, which is well within the state of the art, is simply unavailable.

^{33/} AT&T, Petition for Waiver of Section 64.702 of the Commission's Rules and Regulations, 88 F.C.C 2d 1, 31 (1981).

AT&T Relief Petition

In September 1983, AT&T determined to petition the FCC for broadscale relief from the separate subsidiary requirements of the Second Computer Inquiry, on the reasonable assumption that the forthcoming divestiture of three-fourths of the firm's assets and virtually all its local telephone exchange "bottlenecks" made the severe restrictions imposed in 1980 unnecessary. According to the company, it took seven months to prepare the relevant pleadings and studies required by the regulatory process, and the petition was thus filed in April 1984. In its petition, AT&T indicated that the elaborate separate subsidiary restrictions called for under the 1980 rules were imposing costs estimated to exceed \$1 billion annually.

Three and one-half months after AT&T's petition was filed, the FCC staff closed the record in that proceeding. Five and one-half months later, however, the FCC issued not an order granting the relief requested, but rather a notice of proposed rulemaking envisioning possible elimination of just the restrictions on joint marketing of communications services and communications equipment. It is now some six months since the FCC, in January 1985, issued its notice of proposed rulemaking; the record is closed, and yet no order has been forthcoming. During the intervening period, the FCC commendably has granted some interim relief, permitting the resale of conventional long-distance telephone service by AT&T's Information Service subsidiary. As the AT&T official responsible for the overall effort recently noted, however:

But the process has taken 21 months so far and just the quantifiable costs run over \$4 million per working day. Interim relief granted along the way has cut the current cost to about \$3 million per day. The American economy, not just AT&T and its customers, has paid a penalty of about \$2 billion over this period.^{34/}

During precisely the same period when AT&T was endeavoring to secure relief from regulations that forcibly compartmentalized its business operations and imposed rigid restrictions on intracorporate commercial dealings, IBM perfected its ownership of Rolm Corporation, a leading PBX supplier, and also recently joined with two of the three

^{34/} Remarks of Mr. George D. Morlan, AT&T, Law & Business Conference on Separate Subsidiaries, Washington, D.C., June 21, 1985, at 2.

largest facilities-based competitive carriers.^{35/} Virtually all restrictions which the FCC in 1977 had placed upon joint activities of IBM and Satellite Business Systems also have been lifted.^{36/}

In 1984, IBM had about \$13 billion more in revenues -- and about five times the profits -- of AT&T. Its 1984 revenues were nearly double the total assets of the largest Bell operating company. Notwithstanding these obvious differentials, at the same time limitations on IBM's competitive communications enterprises were being vitiated, those on AT&T and the Bell companies (aimed ostensibly at minimizing their potential for anticompetitive cross-subsidies) remained.

Network Channel Terminating Equipment

The controversy which has arisen regarding the provision of "network channel terminating equipment" (NCTE) provides another example of the complications and potential commercial impediments which the FCC's Second Computer Inquiry rules engender. NCTE is the generic term for a class of equipment which provides an interface between customer-owned computers and the data communications networks (and associated control computers) owned by AT&T, the Bell Operating Companies, and other common carriers. NCTE provides benefits both to the customers, by making the data channels more reliable and useful, and to the carriers, by helping maintain network performance and minimizing any possibilities of network harm. Traditionally, NCTE has been provided by telephone companies as part of their overall data communications offering. In the late 1970s, however, the Independent Data Communications Manufacturers Association (IDCMA) petitioned the FCC to classify NCTE as "customer premises equipment." Such a classification, under the FCC's 1980 computer rules, would require the telephone companies to offer the equipment only through separate subsidiaries. It would also remove any questions regarding the right of telephone subscribers to use either carrier or noncarrier-supplied NCTE, at their choosing.

NTIA's Institute for Telecommunication Sciences conducted an extensive technical analysis and concluded there is no reason why NCTE cannot be supplied on a competitive

^{35/} See, e.g., IBM 1984 Annual Report at 4 (Rolm acquisition); Wall Street Journal, June 26, 1985, at 3, (MCI and SBS consolidation).

^{36/} See SBS, 62 FCC 2d 997, 1046 (1977), reh. denied, 64 F.C.C. 2d 872, 873 (1977), vacated in part sub nom. SBS Structure Order, FCC 84-589 (rel. Nov. 28, 1984).

basis. Following submission of this analysis and comments by others, the FCC ruled that NCTE should be considered "customer premises equipment" and its provision deregulated.^{37/} By so ruling, however, the effect may well be to handicap telephone companies in their competitive provision of these products. To participate in the market, these companies must now provide NCTE installations through a separate arm's length subsidiary, and discontinue the joint provision of such data communications services and equipment. Other providers of data communications services will presumably be permitted to market such equipment and data services jointly. But under the FCC's 1980 computer rules, AT&T and the Bell companies cannot unless they seek a waiver. While the Bell companies have filed petitions seeking permission to continue their joint offering of NCTE and data communications services, these petitions are still awaiting FCC action.

What makes the present controversy particularly unnecessary is the nature of the products and services at issue, and the customers who buy them. High-speed data communications circuits, and the very sophisticated terminals used in conjunction with these circuits, clearly are not marketed to the general public. Rather, the customers in almost all instances are major corporations, typically with their own in-house data processing and communications expertise. Customers clearly should have available a menu of equipment and service options, and the right to select that package of products and services which best satisfies particular needs. It seems improbable that this sophisticated group of major corporate customers, buying highly specialized offerings, requires FCC assistance to safeguard them from hypothetical telephone company abuses, particularly since these customers increasingly have available a growing array of both circuit and equipment alternatives.

Whether the independent suppliers of NCTE require special Federal protection against potential telephone company abuses is also unclear. In most instances, the price of terminal equipment is likely to be but one factor, and a small factor, in the overall decisionmaking process. Special features, equipment quality, and reliability are far more likely purchasing determinants. All other things being equal, the customer may choose to deal with a single supplier of all equipment and circuits. Restricting AT&T and the Bell companies in this regard, however, clearly will not remove this potential marketing obstacle confronting independent

^{37/} Memorandum Opinion & Order, CC Docket 81-216, FCC 84-145 (rel. April 27, 1984).

equipment vendors. Such "package" offerings are, or presumably could be, available from firms other than these telephone companies. As a matter of consumer sovereignty, customers should have the option to "piece-out" or consolidate on overall procurement.

Requiring the Bell Operating Companies or AT&T to offer data communications equipment and services through separate subsidiaries seems difficult to rationalize from the standpoint of protecting the public. Such a requirement also appears hard to reconcile with affording customers the maximum range of service and equipment options. As a means of safeguarding the commercial fortunes of the independent equipment vendors, moreover, the requirement would appear to have very limited value since companies other than telephone companies are able to market "package deals." There are readily available far more cost-effective means of detecting anticompetitive cross-subsidies, including requirements for "unbundled" pricing and detailed cost-accounting.

The precise cost to the telephone companies of compliance with the FCC's ruling is uncertain, as is the cost to customers measured in terms of options foregone and inconveniences imposed. Also uncertain is whether, and to what degree, any of the parties to this controversy will actually reap benefits commensurate with the costs the ruling may impose. The NCTE controversy is a good example of presumably significant costs imposed for no very clear, much less compelling, public policy reason. Permitting the suppliers and customers of data communications services and equipment maximum choice, in short, is the better approach.

Possible Solutions

The restrictions placed on AT&T and the Bell Operating Companies under the FCC's Second Computer Inquiry regulations may reflect, in part, an assumption that the capacity of these firms to function effectively is virtually limitless, and that they are well able to withstand whatever procedural and substantive impositions Government may choose to place upon them. The restrictions also seem to reflect, in part, some belief that the resources available to these firms are so great, relative to their competitors, that a regime of official handicapping is warranted.

However valid these assumptions may once have been when there was a single, unified Bell System and the competitors for the most part were small -- or, at least smaller -- business operations, it is clear beyond reasonable dispute that conditions since 1980 have radically changed. AT&T today is substantially smaller and very substantially less profitable than IBM, for example. The largest telephone

utility in the country is not AT&T, nor any of the Bell companies, but rather GTE. At virtually every level in the telecommunications industry, incumbents confront more and more competition, typically from well-heeled competitors or the subsidiaries of major multinational corporations.

The cost-effectiveness of the "separate subsidiary" requirement is commendably now under consideration by the FCC staff. In adopting this requirement in 1980, however, the FCC may well have underestimated the costs which it imposes on the general public. The FCC also then did not assess the so-called "hassle factor," which has increased by virtue of changes in the industry caused by the AT&T divestiture. The problems caused by these rules, however, go deeper than anecdotal evidence of unnecessary impositions on industry and the public for no very compelling public policy reasons.

Restrictions on the provision of new services by AT&T and the Bell companies have the effect of driving the "intelligence" out of the public network onto the customer's premises. Beyond the potential for raising the aggregate cost of the Nation's telecommunications marketbasket, policies which minimize "intelligent" network services may well worsen our trade balance. The domestic content of both the capital and labor used to provide network services appears to be higher than for customer premises equipment -- a market which in recent years has experienced dramatically increased foreign penetration. Such policies, moreover, contrast sharply with those of our major trading partners in Western Europe and Japan. Despite some recent moves toward liberalization, communications policies abroad clearly permit or encourage -- indeed, in some cases, require -- enhanced services to be offered through public-switched networks owned or controlled by national governments. And, of course, both the network services and the network facilities markets in those countries are insulated, in considerable measure, from competition from U.S. firms. In short, communications trade policy asymmetries between U.S. firms and their competitors abroad can only be exaggerated by regulatory policies which unduly bias domestic procurement in favor of customer premises equipment embodying intelligence and functions which could economically be provided through the public network.

It is, perhaps, unfortunate -- but nevertheless true -- that the risk of cross-subsidy may be greatest in those instances where the public also stands to benefit the most from the removal of regulatory barriers. A regulatory approach grounded on any unreasoning fear of cross-subsidization, therefore, also runs the risk of denying the public more and more potential benefits, as digital communications technology continues to evolve. The provision of appropriately priced "enhanced" network services by the

core telephone business increases usage of the network, spreads its overhead costs, contributes revenues to support basic services, spurs innovation, and yields public dividends from the realization of economies of scope. Digital technology facilitates these gains. Yet, capturing these public benefits and maintaining rigid policies of "maximum separation" may increasingly become mutually exclusive alternatives.

The Commission's regulatory management of the computer-communications interface has been notably successful in fostering competition. Workably competitive markets have developed practically free from entry, rate, and service regulation. Competitive rivalry is vigorous and healthy in the equipment and enhanced services markets. And, we have seen no compelling evidence demonstrating that users of regulated services are subsidizing carriers' competitive, unregulated offerings.

The two computer inquiries and the associated waiver process, however, have not been notably successful when measured against other equally important public policy standards. Though common carrier regulation has not been allowed to creep into the effectively competitive enhanced services and sophisticated terminal equipment markets, and even though the distribution of costs between regulated and deregulated markets appears adequately to reflect cost causation, those successes have been very expensive in terms of other values lost and costs incurred.

It is difficult to quantify precisely the total value lost by users who have been denied technologically and economically feasible services, or been forced to wait months or years for a regulatory determination of whether and under what conditions carriers would be permitted to serve them. Yet these costs must be substantial. And their very existence conflicts with the policy imperative to make available in a timely and efficient manner the fruits of the technology in which we as a Nation have invested so heavily.

To the cost of delay and prohibition of certain carrier offerings must be added the costs of uncertainty in planning and developing the public-switched network. The Computer II rules and their uncertain application add an unneeded and burdensome restriction on the evolution of the network architecture required, for example, to implement the Integrated Services Digital Networks (ISDN) concept. Research and development activities of the restricted carriers are distorted. For the Bell Operating Companies, which are foreclosed from manufacturing by terms of the AT&T consent decree, the distortions are magnified backwards to their hardware suppliers who are unable to sell to these

firms equipment which might be used to provide enhanced network offerings. And, of course, the user ultimately pays.

Delays and prohibitions affecting the introduction of new network services by the carriers may also undermine the universal service objective. Preventing such services from sharing and defraying part of the substantial fixed and common costs of the public-switched network clearly increases the burden on basic services. Indeed, a robust and dynamic enhanced services market might well ease the upward pressure on basic rates. It could generate growing contributions to offset the redistribution of non-traffic sensitive costs and more rapid rates of depreciation and capital recovery occasioned by increasing competition. Insofar as such services are priced to cover their incremental costs, they make a revenue contribution, thereby permitting basic rates to be lower than they otherwise would be.

Even those carrier-provided enhanced services which are ultimately permitted by the FCC are required for the most part to be offered through a fully separate subsidiary. We are sympathetic to the Commission's reluctance to utilize accounting solutions to identify, separate, and assign the costs of shared resources underpinning both tariffed and detariffed services. We have in the past generally supported the Commission's conclusion in the Second Computer Inquiry that the potential benefits of full separation exceeded the costs. The balance, as noted above, has shifted in the post-divestiture market environment. The evidence available to us indicates unnecessary costs are associated with functional and resource duplication in both the carriers' core businesses and in their competitive subsidiaries. The value of any economies of scope and integration lost, and the cost of duplication incurred by the separate subsidiary requirements, translate dollar for dollar into higher average communications rates.

The evidence we have reviewed strongly suggests that cost accounting and allocation as an alternative to structural separation may well offer substantial public dividends. When such an alternative is properly structured and enforced, the risk of substantial, anticompetitive cross-subsidy can be held within tolerable limits.

The Commission may have been overly protective against the threat of cross-subsidy. The mere hint of potential for cross-subsidy has become a regulatory bete noire. Granted, it may be difficult, given the current state of the telephone accounting system, to devise unambiguous tests for cross-subsidy. That fact should not, however, drive regulatory policy to embrace increasingly costly solutions which reduce the potential to zero. We believe any

additional risks are fully justified by the opportunity to advance other policy goals.

We recommend that the FCC replace its Second Computer Inquiry structural separations requirements for AT&T and the Bell Operating Companies with the following measures that are designed to ensure fair and open competition while also serving consumer needs and the public interest:

1. Unbundling of services. All regulated carriers should offer basic services on an unbundled "building block" basis available to all potential providers of enhanced services, including themselves.

2. Equal access. Carriers should provide all potential providers of enhanced services equal access to the tariffed, unbundled, basic service building blocks.

3. Tariffing unbundled building blocks. Each component of basic service should be tariffed and should be offered to any potential enhanced service provider, including the carrier, at the tariffed rate. Carriers should be required to pay the tariffed rate charged to potential competitors.

4. Accounting for costs. AT&T and the Bell Operating Companies should be required to account for costs assigned to regulated services and separate those costs from the costs of unregulated service offerings. The FCC should complete action and adopt procedures for allocating common costs.

5. Annual audit. The FCC should require carriers falling under these provisions to be audited annually by an independent accounting firm for compliance with the Commission's rules in this area. The cost of such audits would be borne by the carriers.

In addition to these requirements, if competitive enhanced services are to develop without the costly and counterproductive burden of structural separation, potential providers must have access to network information on a timely basis. Thus, it is important that any network standards coordinating body be open to membership to enhanced service providers as well as all interexchange carriers, exchange carriers, and equipment manufacturers and suppliers.

Part 3. CONSENT DECREE AND COMPUTER II COMPOUNDED

Government dissolved the Bell System and imposed significant transaction costs on the American public, because it was believed the monopolistic structure of that System was imposing substantial costs and inefficiencies, and otherwise impeding the efficient development of the communications infrastructure needed to foster and support the "information economy." It was also believed that inefficiencies in the provision of telecommunications services, attributable to monopoly, were adversely affecting a diversity of industries which were increasingly dependent on communications to support their operations and to improve their performance. Government assumed, in other words, that the "dead hand" of monopoly was affecting what constitutes a critical national infrastructure element, while also generating inefficiencies which were rippling throughout our economy.

When one examines the practical effect of some of the restrictions imposed on the Bell Operating Companies by the AT&T consent decree, however, and also considers the constraints implicit in the FCC's Second Computer Inquiry rules, it becomes reasonably clear that we may well have simply swapped one regime of distortions for another. Absent changes, this new system may prove even more damaging over time.

Consider, for example, the relatively simple case of remote utility meter reading and related service offerings, services that new digital communications technology facilitates. Utilities currently spend significant sums reading customer meters, or estimating customer consumption (and resolving any disputes that imprecise process may cause). Because many energy utilities also encounter some difficulties precisely monitoring overall consumption levels, they also provide for generating capacities greater than might be needed were more efficient "load shaping" technologically feasible. Reducing energy utility costs, while at the same time contributing toward more efficient individual consumption patterns, would clearly further important public interests. This is especially true given the time that is now required to bring new generating capacity on line and the current high cost of such capacity.

Designing and deploying sophisticated energy use and control systems is well within the present state of the communications art. There are, however, far more than simple technical issues which must be considered.

Under the FCC's Second Computer Inquiry rules, any remote sensing devices capable of detecting levels of energy consumption would in all likelihood be denominated "customer

premises equipment," or CPE, and thus could not be offered by the local telephone company directly. Instead, an arm's length equipment marketing subsidiary would have to provide such products -- and then only if manufactured by an independent supplier. If the firm were able to market a package or cluster of services, the price it could charge for this particular offering might be low. If the service was required from the outset to float entirely on its own bottom, however, it is likely to be priced quite high.

Remote energy monitoring or meter reading systems, however, also depend on the use of various computer/data processing functions which generically are referred to as "hubbing" or "polling." That is, information is gathered on command of a centralized unit from all of the dispersed sensors in a given area, manipulated, and then incorporated, for example, in individual billings. Or information regarding all energy consumption in a given locale might be sampled on a dynamic basis with the information thus gathered then provided directly to utility company computers to facilitate generating output "load shaping."

Under the FCC's 1980 computer rules, this polling function almost certainly would be denominated an "enhanced service" and, again, placed off-limits for the basic service telephone company. The Antitrust Division, moreover, almost as certainly would consider this computerized process to be an "information service," regardless of whether offered by the local telephone company or one of its subsidiaries. And, of course, the AT&T consent decree bars the Bell Operating Companies from engaging in the provision of such "information services."

The net effect of these interrelated Government restrictions and prohibitions is to curtail the availability of services which could, first, contribute to more efficient energy use (and thus, possibly, lower bills), and second, more efficient energy utility operations.

What is the economic cost of inhibiting or even foreclosing the availability of such new energy management services? There obviously is little specific data available in this regard. The average residential electricity bill in Washington, D.C., however, is about \$940 a year. If one assumes that more sophisticated means of controlling energy consumption were available to the homeowner, perhaps as much as a 10 percent savings might be achieved, or nearly \$100 yearly. More efficient energy management systems, in turn, might reduce by 10 percent the annual requirements for new electrical generating capacity, plant which currently costs as much as \$5,000 to \$10,000 per kilowatt hour.

It is conceivable that such systems might emerge independent of the telephone companies, though none appear to have done so to date. Given the range of other venture alternatives available and the relatively modest profit opportunity inherent in such energy systems viewed as a stand-alone service, the number of potential independent suppliers of the service is not great. Every month that such systems are not available, of course, means public benefits foregone. Not only is the public thus denied a service alternative that could deliver genuine benefits, but new uses of existing telephone network capacity are also foregone. Consequently, the ability of the public, telephone companies, and electric utilities to capture the benefits of a new, quite feasible, "high-tech" service is limited. And it is limited not by the marketplace, but rather chiefly by an array of Government restrictions.

Consider a related situation: so-called "electronic banking." The installation of "automated teller machines" (ATMs) is a means of expanding the financial service options available to consumers, and it is also a way by which competition among financial institutions can be facilitated and strengthened. The efficient operation of any remote ATM network, however, also requires use of sophisticated data handling techniques. "Real time" connections between each remote banking facility and a centralized computer can be prohibitively expensive. Instead, data from remote units may be accumulated at various network nodes, then shunted to that centralized banking facility for processing, preferably during nonpeak calling hours when communications costs are reduced. Such data traffic management, however, again almost certainly would be considered an "enhanced service" under the FCC's Second Computer Inquiry rules, and could thus only be provided by a local telephone company through a separate, arm's length subsidiary, with all of the operational costs and inefficiencies inherent in such an arrangement. Such a service, almost as certainly, would also be denominated an impermissible "information service" by the Antitrust Division and thus forbidden to the Bell Operating Companies altogether.

The policy implications of this particular difficulty are fairly clear. To the extent that operational costs are prohibitive as a result of FCC and consent decree regulations, the expansion of new financial service networks which could provide more new options to banking customers may be artificially limited or at least slowed. Competition among financial services providers -- something which the Antitrust Division has traditionally sought to foster -- may also be curtailed. Alternatively, the operational costs of such electronic banking systems may be artificially inflated,

which may also lessen any competitive benefits the public might obtain as a result of competing systems.

In neither of these instances are the distortions imposed on the energy utility and financial service sectors by the FCC and Antitrust Division rules necessarily overwhelming. They are especially undesirable, however, because they adversely affect not only the efficient development of the utility and financial services sectors, but also the efficient development of the telephone infrastructure itself.

Distortions of the telephone system occur when restrictions are imposed depending on the accident of equipment location, labeling, or regulatory nomenclature. A "remote switching module," for example, can probably be supplied by the telephone company itself as part of a "basic" offering (absent the vicissitudes of ad hoc regulatory or third-party intervention). On the other hand, similar capability incorporated in a "private branch exchange" (PBX) can be provided only by way of the telephone company's equipment retailing subsidiary. If the capability of either the "remote switching module" or PBX is made available to several customers in a single business locale, that is permissible -- unless one of the tenants in a building is (or becomes) a toll reseller, in which case the service may be impermissible on the ground that it constitutes illicit participation in the offering of "interLATA services."

A remote switching "module" which offers voice storage features may contravene the consent decree's prohibition on "information services." The telephone company's subsidiary may be able lawfully to sell a PBX with "least-cost routing" capabilities (provided it is not sold to a carrier or reseller). It could not, however, maintain the rate information stored in the PBX that would enable the switch to perform least-cost routing. That information would have to be entered and updated by the customer. Whether the telephone company could provide dynamic least-cost routing at a customer's direction using its own central office switch is uncertain. It probably could not since this might violate the AT&T consent decree's prohibitions on "interLATA" service. If, on the other hand, the business customer directed the telephone company to route all toll calls to a particular carrier, the company could do so. Indeed, under the current "equal access" procedures, the telephone companies are required to honor all business and residential call routing requests. These legalistic impediments to the efficient and competitive provision of services, while difficult to enforce today, stand to grow exponentially over time as the service capabilities of the new telecommunications technologies expand.

To the extent that the efficient exploitation of technology and the telephone infrastructure is impeded by this network of highly regulatory Government directives, the obvious losers are ordinary residential subscribers. "Custom Calling II" services are not now generally available anywhere in the United States, as mentioned above. Such services -- which include voice storage and forwarding facilitated by today's modern electronic switching -- might be provided by other entities. Marketing costs for independent companies without an established relationship with small volume residential subscribers, however, have evidently been prohibitive to date.

Such voice storage and forwarding capabilities are readily available to major users; they are a commonplace feature of today's PBXs. Such capabilities, however, are simply not available to smaller users, not necessarily for economic or technical reasons, but because of Government fiat.

The disincentives and economic distortions implicit in these complex regulatory schemes also have significant trade effects, as also discussed elsewhere in this report. To the extent the rules may favor the dispersion of switching and traffic management functions to customers' premises, foreign equipment makers stand to gain, as their share of the overall customer premises equipment market is large and growing rapidly. If, on the other hand, telephone companies are permitted to locate capabilities or "intelligence" in central office switches, U.S. suppliers may have some advantages, since non-U.S. companies today enjoy a relatively small share of the network equipment market.

Overall, the practical effect of these restrictions on the telephone system may be to reduce usage and, in the process, to sustain the current overhead and fixed cost allocations that each unit of usage must bear. At present, the average residential telephone line is used only some 20 minutes daily. Each of those minutes of use, therefore, must bear a share of fixed costs attributable to 24 hours of investment. Increased usage of telephone plant could lower "cost-loading" and, in turn, possibly reduce the cost of some basic services. To the extent that small business or other commercial usage might be stimulated by the availability of new services, moreover, costs to low volume residential users might conceivably be lowered.

None of these cost impositions and potential economic distortions may be decisive in and of itself. The cumulative effect, however, and the possible adverse consequences, may be quite severe. That such distortions exist, largely as a consequence of Government decisionmaking, indicates the

difficulties and potential costs of "line-drawing" in a technologically and commercially dynamic environment. They also suggest the plain need to revisit these Government constraints expeditiously.

CHAPTER IV: LONG-TERM VIABILITY OF INTEREXCHANGE COMPETITION

Introduction

Historically, AT&T dominated virtually all facets of the U.S. domestic long-distance or toll communications business. In 1959, however, Government sanctioned significant competition when radio frequency spectrum was set aside for private, intracorporate microwave communications systems. Four years later, MCI applied to the FCC to establish a competitive common carrier system retailing "private line" services between Chicago and St. Louis. This limited competition was permitted on the ground it would offer users new service options more closely tailored to individual needs and would foster advances in communications technology. The FCC in 1971 authorized competitive entry into the interstate private line market generally and, a year later, adopted an "open skies" policy for domestic communications satellite systems.^{1/}

Long-distance communications competition grew exponentially following the 1977-78 Execunet decisions by the court of appeals and the adoption by the FCC of policies sanctioning the resale of common carrier services.^{2/} Competition has been marked by the proliferation of new entrants in recent years. Competition has both stimulated and responded to the significant growth in the market for interexchange voice and data services which occurred over the years 1978-84, as shown in the various tables below.

1/ See generally Comment, Interstate Telecommunications Competition After Execunet, 31 Fed. Com. L.J. 117 (1978); Knieps & Spiller, Regulation by Partial Deregulation, 25 Ad. L. Rev. 391 (1983).

2/ See MCI Telecom. Corp. v. FCC, 561 F.2d 365 (D.C. Cir. 1977), 580 F.2d 590 (D.C. Cir. 1978). Resale of Common Carrier Services, 60 F.C.C. 2d 261 (1976), aff'd sub nom. AT&T v. FCC, 572 F.2d 17 (2d Cir. 1978); Resale of Public Switched Services, 83 F.C.C. 2d 167 (1981). See also Note, Resale and Sharing of Private Line Communications: AT&T Restrictions and FCC Regulations, 61 Va. L. Rev. 679 (1975).

Table 4-1

Growth in Demand for Interexchange Telecommunications Service
(\$ Billions)

	<u>1978</u> <u>Revenue</u>	<u>1984</u> <u>Revenue</u>	<u>Increase</u>
Intrastate	\$ 9.41	\$20.36	116%
Interstate	13.13	29.04	121%
International	.98	2.20	124%
	=====	=====	=====
TOTAL	\$23.52	\$51.60	119%

The competitive carrier "industry" has grown rapidly. In 1978, total estimated revenues of this group of non-AT&T firms from their long-distance operations were approximately \$200 million; by 1984, these revenues had grown to nearly \$5 billion. At present, these carriers compete in most interLATA markets, in a few intraLATA markets, and an increasing number of international markets.

A comparison of Table 4-2 and Table 4-3a shows the growth in market share by the competitive carriers from less than one percent of the total toll market in 1978 to more than nine percent in 1984. Table 4-3b shows market shares and revenue for the interLATA market in 1984 while Table 4-3c shows the same data for intraLATA toll.

Table 4-2

Market Share and Toll Revenue -- 1978
(\$ Billions)

	<u>Revenue</u>	<u>Market Share</u>
AT&T/BOCs	\$19.62	83.4%
Independent Telcos	3.70	15.7
Competitive Carriers	.20	0.9
	=====	=====
	\$23.52	100.0%

Table 4-3a

Market Share and Revenue for Total -- 1984
(\$ Billions)

	<u>Revenue</u>	<u>Market Share</u>
AT&T	\$33.25	63.5%
Competitive Carriers	4.95	9.4
Local Exchange Companies*	13.40	25.6
Private Microwave	.80	1.5
	=====	=====
	\$52.40**	100.0%

* BOCs and Independent Telcos

** Total differs from Table 4-1 due to inclusion of private microwave.

Table 4-3b

Market Share and InterLATA Toll Revenue -- 1984
(\$ Billions)

	<u>Revenue</u>	<u>Market Share</u>
AT&T	\$33.25	85.0%
Competitive Carriers	4.95	12.7
Local Exchange Companies*	.90	2.3
	=====	=====
	\$39.10	100.0%

* BOCs and Independent Telcos

Table 4-3c

Market Share and IntraLATA Toll Revenue -- 1984
(\$ Billions)

	<u>Revenue</u>	<u>Market Share</u>
BOCs	\$ 9.65	77.2%
Independent Telcos	2.85	22.8
	=====	=====
	\$12.50	100.0%

Contemporaneous with the AT&T divestiture, major changes in traditional telephone industry cost-allocation and pricing policies were ordered by the FCC. These changes increased the amounts paid by AT&T's long-distance competitors for access to local exchange facilities. These changes were needed to facilitate cost-based pricing of services, and to reduce certain cross-subsidy burdens previously imposed on AT&T and other established telephone companies.

Before divestiture and these pricing changes, there were some 300 companies competing in the U.S. domestic long-distance telephone business. This included many resellers and a few major facilities-based carriers, such as AT&T, MCI, GTE Sprint, and Satellite Business Systems (SBS). Increases in operating costs, the expenses associated with major construction programs, and AT&T price reductions, however, have affected the earnings of most of AT&T's toll market competitors.

In recent months, legitimate concerns have been raised regarding the financial and operational difficulties some toll carriers have reported. Old arguments have resurfaced regarding the sustainability of competition in sectors assertedly characterized by economies of scope and scale. Related contentions have been advanced with respect to "artificial" or "contrived" competition. Some assert that Government now must take extraordinary steps to preserve competitors in order to preserve competition in this important sector. This view has been challenged by others, some of whom suggest the current problems facing some carriers simply show the difficulties often encountered when markets are rendered more competitive. They argue that previous broadscale entry was induced by the prevailing artificial "umbrella" pricing schemes rather than superior efficiencies. They also maintain that company failure is a normal and predictable aspect of a competitive marketplace and, indeed, the more competitive the market, the greater may be the incidence of firm failure.

Some of these disputes may be lessened by the recent affiliation of MCI, the pioneer competitive carrier, and IBM, the most profitable major U.S. corporation. On June 25, 1985, MCI and IBM announced an agreement under which MCI would acquire SBS, and IBM would, in turn, acquire a large stake in MCI. Concerns regarding possible "re-monopolization" of the long-distance field would seem somewhat misplaced in light of this development. It is also true, of course, that Government clearly has the ability to forestall any such hypothetical "re-monopolization" by permitting the Bell Operating Companies -- major factors in this business already -- to expand their toll operations.

Importance of Competition

Most parties would by now agree that ensuring effective competition in the long-distance telecommunications field is an important national goal. No other nation in the world provides both business and residential telephone customers the service options which are routinely available to most Americans today. This breadth of choice has tended to enhance consumer welfare by ensuring, among other things, that consumers are able to select among competing long-distance services and pick the firm most closely aligned with individual needs.

A central purpose of the AT&T antitrust litigation and subsequent divestiture was to ensure and reinforce the availability of customer choices. The public has borne costs as a consequence of divestiture. Maintaining reasonable choices is thus important as an equitable proposition, as well as a matter of practical politics. For if necessary public support of procompetitive initiatives in telecommunications is to continue, there must be both the public perception as well as the reality of effective choice. The ability to select among alternative toll carriers constitutes an important component of the overall package of communications choices now generally available to the American public. That package, most would agree, should not be needlessly or precipitously altered.

Maintaining effective competition in the long-distance services market is also important given the diversity of America's current and likely future communications needs. The manifest trend in telecommunications today is away from homogeneous service requirements toward far more particularized wants and needs. A competitive communications market is far more likely to deliver a broad range of services, precision-engineered to individual requirements, than would a return to a less competitive environment. Experience in telecommunications, as well as other areas of the economy, amply demonstrates that competition and the marketplace are the optimal means of ensuring that diverse demands are satisfied.

Satisfying the needs of commerce and industry is especially important to the overall future of our free-enterprise economy. If American business is successfully to meet growing foreign competitive challenges both at home and abroad, all feasible ways of boosting firm productivity and efficiency must be available and employed. Telecommunications and related technologies clearly offer potential efficiencies, and it is important that businesses be given the chance to capitalize on them. Growing use of telecommunications may be one of the best means of ensuring

the competitiveness of the American economy overall. The services needed to fulfill commercial requirements, again, are most likely to be offered if there is an effectively competitive communications marketplace.

Maintaining effective competition in telecommunications also has proven the most efficient guarantor of responsive performance on the part of established companies. While difficult to quantify, the presence of long-distance competition has spurred AT&T and other firms to introduce new services more rapidly, improve the capabilities of their plant and facilities more quickly, offer subscribers more service choices, and generally operate in a significantly more efficient and responsive fashion.

The fact that competition has spurred more rapid deployment of new technologies and new service offerings is especially crucial. For while traditional rate base regulation may be able to police overall company earnings and price levels, it is ill-equipped to spur firms to offer new products and services. The risk of market failure, implicit in a competitive marketplace but alien to traditionally regulated markets, is important to ensure that companies demonstrate not simply adequate but superior commercial performance. Thus, as an effective adjunct to and surrogate for traditional regulation, long-distance communications competition has demonstrated substantial public policy value.

Long-Run Prospects Favor Competition

Significant short-run difficulties unquestionably have arisen since the structural and other changes associated with the AT&T divestiture have been implemented. Changes in past industry cost-allocation and pricing policies have created some transitional problems. The previous "deep discounts" for local exchange access, low capital costs typically associated with entering the now popular resale business, and AT&T's difficulty in responding to competitors' pricing, combined to yield conditions very amenable to multiple entry. Some firms undoubtedly entered the long-distance market less because of their superior efficiencies, foresight, or business acumen and more simply to capitalize on imperfections inherent in the then prevailing regulatory regime. As that regime is altered, some changes in the number of companies competing in the marketplace is a normal, reasonably predictable consequence. Failure of some firms is most common in highly competitive markets and least observed in pervasively regulated sectors of the economy. Thus, as the toll communications business becomes more competitive, firm failure necessarily may become more common.

Our analysis persuades us that, objectively assessed, the long-run prospects for effective competition in the toll communications business are quite bright. Some steps by Government are desirable to ease the transition to a genuinely competitive long-distance communications sector, and those steps are discussed later in this report. But we do not believe that the facts support some of the more pessimistic competitive forecasts that have recently been advanced.

One recent study, prepared for GTE by Booz-Allen & Hamilton (Booz-Allen), a leading management consulting firm, suggests that the long-run prospects for establishing an effectively competitive toll communications market are bleak. Booz-Allen's forecast was based on analysis of publicly available information, GTE proprietary data, and economic and engineering analyses of the other interexchange carriers, including AT&T. Although comprehensive and a contribution to the body of knowledge, the report has serious deficiencies and thus, by itself, is not an adequate basis for further major actions.

The Booz-Allen report contains a summary of information collected on three major facilities-based carriers (MCI, GTE Sprint, and Allnet) which represent nearly 70 percent of competitive carrier revenues. By averaging the data, however, the report does not adequately account for significant differences among carriers. MCI, by far the largest competitive carrier, has publicly disavowed many of the report's factual assertions and conclusions.^{3/} Allnet, despite Booz-Allen's claim, is primarily a reseller and not yet a major facilities-based carrier. GTE, which commissioned the study, did not reveal its price, cost, and investment data. Booz-Allen does not clearly identify all data sources and does not explicitly identify its analytical assumptions. It has not made the complete study available for evaluation. Verification is thereby greatly complicated. The report presents only one scenario, moreover, and lacks any sensitivity analyses which might enable readers to assess the relative importance of various factors.

Booz-Allen projects total industry annual growth in the interLATA market to be 8.4 percent, but most other estimates project growth in the range of 10-12 percent per annum.^{4/}

3/ Communications Daily, March 22, 1985, at 4.

4/ 1985 Industrial Outlook; Steven C. Chrust, Bernstein Research: MCI Communications Corporation (July 27, 1984); Yankee Group, The Long-Distance Shakeout, (May

Booz-Allen assumes overall revenue growth on the part of competitive carriers of 35 percent per year, below recent performance levels of the three carriers. The report strongly suggests that price will be the overriding factor in customer selection of a long-distance carrier and indicates that a 10 percent price differential relative to AT&T is critical to the success of the competitive carriers. This may not take adequately into account the demand patterns in some segments of the toll market, where price may not be the only important selection criteria. Also overlooked may be alternative competitive strategies, including the marketing of packages of equipment and services in which toll service is but one component.

Booz-Allen further suggests that AT&T's non-access costs are currently below those of its competitors, an assertion that has been challenged by MCI and contradicts previous statements by other competitive carriers.^{5/} The report assumes an aggressive marketing strategy (share gain from 12 to 43 percent) is necessary, but does not accept the normal business assumption that earnings will be depressed during this "buy market share" stage.

The report indicates that collectively, a \$6 billion investment is necessary for the three competitive carriers to compete effectively in the interexchange market, a figure that MCI has specifically criticized.^{6/} Unclear is how one can reconcile projections of subnormal traffic growth with the conclusion that substantial amounts of new facilities are needed. Not explained, moreover, is why facilities ownership is necessarily essential if, as some have suggested, some industry overcapacity develops. In an environment characterized by overcapacity, resale companies should enjoy something of a cost advantage.

This and other studies, in our view, overestimate the future strengths and advantages likely to be enjoyed by the now dominant company, AT&T. This is partly because they attribute excessive weight and significance to any economies of scope and scale which may be inherent in AT&T's long-distance plant. There is, of course, a substantial literature dealing with possible scale or scope economies in

1984); Business Week, (January 9, 1984); 1985 MCI Annual Report, at 6,8.

5/ Communications Daily, March 22, 1985, at 4.

6/ Id.

AT&T's toll operations.^{7/} Not all of these studies use the same output measurements, however, and they vary as to what particular functions are examined. Measurements of circuit costs, for example, will vary depending on whether electronic or conventional switching operations are included. Many of these studies, moreover, may be of limited usefulness today since they are based on analyses of technologies different from those currently being adopted.

Estimating Any AT&T Cost Advantages

AT&T has provided the following breakdown of its overall long-distance operating costs:

Table 4-4

AT&T Operating Costs

<u>Category</u>	<u>% Total</u>
Access Costs	60%
Network	13
Operator Services	2
General, Admin., & Marketing	25
	=====
	100%

These numbers suggest that even if there are quite pervasive scale economies in AT&T's network operations, the effect on the firm's total operating costs is not likely to prove competitively decisive.

A majority of AT&T costs currently are either not amenable to direct control by AT&T or are subject to control only through application of technology equally available to its competitors. Local exchange access charges are established by unaffiliated companies subject to regulation. These charges constitute by far the largest share of AT&T's total long-distance service costs. Local exchange "bypass" facilities may offer a means of avoiding some of the carrier access charges that local companies assess. The ability to make use of local exchange "bypass" facilities, however, is not necessarily AT&T's alone. AT&T's total access charge payments may also decline somewhat as equal access is phased

^{7/} See MacAvoy and Robinson, Winning by Losing: The AT&T Settlement and Its Impact on Telecommunications, 1 Yale J. Reg 1, 31-32 (1983) (and citations therein).

in by the Bell Operating Companies, GTE, and independent phone companies. This is because total exchange costs are relatively fixed and, as AT&T's competitors pay more (and more is paid through subscriber line charges), AT&T will pay less. AT&T's relative disadvantage may shrink vis-a-vis its competitors who do not now pay "premium" access charges. On a per call basis, AT&T's access costs may be somewhat lower than today, but no lower than its competitors and will still constitute a substantial part of total costs.

AT&T's competitors are likely to be in a comparable situation after the transition to equal access. That is, their operating costs will be divided among the same major categories in roughly the same proportions.^{8/} As equal access is phased in, competitors' access costs will rise. Access to local exchanges will remain the largest cost category for competitive carriers. On a per call basis, however, there should be rough cost parity between AT&T and the competitive carriers.

The second largest category is general and administrative costs. AT&T's administrative costs are unlikely to be decisively lower in the near future. On the contrary, AT&T's costs may be relatively high for the next few years because of its history as a regulated firm relatively undisciplined by competition. Competitive pressure in recent years has induced streamlining, but it is difficult to believe that AT&T has not only matched but exceeded its leanest competitors in administrative efficiency.

More importantly, any economies of scope or scale in the general and administrative sector are not likely to create decisive cost differences upon which a monopoly can be based. Economies achievable in this category are improbable beyond some moderate scale of operations. Indeed, in important areas, there may be diseconomies of scale since administrative operations obviously tend to become unwieldy beyond some large size.

Marketing may be an exception and AT&T may enjoy a slight cost advantage based, in part, on its long history of rendering high-quality service to a broad customer base. By the same token, severe service difficulties arising in the immediate post-divestiture period may well have alienated some of this traditional loyalty. Even today, major users report continued difficulties securing service from AT&T. AT&T's primary strength may lie with smaller and possibly less profitable customers, not with the very large users that

^{8/} See also Comments of United Telecomm in FCC Docket 83-1147.

tend to have substantial internal staff and communications management expertise. Any special advantages AT&T might enjoy, moreover, may well be matched now by MCI, given the added customer recognition and credibility that come from IBM affiliation.

The overall trend in the communications marketplace is increasingly toward more customized networks and service packages. It is unclear that any firm, even with the resources and talents of AT&T, will prove decisively able to target all segments of this pluralistic market. Not all sectors of the market may prove equally competitive, but the field is likely to prove so overall.

Network transmission and switching is the final major cost category, though it now represents only 13 percent of AT&T's operating costs. The case for possible economies of scale is somewhat stronger here. The main uncertainty concerns the point at which additional network economies become negligible. It seems likely that a carrier with 1 percent of the long-distance market would have significantly higher unit costs than one with 10 percent. Trunking efficiencies alone dictate such a result. It is far from clear, however, whether a carrier with 70 percent of the market would have significantly lower network costs per unit of traffic than a carrier with 10 percent. Smaller carriers, moreover, may be able to exploit scale economies for particular market segments, such as concentrated geographic areas. In any case, with network costs representing only about 10 to 15 percent of the total cost, it is unlikely that any small economies of scale existing beyond a moderate scale of network operations could provide a basis for a sustained long-distance monopoly.

Furthermore, the economics of network operations are changing, as the carriers begin to incorporate digital and fiber optic technologies into their networks. AT&T and its competitors have access to these technologies, and both are moving to take advantage of them. It appears that the efficiencies arising from these technologies will make differences in the cost of network operations even less of a factor for the development of competition in the future.

AT&T and its competitors both have available to them the same technologies and access to the same markets for resources in cost categories other than network functions. In the long run, all efficient participants in the long-distance market should face very similar costs. We see no factor in the market providing AT&T or any other carrier a hook on which to hang a monopoly. The most realistic forecast is that competition will continue growing and will survive indefinitely. IBM's recent acquisition of a large

stake in MCI seems to confirm this view. The exceptionally large recent investments in facilities by other major carriers also confirm this view. If for no other reason, competition will survive because large users will not, and need not, tolerate the curtailment of choices that could be caused by a return to monopoly.^{9/}

Some might be tempted to conclude from the anticipated cost equivalency for all market participants that competition is not possible and that only AT&T will survive. This result does not follow. First, diseconomies of scale beyond some very large size may preclude such a result. Second, roughly equal prices and costs are quite consistent with vigorous competition, and, indeed, are suggested by the most common notions of competition.

Finally, even with uniformity of cost opportunities, there remains substantial leeway for long-distance firms to compete with each other. There are at least three potential generic business strategies that can be easily identified: low cost, differentiation, and focus. These strategies are approaches "to outperforming competitors in the industry; in some industries structure will mean that all firms can earn high returns, whereas in others, success with one of the generic strategies may be necessary just to obtain acceptable returns in the absolute sense."^{10/}

Cost Leadership

This approach is borne of popularity from the experience curve concept. This concept teaches that as knowledge of the business increases over time, unit costs will decline. Cost leadership requires aggressive construction of efficient-scale facilities, vigorous pursuit of cost reductions from experience, tight cost and overhead control, and cost minimization in areas such as advertising, sales, and marketing. Firms adopting this approach are most likely to emphasize attributes of low price, rather than service quality or flexibility. According to Porter, having a low-cost strategy may yield the firm above-average returns

9/ See generally Easterbrook, Predatory Strategies and Counterstrategies, 48 U. Chi. L. Rev. 263, 270-271 (competitors and customers can combine to make arrangements mutually more attractive than a monopolist's offering of low prices followed by much higher monopoly prices.)

10/ Michael Porter, Competitive Strategy: Techniques for Analyzing Industries and Competitors, (The Free Press, 1982), at 35.

in its industry despite the presence of strong competitive forces. It is significant to note that MCI claims it is and will continue to be the low cost provider of long-distance service. AT&T has also indicated that it intends to be a low cost provider of long-distance in the future.

Differentiation

An alternative approach is one of differentiating a product or service offering of the firm. This entails creating something perceived industry-wide as being unique. Differentiation can take many forms: brand image, technology, and customer service. While a strategy of differentiation does not allow a firm to ignore cost management, it clearly reduces it to a level of secondary importance. "Differentiation, if achieved, is a viable strategy for earning above-average returns in an industry because it creates a defensible position for coping with the [dynamic forces of competition], albeit in a different way than cost leadership."^{11/} But, achieving differentiation may preclude gaining a high market share since it often requires a perception of exclusivity. While customers throughout the industry may acknowledge the superiority of the firm, not all customers will be willing or able to pay the required higher prices.

Focus

A third strategy involves focusing on a particular buyer group, segment of the product line, or geographic market. As with differentiation, a focus strategy may take many forms. The strategy rests on the premise that the firm is able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly. The firm achieving focus may also potentially earn above average returns for its industry; its focus means that the firm either has a low cost position with its strategic target, high differentiation, or both. Like the differentiation approach, the focus strategy implies some limitations on the overall market share that is achievable.

Thus, likely uniformity of basic costs does not foreclose competitive opportunities available to long-distance firms. MCI, as noted above, has claimed that it is and will continue to be the lowest cost supplier of quality long-distance service. AT&T has tended to stress the ubiquitousness and high-quality of its offerings. SBS has placed emphasis on its IBM connections. If all firms were to concentrate on providing identical service to the same

^{11/} Porter, at 37.

customer group, competitive prospects might be limited. This, however, is unlikely to happen. Here, as elsewhere in our free-enterprise economy, managements are likely to experiment with and adopt a diversity of marketing strategies, particularly those approaches they believe will prove most profitable for the firm. We see no good reason to assume that considerable competitive opportunities for success in the long-distance marketplace will not be available.

Transitional Measures

While we are bullish regarding the likelihood of an effectively competitive marketplace in long-distance communications, we recognize some of the difficulties which have arisen. The implementation of "equal access" has proven more complicated than was initially predicted by nearly all parties involved. Not all of the gains which the competitive carriers may have expected as a consequence of this step have yet materialized. AT&T has also proven a formidable and effective competitor.

It is important to bear in mind that we are in the midst of a complicated and difficult transition, away from a market characterized by "sole source" provision of a basic service toward a much more competitive environment. The competitive carriers do face something of an undesirable "time-warp" problem as higher access charges, the costs of building their networks, AT&T price reductions, and imperfections in the "equal access" process all coincide.^{12/}

Sound public policy dictates that any transition from pervasively regulated monopoly toward regulated competition be as fair as possible. Firm failure as a consequence of management errors, miscalculations, inadequate marketing or other measures, while it is obviously undesirable to those immediately involved, is quite different in effect than failure caused by inflexible Government policy. Both the perception and the reality of fairness matters, as each has a bearing on capital costs and the likelihood of future competitive entry. If an industry is perceived as laboring under unfair or unpredictable rules, capital is likely to be available only at a premium commensurate with such risks. Ensuring fairness and reasonable predictability to the maximum extent possible, therefore, should be an important Government goal.

^{12/} Some further consolidation is likely to occur as carriers pool resources to compete more effectively against larger rivals.

The transition to equal access requires that new and untried processes be developed by each of the Bell (and GTE) Operating Companies. Logistical problems are being encountered by both the operating companies and the competitive carriers. These difficulties will disappear over time as those involved gain experience. Typical problems for interexchange carriers include: not receiving facilities from operating companies at times promised; not being notified in timely fashion when customer presubscription orders are processed; not being notified of customer installations; and not receiving timely notification of changes in the local customer base. Unless these problems are remedied, it will be difficult for competitive interexchange carriers to compete effectively with AT&T. Therefore, we endorse the recent action by the Antitrust Division that stipulates that equal access obligations will not be considered to be met until four categories of information is provided to all interexchange carriers (IX):

- (1) Timely notification of receipt and disposition of the IX carriers' orders, with an identification of the orders accepted, the orders rejected and the reasons for the rejection;
- (2) Timely notice that an IX carrier's order is in conflict with another carrier's order, i.e., that more than one IX carrier claims it has a valid order from a customer, with a statement of the resolution of the conflict;
- (3) Timely notice that an IX carrier's order for a customer has been displaced by a subsequent valid order received from another carrier . . .;
- (4) Timely verification to carriers and customers as soon as possible after cutover, and at regular intervals thereafter for subsequently submitted orders, that the valid customer orders submitted by IX carriers or customers have been correctly programmed into the end office switch and that 1 plus calls are being sent to the carrier chosen by the customer.^{13/}

^{13/} Letter from Charles F. Rule, Acting Assistant Attorney General, Antitrust Division, U.S. Department of Justice to Thomas E. Bolger, Esq., Chief Executive Officer, Bell Atlantic Corporation, June 25, 1985.

At present, the competitive carriers confront rapid, albeit warranted, increases in their access costs coupled with the prospect of sharp price reductions by the company that enjoys significant historical advantages. The competitive carriers, in short, are being squeezed at both ends. Price reductions by all firms participating in the long-distance field are a desirable policy objective. Competition, after all, is the process by which producers generally are compelled by market forces to share their surplus with consumers. Maximizing consumer welfare in the long-run is what competition is all about.

At the same time, it is especially incumbent upon the FCC to continue its close scrutiny with respect to proposed substantial AT&T price reductions as the "equal access" process continues. After equal access is essentially implemented by the former Bell Operating Companies in September 1986, less scrutiny will be warranted. After that date, should there be a legitimate question whether proposed rate reductions are in fact cost-based, it may be appropriate for the FCC then to err on the side of lower prices. Until that time, however, we believe the more prudent course would be for the FCC carefully to police and monitor proposed rate reductions.^{14/} Walking the narrow line between undesirable protection and unfettered, unfair competition obviously will not be easy.

In addition to closely scrutinizing any proposed rate reductions by the dominant long-distance carrier until the completion of the "equal access" process, we believe the FCC should address what appear to be persistent and unwarranted service problems affecting certain parts of the long-distance business. Quality of service is the other half of the common carrier price equation. A regulated company obviously can affect price by varying the level and quality of the service rendered.

In an era of increasing automation and computer-operated telecommunications networks, there would seem to be little good reason for the unwarranted delays business and other customers have experienced in securing certain telephone services. These delays evidently are due to the inability or unwillingness of the constituent parts of the former Bell System to interact effectively and smoothly. The FCC appropriately has instructed the Bell Operating Companies and AT&T to improve their service to the public. Efforts in this regard by both industry and Government, however, should be

^{14/} See, e.g., FCC CC Docket No. 84-1235, In the Matter of Guidelines for Dominant Carriers' MTS Rates and Rate Structure Plans.

redoubled. Again, if public support for the necessary changes now underway in this critical sector of our economy is to be encouraged, all reasonable steps are required to ensure that quality of service and responsiveness are restored to the previous levels for which the former American telephone system deservedly was famous.

Conclusion

In conclusion, our review and analysis of the extensive comments supplied as part of this undertaking, and our appraisal of other information, persuades us that the long-run prospects for vigorous and sustained competition in the long-distance communications sector are good. There is little evidence that economies of scale or scope achievable in the present AT&T network confer on that company an insuperable competitive advantage. Network costs constitute but a fraction of overall costs. And, with respect to other cost categories, we see no basis to assume there will emerge decisive commercial advantages.

Most likely, firms in the long-distance communications field will adopt and pursue a range of marketing strategies comparable to those followed by firms generally. Telecommunications technology facilitates a pluralism of such strategies and the continued presence of a multiplicity of competing suppliers.

While we are thus optimistic regarding the long-run prospects for competition in this important sector, we are sensitive to the transitional difficulties that firms including GTE have identified. Prior to the completion of the equal access process, therefore, we believe the FCC should continue to exercise close scrutiny of any proposed major rate reductions by the dominant firm. Every effort should continue to be made regarding the process of implementing equal access to maintain both the perception and the reality of fairness to all the parties involved.

Finally, and in addition to ensuring that the transition to an effectively competitive marketplace is accomplished with minimal cost and friction, we believe the industry and the FCC should redouble their efforts to resolve undesirable and persistent service problems.

CHAPTER V: FEDERAL/STATE JURISDICTION

Introduction

Changes in telecommunications technology, markets, and regulatory philosophy may, in the short term, exacerbate differences between state and Federal officials over how to manage the transition to increasingly competitive markets. Over the slightly longer run, however, economic and technological developments, combined with Federal policy initiatives, should open a path toward greater consensus.

Competition is increasing in both local and toll markets; companies are providing combinations of services that defy easy categorization as exclusively interLATA or intraLATA, toll or local, private line or public-switched, interstate or intrastate. Multiple suppliers and technological innovation yield diverse offerings that stretch the established fabric of regulatory jurisdiction.

The current bifurcated regulatory system, set up by the 1934 Communications Act, is based on boundaries that are blurred in many respects. The Federal response over the last 20 years frequently has been preemption of state jurisdiction, on the grounds of fostering competition and ensuring uniform nationwide opportunities for telecommunications subscribers. But preemption has costs. The states vary in needs, preferences, and circumstances. Competition will not come to every market in every state at the same pace or in the same degree; nor will deregulation.

Joint Federal/State boards, provided for in section 410 of the Communications Act,^{1/} offer a means for Federal and state officials to communicate and collaborate in attempting to adjust to changes in telecommunications technology and markets. Calls for such a cooperative approach were sounded by several of the commenters in this study.^{2/} Others, however, proposed a more assertive Federal role.^{3/} We believe preemption should be a last resort, not a first choice.

1/ 47 U.S.C. Sec. 410.

2/ See Comments of NYNEX, Appendix at 59; Comments of Pacific Telesis, at 39; Comments of Southwestern Bell, at 26; Comments of Southern New England Telephone, at 7.

3/ See Comments of ADAPSO, volume 1 at 14; Comments of MCI, at 15; Comments of Lexitel, at 21; Comments of NCTA, at 12.

This chapter emphasizes two major themes. First, despite the history of conflict with Federal officials, most state regulators are ambivalent, rather than unalterably opposed, to competition and deregulation. Many positively favor deregulation and competition. Most state officials understand that competition is changing the rules of the game and that regulation must change as well.^{4/}

Generalizations about state stances toward Federal competition and deregulation initiatives, even for a single state, are hazardous. A state might strongly resist FCC preemption, heavily regulate bypass carriers, yet deregulate interLATA services. For example, the Virginia commission, which has deregulated long distance, vigorously criticized Federal preemption of state jurisdiction in its comments to NTIA.^{5/}

The second theme is that technological, economic, and policy developments are combining to make the case for allowing deregulated competition within the states more and

4/ See Robert M. Entman, Telecommunications Deregulation and Competition: Early Policy Perspectives from the States (Cambridge, Mass.: Harvard Program on Information Resources Policy, 1985).

As an example, the California Public Utilities Commission Public Staff -- authorized to represent the interests of ratepayers -- filed comments in an inquiry clearly opposing an approach that would "hold the line" against competition. The staff submission said such a stance would make ratepayers "too vulnerable to the worst aspects of both worlds, inefficient utility operations and investments and major competition taking away the high value markets." Moreover, the staff asserted, the FCC, market forces, and technology are combining to make opposition to competition less and less viable. The staff endorsed local measured service, more rapid capital recovery, local pricing flexibility, and other goals long held by the operating companies. Although the members of the commission themselves may be more willing the "hold the line," it is revealing that consumer representatives in this leading state have adopted a relatively procompetitive stand. Recommendations of the Public Staff Division of the California Public Utilities Commission on the Regulation of Telecommunications in California, November 8, 1984, at 19; cf. at 6-9, 14-15. Submitted as part of comments to NTIA by the California PUC.

5/ Comments of Virginia State Corporation Commission, at 2-3.

more compelling -- if not irresistible -- to state officials.

State regulators and legislators confront four major forces that work in favor of competition: technology, economics, interstate rivalry, and policy.

- o Technology. Technology makes impeding competition increasingly difficult, and enhancing competition ever easier. Most important, technology is vanquishing old barriers between service markets. Multiple suppliers are likely to purvey sophisticated equipment and access to integrated networks offering a range of services from local voice to enhanced long-distance data. Technical innovations drive down the costs of providing new services. Meanwhile, regulatory prohibitions on such uses are becoming increasingly difficult.
- o Economics. Competition prods companies into taking advantage of technology to deliver services at the lowest cost. Regulatory restrictions might prevent the regulated firms from adopting least-cost technologies or responding to changing consumer demands that grow out of new technological capabilities. Government constraints may expose firms to inroads by unregulated competitors. Inequality of regulatory treatment of firms is difficult to sustain. Once competition is allowed, regulators experience pressure to establish a "level playing field." Many state officials are particularly sensitive to any possible regulatory handicaps on the local exchange carriers, recognizing that such constraints could render them vulnerable to competitors and increase their cost of capital. Exchange companies with an image of financial strength and flexibility enjoy a lower cost of capital and thus have a better chance of keeping reasonable local rates for small users.
- o Interstate rivalry. States are in heavy competition to attract business investment. New enterprises often require diverse and modern telecommunications systems, much as they demand good roads, universities, and the like. Where regulation dampens incentives for telecommunications firms to invest, upgrade plant, and innovate, the state economy may well suffer. States with advanced telecommunications systems will have an advantage, occasionally even a decisive edge, in the search for business investment. With telecommunications playing an

increasingly vital role in both service and manufacturing firms, overly stringent regulation will be to some degree self-limiting.^{6/}

- o Policy. Telecommunications companies continually exert pressure on the FCC to preempt state authority when it runs afoul of procompetitive goals. The FCC has tended to respond favorably, and courts have upheld the agency many times. This record creates pressure upon state regulators, who seek to avoid preemption so they can retain at least some control. State officials know that when they are perceived as obstructionist, preemption may seem more justifiable to the FCC and courts.

All this is not to deny that there will be disagreement between some state regulators and Federal officials. There will also be clashes within and between states. Indeed, conflict will occur within the Federal government as well; Washington is no more a monolith than the states. The long tradition of discussion, debate, and contention over common carrier telecommunications regulation is not likely to be totally left behind any time soon.

But on balance, the most likely scenario will see some but not most states frustrating some but not all Federal policy objectives. The majority of states are already adapting many of their policies to the demands of competitive markets.

Consider the example of Oregon. That state's legislature recently enacted a bill largely deregulating intrastate toll service. The Oregon Public Utilities Commissioner (there is only one member) sets maximum rate levels and determines when a particular market is sufficiently competitive to merit deregulation. Except for the determination of sufficient competition and rate levels and certification of competitors, toll providers -- including AT&T -- have been deregulated.

The bill is not a total victory for free markets: competition for local exchange service (except for shared telecommunications services) is prohibited. In any case, this largely deregulatory bill was passed at the behest of Commissioner Gene Maudlin, who was quoted as saying that the bill is "simply doing in the state what the FCC is moving toward on a national level."^{7/}

^{6/} Comments of Vermont Public Service Board, at 5.

^{7/} Telecommunications Reports, June 17, 1985, at 1.

There are three broad areas in which disagreement between state and Federal policymakers may emerge: issues concerning traditional local exchange service; toll policies; and regulation of new services.^{8/} This chapter will consider these topics in turn.

Specific Tasks Confronting the States

1. Local Service

For the states, the following are likely to be key tasks in setting policy toward local service:

- (a) Determining local service pricing policies that minimize bypass and loss of revenues from large users to the local operating company. Note that for many state officials, bypass itself is a problem, whether "economic" or "uneconomic," since many forms of bypass will result in loss of revenues to the local exchange company.
- (b) Determining whether to introduce and how to structure local measured service (LMS), and how to relate flat rates, subscriber line charges, and LMS;
- (c) Devising special prices, or other mechanisms to ensure continued access to telephone service among poor citizens, including the rural poor. Allied to this question is whether to attempt to keep local rates generally below actual costs, and if so, where to find the subsidies to do so;
- (d) Deciding whether to allow new local providers (e.g., shared tenant services, specialized services, cable TV systems) to enter the market and whether and how to regulate their prices; and
- (e) Deciding how to recover depreciation expenses of the local companies in an era of rapid technical innovation without causing substantial increases in

^{8/} By "traditional" we mean what was once known as plain old telephone service, which was mostly voice with some use of voice grade circuits for data. The voice services remain politically most significant, for now, and thus merit special attention here. As noted in the chapter on technology, the local networks will increasingly be able to provide non-voice services; as digitization spreads, distinctions between voice and non-voice will diminish or disappear.

local rates. This question is discussed separately in the chapter on depreciation and capital recovery.

Making these determinations will not be easy for state officials. Their various policy goals may sometimes contradict each other; for example, holding down local rates may conflict with the goal of keeping the exchange companies healthy financially. Developing subsidies for poor users may entail the risk of accelerating bypass.

Such decisions, moreover, are unlike those state regulators previously confronted in telecommunications. Until recent years, the most controversial cases involved gas and electricity rates. Telephone choices were limited largely to approving or disallowing rate requests. Now, state utility commissions are faced with the need to analyze complex tradeoffs and make policy decisions that will shape a wide range of telecommunications markets, not just rates for "plain old telephone service."

2. Toll Markets

In overseeing toll prices, states will face several significant choices. Most states allow intrastate interLATA competition, although some are prohibiting intraLATA competition. Continuing efforts to prevent intraLATA toll entry may cause friction with Federal officials.

Other key toll issues for the states are whether and how to regulate the rates of the new, competitive carriers; and how to regulate or when to deregulate AT&T. To some degree, decisions may differ according to whether the service is inter or intraLATA; on the other hand, distinctions between inter and intraLATA will become increasingly difficult to draw.

3. New Services

Oversight of new services necessitates decision about innovative voice, data, and video services offered by established firms and new telecommunications entrants. As with traditional local and intrastate toll (voice) service, state regulators can apply entry, price, and structural regulatory tools to new services absent FCC preemption. States' regulatory choices could produce conflict with Federal policy.

Conclusion: Accommodations Can Be Reached

NTIA recommends greater use of the mechanism provided for in section 410 of the Communications Act, i.e. coordi-

nation of state and Federal positions and decisions via ad hoc joint boards. Since this mechanism is costly and may cause delays, it will not be suitable for all problems. Nevertheless, this treatment could be very beneficial under appropriate circumstances. The boards should enjoy clearly defined but limited powers and purview. These bodies could help clarify needs and goals on both sides and allow speedier and more amicable resolutions of disputes. Plans for coordination among state and FCC staff also need to be developed. To further staff understanding, the FCC also should consider using Intergovernmental Personnel Act (IPA) mobility assignments to bring state personnel to the Commission for rotations of one to two years. Likewise, the FCC may want to send its employees to states on a temporary basis under the same Act.

As currently provided under section 410, joint boards should remain advisory and temporary. Problems are too varied for a single, permanent joint board to be a useful mechanism.

Given the recent Congressional history, a second option in this context would be unrealistic: revision of the Communications Act to align jurisdictional boundaries more closely with current economic and technological realities. Such an action would be difficult to achieve. Even with a consensus, the dissolving distinctions between intrastate and interstate services would make the intellectual task of drawing proper regulatory boundaries formidable.

Local Issues: Coping with Competition

Two important issues arising at the state level are (1) whether the local market should be opened to competitive entry and (2) whether current pricing practices require modification. As shown below, these two questions are closely interrelated.

Local Service Competition

Alternatives to the local public-switched network can come from outside or within the local exchange company. State regulation can therefore affect local competition through oversight of the exchange companies as well as of the new providers.

Consider, first, the local companies. State regulators, from their responses to developments thus far, do not appear to be hewing unrealistically to a view of these firms as permanently regulated providers of basic telephone service. They appear to support diversification, which would include

company provision of a variety of local services.^{9/} In an FCC proceeding, the Antitrust Division argued that the Bell companies ought to form separate subsidiaries for cellular, customer premises equipment, and enhanced services, whereas state commissions filed comments opposing such a blanket rule.^{10/}

Potentially, state officials could enact restrictions designed to prevent the Bell companies from concentrating their energies on new markets and neglecting their small user obligations. Some state regulators might also fear that cross subsidies would flow from the "monopoly" local service to the competitive activities. In a survey, however, members of state commissions expressed confidence that regulation could prevent such a subsidy flow. If anything, commissioners appear to hope for subsidy flow in the opposite direction, with profits from competitive activities keeping local rates down.^{11/}

Subsidies from the competitive activities to the local network may be unlikely, however; competitive markets cannot be expected to provide excess profits for very long, if at all.^{12/}

Potential and actual competition may serve just as effectively as regulation in erecting barriers against subsidy flows in either direction. The threat of bypass and entry of intraLATA competitors should lessen the ability to extract monopoly profits from large users of local service.

The new competitors of local phone companies appear likely to become targets of restrictive state regulation. Some state regulators apparently feel that the competitors

^{9/} See Entman, op. cit., at 37-42.

^{10/} Report and Order, CC Docket 83-115, ENF 83-5, FCC 83-552 (December 30, 1983), Appendix A, at 13, par. 64.

^{11/} Entman, op. cit., at 37.

^{12/} The New York Public Service Commission staff has proposed, for example, that the separate, unregulated subsidiaries of Rochester Telephone be required to pay a royalty (percentage of revenue) to the operating company. Such payments would compensate for intangible benefits the association with an LEC provides to the subsidiary, according to the staff. This option is presumably not one that pleases the operating companies. See State Telephone Regulation Report, April 25, 1985, at 5-6.

have opportunities to "creamskim," or otherwise harm the interests of the local exchange entity.

Indeed, the basic practical policy distinction between state and Federal jurisdictions may not be competition vs. non-competition alone. Just as important -- perhaps more so -- is the desire by some state officials to minimize local competition in order to maximize the revenue flows of the exchange companies (and thereby, they believe, keep rates low for small users). This preference conflicts with the Federal determination to safeguard opportunities for new local service providers to enter and compete with the exchange company. States appear more likely to lean toward the local exchange firm, but they may be frustrated in such efforts by the momentum of technology and the threat of preemption. One important example of local competition that raises these issues is the shared tenant system.

1. Shared Services

As discussed earlier in the technology chapter, the sharing of local transmission and switching facilities is a fast-growing phenomenon that poses a clear competitive challenge to the exchange companies. Recognizing this, some state regulatory commissions have attempted to restrict competitive entry.

Shared tenant services raise such major problems as the potential of stranded investment and network planning difficulties. Should users band together to share existing facilities, formerly-occupied capacity could languish unused. Where new buildings are put up and the local phone company does not know in advance how many tenants will be using shared facilities, planning for extension of lines, expansion of switches and the like becomes troublesome. One key question is who should pay the costs of stranded investment or incorrect planning. If the exchange company itself is offering the shared services to new buildings, such problems may be obviated.

An illustration of policy disagreement between state and Federal regulators comes from a complaint filed with the FCC in March 1985 by the North American Telecommunications Association (NATA). The petition contested several Southwest and Southern Bell state tariffs. NATA claims the tariffs force users of shared multitenant systems to subscribe to local service they might not need -- e.g., preventing the use of PBXs to connect two tenants sharing that PBX and forcing them to connect via the local public network. Relying on Carterphone, Hush-a-Phone, and Computer II rulings, NATA said the tariffs clearly violate FCC policies allowing connection of customer-supplied equipment when it does not technically

harm the network.^{13/} The matter is now pending before the FCC.

Other forms of sharing besides those among tenants of a single building or complex are, of course, possible.^{14/} They pose the same sort of competitive challenge to the local telephone companies. The economics are such that even relatively small users might find it economically attractive to join a group to share facilities. As sharing spreads, pressure on state regulators to stop the competitors, to allow local phone companies free rein to respond, or perhaps both, will grow. In such circumstances, disagreement with Federal procompetitive policy is possible.

Such disagreements demonstrate why the distinctions between interLATA and intraLATA, or inter and intrastate, services, are increasingly becoming distinctions without real differences. The shared facilities are likely to be used for all forms of telecommunications.

It is undesirable and will become increasingly difficult for the very same shared equipment to be deregulated in its interstate functions and regulated in intrastate. It would be similarly problematic for state governments to attempt to prevent the use of such shared equipment for intrastate communications and confine it to interstate. In this regard, it is important to distinguish service from customer premises equipment when considering shared tenant systems. Although equipment cannot practically be differentiated, regulators might be able to partition services employing the equipment into interstate and intrastate uses. Enforcing this distinction would probably be difficult and costly, however, and thus difficult to sustain.

In its comments to NTIA, IBM asserted that "Many states have been sympathetic to telephone company arguments that would thwart the growth of STS [shared tenant] systems." IBM went on to say such regulatory actions would frustrate "clear Federal policies articulated in the FCC's decisions deregulating CPE, intrasystem inside wiring, and enhanced services, and establishing the rules for interconnection of

^{13/} North American Telecommunications Association, Washington Update, March 11, 1985 at 1; State Telephone Regulation Report, March 14, 1985 at 4-5. This is FCC Docket ENF-85-13.

^{14/} For example, certain sharing arrangements in the private radio services have been authorized by the FCC. See, e.g., 47 CFR §§ 90.179, 94.17 (1984).

CPE with the public switched network." As a result, IBM calls for preemption of state authority.^{15/} Indeed, IBM has filed a petition to this effect with the FCC.^{16/}

The IBM petition called forth mostly negative responses from the regional holding companies and the National Association of Regulatory Utility Commissioners, which represents state regulators.^{17/}

As in other areas, states have not been unanimous in their responses to shared local services. Some states allow shared multitenant services, also known as "smart buildings." Others ban shared services; many are still deciding. Different states have different combinations of restrictions and regulations.^{18/}

NTIA does not, at this time, support preemption by the FCC. We believe a partial solution to this conflict might lie in allowing Bell Operating Companies to offer least cost routing services and information services such as call storage and forwarding. Under current regulations, the Bell companies cannot compete effectively with shared service providers that offer all-inclusive packages. Were the constraints lifted, these firms would have little or no rationale for opposing competition.^{19/} State regulators might then be more likely to lift restrictions on entry by new shared tenant service suppliers.

Quite similar reasoning applies to a range of telecommunications technologies that might compete with the traditional public network. These include private lines, private microwave, cellular radio, digital termination

^{15/} Comments of IBM, at 29-31.

^{16/} Request for Declaratory Ruling, ENF-85-45, May 16, 1985.

^{17/} Communications Daily, June 27, 1985, at 5.

^{18/} See Appendix to IBM's Request for Declaratory Ruling, op. cit.

^{19/} The Bell companies might, however, still consider their carrier of last resort and other common carrier obligations an unfair burden. Their competitors labor under no such responsibilities. The question of compensating Bell companies in some way, or modifying their common carrier obligations, may come up in the future. We consider the alternative of bypass taxes elsewhere in this chapter.

systems, and cable television systems.^{20/} The basic points are much the same as for shared services. The main difference is that the issues are older; the FCC has already partially or wholly preempted state entry regulation of such technologies as cellular and digital termination.^{21/} In all likelihood, shared services pose the most serious competitive threat.

2. Cable TV as a Competitor

Consider, as a second example, cable TV. In the 1984 Cable Deregulation Act, the matter of state jurisdiction of cable systems that act as common carriers was mentioned^{22/} but not fully clarified. As policy now stands, states can choose to regulate cable systems when they offer common carrier-like services. In one survey, state commissioners affirmed by a substantial majority that they would regulate cable if the system offered voice services, and by a smaller majority if the service were limited to data transmission. About half of the commissioners also favored taxing cable (or other) bypass revenues to support the local exchange companies.^{23/}

While cable system operators find such regulation distasteful, exchange companies assert that deregulating cable would give it unfair competitive advantages as long as telephone remains heavily regulated.^{24/} Cable has some

^{20/} For a discussion of cable, see Robert Pepper, "Competition in Local Distribution: The Cable Television Industry", in Benjamin M. Compaine, Ed., Understanding New Media (Cambridge, MA.: Ballinger Publishing Co., 1984), at 147-194. On state regulation of competitive local distribution technologies, see Entman, op. cit., Chapter Four.

^{21/} The FCC has specifically not preempted the resale and sharing of local exchange service, however. Such preemption is requested in the IBM petition, op. cit.

^{22/} Cable Communications Policy Act of 1984, Sec. 621 (d) (1) and (2), Pub. L. 98-549, 98 Stat. 2779 (1984).

^{23/} See Entman, op. cit., at 53.

^{24/} See hearing testimony of Robert Blanz, President of Mountain Bell, before House Energy and Commerce Subcommittee on Telecommunications, re: H.R. 4103 and H.R. 4299, June 22, 1983. For an analysis of cable in competition with telephone, see Understanding New Media, op cit.

disadvantages in any competitive thrust against telephone systems, however. Even the largest multiple cable system operators are dwarfed in revenues and resources by the regional holding companies. Cable companies also have little of the technical expertise on switching and transmission reliability needed for sophisticated data and voice applications.

Moreover, if freed of regulatory restrictions, telephone companies themselves might well decide to offer broadband services. An example would involve lifting the general prohibitions on exchange company ownership of cable TV systems in the same communities in which they provide phone service.^{25/}

Through 1985, much of the competition was restrained by the threat or reality of restrictive regulations on both telephone and cable. As other local distribution facilities such as shared tenant systems begin to compete with the exchange company, restrictions on them and on cable may begin to make less sense. Whether state officials view the matter that way remains to be seen. The Federal government may be under some pressure to preempt state authority over cable, judging from some of the comments NTIA received.^{26/}

Consumers may benefit significantly from a removal of broadband prohibitions on local telephone companies. There are substantial economies in allowing multiple uses of the telephone wire that enters almost every home in the nation. Such uses of exchange company facilities must be accompanied by common carrier, nondiscriminatory access guarantees for all enhanced and information service providers. Simultaneously, firms that seek to provide specialized common carrier services via coaxial cable, microwave, and newer technologies should be allowed to do so.

3. Regulatory Scenarios

State commissioners appear to consider two key criteria in assessing whether to allow and how to regulate new market entrants such as cable. First, would the entrant significantly threaten the revenues of the local telephone company? Second, is there any practical way to halt potential competitors? Technological forces and Federal

^{25/} There are now some narrow exceptions permitting such cross-ownership in rural areas. See 47 CFR Sec. 63.54 et seq., and Report and Order, MM Docket 84-1296, FCC 85-179, released April 19, 1985.

^{26/} Comments of NCTA, at 12.

edicts frequently make the answer to the latter question "no." The degree and type of regulation public utility commissions attempt to enforce seems to depend on how directly new competitors threaten the local phone companies. Many commissioners appear to be willing to allow entry and to regulate new technologies minimally, even if the entrant is a serious competitor, so long as the telephone companies are also deregulated as well.^{27/}

This situation can spawn two alternative paths for state regulation. Each has already been taken by some states. The second is likely to be the most common response.

On the first path, some states have attempted to thwart the development of competitive services, both local and intrastate. This situation has given rise to pressures to preempt state powers over services that appear to be local (or intrastate toll), but cannot be purely confined to state jurisdiction. An example is the IBM petition to the FCC for preemption of state authority over shared tenant systems already cited.

The other path is one whereby the inherent logic of the technology and economics will tend to dissuade state officials from attempting to draw regulatory lines. As noted, the operation of shared facilities for interstate telecommunications will create strong pressures to allow their use in intrastate service. As this form of local competition grows stronger, the rationale for keeping cable television and other competitors out of the market -- including the exchange company itself out of broadband services -- weakens.

Consequently, this path projects new entrants and the exchange companies competing in the marketplace. The Federal actions recommended in this report, such as modifying the AT&T Consent Decree and Computer II restrictions, would help to bring about a more competitive outcome.

Even on the first path, state regulation could be self-limiting. States that insist upon inappropriately regulating new local services may suffer the consequence of less developed telecommunications infrastructure. Consumers and businesses faced with outdated telecommunications systems will, if sufficiently distressed, express their opposition through the political process. Businesses might move to more developed locales. Such activities should lead to changed policies.

^{27/} See Entman, op. cit., Chapter Four.

If, on the other hand, residents and firms do not respond, their preference might be to make do with an older telecommunications system. Such a decision is not wholly unreasonable, given states' rights traditions. It may, however, pose a problem from the Federal perspective for the evolution of a modern, interconnected national system.

NTIA opposes blanket preemption on the grounds of system coordination at this time. While the possibility of a "Balkanized" regulatory system cannot be ignored, neither should it be overemphasized. In the main, we expect state regulators to make reasonable regulatory decisions in the interests of their own citizens. If they do, little future preemption should be required to ensure the emergence of an interconnected and modern national system.

Local Pricing

All issues of local service pricing must be viewed in the context of ever-growing local competition. States will be deliberating on several major issues. All grow out of the dominant concern to keep local phone rates as low as possible for residential and small business customers.

One issue will be how to cope with large subscribers making less use of the local public network. Providing operating companies more flexibility to offer special prices and services represents one solution. A second issue is how far to move prices of local service to costs. This question will be framed partly in terms of making Local Measured Service mandatory, and partly (though perhaps not overtly) in terms of finding a way to recover nontraffic sensitive costs via the basic monthly charge. A third issue when moving toward more cost-based pricing is how to accommodate the needs of users who cannot afford the true cost of providing them service.

1. Coping with Bypass

State regulators tend to identify the bypass problem as diminution of demand by large subscribers for use of the public-switched network. Such a decline could substantially raise prices to small users, whether or not the bypass is "economic," to the extent that local companies cannot reduce their costs as quickly as revenues are lost.^{28/} Bypass

^{28/} It is probably fruitless to attempt to distinguish between economic and uneconomic bypass. State officials are likely to view any significant loss of large customers and revenues from the local operating company as a policy problem. See FCC Bypass Report, (CC Docket

competition to the local public network is already significant in some communities. There is some disagreement about the severity of the threat to local revenues, and about the reasons companies choose to bypass.^{29/}

In any case, bypass is quite likely to increase substantially. That likelihood can be seen in figures on concentration of business in a few locations. For example, ten buildings in San Francisco reportedly provide 16 percent of Pactel's total business revenue in that city.^{30/} Shared tenant services seem to make sense in such circumstances, as will other forms of bypass.

A Federal policy proposal whose main purpose was alignment of prices with costs, was also held to affect bypass: the interstate customer access line charge (CALC). The charge is now called a subscriber line charge (SLC). Multi-line businesses pay about \$6.00 per line; others pay \$1.00 a line. This charge is designed to replace some of the revenues that had been generated through usage-sensitive long-distance charges but used to cover the local network's nontraffic sensitive costs. Heavy users of long distance have paid considerably in excess of the cost of bypass alternatives; they were subsidizing local network costs. The subscriber line charges, by decreasing the access charges paid by interexchange carriers, should reduce the incentive to bypass local telephone companies as a way of avoiding that subsidy.

Even as the Federal, interstate subscriber line charge is going into effect, the states do not appear to be

78-72, Phase I, FCC 84-635 (January 18, 1985), at 8), which acknowledges the difficulty of determining whether bypass is economic or not.

^{29/} See Racster, Wong, and Guldman, The Bypass Issue: An Emerging Form of Competition in the Telephone Industry (National Regulatory Research Institute, 1984); Geraldine Alpert and Harold Ware, The Bypass Question: Can We Find a Better Answer (NERA, January 24-26, 1985); and Gerald Brock, Bypass of the Local Exchange: A Quantitative Assessment (Office of Plans and Policy, Federal Communications Commission, 1984).

^{30/} Submission to California Public Utilities Commission, CPUC Hearings on Telecommunications Regulation, November 8 and 9, 1984.

instituting comparable intrastate assessments.^{31/} Rather, it appears that the equivalent costs for the intrastate jurisdiction are being recovered through carrier access charges and higher basic monthly charges for local service.^{32/} Higher monthly rates may encompass a hidden subscriber line charge, one perhaps less likely to draw consumer opposition than an explicit end user access charge. We discuss the subscriber line charge component of local rates further below.

Connecting to interexchange carriers without using the local telephone companies' public network is called carrier bypass. Such linkages enable users to avoid subsidizing local service. The other form of bypass is using facilities outside the public network for local point-to-point communication via private line and microwave (customer bypass). The two are quite distinct. Large users need to connect to telephones in their local areas, however many long-distance calls they make.^{33/}

Bypass of the local exchange to link to interexchange carriers does not necessarily mean elimination or even sharp diminution in use of exchange company facilities for local calls. By lowering costs of originating long distance, carrier bypass might even raise the use of the public network at the destination end of toll calls. Even customer bypass does not necessarily portend lower use of the public network or shrinking revenues for the exchange firm. In a recent bypass inquiry, a New York administrative law judge found that local exchange revenue from users engaging in bypass continues to grow.^{34/}

Increasing carrier access charges, on the other hand, may strengthen incentives for carrier bypass. Yet reliance upon carrier charges appears to be self-limiting. Disparity

^{31/} Robert Entman and Terry Monroe, Summary of State Telephone Regulatory Data. (NTIA, March 1985).

^{32/} Id.

^{33/} Different offices within a large firm at the same location may have dramatically different needs for local and long-distance communication. An insurance company's data processing department may use long distance almost exclusively, in order to connect to the central office's database. Calling by the company's local claims department may be limited almost entirely to the local community. Bypass needs are diverse.

^{34/} State Telephone Regulation Report, May 9, 1985, at 2.

between interstate and intrastate toll rates will grow if the latter are more heavily burdened with carrier charges. Such a disparity creates pressures on utility commissions for correction, if only through widespread evasion of the intrastate penalty. As the Vermont Public Service Board commented to NTIA, "customers will not accept the lack of parity between [interstate and intrastate toll] services [and] a significant [price] differential creates the potential for arbitrage across state borders."^{35/}

State commissions may also consider taxation of bypass carriers. An example of such a policy is a bill before the California legislature, AB547, which "would require the CPUC to assess bypassers for a contribution to maintain the public telecommunications network."^{36/}

This sort of policy is also a path fraught with difficulties for state regulators. Who defines "bypassers"? Should the private line and other non-public network offerings of the local exchange company be taxed as bypass carriage? What of existing and future services (e.g., virtual private lines) that further blur the public-private distinction? Some services and facilities may simultaneously afford bypass and direct connection into the local network; what is to prevent users or providers from claiming the offering is not bypass? How do state officials set taxes at the proper level to bring about the level of bypass they think optimal?

How will telecommunications managers of large organizations, with their widely varying needs, react to paying punitive taxes that prevent them from freely choosing cost-saving, productivity-enhancing technologies? Large users will respond negatively, and so will major providers of telecommunications services such as AT&T, IBM-MCI, Bell Operating Companies, and other local exchange carriers.

An argument can be made that bypassers should pay such assessments, even if they do not use local exchange facilities, by drawing an analogy to assessments levied in support of public schools. Another argument maintains that some charge should be made since carriers are required by their franchises to be the service provider of last resort.

Whatever the theoretical merits of these contentions, as a practical matter any "bypass tax" seems nearly unworkable. Assuming that bypass can even be detected, parties will vary

^{35/} Comments of Vermont Public Service Board, at 12.

^{36/} Comments of California Assemblywoman Gwen Moore, at 14.

in their ability to secure whole or partial exemptions through the political process. It seems highly unlikely public safety or state government "bypassers" would be held liable for such assessments. Federal users would also, in all likelihood, be exempt. Ratebase regulated electric utilities could make a persuasive case for an exemption as any assessments on them would simply be passed along to their ratepayers.

As more and more parties secured an exemption from any such fee, the assessment on those remaining subject to the special charge would necessarily grow, to prevent total receipts from shrinking. As their assessments rose, those parties would understandably press all the harder for their own exemption. Unless truly universal, in short, no bypass tax is likely to succeed; and since such a tax is highly unlikely to prove universal, the notion is, for all intents and purposes, unworkable.

In sum, there is good reason to expect that in most states, neither overly burdensome carrier access charges nor bypass taxes will become major regulatory fixtures.

2. Flexibility

The idea of rate-making flexibility is gaining popularity. It is seen as a better method of allowing local phone companies to cope with competitors who are generally free of price and structural regulation.

Flexibility will probably mean more than just discounts for large users of basic telephone service. To meet the competition, local companies will probably seek to offer highly individualized packages of services including voice and data transmission via private and public lines, Centrex services, connection to interexchange carriers, and other features. It would lead to a regulatory quagmire were state commissions to attempt to rule on each of these packages, so flexibility in some measure seems a likelihood.^{37/} Note too

^{37/} Evidence for this development is contained in state responses to the potential for Centrex services to lose out badly to PBX providers. PBXs and Centrex offer similar services (for example, switching calls within an office). Whereas the latter employs computers and switches at the central office of the local exchange company, the former performs entirely on the customer's premises. Each phone hooked to a Centrex uses a separate line to the central office; PBXs use fewer lines, so users can reduce bills for interstate subscriber line and other charges. Many state

that flexibility will probably entail permitting the local telephone companies to offer both local and interexchange connection bypass services.

Flexibility is not, however, without practical difficulties. Implementation will require care and thoughtful planning to ensure acceptability to all segments of the user and regulatory communities. Unsupervised flexibility on rates and services could prove to be a more controversial procedure than expected. Even flexible rates that do seem cost-based could become political footballs. State authorities may be caught between their desire to offer local phone companies reasonable pricing options, and pressures from small users and new local market entrants to restrict established carriers.

Here is the paradox: by maximizing the ability of a local telephone company to meet the bypass threat, decision-makers also could increase the incumbent's hypothetical power to dominate competitors. The correct choices are those that help to achieve the policy goals outlined in the foreword. As a result, Government actions artificially limiting the activities of telecommunications firms are generally not in the public interest. Moreover, such restrictions would not be sustainable over time because of the advance of technology.

Pricing Local Service at Cost

Phone rates have long been priced to reflect differences in the value of services to different classes of users. In most states, for example, there are different rate groups in various communities. Those who can reach more lines with a local call (generally, urban subscribers) have traditionally paid more than those whose local calling area offers fewer stations. This has held even when it was more costly to provide service in the less densely populated area. Similar price disparities exist between business and residential users in the very same community, again on the theory that the value of the service is greater to businesses.

Two separate rate structure changes being implemented by some states may prove politically problematic. Yet they may be important to the Federal goal of pricing telecommuni-

commissions have allowed exchange carriers to grant credits on their bills to offset the subscriber line charge. In addition they have approved flexible tariffs, lower charges for users closer to central offices, and the like. See State Telephone Regulation Report, April 25, 1985, at 1-3.

cations on an actual cost basis. They are first, rate plans employing local measured service and second, rate practices reducing the large gulf between rates and costs in areas of low population density.

1. Local Measured Service

Residential rates have generally been averaged by use; flat, unlimited rates for local calling represent averaging across different levels of local use. Replacing this averaging implies introduction of local measured service (LMS).

The "logic of LMS," according to regulatory economist and former Civil Aeronautics Board Chairman Alfred Kahn, is "irresistible" in a competitive, cost-based telecommunications environment. He adds the caveat that costs of measurement must not exceed the benefits. ^{38/}

Kahn's observation notwithstanding, moving from flat to measured rates has occasioned controversy in many states. Many subscribers feel LMS offers less service at a higher price, although in fact a majority might have lower rates. This probability is supported by evidence on the distribution of local calling under flat versus measured rates. According to economist Bridger Mitchell:

The effect of measured service on different subscribers will depend on their patterns of use. In general, measured service will attract new subscribers and allow the telephone company to achieve virtually universal service... Generally speaking, current low-income subscribers who tend to use their telephones more will make greater reductions in their calling, and will on average pay about the same amount for service as higher-income subscribers. At the same time, new subscribers will be predominantly those lower-income households who make relatively few calls and who have therefore been unwilling to subscribe to telephone service because they have

^{38/} Alfred Kahn, "Recovering the Cost of Customer Access: Outstanding Issues," paper presented at NERA Telecommunications Seminar, Litchfield Park, AZ, January 24-26, 1985, at 17.

regarded it as too expensive under current flat rates.^{39/}

There is also a practical complication. Future LMS rates could be considerably less expensive than future flat rates for many users. But future LMS charges may be higher for most people than the price they had previously paid for unlimited calling.

A force pushing state regulators toward adoption of LMS is the inevitability of substantial increases in flat rates. As these go up, "budget" options will become attractive to increasing numbers of users who do not make large numbers of local calls at home. There will be disagreement over making LMS mandatory, but even that step may become easier or unnecessary if flat rates increase enough.

If nontraffic sensitive costs are loaded into flat rates in lieu of assessing explicit subscriber line charges, the attractiveness of LMS should increase further. Of course some portion of nontraffic sensitive costs may be included in the basic monthly dial tone charge for LMS as well. The relative prices, and desirability, of LMS and flat rate service will vary depending on precisely how much of the nontraffic sensitive costs are included in each.

LMS is a necessary component of a move toward cost-based pricing. Most customers would benefit from LMS; it gives users much more control over their local calling costs than they will have if they rely upon inevitably escalating flat rates.

3. Subsidies for Local Service

The policy of subsidizing some rates, i.e. of making some exceptions to the rule of cost-based pricing, has a long history. In Congress and state legislatures alike, support for subsidizing some rural or high-cost regions, and for aiding very low income individuals, has been considerable. Federal policy should be able to accommodate targeted subsidies for disadvantaged individuals or unusually high cost service areas.^{40/} State and Federal regulators may

^{39/} Bridger Mitchell, "Optimal Pricing of Local Telephone Service," American Economics Review (September 1978) 517-537, at 533.

^{40/} In its comments to NTIA, Siecor pointed out that the concept of universal service could change over time. As more and more services are available, options besides plain old telephone (voice) service may become

differ, however, on where to obtain the subsidies, and on pricing of local service for other categories of small users.

a. Lifeline. "Lifeline" rates are typically suggested as a solution to the problem of keeping low income users on the network, although only a few states currently have such an explicit rate targeted to the poor.^{41/} Most states offer budget rates, available to all, involving a relatively low monthly fee and a per-call charge.

As an example, Pacific Northwest Bell proposed a lifeline service for the State of Washington.^{42/} It would allow low income users unlimited calls without charge to five preselected numbers, with measured charges for all other numbers. The cost would be met with a higher usage charge to high volume business users during peak hours. The size of the subsidy, if narrowly targeted, would probably not be great enough significantly to affect bypass incentives.

b. Rural subsidies. Subsidies for rural telephone users appear to be built into the toll rates of many if not most states.^{43/} Depending upon the specific costs involved, some rural users could face quite substantial boosts in local and toll prices if rates were aligned closely with costs. Rural residents may favor subsidy schemes that seriously violate the goal of cost-based pricing. Targeted subsidies can keep rates reasonable without substantially distorting more realistic pricing schemes.

c. Subsidizing all local service. The more difficult policy problem may lie in some state officials' desires to minimize local rate increases for all smaller users. Enforcing such subsidies tends to load local costs onto large users, thereby encouraging bypass. Moreover, the data indicate that such general subsidies do not benefit the poor as much as the more affluent. According to AT&T, in California 21 percent of the local subsidies go to those

"necessities." Providing every elderly American with medical alert modules, for example, may come to be seen as a reasonable goal. Others may see provision of computer network hookups as a prerequisite of equal educational opportunity. As a result, "universal service" could become considerably more expensive in the future. See Comments of Siecor, at 17-18.

41/ Entman and Monroe, op. cit.

42/ Telecommunications Reports, February 4, 1985, at 12.

43/ See data in Entman and Monroe, op. cit.

with incomes under \$10,000, and 22 percent to those with incomes over \$30,000.^{44/}

Some states may nonetheless attempt to keep local rates artificially low. As was true of entry regulation, there is an argument for allowing state officials to follow this path if they choose -- and to suffer the consequences in deteriorated or outmoded telecommunications networks and services. There is also an argument for preemption, in order to maintain an even pace of innovation and development of the telecommunications system throughout the country. At this time, preemption is not required. Instead, state officials should act in the best long-range interests of residential and business consumers in setting local rates based on costs.

Toll Issues

Although the distinction between interLATA and intraLATA toll service and competition may not hold up for very long, it is still important at present. There is a significant difference in the way the states are treating the two segments.

In general, intrastate, interLATA long distance is becoming a competitive service. Accordingly, interLATA regulation is diminishing in many jurisdictions. For intrastate interLATA markets, entry regulation is essentially no longer an issue in most states, though price regulation remains contentious, as it does for interstate long distance.

IntraLATA toll service is a more complicated matter. More states are resisting competition here. Also, distinguishing between intraLATA toll competition and competition in local exchange service is becoming difficult. For intraLATA services, both entry and price regulation are matters of debate.

^{44/} AT&T submission to the California PUC, CPUC Hearings on Telecommunications Regulation, November 8 and 9, 1984, at A-12-13.

InterLATA Competition and Regulation

InterLATA competition exists in approximately 31 of 38 multi-LATA states; intraLATA competition in eight.^{45/} Thirty-five of the 38 multiLATA states allow interLATA WATS resale. Only Michigan has banned it.^{46/}

Regulation of AT&T Communications has been relaxed in a dozen or so states. Only six states have full rate base regulation of both AT&T and other facilities-based competitors; only four have such regulation for resellers. Many states have two-tiered regulation, with AT&T facing full regulation and other facilities-based carriers reduced, often pro-forma oversight. Again, this is true even in some states that have opposed Federal initiatives favoring competition or deregulation, such as California, Florida, and Missouri.^{47/} Clearly many states are not taking a traditional regulatory approach. For interLATA communication it appears doubtful that Federal priorities and state actions will seriously conflict.

The most likely point of state/Federal contention may be the eventual deregulation of AT&T. Although some states have moved ahead forcefully in this direction, others may resist. Even if the FCC ultimately decides the national market is sufficiently competitive, some utility commissioners could oppose deregulation.

The obvious solution is for any state deregulation of AT&T's intrastate interLATA activities to take account of state to state variation in competitiveness. Deregulation could be phased in once competition reaches a threshold acceptable to state officials, but not before. A joint board could be helpful in coordinating state and Federal actions. Eventual federal deregulation of AT&T, if it is merited, should provide a spur for states to follow suit.^{48/} In any

^{45/} State Telephone Regulation Report, March 14, 1985, at 1-2.

^{46/} Id.

^{47/} Id.

^{48/} Note the somewhat unexpected sequence of AT&T deregulation that seems now to be unfolding. In many states, AT&T's new intraLATA (usually private line) enhanced services, which may involve toll and local calls, will not be closely regulated. Thus AT&T intraLATA activities, which most directly threaten local exchange company revenues, could be deregulated in many

case, deregulation of AT&T's interstate services is unlikely to be on the agenda until the latter part of the decade.

IntraLATA Competition

IntraLATA toll resale competition is widespread; facility-based intraLATA toll competition less so.^{49/} About 34 states allow intraLATA resale; many others are considering it. Facilities-based intraLATA competition is permitted in about eight states. It is explicitly forbidden in approximately 20 states, and pending in most of the rest.

1. The Breakdown of Toll-Local Distinctions

The objective of banning intraLATA competition is to protect subsidies for local service. The seeming monopoly on intraLATA toll service is thought to provide a generous foundation for support of the local exchanges. In truth, subsidies may not be large for very long. In fact, subsidies from short haul toll service to local have always been substantially less than subsidies from long haul toll. Prohibitions on intraLATA toll competition will also prove difficult to enforce as distinctions between intraLATA and interLATA toll and local service dissolve.

Within a LATA, the distinction between "toll" and "local" traffic is becoming obsolete. Local measured service particularly tends to diminish any difference.^{50/} Under LMS, local calls are often charged by time of day, duration, and distance -- just like long distance calls.

A "toll" carrier competing with the local exchange company within a LATA and operating at high efficiency in a densely populated corridor, might well be able to charge less for local calls than the local exchange company's measured rate charge. Competitors could offer packages of intraLATA calling at flat rates priced under the exchange company's non-toll message units. Such offerings, by AT&T or others,

places before AT&T's interLATA offerings. In addition, some states have already substantially deregulated AT&T's toll offerings -- well in advance of any Federal moves in that direction.

^{49/} State Telephone Regulation Report, March 14, 1985, at 2.

^{50/} See Almarin Phillips, Submission to the California Public Utilities Commission, CPUC Hearings on Telecommunications Regulation, November 8 and 9, 1984, at 3.

could provide serious competition to a local company burdened by rate base regulation and "carrier of last resort" obligations. 51/

Furthermore, as Phillips argues,

One should anticipate that unregulated subsidiaries of the RBOCs, along with ATTIS, other exchange and interexchange carriers, and other users and providers of service will operate freely across LATA boundaries in their "enhanced" service offerings. As this occurs, the incremental cost of providing voice service through the same networks will become very low. In the end, it will be impossible -- and undesirable -- to prevent the redevelopment of efficient voice service networks that ignore LATA boundaries. 52/

Thus distinctions between inter and intraLATA toll will also diminish. Competition will penetrate all three markets. Maintaining complete intraLATA toll monopolies will prove impossible in many locales. Competition will make the extraction of subsidies for local service from toll an unreliable if not untenable proposition.

2. The Entry of AT&T

Local and intraLATA toll competition seems to be a concomitant of permitting the Bell companies to provide interLATA and enhanced services. AT&T's entry into intraLATA service illustrates this concept. AT&T Communications, clearly a redoubtable competitor, has obtained permission from the State of Washington to provide intraLATA WATS, in competition with the local Bell company. This is apparently the first state in which AT&T can offer WATS throughout the state. AT&T has an advantage in the competition. Subscribers taking both intraLATA and interLATA WATS from

51/ There is a caveat. Local exchange companies can route much of their intraLATA "toll" traffic directly from one Class 5 switch to another. That means they might offer intraLATA calling without having to pay a carrier access charge (to themselves). Competitors have to pay an access charge. Depending on how intraLATA access charges are structured, the viability of intraLATA toll competition could be diminished.

52/ Almarin Phillips, Submission to California PUC, op. cit., at 3,4.

AT&T can reach high volume discounts faster than if they obtain only interLATA from AT&T.^{53/}

The New York Public Service Commission has granted AT&T full intraLATA authorization. AT&T says it only intends to offer teleconferencing and other narrow services. It claims not to have facilities for intraLATA Message Toll Service (MTS).^{54/} The AT&T plans are likely -- if not certain -- to grow more expansive, for reasons alluded to by Phillips in the quotation above.^{55/}

Some regional holding companies have expressed concern about other AT&T intraLATA activities. Pacific Telesis points, for example, to AT&T's restructuring of private line tariffs to allow bypass of the local network and upgrading of switches to connect directly to PBXs. In arguing that it should be freed of Computer II requirements so it can compete with AT&T, Pacific Telesis asserts that AT&T is now offering many of the same types of services it previously offered as the unified Bell system.^{56/}

3. Bell Operating Company Responses to Competition

One example of a Bell firm's competitive response comes from New York. New York Telephone proposes rate restructuring that would subdivide LATAs into toll regions. Calls within one region would be local. Calls between regions would be charged according to region-to-region rates, not mileage. New York Telephone would sell blocks of time for two, five, or ten hours of inter-region calling.^{57/} This possibility illustrates the potential breakdown of distinctions between toll and local calling as well as development of an innovative pricing scheme to meet competition. Such creative steps should be encouraged.

^{53/} Telecommunications Reports, March 28, 1985, at 11.

^{54/} State Telephone Regulation Report, January 31, 1985, at 10.

^{55/} An early example of this is the Merrill Lynch/New York Port Authority Teleport facility. It will provide access to the AT&T point of presence without using New York Telephone's facilities. See Telecommunications Reports, May 6, 1985, at 27.

^{56/} Communications Daily, April 10, 1985, at 3.

^{57/} State Telephone Regulation Report, March 14, 1985, at 9.

Some of the controversies which arose in the Seventies regarding interconnection to facilitate interstate services competition could arise at the local exchange level.^{58/} State authorities should ensure that local exchange companies respond to actual and potential competition through legitimate pricing and service changes rather than anticompetitive measures which may increase their antitrust exposure and heighten any likelihood of FCC preemption.

4. IntraLATA equal access

Those in equal access exchanges do not reach their designated interLATA long-distance company if they dial 1 for an intraLATA call. Instead, the local Bell company handles such traffic. To reach their usual carrier for that intraLATA call (where intraLATA competition is permitted), users currently have to dial a four-digit "access" prefix. To avoid this automatic routing feature, customers have to determine whether the call they are making is inter or intraLATA, a technical detail few consumers know. The Bell companies claim they would have to make expensive changes in switches to allow 1+ dialing for intraLATA as well as interLATA; AT&T and others, however, say this would be feasible at low cost.^{59/}

It appears that intraLATA equal access can be provided at reasonable cost in most cases where interLATA equal access is in place. We therefore endorse the enforcement of a requirement that the Bell Operating Companies provide intraLATA carriers equal access.^{60/}

Simultaneously, as recommended previously, Bell Operating Companies should be allowed to enter information service markets while being required to provide equal access to competitive information service providers.

^{58/} For a history, see Gerald Brock, The Telecommunications Industry, The Dynamics of Market Structure (Harvard University Press, 1981).

^{59/} See State Telephone Regulation Report, March 14, 1985, at 4 and Telecommunications Reports, March 11, 1985, at 12-13.

^{60/} Equal access in this context should include some means of addressing the problem alluded to in footnote 51 supra: the local exchange companies' ability potentially to offer some intraLATA toll calls without having to pay for carrier access.

The Bell companies are prevented by the AT&T consent decree from offering information services in competition with AT&T and other firms. The apparent scope and vigor of AT&T's plans to compete with the Bell companies provide further support for lifting this restriction, as earlier recommended.

Issues Surrounding New Service Offerings

Enhanced vs. basic

The FCC Computer II rulings deregulated enhanced voice and data services, preempting state regulation. The FCC held that enhanced services are inherently competitive. States, however, continue to have authority over exchange telecommunications services. Local exchange companies may provide basic services only under state regulated tariff. If exchange companies provide enhanced services, they may do so only through a separate subsidiary, unless the FCC grants a waiver of that structural requirement. As a result, an essential jurisdictional issue is whether a service is basic or enhanced.

Applying the distinctions in practice can be difficult. A Florida dispute recently decided by the FCC provides an illustration. IBM asked the Commission for a declaratory ruling that Southern Bell be allowed to offer its Local Area Data Transport (LADT) service only on an unbundled, detariffed basis.

IBM asserted that LADT was an enhanced service and should not be subject to state tariff. Under the Florida tariff, the capability for simultaneous voice and data transmission over the local loop was available only to those who subscribed to Bell's LADT and used certain Southern Bell terminal equipment, i.e., the data subscriber line carrier. In essence, LADT was being bundled and offered under tariff as if it were a basic service, contrary to FCC mandate, according to IBM's interpretation. IBM said LADT should be available to all users on a detariffed, competitive basis.

The FCC upheld IBM in part and denied its request in part. It found LADT to be a basic, not enhanced service -- so it will be offered under tariff; and Southern Bell does not have to offer LADT via a separate subsidiary, as it would an enhanced service. The FCC further ruled that the associated data subscriber line carrier equipment is customer premises equipment. Customers can therefore procure equipment

to use LADT from other vendors besides Southern Bell, such as IBM.^{61/}

This example reveals the potential for jurisdictional friction in considering regulation of the newer telecommunications services. If a Bell Operating Company were to file a tariff with a state commission for what it classified a "basic" service, the FCC might become involved and take positions opposing those of the state commissions. On the other hand, the FCC's classification of Southern Bell's LADT as basic (meaning it does not have to be offered through a separate subsidiary) might be an indirect indication that the FCC is disinclined to maintain structural strictures for Bell companies. Such sentiments would align it with the preference of many if not most state regulatory agencies.^{62/}

Another complication is that Bell companies can, under the AT&T consent decree, offer enhanced services only if they are not "information" services. Judge Harold Greene, not the FCC, has the authority to define "information." In applying Judge Greene's decisions on such matters, state regulators could find themselves in conflict with the court. Other complexities of Computer II and consent decree definitions and restrictions are discussed at length in Chapter III of this report. A major element of the policy dilemma may be drawing jurisdictional lines between state and Federal governments and making regulatory or deregulatory strictures stick, without violating the Communications Act.

If the FCC redefines the basic/enhanced dichotomy and alters the separate subsidiary requirements of Computer II, and particularly if guidelines are at all ambiguous, some states may decide to make ad hoc determinations of the need for separate subsidiaries, the form of regulation or deregulation, and the allocation of costs. In such states, the procompetitive goals of Federal policy could well be frustrated. Clarifying jurisdiction over the new services will thus be an important task.

This is one area, however, where it should not be assumed that the states are necessarily more prone to enact restrictions than the Federal government. As a concomitant of their strong concerns with the financial health of Bell Operating Companies, many state officials appear quite willing for the companies to enter virtually any market they

61/ Memorandum Opinion and Order, FCC 85-292, ENF File No. 83-34, released June 11, 1985.

62/ See Entman, op. cit., at 37-43.

want, without separate subsidiary or other requirements. For example, in its comments to NTIA the Vermont Public Service Board asserted a preference to keep new activities within the operating companies, where they are best monitored.^{63/} Although the monitoring could theoretically include strict regulation, too many restrictions on a Bell company competing in a free market with unregulated firms would defeat the states' objectives.

From the standpoint of Federal goals, these objectives pose a potential problem: some states may expect that Bell company revenues from new services will yield subsidies for local service. This might turn out to be another self-limiting phenomenon. If states attempt to extract subsidies from these activities, which are often risky and capital intensive, the exchange carriers could decide not to offer them. They might decline to face the risk if the rewards only go to keeping down rates for a "monopoly" service on which they are guaranteed a return.

There is another perspective on the proper treatment of Bell Operating Company investment in competitive enterprises. Regional holding company stockholders bear some risk of failure when Bell Operating Companies invest in a risky enterprise, since the holding companies own the Bell companies. Stockholders should also enjoy the benefits of success if the risk pays off. This is not merely a matter of fair play. It is a matter of market economics. If stockholders must bear any losses but do not have an opportunity to benefit from competitive activities, the price of the stock will be depressed. The fall will be propelled by a correct perception that the firm is engaged in risky investments without a prospect of compensation for the effort. Lower stock prices and higher costs of raising capital for the Bell companies would not help consumers.

In any case, it remains unclear whether states would be able successfully to assert jurisdiction over many of these services.

State Regulation of the Regional Holding Companies

Many state officials seem relatively sanguine about their state's Bell Operating Company entering new service markets. The parent companies' preferred strategy for diversification may be through another subsidiary, however, rather than the exchange entity. Entrance by another holding company subsidiary might be regarded less favorably by the states, as state regulation of them is even more uncharted

^{63/} Comments of Vermont Public Service Board, at 8.

than the areas considered just above. Some state regulators fear that subsidies might flow out of their local telephone operations to fund the competitive activities of the holding company, never to return to their jurisdiction. Hence, control over holding company activities could become an issue for the states.

1. Holding Company Activities Outside
the Bell Operating Company

Will states attempt to regulate holding company offerings within the state that are not provided through the Bell Operating Company? What is the extent of state jurisdiction over services and products that are not offered by monopoly common carriers? Although some states have laws on diversification and public utility holding companies, the regional companies may reject any interpretation that attempts to bring other activities of the regional holding companies under state jurisdiction merely because of ownership of the local exchange entity.

2. Regionally Shared Intelligent Networks

Another regulatory issue potentially posed by the holding companies grows out of pending Bell company plans for use of new technology to offer intelligent network services. Consideration has been given to use of a single regional switch, located in areas of high traffic concentration. Having separate nodes in each state might not make economic sense, depending upon expected traffic volumes. Thus, for example, data originating in Gary, Indiana might be routed to a switch in Chicago before being sent back to a destination in Gary.

The resulting traffic patterns would raise such issues for state regulators as: Is the switch properly part of each state Bell Operating Company's rate base? How should shares of the cost of the switch be allocated -- by state population, past or projected future volume of use, or what? What if a state regulatory agency says it wants the local phone company to have its own switch? Or what if another regulatory commission refuses to approve rates to support a share of the regional switch, claiming they do not want consumers to bear the burden of the new services?^{64/}

^{64/} While the precise details of such proposals are not available at this time, this example is being used to show some of the complexities which could develop should states seek to assert jurisdiction over the regional holding companies.

Because the shape of any regulation of the regional holding companies is only beginning to emerge, we make no recommendation on these questions. We merely note them as likely subjects for the future policy agenda.

Emerging Relationship Between States
and the Federal Government

In this chapter we have traced the impact of four major forces on the jurisdictional relationship between state and Federal regulators. We have seen repeatedly that technology, economic imperatives, interstate rivalry, and Federal policies initiatives are combining to stimulate and reinforce the penetration of competition into most telecommunications markets.

States are not likely to present a jumbled crazy-quilt of inflexible regulations hostile to competition. Most state officials are increasingly knowledgeable about the changes occurring in telecommunications and are altering policy accordingly. This is particularly true of agencies in the major states that represent a majority of the U.S. population. The alterations are generally congruent with each other and with Federal goals. In the main, state regulators are making better choices than would result from the Federal government attempting to oversee telephone companies from Washington. Consequently, broad-brush preemption of state regulation is unnecessary.

CHAPTER VI: DEPRECIATION AND CAPITAL RECOVERY

Introduction

Until relatively recently, depreciation and capital recovery were obscure matters which provoked little controversy in the telephone industry. Rules were set by consensus among firms and regulators. They established long periods for amortizing capital investment which minimized depreciation expense in the current period and kept rates down. Technological innovation, economic changes, and policy alterations have rendered this traditional approach untenable. If continued, the old depreciation policies could inflict serious damage on local exchange companies and on their customers. Although the FCC has addressed the problem in part, more remains to be done in the Federal and the various state jurisdictions.

Our goal in this report is to highlight this issue as identified by several commenters in our inquiry.^{1/} The issue has been further thrust into prominence by an Ameritech petition to the FCC^{2/} and the Supreme Court's recent grant of certiorari to hear state objections to FCC preemption of much of their depreciation authority.^{3/}

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- 1/ See, e.g., Comments of Bell South, at 14-16; Contel, at 4; SNET, at 2-4.
- 2/ Petition for Rulemaking, RM-4932, filed by Ameritech on January 23, 1985, and supplemented March 15, 1985. A description by a state regulator of the depreciation issue is that of the Chairman of the Vermont Public Service Board. V. Louise McCarren, "Funding the Future of the Telecommunications Industry: Managing Technological Innovation to Satisfy Consumer Demands," unpublished, Saratoga Springs, New York, June 3-5, 1985, p. 4.
- 3/ Amendment of Part 31, 92 F.C.C. 2d 864 (1983), aff'd sub nom., Virginia State Corp. Comm. v. FCC, 737 F.2d 388 (4th Cir. 1984), cert granted and cases consolidated on June 24, 1985, in California v. FCC (No. 84-889), Public Utility Commission of Ohio v. FCC (No. 84-1054), and Florida v. FCC (No. 84-1069). Also consolidated with those cases was a direct appeal in Public Service Commission of Maryland v. C&P Telephone Company (No. 84-1369). A fifth case, Louisiana v. FCC (No. 84-871) will be heard with the above four cases.

How Depreciation Works

Under rate base rate of return regulation as applied historically to U.S. telephone companies, users are required to pay rates to generate revenues which cover all the companies' legitimate costs of doing business. Annual revenues must be sufficient to sustain the business and provide the wherewithal to replace aging and economically or technologically obsolete plant and equipment. The revenue requirement in a given year includes all operating expenses -- including an annual charge designed to permit recovery of the original cost of assets used in the provision of service -- plus a fair return on investment.

That annual charge is generally referred to simply as "depreciation" and is a non-cash expense. The charge is supposed to account for the decline over time in the value of the firm's capital assets. In principle, accumulated annual depreciation charges over the life of the assets should equal their original cost, thereby assuring complete recovery of initial investment while providing the means to replace outmoded plant and upgrade services.

Though the principles of depreciation accounting are relatively straightforward, determination of depreciation schedules as a practical matter has become complicated and contentious.

Investment in telephone plant and equipment is quite diverse, ranging from telephone poles to "high tech" electronic digital switches. A given category of plant will include items of different ages reflecting different times of installation. The administrative and regulatory cost of determining an individual depreciation rate for each asset would be prohibitive. Instead, depreciation rates are determined by a multistage process which involves: (1) grouping plant according to certain common characteristics; (2) determining an expected useful life for the assets in the group; and then (3) determining a schedule of annual depreciation charges which will amortize the assets over their useful life.

Regulatory Proceedings Confronting the Depreciation Issue

In Docket No. 20188, the FCC adopted new depreciation rules to allow more rapid write-off of equipment.^{4/} The Commission instituted the equal life group method for depreciation of new investment. This method speeds capital

^{4/} Report and Order, 83 F.C.C. 2d 267 (1980); Order on Reconsideration, 87 F.C.C. 2d 916 (1981).

recovery compared with the previously employed vintage group method. For existing and new plant (except terminal equipment), the FCC also authorized application of remaining life methodology. States, which formerly set local exchange company depreciation allowances when approving tariffs, have varied in the degree to which they have granted company requests based on these new methods, however.^{5/}

In 1983, the FCC preempted state depreciation rules which were inconsistent with its Docket No. 20188 ruling.^{6/} Several states challenged the FCC mandate by going directly to Federal courts. Others simply refused to apply the method in their rate cases and were challenged by telephone companies in state courts. Different courts in various cases have reached opposite conclusions, deciding in favor of either company or state positions.^{7/} Most recently, several states requested the Supreme Court to review rulings upholding FCC preemption of state authority over depreciation rates. The Supreme Court agreed on June 24, 1985, to hear the cases.^{8/}

Problems with Traditional Policy

The traditional depreciation method has been straight line, which allocates depreciation expense equally over some number of years. Its application to telephone equipment led to the straight line vintage group recovery method. That method groups plant according to the year the assets were put in service; all investment of a given type first employed in a particular year comprises a vintage. Within the vintage, there is much variation in the actual service life of the equipment. Yet all items within the group are depreciated over the average life of the group. The upshot is that the cost of any item that is taken out of service before the end of the average life for its vintage is not yet fully recovered at that time. Items that are taken out of service later than average are expected to make up the difference. This may distort incentives to take out or leave items in

5/ Walter G. Bolter, ed., Telecommunications Policy for the 1980's, the Transition of Competition (The Washington Program, Annenberg Schools of Communication, 1984), pp. 166-67.

6/ Memorandum Opinion and Order, 92 F.C.C. 2d 864 (1983).

7/ See, e.g., C&P Telephone Co. v. PSC of Maryland, 748 F.2d 879 (4th Cir. 1984); New England Telephone v. PUC of Maine, 742 F.2d 1 (1st Cir. 1984).

8/ See footnote 3, supra.

service for reasons having little to do with their actual usefulness.

There are other difficulties with that traditional policy. Depreciation rate calculations were done on a "whole life basis." This means that if the estimated service life of an item changed during its service, prompted, for example, by advances in technology which reduced its economic or useful life from 20 to 10 years, the depreciation rate would change from 5% to 10% per year at that point. But the total time during which depreciation expenses could be recovered would also change, in this example from 20 to 10 years. Thus, if an item started out at 20 years of estimated life, was depreciated for 4 years at 5% and then was switched to a 10-year life estimate, it would be depreciated at the higher 10% rate only for the next 6 years. The total cost recovered would be only 80% (4 years x 5% = 20% plus 6 years x 10% = 60% equals 80%) of the total cost of the item. About one-fifth of the cost would not have been recovered within the period corresponding to the useful life of the asset.

Moreover, service life estimates can be quite flawed. The estimates are based on "historic mortality data." These estimates come from experience with old, already-retired equipment. With the rapid rate of change in technology and the marketplace described earlier, such a basis virtually guarantees a mismatch between current technological and economic realities and depreciation and cost recovery.

Under the old monopoly system, the dominant firm generally controlled the pace of innovation. The telephone industry was for the most part insulated from market pressures to adopt new technology. Depreciation cost recovery was deliberately stretched out to minimize expenses, and thus rates. Because technical innovation was relatively slow, disjunction between the net book value of equipment and its actual economic value was neither as great nor as problematic.

The relationship between revenue requirements and depreciation expense, though positive, is not a dollar for dollar equivalence, since depreciation expense also reduces the remaining value of capital investment in the rate base and thus allowable earnings on that rate base. Accordingly, the net change in revenue requirement from an increase in the depreciation expense would reflect an increase in current operating costs as well as the reduced capital cost used in calculating the rate of return.

This dual impact on revenue requirements helps explain much of the current controversy. Regulators generally have preferred to keep depreciation rates and expenses

relatively low, thereby depressing the revenue requirement and average rate levels in the current period. Absent recent extenuating circumstances, telephone managers (on behalf of shareholders) have been willing to acquiesce, since the firm earns its allowed rate of return on all of these underdepreciated (overvalued) capital assets. As a purely short-term proposition, deferring depreciation has historically been acceptable to shareholders, regulators, and ratepayers alike.

In a fully regulated environment of local monopolies, regulators and telephone companies could control the rate of introduction of new plant and equipment. By deferring the construction of new plant and retirement of plant in place, service lives of existing plant could be stretched out, thereby extending the recovery of capital costs and holding down annual revenue requirements. With regulation controlling (and slowing) the pace of new investment, depreciation policies played an important role in maintaining low basic rates.

The growth of competition, the convergence of the communications and computer industries, deregulation, and the quickening progress of technology -- which has reduced the economic life of many capital assets -- all have combined to diminish the ability of regulators to maintain these policies. Though older plant might continue to be quite serviceable in an engineering sense, its economic life is limited by the increasing availability of lower cost production technologies and the demands for service diversity and quality unavailable from older technologies.

The current net book value of much plant in service is now substantially above its market or real economic value. Put differently, as a result of technological change, competition, and deregulation, the value of telephone plant has diminished faster than carriers have been permitted to amortize it by state and Federal regulators. This means that there are deficiencies in the depreciation reserves intended to compensate shareholders for the loss in economic value of plant and equipment.

Continuing past approaches to depreciation accounting would lead to growing deficiencies in depreciation reserve accounts. In the future, these would have to be recovered through either higher rates to users, lower returns to shareholders, failure to invest in new and upgraded plant and equipment, or all three. None of these practices is desirable under conditions of competition, especially where equipment and service innovations appear rapidly and failure to keep pace can handicap a vital industry.

The path away from traditional depreciation practices which are no longer viable is a dual one: (1) devising ways to speed up capital cost recovery for future investments; and (2) finding a means of making up for large depreciation reserve deficiencies from past policies.

Faster Future Capital Recovery

Resistance to Federal efforts to reform depreciation practices is centered in some state regulatory commissions, bodies which oversee most functions of the local exchange companies. Most state regulators perceive political pressure to keep local telephone rates as low as possible. In addition, some state regulators oppose depreciation reform on the grounds that the local exchange companies should not be encouraged to upgrade plant and equipment more rapidly. Most subscribers, they reason, will never benefit from such expensive, sophisticated add-ons to the public network. Indeed, some state officials believe acceleration of depreciation recovery to encourage future investment by local telephone companies could lead to small users subsidizing large businesses, as well as to overinvestment.^{9/} Under this hypothetical example, local exchange companies would load their rate bases with costly, esoteric advanced capabilities of no use to homes and small businesses. Yet rate regulation will apportion the expense to every user.

Given the pressures on earnings, from competition and from other sources, fears of local exchange company extravagance are exaggerated. But they exist nonetheless. There is substantial potential for frustration of Federal policies should states successfully resist FCC or court mandates on depreciation recovery for future investment.

Extended depreciation schedules heighten the distance between net book value and actual value of equipment. This disparity is debilitating for firms and consumers alike

^{9/} That is to say, an updated, sped-up version of the Averch-Johnson-Wellich effect. The officials believe changes in depreciation policy would lead to needlessly rapid investment turnover and too much money spent on equipment of marginal utility. See Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," American Economic Review, December 1962, pp. 1053-69. Cf. Alfred Kahn, "Recovering the Cost of Customer Access: Outstanding Issues," paper presented at NERA Telecommunications Seminar, Litchfield Park, AZ, January 24-26, 1985, at 13-16, on uncertainties and possibilities of misallocated costs.

in a variety of ways. Failing to bring depreciation practices into alignment with economic and technological realities will make the local exchange companies more vulnerable to competition in the short term. In the longer term, faulty depreciation policy will raise rates and diminish service quality to all users. Maintaining traditional depreciation methods no longer comprises a pro-consumer stance.

With slower depreciation schedules, the rate base remains larger than it would be otherwise for the same level of service. Consumers will ultimately have to pay more for a network that is less modern and efficient than the one that would have resulted under an economically correct depreciation policy. Moreover, failure to reform depreciation renders the local exchange companies more vulnerable to competitors who are unburdened by regulator-prescribed (and slowed) depreciation or by old, unrecovered depreciation expense.

Changes in depreciation policy are crucial to the ability of the local telephone companies to meet competition. New competitors do not have large depreciation reserve deficiencies. Most of them are unregulated and can select the most beneficial depreciation schedules allowed by Federal tax laws. By failing to make reasonable depreciation prescriptions, state regulators stimulate and strengthen competitive threats to the their local exchange companies.

Hampering the ability of local exchange companies to remain competitive is presumably not the goal of most state regulators. The companies' competitors could drain large customers and revenues from them. The loss of revenue (as well as lack of modern network efficiencies) will raise prices to the smaller users left with the local telephone company.

The pressure of competition from firms not burdened with a need to recover reserve deficiencies and able to depreciate new investment more quickly, makes depreciation reform crucial to the health of the local telephone industry. Artificially retarded depreciation hurts investment ability in two ways: it raises the cost of capital by contributing to perceptions of these firms as poor risks, and it diminishes their ability to fund investment internally, since depreciation provides a source

of internal cash. Moreover, all Americans benefit from a more productive and efficient telephone plant.^{10/}

What might be viewed as somewhat indirect benefits to residential consumers of keeping their local telephone company healthy and modern are combined with the direct gains from efficiencies of modernized telecommunications networks. More efficient switching, transmission, trunking, and traffic aggregation will keep costs lower for both local and long distance calling, as well as provide a wider range of new services to homes and small businesses. In the long run, such a system will best protect "universal service" at the lowest possible rates.^{11/}

NTIA does not endorse a particular method for depreciating future investment; the choice of proper cost recovery methods must be made by the regulatory agencies. Among the meritorious suggestions that should be considered are Ameritech's for minimum/maximum service life bands pending before the FCC, and USTA/GTE's model for projecting the rate of loss of true economic value over the life of a piece of equipment.^{12/}

The USTA projects a need approximately to double the reserve ratio from the current 22% to about 45% by 1990.^{13/} Without endorsing that number, the projection serves as an index of the magnitude of the need for depreciation reform. The impact of any changes in the Nation's tax policy (e.g., reduction or elimination of accelerated depreciation allowances and the investment tax credit) must be taken into account by regulatory agencies. Some more realistic method of valuing and recovering future capital investment, however, must be implemented as soon as practicable.

^{10/} See Walter G. Bolter and David A. Irwin, Depreciation Reform, A Crucial Step in Transforming Telecommunications to a Free Market (Washington, D.C., September 1980).

^{11/} See, e.g., Comments of Southern New England Telephone, at 4.

^{12/} Ameritech petition to FCC, see note 2, supra; Depreciation Reserve Assessment, United States Telephone Association, May 1985; and GTE and USTA representatives' presentation to NTIA of May 30, 1985.

^{13/} Depreciation Reserve Assessment, id., at ii.

Paying For Old Unrecovered Depreciation

The depreciation dilemma has another aspect: recovery of past expenses. Some estimates are that increases in revenue requirements of \$5 billion a year for the next five years would be required to eliminate the existing reserve deficiencies.^{14/} Southwestern Bell asserts its reserve deficiency is \$2.5 billion, Bell Atlantic \$3 billion, Pacific Bell over \$1 billion.^{15/}

These are large sums of money. To amortize \$25 billion over ten years by assessing each subscriber, the monthly addition to each bill would be over \$2.00. Though we have not made independent estimates of the magnitude of the reserve deficiencies, we believe that it is substantial and is growing rapidly. The longer regulators wait to face up to the task of resolving the recovery of past depreciation shortfalls, the worse the problem becomes. In particular, a point would soon be reached at which no politically acceptable price could be set for telephone service that would allow the operating companies to recover for past depreciation, because the amounts are so large and competitive alternatives set a limit on prices the former monopoly carrier can charge many of its customers.

It seems advisable to address this dilemma forthrightly. Somebody has to pay. It is neither wise nor fair to make either stockholders alone or ratepayers alone bear the entire cost. Companies may argue they were only following regulators' orders when they depreciated at a slow pace, and thus do not deserve to be assessed the cost of catching up. But for many years, the companies were willing partners in setting depreciation policy with state and Federal officials.

Ratepayers could claim that those who invested in telephone company stock were aware of the regulatory constraints on the firms and the resulting risk to long term earnings. The stock and bond markets should have discounted the value of telephone securities accordingly. If not, the problem is one for investors, not the ratepayers.

While making stockholders pay might appeal to some, such a policy is short-sighted. The stock and bond prices of the local exchange companies could be increasingly and adversely affected. Their cost of capital would increase. Needed

^{14/} State Telephone Regulation Report, February 28, 1985, at 3.

^{15/} Id., at 4.

investment might be neglected. In any case, users would wind up paying higher rates, probably for poorer and fewer services.

The sensible path is one of fairness to both ratepayers and stockholders. The costs of past policy, which arguably benefited past ratepayers and stockholders alike, should be borne in some measure of equitable apportionment.

A Proposal

We offer here a general outline of a proposed solution to be devised and implemented after consideration by an ad hoc Federal/state joint board.

(1) To prevent the problem from worsening even as a solution is devised, the FCC should cap the growth of reserve deficiencies by adopting accelerated depreciation schedules for all new carrier investment.

(2) The amounts of existing reserve deficiencies should be determined.

(3) A sufficient period of time for amortization of this balance should be set.

(4) A plan should be devised so that cost is equitably shared by ratepayers and shareholders. A proportion of the unrecovered depreciation would be written off by the firms in prudent fashion over a prescribed period; the rest would be recovered through adjustments to revenue requirements in the ratemaking process.

Developing such a plan would contribute significantly to a smaller rate base stocked with more efficient equipment than would otherwise be the case. The eventual outcome would be rates for all consumers significantly lower and services considerably better, than if the depreciation issue is left unresolved.

CHAPTER VII: MEETING TELECOMMUNICATIONS GOALS
IN RURAL AMERICA

Introduction

The delivery of high quality, reasonably priced telecommunications services to subscribers in rural America has long been a major goal of Federal and state policymakers. During the first third of this century, as telephone service became prevalent in most urban areas, telephone service in rural areas of the country was nonexistent or decidedly inferior.

Three principal policy decisions led to the widespread development of rural telecommunications services. First, the Rural Electrification Act was amended to provide low interest loans to commercial telephone companies and cooperatives. Telephone companies rapidly sprung up and began providing service in remote areas of the country.^{1/} The second factor that led to greater availability of telephone service was the development of a nationwide averaged interstate toll rate structure in the 1940s. This rate structure allowed users to make interstate calls to and from rural locations at no greater charges than for calling between densely populated areas. Third, through a process known as separations and settlements, a significant fraction of the cost of providing local service was shifted to the interstate jurisdiction and recovered through interstate toll rates.^{2/} While this process served to keep local telephone rates low for all subscribers, it particularly benefited the rural areas where local loop costs were high.

These policies resulted in nearly universal telephone service within the United States. Over 90 percent of the population now has telephone service and in some parts of the country telephone penetration is now over 95 percent. As

^{1/} The Bell companies also serving rural areas and not receiving low cost loans were able to extend service to additional customers by internally averaging low and high-cost service areas.

^{2/} Separations is the process by which costs are allocated between the interstate and intrastate jurisdictions. Settlements is the process by which independent telephone companies were compensated by the Bell companies for their provision of interstate and intrastate toll service. (This latter process was known as division of revenues when companies within the former Bell System were compensated in like manner.)

competition has been introduced into the telecommunications industry, the sustainability of many of these policies has been called into question. Competition has the effect of driving prices closer to the underlying cost of providing service. Internal subsidies -- resulting in flows of money between low-cost and high-cost areas, between urban and rural parts of the country, between business and residential users -- are difficult, if not impossible, to maintain. In markets where subsidies keep prices well above cost, competitors without subsidies built into their rate structure are able to enter markets and price their services significantly lower than incumbents. In like manner, competitors refrain from entering markets where prices are artificially kept well below cost. This latter condition has the effect of discouraging competition and innovation in markets where incumbents' services are priced well below costs. While an internal subsidy system works well in a monopoly environment, in short, it cannot be long sustained under competition.

The introduction of basic telephone service occurred first in urban areas. Similarly, the introduction of competitive toll services has come first to the densely populated areas of the country. This chapter will examine issues related to the competitive provision of telecommunications services in rural America.

Some of the issues that will be discussed include the continued availability of basic telephone service at reasonable rates, incentives for competitive entry in rural areas, new technology and reduction in local loop cost, and equal access for local exchange carriers serving rural areas.

Rural policy issues, to date, have centered on the potential loss of financial support that was previously built into the rate structure. Competition has made many of these existing rate structures unsustainable. Much attention has been focused on developing mechanisms, such as the Universal Service Fund (USF), to ensure that rates for basic telephone service remain reasonable in rural areas. Little attention has been given, however, to developing incentives, creating new uses of technology, and encouraging actions that would bring the benefits of competition to these areas.

The development of national telecommunications policy has focused on ensuring that the largest number of consumers and users have access to technologically advanced and efficient telecommunications services and equipment. The delivery of similar services to rural and remote areas raises a number of issues that have not been fully examined at either the Federal or state level. Making available high quality telecommunications services and equipment, and giving

consumers choices, will require the development of new mechanisms and incentives to replace the policies of the past. There are two separate issues here. First, the continued availability of basic telephone service at reasonable rates and, second, the availability of new technology, new services, and consumer choice.

The Continued Availability of Telephone
Service at Reasonable Rates

Local Service Rates

Over the past five years, the FCC, the Executive branch, Congress, state regulatory commissions, and the industry have struggled to develop an equitable system to preserve universal service as current processes were replaced with access charges and new rate structures to meet the requirements of the AT&T consent decree and competitive markets conditions. A consensus emerged that resulted in the creation of the Universal Service Fund. The USF is a permanent part of the FCC's access charge system. This fund, which is supported by payments by the interexchange carriers as part of their tariffed access rates, ensures that telephone rates in high-cost areas will not vary substantially from the rest of the country. Telephone companies whose costs exceed 115 percent of the national average will receive money from the fund to cover a percentage of their costs which exceeds the national average. This money will be flowed through by the company so that rates in its service territory will remain reasonable. This mechanism is illustrated by the following example: A telephone company with 6,000 local loops and a yearly average cost per loop of \$300, as compared with the national average of \$200 a year per loop, would receive \$210,000 from the USF, based on the percentage recovery allowable under the Joint Board formula. Several states are considering or have adopted similar assistance plans further to ensure that rates remain reasonable.^{3/} These plans will go a long way toward keeping telephone rates in rural areas reasonably comparable to those in urban areas. This is not to say that telephone rates for some subscribers will not go up as the subsidies that are currently built into the interstate toll rate structure are reduced. As some of these local loop costs are shifted back to the intrastate jurisdiction, some local rates will rise. The detariffing of customer premises equipment, the potential detariffing of inside wiring, and changes in depreciation schedules are also putting upward pressure on

^{3/} Comments of California Assemblywoman Gwen Moore, at 7.

local rates. However, actual rate increases have been lower than previously expected.^{4/}

As with most issues, broad generalizations are often difficult to substantiate. The characteristics of rural areas are not the same. While high cost is generally correlated with low population density, this is not always the case. High cost can also be closely correlated with new investment. For example, under the USF formula for distribution of funds to high cost areas, Florida is a major recipient of funds.

Thus as is true under any policy, there will be winners and losers. There are certain areas of the country that are significantly rural but are not particularly high cost.^{5/} This may be especially true in low growth areas where new telephone company investment is minimal. Under the separations and settlements formula, allocations to the interstate jurisdiction were made on the basis of cost and toll usage. The subscriber plant factor (SPF), which was the mechanism that determined allowable costs, was significantly driven by toll usage. Therefore, a rural phone company in an area with extremely high toll usage would have a high SPF and receive a substantial portion of its revenues from interstate toll settlements. For these areas of the country, the reduction in SPF and the adoption of a flat interstate allocation mechanism will result in a significantly higher intrastate revenue requirement. As the amount of costs allocated in interstate through this formula declines, the costs will have to be recovered from intrastate services. The Joint Board and the FCC have adopted a gross allocator of 25 percent. This means that no more than 25 percent of nontraffic sensitive (NTS) costs can be allocated to the interstate jurisdiction.^{6/} Some rural companies previously were allocating 85 percent of their NTS costs to the interstate jurisdiction. However, because some of these areas with very high toll usage do not have significantly high costs, they will receive minimal assistance from the USF. For these areas, longer transition times have been built into the FCC's plan. The purpose of this illustration is not to question the policy, but instead to indicate how a policy that is generally beneficial to high-cost areas may

4/ Robert Entman and Terry Monroe, Summary of State Telephone Regulatory Data, (NTIA, March 1985).

5/ Comments of Vermont Public Service Board, at 10.

6/ The exception being NTS allocated to interstate as a result of costs qualifying for assistance from the USF.

not be universally beneficial to all telephone companies in all rural areas.

Deaveraging

This is also true of other policies that are considered to be generally beneficial. Another example is the issue of nationwide interstate toll rate averaging. As with any nationwide averaging scheme, there is a flow of money from one jurisdiction to another. In this case, low cost areas have experienced major outflows of money to support higher cost areas. While this policy may be beneficial overall, it may nevertheless have a substantial negative impact on jurisdictions that also have significant bypass problems because it forces their rates to be much higher than their actual costs. As with all public policy decisions, there are difficult trade-offs to be made. This policy of nationwide rate averaging, once desirable, may not be the best way to achieve societal objectives in a competitive environment.

It is important to point out that there already exists a significant amount of deaveraging within the current rate structure. Intrastate toll rates vary enormously from jurisdiction to jurisdiction. Within a single jurisdiction, there may be substantial disparity between short haul and long haul toll rates. In addition, local rates have never been averaged. Each telephone company files a rate structure to recover its own revenue requirement. Within a single jurisdiction, basic service rates vary widely. In general, local rates are lower in rural areas than they are in urban areas. This may be true because rural companies were receiving a significant fraction of their revenues through the settlements process and did not need to recover additional revenue through local rates. Lower basic rates may also have been justified by the fact that, in low population density areas, a subscriber usually can reach only a limited number of persons with a local call. Because of this limited calling scope, rural residents must frequently make toll calls to reach urban areas and to have access to governmental, medical, and educational services. These rural customers will benefit significantly from reduced toll rates as nontraffic sensitive costs are removed from the toll rate structure.

Rural areas may also be characterized by high toll transport charges. Toll transport facilities connect the local telephone company central office with the first point of connection to the toll network. Previous studies on the impact of toll deaveraging indicate the most significant cost differences in the public-switched network occur in these toll connect trunks. The toll connect trunks in rural areas tend to be longer, with limited ability for traffic

aggregation, resulting in higher costs than for more densely populated areas. Beyond the point of interconnection with the national toll network, differences in the cost of transport tend to be minimal. Thus beyond this first point of connection, the cost of carrying a call 100 miles or across the country may be almost identical. The implications of these cost characteristics are important, particularly as they relate to toll deaveraging.

If a significant fraction of cost differences in the network occur in the toll connect links, the pressure for deaveraging will occur in the transport portion of the traffic sensitive access charge. Where there are differences in the cost of transport to serve a rural area, the pressure to charge more for bringing traffic in and out of geographic areas may be greater. While many have argued in favor of a prohibition on deaveraging, in the long run the pressure to deaverage and meet competition on other routes will be great. Deaveraging of toll rates may be inevitable, and thus the dilemma from a policy standpoint is to find a means to minimize any significant cost differences in transport charges without excessively distorting an overall move to cost-based pricing. One means of accomplishing this would be through a very limited, targeted subsidy much like the USF which would ensure that transport charges do not vary from the national average by more than an agreed upon percentage. This would be a very limited subsidy and would give carriers the opportunity and flexibility to price their services competitively. They would, of course, have the option of maintaining an averaged rate schedule consistent with their own business plans. The issue of deaveraging transport charges will require close scrutiny by the Federal-State Joint Board. This issue is already before the Board as a result of CC Docket 80-286. The Board should look at this issue on an expedited basis so that any required changes can be debated adequately and phased in if necessary. The result of this study may indicate that the differences in transport costs are not significant enough to require any further Joint Board action.

Decisions at the Federal level have required both the reassignment of a portion of nontraffic sensitive local loop costs to the intrastate jurisdiction and the recovery of some of these costs directly from subscribers. As a result, Federal and state policymakers have focused their attention on mechanisms to ameliorate the impact of upward pressure on local rates. This job has now been substantially completed with the implementation of the USF and the FCC monitoring plan. In addition, attention is now being focused on the development of lifeline assistance programs to target aid to subscribers based on financial need. Policymakers must now turn their attention to developing and implementing policies

that ensure rural consumers have access to the competitive choices available to their urban counterparts. The policies will be discussed in the next section.

Incentives for Competition in Rural Areas

Toll Services

When basic telephone service was introduced, urban markets were the first to receive service. As competitive toll services have come into the marketplace, carriers have focused on the densely populated and high traffic routes.

For the most part, few competitive carriers have chosen to provide toll service in rural areas. To the extent that there has been competitive entry, it has been by resellers who require minimum capital investment and receive the benefits of anomalies in the current access tariffs which reduce access related costs.

In the very few cases where a facilities-based toll carrier has provided rural service, the geographic area tends to be more suburban than rural and there is usually extended area service, i.e., EAS (no toll charges) between exchange company areas. Thus a customer in an EAS area may access the switch of an competitive carrier located in a metropolitan area without incurring a toll charge.^{7/}

It is not surprising that competitive carriers have not yet been willing to extend their networks to provide service in rural areas. Most of the new carriers have had trouble keeping up with demand for facilities in highly populated areas. To have extended service to thinner routes during this high growth period would not have made good economic or business sense. The result of these decisions has created a situation where few customers in rural areas have the same choice with regard to toll service that is available to their urban counterparts.

The question from a policy standpoint is whether there is anything that might be done to change the incentives for competitive carriers to serve rural areas. In formulating the plan for the creation of LATAs, rough guidelines were developed by the Antitrust Division with regard to the number of access lines needed to attract competitive entry. The Division's guidelines postulated that

^{7/} This situation may have had a deleterious effect on some local exchange carriers. See Petition for Rulemaking, RM 5057, filed by the Exchange Industry Group, June 7, 1985.

there should be about 100,000 access lines before an area became attractive to serve. While these guidelines should not be viewed as determinative, they do stand for the proposition that traffic must be sufficiently aggregated before a carrier will make the investment necessary to serve a geographic area.

A vast amount of the land area but a small percentage of the population is served by the independent telephone companies doing business in rural areas. Bell companies, such as Nevada Bell and Mountain Bell, do provide service in rural areas, but many of the significantly rural areas are served by the Independents.

Competitive entry for areas served by the Independents raises issues that may be different than those posed by such entry in areas served by Bell companies. Bell companies and GTE are under an obligation to provide equal access on a specific timetable to interexchange carriers. Independents have less stringent Federally imposed requirements for equal access (this issue will be discussed in detail below).

It is unlikely that competitive carriers will begin to serve rural areas, unless traffic is aggregated in some fashion. Traffic aggregation simply means that toll traffic coming out of specific areas would be brought together at a point of interconnection.

There are a few examples of independent companies becoming directly involved in the provision of toll services. Regional carriers, such as SouthernNet and RCI (a subsidiary of Rochester Telephone) have been founded in conjunction with independent telephone companies to provide both interstate and intrastate toll services. At present, few Independents participate directly in the actual provision of toll services. While some Independents own a portion of toll transport facilities, for the most part these carriers provide only exchange access services. New networking arrangements may be required if competitive alternatives are to be provided to rural customers. Under the current constraints of the AT&T consent decree, Bell companies can neither provide interLATA toll service nor routing of interLATA traffic. Thus, where the Bell companies serve rural and remote areas, means of aggregating toll traffic must be found which do not involve the provision of interLATA toll services, or the restrictions of the AT&T consent decree will have to be revisited.

Equal Access Issues

With implementation of the AT&T and GTE consent decrees, 89 percent of the total U.S. access lines are under a plan to convert to equal access for interexchange carriers. The FCC recently ruled that the remaining independent telephone companies are required to implement equal access in three years where they have stored program controlled switches and there has been a reasonable request for equal access from an interexchange carrier. For Independents that have electromechanical switches, there is no timetable to provide equal access, but companies are encouraged to make the investment as soon as practicable.

The implementation of equal access raises both end-office and networking issues. Both consent decrees and the Commission's order focus on equal access as an end-office issue. Yet as discussed above, unless companies in rural areas can find ways to aggregate traffic sufficiently to make it more economically attractive to serve their areas, little competitive entry is likely to occur. Simply connecting an end-office to provide equal access does not guarantee that any carriers will choose to serve the area.

There are other issues that must be resolved as well. The Florida Commission has adopted a plan which divides the state into "equal access exchange areas" (EAEAs). The EAEAs are smaller than LATAs and include all the independent companies in Florida. Within each EAEA, local exchange carriers (LECs) are required to provide at least one point of interconnection for interexchange carriers. All LECs must furnish equal access and bring their toll traffic to the point of interconnection. Transport charges within the EAEA are averaged so the interexchange carriers pay the same amount to serve all points within the EAEA. The policy of the Florida Commission is to ensure that all subscribers in the state have access to competitive carriers. The Florida plan may serve as a model to other states that wish to develop overall statewide planning to encourage wide availability of competitive toll services. The action by Florida indicates that state commissions have the ability to create incentives for competitive entry into their states and to see that all citizens, not just those in urban areas, benefit from competition.

Another possible mechanism for encouraging competitive service to rural areas is to allow independent companies access to the Bell company access tandems. These access tandems are being installed by the Bell companies to allow the competitive carriers to trunk traffic to the tandem rather than having to install lines to each end-office that has been converted to equal access. This point of

interconnection creates network efficiencies for the competitive carriers. Allowing the independent companies to bring their toll traffic to the Bell company access tandems would provide similar efficiencies for smaller local exchange carriers. Independents might install equal access tandems themselves. These arrangements must be approved by the FCC and the state commissions to ensure that there is no discrimination against interexchange carriers and that affiliates of local exchange companies do not receive favored treatment.

Local Exchange Services

The issues involving the competitive provision of local services are similar for local exchange companies serving urban and rural markets. High concentrations of traffic with a few major customers within major metropolitan areas make bypass of local company facilities economically feasible for certain users and carriers. However, a local company serving a rural areas may frequently have one large customer in its service area. The loss of that customer can be equally devastating to a small rural phone company as the loss of several large customers to a larger firm. In addition, as nontraffic sensitive costs are shifted from interstate to intrastate, local exchange rates will rise. The higher cost for local service will create incentives for sharing of facilities. Where local loop costs are high, sharing arrangements for subscribers in certain locales will emerge. Such arrangements may make economic sense, particularly where facilities are new and there are no issues of stranded investment for the local telephone company. These firms may in fact wish to limit the number of lines to particular facilities when there is a strong likelihood the facility might soon be used in sharing arrangements. These issues require further development at the state level. Other issues regarding local exchange competition will be discussed below in the section on new technology in rural issues.

New Technology in Rural Areas

The predominant factor which makes rural areas costlier to serve is the long local loops which run from the customer premises to the telephone company central office. These facilities have been classified as nontraffic sensitive, meaning the costs do not vary with the amount of use. It is the cost of these facilities that is now being subsidized through the Universal Service Fund. New technology can serve to reduce the cost of local loops. It could also result in reclassification of categories of equipment. If facilities which are now considered nontraffic sensitive are reclassified as traffic sensitive, this will reduce the amount of subsidization required by the USF.

It may be necessary to reexamine classifications of equipment under the separations process as new equipment and technology become available. Devices such as subscriber line carrier systems (pair gain systems), digital remote concentrators and switches, network channel terminating equipment (and associated loop transmission systems), and digital switches may result in reduced costs to serve rural areas.

Some of these systems may be more traffic sensitive than the current technology. An advantage of equipment being classified as traffic sensitive is that the costs are recovered directly from the user, and only to the extent the equipment is actually used. Since the USF is designed to support high-cost areas on the basis of the nontraffic sensitive costs, a reduction in those costs or a reclassification of equipment will shrink the size of the fund and thus reduce the amount of subsidy required. This in turn will have a beneficial effect on bypass caused by high carrier common line access charges.

Other new technology is being developed which may reduce the cost of serving rural and remote areas. One promising idea is the use of cellular radio as a fixed rather than a mobile service. Other cost-reducing technologies include voice-oriented digital termination service and digital telephones. Improved rural radio service is also being studied.

While current technology may be adequate to provide basic telephone service, the introduction of some of the technology discussed above will allow customers to have access to new services and choices which are not currently available.^{8/} Such new services are particularly desirable in rural areas where subscribers are often isolated and must otherwise journey significant distances to reach services. Possibilities such as remote medical services, which may allow a doctor to screen medical information through remote sensing devices, could be extremely useful. Also, the modernization of existing plant will make rural areas more attractive for locating new industry. This is especially important as the national economy shifts from manufacturing and agriculture to one dominated by service industries.

As a result of the subsidies built into the present pricing system, local service has been priced well below the cost of providing the service. This pricing scheme provides incorrect pricing signals to developers of new technology. In the toll market, competitors have entered because the internal pricing subsidies kept the prices charged by

^{8/} Comments of Siecor, at 19.

established firms such as AT&T well above cost. Therefore, competitors were able to price their services below those of the incumbents and earn substantial profits. In the local exchange market, the converse is true. Competitors looking at the existing pricing structure could never underprice or even equal the price of the overly subsidized local service. Thus this existing pricing scheme may actually serve as a disincentive to the development of new local service technology. As prices for local services are driven closer to cost, the incentives for developing cost-reducing technology may change and the market for these services may actually be stimulated.

Engineering Research and Development

In the past, most network and engineering functions were performed by the Bell System in consultation with the independent companies. The separations and settlements and division of revenues processes provided incentives for companies to make investments in interstate and intrastate toll facilities.

Companies received the same rate of return on their interstate investment as did AT&T, even though their cost of capital might have been significantly less than that of the Bell System. This so-called "partnership" worked well to develop and modernize the network at a predictable pace. The incentives to make investments in network facilities, however, today are changing as the Bell companies and the Independents make investment choices on the basis of their individual interests and business plans. With the implementation of interstate and intrastate access charges, the partnership between the BOCs and the Independents no longer exists; the settlement process was the glue that held it together.

The Bell companies have institutional arrangements through Bell Communications Research (Bellcore) to undertake joint research and development, network design and planning, systems engineering, and development of software systems. With the exception of GTE, however, the Independents have no similar institutional arrangements. Yet the need for Independents to get more involved with their own network planning and to develop new services is greater now than at any time in the past.

There are two possible solutions to this problem. Independents might be given access to Bellcore on a contractual basis. This would allow these companies to have access to new technological developments in order to modernize their facilities. Alternatively, Independents may wish to form consortiums or other more informal groups to

work together and combine resources. This would enable companies to undertake studies and to share costs of projects they would be unable to carry out individually. The customers served by companies in rural areas may not have access to advanced technology and the service choices competitive carriers offer if the telephone companies do not begin to plan now for their future network arrangements.

CHAPTER VIII: TRADE IMPLICATIONS OF DOMESTIC
TELECOMMUNICATIONS POLICIES

Introduction

Telecommunications is increasingly a world market, and the policies which the Government pursues domestically have important international trade implications. Today, the United States constitutes nearly half the world market for telecommunications and information goods and services, with Japan and Western Europe accounting for most of the balance. Many of our major trading partners have targeted their indigenous communications and related industries for special competitive advantages. Most appreciate, moreover, that access and success in penetrating American markets is important to achieving the critical commercial mass needed to command and sustain world-class leadership.

While our international competitors' governments have taken affirmative steps to buttress and reinforce the strengths of their communications companies, U.S. domestic policies in the past too often have hobbled major American firms seeking to meet growing foreign competitive challenges more effectively both at home and abroad. The FCC's Second Computer Inquiry regulations, for example, plainly handicap our leading communications firm, AT&T, in this regard. Consent decree constraints have also been placed on the ability of the Bell Operating Companies (BOCs) -- which comprise nearly half our entire national communications industry -- to participate in overseas markets. As competition intensifies, placing the U.S. equipment and service providers in adversarial roles (Bell Operating Companies, AT&T, MCI-IBM, competitive common carriers), foreign firms are increasing their market share by assuming the role of neutral suppliers.

Commendable trade initiatives aimed at expanding the overseas market opportunities available to American companies have not yet yielded major U.S. international successes. The customer premises and network equipment markets in this country were opened to all competitors by virtue of the FCC's 1976 equipment registration program. Additional commercial opportunities were provided upon the 1984 breakup of the Bell System. Operating freely in our equipment markets, non-U.S. firms confront virtually no constraints on their marketing of computer-data processing and other related offerings in our deregulated "enhanced services" markets. Foreign multinationals are free to compete vigorously in U.S. communications markets, while too many countries abroad still close their markets to American communications firms.

Exacerbated by the AT&T divestiture and other regulatory actions, the disparity in world market access to the United States versus other countries is undeniable. U.S. telecommunications firms find themselves at a competitive disadvantage because they do not have an insulated domestic demand. More critical, however, is the fact that U.S. firms excluded from global markets may find themselves with relatively fewer funds available for research and development and an inability to learn by participating in overseas markets, in stark contrast to their foreign competitors who have access to both home markets and the U.S. market -- the world's largest.

Table 8-1

U.S. TRADE BALANCE WITH THE WORLD IN
ELECTRONIC-BASED PRODUCTS 1980-1984^{1/}
(\$ Millions)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Communications	968	722	580	56	-608
Computers	6309	7005	6822	6207	5936
Components	625	231	-281	-919	-2968
Consumer Products, Office Products & Instruments	-526	-1923	-2140	-4178	-8520
Total Balance	7376	6035	4091	1166	-6160

Compounded by the recent strength of the U.S. dollar, the predictable result of a number of other significant factors -- Computer II and consent decree constraints on leading U.S. firms, unfettered foreign access to deregulated American markets, and closed commercial environments abroad -- has been record U.S. trade deficits in the telecommunications and related electronics-based products sectors. The United States, for example, enjoyed a 1983 trade surplus of some \$4.9 billion in the broad, electronics-based products sector. In 1984, it recorded a deficit of \$6.2 billion.

^{1/} Based on official Bureau of Census statistics, (April 1985).

Attempts to counter and reverse this trend will necessitate serious reappraisal by the Government of the wisdom of continuing to hamstring leading U.S. communications firms in the face of intensifying international competition. Such efforts will also entail greater -- and continuing -- sensitivity and awareness on the part of Government to the international trade consequences of decisions made here. Maintaining a strong, vigorously competitive American telecommunications sector has been a fundamental policy goal for more than two decades. Success is important to further a number of vital U.S. interests, including national defense, security, and emergency preparedness. If telecommunications and information technologies are to provide opportunities for future economic growth, development, and employment that the country needs, prompt and affirmative actions aimed at removing obstacles to U.S. competitiveness will be needed.

Global Telecommunications Trade

The World Market

No single definition of the markets at issue here is universally accepted, chiefly because technology has blurred traditional product and service lines. Broadly defined, however, the relevant market encompasses telecommunications and computer industry goods and services. As of 1984, almost \$450 billion was at stake in these lines of commerce worldwide. Overall, these related markets are forecast to experience an average annual growth rate of about 11 percent for the years 1985 through 1990, which would yield a total world market of about \$831 billion by the end of this decade. Telecommunications equipment and services, with projected annual growth rates of about 8 and 9 percent, respectively, should constitute about two-thirds of this electronics-based economy. The market for telecommunications equipment and services in the United States alone is expected to approach \$201 billion by 1990.

Table 8-2

THE WORLD MARKET FOR TELECOMMUNICATIONS AND
COMPUTER PRODUCTS AND SERVICES
(\$ Billions *)

	<u>1984</u>		<u>1990E</u>		<u>Annual Rate of Growth 1984-90E</u>
	Worldwide	(U.S.)	Worldwide	(U.S.)	
Telecom Equipment (SIC 3661, 36621, 36622)	60	(24)	95	(36)	8%
Computer Equipment (SIC 3573)	80		195		16
Telecom Services (SIC 4811, 4821)	265	(103)	444 ^e	(165)	9
Computer Services (SIC 737)	40		97		16
	===		===		===
Worldwide Totals	445		831		11%

* Estimates are not adjusted for inflation
E = Estimated

Source: NTIA; based on various industry studies and projections.

Intensive competition, particularly in the world telephone equipment markets, is a relatively recent phenomenon. Until recently, most major U.S. telephone companies were vertically integrated, with the manufacturing subsidiaries of AT&T, General Telephone, and United Telecom focusing chiefly on satisfying internal company demands and needs. Abroad, few of the foreign postal and telecommunications administrations were vertically integrated into manufacturing. Most, however, enjoyed special supply arrangements with a small number of local companies, or a "family" of companies, such as NEC, Fujitsu, Hitachi and OKI in Japan. International commerce in communications products was limited by relatively slow growth in the overall market,

as well as the persistence of extensive non-tariff trade barriers.

Demand-inducing and cost-reducing technological advances radically altered telephone industry economics both here and overseas. That development, in turn, precipitated procompetitive changes in the regulatory system in the United States. Commencing with the 1956 Hush-a-Phone and 1968 Carterfone rulings, the FCC by 1977 had essentially removed all regulatory restrictions on customer use of noncarrier supplied terminal equipment. The 1984 divestiture by AT&T of its 22 Bell Operating Companies subsequently opened much of the market for telephone network equipment to competition, as those firms no longer rely on Western Electric to fulfill all their equipment needs.

Today, East Asian suppliers -- including in particular Japan, Taiwan, Korea, and Hong Kong -- are the principal providers worldwide of customer premises terminal devices. For example, NEC Corporation, an \$8 billion a year Japan-based electronics conglomerate, increased its sales in North America from \$450 million in 1983 to nearly \$800 million in 1984, and may reach \$1 billion this year. While AT&T, GTE, ITT, Rolm, and other U.S. suppliers of customer premises switching apparatus have slightly more than half that particular U.S. market, Canadian, European, and Japanese suppliers of such equipment have, nevertheless, increased their market shares rapidly. For example, MITEL, a Canadian company recently acquired by British Telecom, captured 10.2 percent of the 4.2 million lines of domestic PBX equipment supplied to the U.S. shipped in 1984, followed by Nippon Electric Company (NEC) (6.9 percent), Siemens (3.9 percent), Ericsson (2.9 percent), Fujitsu (2.1 percent), and OKI (1.6 percent). AT&T still remains the principal supplier of analog and digital central office switching equipment to the Bell Operating Companies. In 1984, however, Canada's Northern Telecom enjoyed a 43 percent share of the digital central office switching market in the United States, more than twice AT&T's 21 percent share. This is especially important since the United States represents nearly half the world market for high-tech digital switches.

The AT&T consent decree allows the Bell Operating Companies to retail, but not manufacture, telephone equipment, and virtually all of these companies have moved aggressively into the retail sector. Almost none of the equipment retailing affiliates of the Bell Operating Companies, however, currently market AT&T products.

At least one major non-U.S. telecommunications company has entered the American communications services market to date. There are statutory restrictions on the ability of the

FCC to issue radio frequency licenses to non-U.S. companies (47 U.S.C. Sec. 310), but virtually no restrictions curtail the ability of alien firms to lease bulk circuit capacity from U.S. carriers and resell that capacity to retail customers. The communications resale field has been deregulated, hence ownership information is largely unavailable. Cable and Wireless PLC, however, which operates communications systems in Britain as well as a number of other countries, also owns TDX, a U.S. resale carrier. No U.S. laws restrict foreign telecommunications authorities from acquiring other resale or enhanced service providers. Nor are there any restrictions on the construction of facilities that do not use the radio spectrum.

U.S. Access to Foreign Markets

The ease of entry afforded foreign multinationals in the U.S. communications market is not paralleled elsewhere. Commendable privatization and deregulation initiatives have been undertaken in Britain and Japan, but have not yet resulted in markets fully open to competitive entry. Foreign telecommunications administrations seem inclined to permit some competition in the customer premises equipment market, but are far less willing to permit open competition with regard to network equipment. AT&T has sold advanced electronic switching equipment in Britain, Taiwan, and Korea, and may secure further sales elsewhere in Europe. AT&T's success in international equipment markets has been limited, in part, by persistent foreign restrictions and the various costs and impediments imposed on the company by virtue of FCC regulations.

The absence of comparably open and competitive communications markets abroad does not necessarily preclude all participation by U.S. companies in international markets. There are still opportunities available which entail investment in, and partial ownership of, foreign equipment suppliers, the licensing of U.S. telecommunications technology, and the provision of managerial, engineering, and other services to local telephone monopolies. AT&T, for example, in 1983 acquired a one-fourth interest in Italy's Olivetti, and has established a joint venture with Philips. In addition, AT&T has strengthened its ties with South Korea's Gold Star organization, and is in the process of developing a semiconductor manufacturing facility in partnership with the Spanish Telephone Administration. ITT's Belgian and West German equipment affiliates have been relatively successful. GTE has secured potentially valuable relationships with Italian telecommunications firms, including Italtel and Feranti, with which it is now producing customer premises switching equipment for the British market. But in marked contrast to the very rapid growth of

foreign communications equipment suppliers in the United States, especially Japan-based firms, commercial progress on the part of American companies abroad has been very gradual and incremental.

The U.S. Balance of Trade in Telecommunications

Given the slow progress of U.S. companies in penetrating overseas markets, and the very rapid pace with which foreign firms have secured a base in the United States, the U.S. balance of trade in telecommunications in recent years has slipped precipitously. By 1983, Japan had become the world's leading exporter of telephone and telegraph equipment, with about 21 percent of the world market.^{2/} While the United States was in second place, capturing a 12.7 percent market share, it was also experiencing a much higher rate of import penetration than the other countries. Telecommunications imports, for example, represented about 10.5 percent of total U.S. consumption in 1983, compared with 8 percent for Canada, 6 percent for Europe, and only 1.4 percent in Japan.^{3/}

Balance of trade figures for the major telecommunications exporting companies reveal the adverse effect of relatively slow-growing U.S. exports coupled with very fast-growing reliance on imported products.

2/ 1985 U.S. Industrial Outlook, Chapter 30, at 5.

3/ Id.

Table 8-3

NATIONAL TELEPHONE AND TELEGRAPH EQUIPMENT TRADE BALANCES
(\$ Millions)

<u>Principal Exporting Nations</u>	<u>1978</u>	<u>1983</u>
Japan.....	408	1,250
Sweden.....	350	706
West Germany.....	455	577
France.....	88	381
Taiwan.....	-31	320
Canada.....	8	303
Hong Kong.....	-73*	255
Belgium, Luxemburg.....	107	130E
The Netherlands.....	107	41
South Korea.....	-83E	10E
Italy.....	29	4E
United Kingdom.....	69	-66
United States.....	155	-418

E - Estimate based on partial year data

* - 1980 data

Note: Balances computed using 1983 exchange rates.

Source: Official trade publications of each nation.

What these numbers show, for example, is that while the United States ranked fourth in 1978 with a modest \$155 million trade surplus in telephone and telegraph equipment accounts, America had slipped to the bottom of the list by 1983, with a deficit of \$418 million.

Table 8-4

U.S. TRADE WITH THE WORLD
(\$ Millions)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Telephone and Telegraph Equipment (SIC 3661)					
Exports	557	653	829	790	777
<u>Imports</u>	<u>421</u>	<u>495</u>	<u>629</u>	<u>1,208</u>	<u>1,817</u>
Trade Balance	136	158	200	-418	-1,040
Radio and Television Communications Equipment (SIC 3662)					
Exports	1,971	2,305	2,402	2,534	2,768
<u>Imports</u>	<u>1,139</u>	<u>1,741</u>	<u>2,022</u>	<u>2,060</u>	<u>2,336</u>
Trade Balance	832	564	380	474	432
Total Trade Balance (SIC 3661,3662)	968	722	580	-56	-608
TOTAL MERCHANDISE					
Trade Balance	-25,512	-28,001	-36,469	-61,055	-107,435
TOTAL GOODS & SERVICES					
Trade Balance	8,975	13,128	-1,141	-32,912	-93,395

If one examines data above showing total U.S. trade with the world, one can see that the total merchandise deficit approximately tripled between 1982 and 1984. During the same period, as earlier mentioned, the U.S. trade balance in the broadest category -- electronics-based products -- suffered nearly an \$11 billion turnaround (See Table 8-1).

It is also clear from the following data that the U.S. trade relationship with Japan is our most challenging problem.

Table 8-5

U.S. TRADE WITH JAPAN
(\$ Millions)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Telephone and Telegraph Equipment (SIC 3661)					
Exports	9	8	9	17	27
<u>Imports</u>	<u>163</u>	<u>248</u>	<u>290</u>	<u>470</u>	<u>941</u>
Trade balance	-154	-240	-280	-453	-914
Radio and Television Communications Equipment (SIC 3662)					
Exports	77	125	138	175	167
<u>Imports</u>	<u>439</u>	<u>713</u>	<u>820</u>	<u>921</u>	<u>1,138</u>
Trade Balance	-362	588	-682	-746	-971
Total Trade Balance (SIC 3661,3662)	-516	-828	-962	-1,199	-1,885
TOTAL MERCHANDISE					
Trade Balance	-10,411	-15,802	-16,991	-19,630	-34,024
TOTAL GOODS & SERVICES					
Trade Balance	-3,349	-13,854	-15,388	-18,283	-35,106

As the second largest single telecommunications market after the United States, providing over 50 percent of U.S. imports in the telephone and telegraph equipment category, Japan has succeeded in fostering, through public promotion, the rise of a highly efficient and sophisticated telecommunications capability. As in the case of computers, robotics, and semiconductors, this was accomplished by achieving control over their national market, then by moving aggressively into the international picture through trade and foreign investment.

Such serious trade problems have a number of equally serious policy implications. They suggest the very real possibility, first, that America's future in this "sunrise" industrial sector may be partially eclipsed, absent more affirmative Government policies. Second, such reversals also threaten in the long run to undermine the well-established

Federal goal of fostering more effective competition in the telecommunications equipment market generally.

Increasingly in telecommunications, the size of a firm's actual or potential market and its ability to sustain world-class competitive standing are directly related. The broader the sales base, the more readily a firm can capitalize on production efficiencies, and the broader the base available to support commercially critical research and development activities. The Japanese manufacturer with unrestricted access to both Japan's market and that of the United States will have a greater chance to achieve production efficiencies and to support critical research, than an American company which can sell only in the United States. This phenomenon over time could have the effect of reducing the competitiveness of the American companies vis-a-vis their Japanese rivals in the global telecommunications marketplace, especially in the high technology, leading-edge product categories. For certain product lines, the correlation between market access and long-range competitiveness could prove decisive, as in the case of new digital switching equipment.

Initiatives Underway Abroad

American domestic communications policies reflect, in part, an assumption that U.S. industry resources and capabilities in this sector are limitless, and thus able to bear, with little adverse long-term effects, virtually any regulatory or other burden which Government chooses to impose. While the United States has saddled its leading producer, AT&T, with "separate subsidiary" and other operational requirements and sought to restrict operations of companies which, in aggregate, represent nearly half the total resources of our telecommunications industry, quite different initiatives are underway abroad.

Nippon Telegraph and Telephone (NTT), which is not now an equipment manufacturer, has four major research labs employing over 3500 researchers. These researchers have an intimate arrangement with principal domestic equipment suppliers -- NEC, Hitachi, Fujitsu, and OKI. NTT establishes the guidelines for the research and controls the activity, working directly with designers from the manufacturing companies. By means of this cooperative arrangement, high-speed facsimile equipment, packet switching, cellular radio, lightwave communications systems, digital switching, data communications architecture, videotex, and other sophisticated systems have been developed or improved. As a large consumer of advanced electronic products, NTT has helped underwrite commercial development costs as well as assisted in product and system definitions. NTT's long-term

support of its key supplier companies has, in addition to accelerating commercial production of a number of products and systems, facilitated the Japanese manufacturing firms' movements into international markets. NTT has thus played an integral role in the emergence of the Japanese electronics industry. Japanese manufacturing firms enjoy both NTT support and R&D subsidies provided by the Ministry of International Trade and Industry, giving them a better chance to compete in the global market.

NTT's procurement of U.S. equipment between 1980-1984 reveals that a substantial portion of the purchases have been for special equipment that fills a niche in the Japanese market -- network management control systems, super computers, large scale integrated manufacturing equipment, domestic satellite echo cancellers, high-speed modems, magnetic tape for information processing, statistical multiplexors, cable connectors, acoustic couplers, channel switching equipment and communication controllers. Missing from the list are significant sales of central office switches, digital PBXs, packet switches and terminals, cellular radio equipment, and lightwave system equipment including fibre optic cable.

In 1973, Corning Glass (the world's leader in fiber optics) tried to establish a joint venture in Japan. Working for several years with Furukawa, a leading Japanese cable company, Corning shared technology in order to establish a joint venture. NTT, the major purchaser of telephone cables, prevented Furukawa from entering into a joint venture with such a strong dominant supplier of fiber optics. NTT's objective at the time was to build a Japanese industry, using domestic cable suppliers. Corning was not permitted to have a joint venture, but was permitted to obtain royalties on the patents developed in Japan. Concurrently, offering the same technology in the German, French, and English markets, Corning established Siecor (joint venture with Siemens), Optical Fibers (joint venture with BICC Telecommunications Cable Ltd.), and Fibre Optique Industries (joint venture with Saint Gobain). Based on these experiences, one could conclude that there was a Japanese strategy not to buy foreign products or to encourage the development of foreign technology. This was reflected in the attitude of government officials, importers, distributors, and end-users.

In Western Europe, proposals have been advanced by the European Economic Community (EEC) to "rationalize" European initiatives in key communications sectors. For example, closer collaboration is being sought among participants in Europe's electronics industry. A dozen leading electronics companies are participating in the European Strategic Program for Research and Development in Information Technology

(ESPRIT) program -- a cooperative R&D effort. To speed the transition toward an Integrated Services Digital Network (ISDN) and Integrated Broadband Communications environment, the European community is funding the Research and Development in Advance Communications Technology for Europe (RACE). France, Italy, the United Kingdom, and West Germany have also announced their intention to collaborate on the technical development of digital switching. Italtel, Alcatel/Thomson, Siemens, and Plessey have agreed to carry out joint development of components and subsystems for existing and future network exchange equipment. The potential payoff would be the development of a common European system by the 1990s to replace the current generation of digital switches.

In the United States, the Microelectronics and Computer Technology Corporation (MCC) began operations in 1983 to conduct cooperative long range research in microelectronics and computer science. In March 1985, Bell Communications Research, Inc. (Bellcore) became the twenty-first shareholder. Bellcore is participating in two of the four MCC programs -- Software Technology and Advanced Computer Architectures.

Battelle-Columbus Research Laboratories is offering to manage a research and development program on Guided Wave Optoelectronics Manufacturing Technology. This project has been discussed with 19 U.S. firms and various U.S. Government officials. The objective is to bring about a privately financed and cooperative effort to assure U.S. leadership in this critical technology. The widespread use of fiber optics foreseen for the 1990s will be facilitated by the development of a generic manufacturing technology.

To counterbalance the cooperative R&D efforts in Europe and Japan, the United States should consider an expansion of the MCC concept, the beginning of private research programs (Batelle), or a separate telephone industry collaboration. With the billions of dollars needed to develop digital technology, the national effort to develop U.S. industrial competitiveness requires a combination of all our resources.

Means of Strengthening U.S. Competitive Potential

Ours is obviously an economy premised on fostering individual corporate initiatives and competition. Programs entailing the "rationalization" or "coordination" of telecommunications industry activities under the aegis of the Government would thus be at odds with longstanding American traditions favoring maximum possible private sector competition. Private industry joint research projects are a desirable means of ensuring that new goods and services are

developed which can then be individually marketed on a competitive basis. Joint industry standards-setting activities are also essential in telecommunications, in order to ensure the connectivity and thus maximum utility of each component of our overall national telecommunications system. The kind of all-encompassing, cartelistic, Government-sponsored joint industry programs which may be acceptable abroad, however, would not be in accord with current national policies favoring private enterprise and fostering competition.

While many of the institutional approaches which this country's foreign telecommunications competitors operate under abroad may be unsuited to domestic U.S. application, there are nevertheless affirmative measures which Government could undertake, with the clear potential to improve the competitiveness of our industry in the global market. Some of these measures seem self-evident and admit to ready, presumably noncontroversial, implementation; others may be more controversial and would entail, in all likelihood, significant alterations in current FCC regulations and provisions of the consent decree.

There needs to be, to begin with, far greater sensitivity and awareness on the part of Government generally, and the FCC in particular, regarding the importance of telecommunications to the Nation's long-run economic performance, and the necessity to consider the foreign trade implications of Federal policies affecting this pivotal industry. Fostering expanded U.S. trade and commerce, particularly in telecommunications, constitutes a highly important public policy goal. The courts have indicated on many occasions that the FCC generally is obligated to consider carefully the impact of its actions on other public policy goals, including national defense, antitrust and competition, and ensuring truly equal opportunities to all Americans.^{4/}

International trade should also constitute an important component of the broad "public interest" standard under which the FCC functions. Accordingly, in all relevant regulatory proceedings, the FCC should undertake carefully to assess the foreign trade implication of proposed actions. In consultation with expert international trade agencies, including the Department of Commerce and the United States Trade Representative, a "trade impact" evaluation should be

^{4/} See, e.g., United Church of Christ v. FCC, 560 F.2d 529 (2d Cir. 1977); United States v. FCC, 652 F.2d 72, 82 (D.C. Cir. 1980) (en banc); AT&T Co. (Northeast Light Guide System), 89 F.C.C. 2d 1167, 1178 (1982).

conducted as a matter of routine. In those instances where the domestic effects of proposed regulations are unclear or reasonably disputable, but the adverse international trade consequences manifest, the FCC should be prepared to tilt the balance in favor of ameliorating or avoiding adverse trade results. Fostering trade in telecommunications should be accorded substantial priority since, in our judgment, stemming and hopefully reversing the present alarming trends toward larger and larger telecommunications trade deficits is critical.

Second, the FCC should continue and, indeed, accelerate its commendable efforts to reexamine the constraints now imposed on AT&T as well as the Bell Operating Companies under the rules adopted in the Second Computer Inquiry. There is some evidence the elaborate "structural" constraints imposed on the pre-divestiture AT&T and carried forward today have adversely affected that company's ability to compete more effectively in the world communications equipment market. AT&T maintains, for example, that because of the Second Computer Inquiry restrictions on joint development of "competitive" and "monopoly" hardware and software, production and sale of its No. 5ESS electronic switch for use by customers has been needlessly slowed. The company has also developed extensive cost information suggesting that compliance with these artificial restrictions has resulted in costs exceeding \$1 billion yearly.

An important public policy goal is ensuring that the efficiency gains inherent in new electronics technology are not offset and absorbed in the process of implementing that technology commercially. Ensuring greater "through-put" efficiency is important, both to make sure customers have access to new technology-based products (at prices which reflect those inherent efficiencies), and to make sure that companies have a full and fair opportunity to compete. The present structural arrangements clearly impose substantial transaction costs on the leading telecommunications equipment producer. Such costs are less and less defensible given the availability of alternative safeguards sufficient to deter anticompetitive domestic practices, and the fact that virtually none of the international equipment competitors labor under comparable government impositions.

The FCC has already taken commendable steps to relax its Second Computer Inquiry restrictions on AT&T, permitting the joint marketing of certain services. Such initiatives should strengthen the company's domestic competitiveness and enable it to compete effectively to maintain its domestic customer base. We believe, however, that more attention is needed and that the FCC should promptly undertake to reevaluate those portions of its Second Computer Inquiry regulations which

constrain AT&T and the BOCs in their efforts to compete fairly.

Third, there should be adopted promptly for international ventures a broadscale international exemption from the "line of business" restrictions imposed on the Bell Operating Companies. Whatever the merits of retaining these restrictions for the time being with respect to domestic communications, we see no compelling public purpose for hobbling the Bell Operating Companies in their efforts to compete abroad.

Under Article VIII(E) of the AT&T consent decree, which relates to proposed business ventures, the decree's general restrictions "shall be removed upon a showing by the petitioning BOC that there is no substantial possibility that it could use its monopoly power to impede competition in the market it seeks to enter." The judgment court and the Antitrust Division appear to have underemphasized this standard -- competitive effects on "target markets" -- and, instead, propounded a broader approach, one which seeks to assess the extent to which, if any new enterprises on the part of a BOC may reduce the firm's ability to meet other obligations imposed under the decree. The practical effect of this approach has been to impede entry by the Bell Operating Companies into export markets. These firms, with total assets over \$120 billion, should they obtain a waiver to enter an overseas market, must also do so subject to FCC Computer II separate subsidiary requirements.

In recognition of the critical role of telecommunications trade, the judgment court in December 1984 took steps to approve a number of foreign trade ventures proposed by the Bell Operating Companies.^{5/} In so doing, the court acknowledged the importance of fostering expanded international trade in this important sector. The present waiver process, however, by itself constitutes a significant trade impediment. Timeliness and immediate responsiveness to customer wants often is an essential ingredient to successful international trade. At present, the Bell Operating Companies are hamstrung in this regard. A waiver for proposed international trade activities must be first discussed with the Antitrust Division and then submitted for approval by the judgment court. Timeliness is not always one of the virtues of the present waiver approval process. Rather, handling of waiver requests, on average, has taken months from start to finish. They are processed and decided, moreover, on a company-by-company, project-by-project basis.

^{5/} United States v. Western Electric Company, 1984-2 Trade Cas. (CCH) Para. 66, 312 (D.D.C. 1984).

Public policy generally recognizes alternative mechanisms of safeguarding important interests. These mechanisms include prerequisites, a requirement that Government approval be secured before commencing any private activity; or post-requisites, a requirement that information be provided the Government after activity has begun, enabling the Government to impose sanctions or nullify the activity. Prerequisites by their very nature impose a heavy cost burden both on Government and the private sector, as they require each instance of potentially beneficial conduct to be screened beforehand, in order to eliminate that small fraction of activities which may be deemed undesirable.

A regime of prerequisites, such as those imposed on the Bell Operating Companies under the AT&T consent decree, is defensible as a matter of sound public policy only if certain rigorous conditions are met. There must be, first, a very high likelihood that the private activity at issue will injure a clearly defined public policy interest. Second, there must be a high probability that any harm will materialize very rapidly -- before Government can act -- and, third, the remedies available to correct any adverse developments must be either exceedingly costly, time-consuming, or otherwise not realistically available.

Proposed international trade ventures on the part of the Bell Operating Companies embody virtually none of the characteristics which traditionally have warranted imposition of a regime of prerequisites. The likelihood such ventures will further the clearly defined public interest in expanded international trade in telecommunications is clear. Almost all such ventures are plainly desirable, indeed, commendable. This is borne out by the fact that most of the initiatives proposed by the Bell Operating Companies to date have eventually been approved by the judgment court.

There is minimal probability that such international trade activities will adversely affect the public. There is virtually no credible evidence any such ventures have adversely affected the interests of monopoly service ratepayers, nor that they have, in some fashion, distracted Bell Operating Companies from satisfying "equal access" obligations under the consent decree. Any such hypothetical harms, moreover, are highly unlikely to materialize overnight. They will appear, if at all, only over time and, presumably, during such time, the Antitrust Division or the judgment court would enjoy ample time to take remedial actions.

It is clear, moreover, that Government has ample means of rectifying any adverse situations in the highly unlikely chance they develop. The antitrust laws, whose

effectiveness as a deterrent is demonstrated by both the Government's action in the AT&T litigation and private actions, including the recent multimillion dollar Litton judgment, are readily available to remedy any adverse effects on U.S. competition as a result of the international trade activities of the Bell Operating Companies. Regulators clearly have the ability to disallow impermissible costs. All of these potential sanctions and remedies are readily available, in short, to counter any adverse developments.

To facilitate international trade undertakings by the Bell Operating Companies, the Government should take steps to modify the AT&T consent decree to allow all such activities without regulating prior permission secured through the waiver process. The FCC should also remove any Computer II constraints which apply to the Bell Operating Companies' foreign trade undertakings. If the Antitrust Division believes it needs full knowledge and understanding of such international trade activities as part of its enforcement of the consent decree, it may be appropriate to require the Bell Operating Companies to submit information regarding international activities once those activities are underway. Our fundamental point here, however, is that neither measured by traditional public policy criteria, nor from an international trade perspective, are the present waiver procedures acceptable. These procedures impose extraordinary costs with respect to almost assuredly beneficial private conduct and notwithstanding the ready availability of alternative approaches. At a minimum, blanket waivers from both consent decree and Computer II provisions should be granted to the Bell Operating Companies with respect to all activities undertaken abroad. We do not recommend that the Antitrust Division require these firms to file extensive information on such activities after the fact. If such a requirement were imposed, however, as a substitute for the present burdensome waiver process, it would not be objectionable as long as the process was kept streamlined and served a valid public interest purpose.

Conclusion

Policy decisions made for domestic reasons can have far-reaching international repercussions. It is apparent that the information age has begun. The changing marketplace, driven by the forces of rapid technological change and Government involvement, must be examined and evaluated from broader perspectives. The framework of U.S. policy should reflect this expanded view. To do otherwise may risk the success of U.S. firms in the world market for information equipment and services. This, in turn, could have serious repercussions on the U.S. economy and the U.S. position in international trade.

The international trade situation for American telecommunications firms today is not promising, and all indications are it will deteriorate further absent more affirmative Government policies. Such measures would include:

- Ensuring that the international trade implications of all Government telecommunications regulations are identified and assessed as part of the regulatory process;
- Removing needless anticompetitive restrictions placed on AT&T and the Bell Operating Companies under the FCC's Second Computer Inquiry regulations;
- Changing the present AT&T consent decree process to allow for a blanket waiver of all international trade undertakings of the Bell Operating Companies;
- Negotiating better access to overseas equipment and service opportunities; and,
- Encourage more cooperative R&D.

CHAPTER IX: SUMMARY AND CONCLUSIONS

This is a long report. But it would have been incomplete without the detail included to show the U.S. telecommunications industry today and to provide a blueprint for tomorrow. Sixty-two parties responded to our Notice of Inquiry, contributing some 5,000 pages of comments to our own independent research. Our analysis leads us to a number of conclusions and recommendations.

Technological Advances and Issues

Technology in the telecommunications and related computer sectors continues to develop at a pace which outstrips even the best-intentioned efforts of Government to regulate change. The less these advances are hindered by Government, the better and more efficient our telecommunications system is likely to be.

Innovation in communications generates numerous direct and indirect benefits which accrue to those who now use only basic telephone services as well as those requiring more sophisticated systems. Demand for additional services, and the possibility of more efficient use of facilities and resources, has led carriers to build more integrated intelligence into their networks. Public policy trade-offs must be made, but taking advantage of this intelligence will expand service options for small business and residential customers. They can have options previously available only to firms with access to large scale computers.

The procompetitive policies of past years, while important, have not eliminated the need to maintain network integrity -- ensuring all parts of our competitive system can technically work together. Through diligence in national standards groups and industry forums, industry can eliminate the need for imposed regulatory solutions. Consumer concerns must remain a priority.

Structural and Other Constraints

Advances in technology are expanding communications service options, altering how traditional services are provided, and affecting competitive marketplace economics. This requires reexamination of traditional regulation and more recent developments such as the AT&T consent decree.

We have looked closely at structural constraints on the industry, both the AT&T consent decree and the FCC's Second Computer Inquiry rules. Both regulatory systems were significant efforts undertaken under difficult circumstances and subject to controversy. They have accomplished much to

promote consumers' overall welfare. Our objective was to determine how they should be refashioned in light of advancing technology and dramatic marketplace developments to further their underlying public interest goals.

AT&T Consent Decree

Many of the costs imposed by restrictions contained in the AT&T consent decree may be necessary to achieve a more effectively competitive industry structure. Making fundamental changes now might exacerbate uncertainties while slowing procompetitive changes. Yet given continuing developments in technology and the marketplace, the consent decree should not be treated as if carved in stone. The boundaries it established will decreasingly conform to industry and competitive realities.

We have made recommendations regarding the provisions of the decree governing interLATA service, manufacturing, information services, and international activities, as well as the line-of-business waiver process.

1. InterLATA Services and Manufacturing

Restrictions on the provisions of interLATA services and manufacturing placed on the Bell Operating Companies should be retained for the time being. When equal access becomes a reality, however, and markets are more open to competition, these restrictions should be revisited with a view toward eliminating or, at a minimum, substantially changing them. As of September 1986, the Bell companies should be allowed to resell interLATA services acquired from other carriers. They should then be allowed to market overall service and equipment packages, as firms such as AT&T and IBM can do now.

2. Information Services

The AT&T consent decree's prohibition on "information services" should be eliminated. This restriction will be increasingly difficult to justify and is adverse to the public's interest. Many information services are logical extensions of basic exchange service. Abolishing this restriction will mean broader availability of service options to more of the public.

The nondiscrimination provisions of sections II(A) and II(B) of the AT&T consent decree make clear the Bell companies' obligation to make their basic networks available to all on nondiscriminatory terms and conditions. It may be appropriate to require the Bell companies to demonstrate steps they will take to ensure any competing information service providers have access to the communications services

they need to compete fully. It may also be appropriate to require the Bell companies to provide intraLATA "equal access" as a prerequisite to their participation in the information services market.

While the general information services prohibition should be eliminated, restrictions on participation in "electronic publishing" should be retained. AT&T and the Bell Operating Companies should be subject to the same restrictions in this regard.

3. International

The telecommunications market today is worldwide. The policy of our Government is to encourage U.S. companies to compete internationally, particularly since our domestic market has become such an inviting target for foreign concerns. Limitations on the overseas activities of the Bell companies should not be imposed. This can be accomplished by either amending the decree or granting these firms blanket waivers to participate in overseas communications and other markets.

4. Line-of-Business Waivers

The extraordinarily broad constraints on the activities of the Bell companies should be eliminated. Should they choose to enter fields other than interLATA service and equipment manufacturing, they should be allowed to do so. Any anticompetitive abuses can be dealt with through private or Government antitrust actions or existing regulation.

The present waiver process under the AT&T decree is unduly burdensome, bureaucratic, and duplicative of regulatory functions assigned by statute to the FCC and state agencies.

The judgment court may decline to eliminate the restrictions. In such case, the Antitrust Division should request that the waiver process be reformed to allow for the grant of broad, generic waivers applicable to all Bell companies.

Computer II

Two overriding objectives are reflected throughout the FCC's Second Computer Inquiry decision: maximum possible deregulation and maximum possible separation of the monopoly and competitive activities of the unified Bell System. Today, with the breakup of the Bell System and advances in technology, the economic costs of the FCC's Computer II rules have grown. These costs will continue to grow if we fail to

take advantage of the increasing capabilities of the telephone network and meet public demand for new services.

Five years have passed since the FCC imposed these requirements. Experience indicates that the cost-benefit balance has shifted in the post-divestiture market environment. We thus strongly recommend that the FCC replace its Second Computer Inquiry structural separation requirements with the following, far less burdensome and intrusive requirements: (1) unbundling of services; (2) equal access; (3) tariffing unbundled service "building blocks"; (4) accounting for costs; and (5) annual audits. Additionally, telephone industry coordinating bodies should be open to enhanced service providers, all interexchange carriers, and equipment suppliers to ensure fair access to all the necessary network information.

Long-Term Viability of Interexchange Competition

Ensuring effective long-distance competition is an important national goal. The ability to choose among competing toll service suppliers is an important component of the package of choices now available to American consumers. The public having borne costs as a consequence of the AT&T divestiture, maintaining those choices is important as an equitable proposition.

Our analysis indicates the long-run prospects for effective toll market competition are good. In the long run, all efficient participants in the market should face very similar costs. We see no factor providing AT&T or any other carrier a "hook" upon which to hang a sustainable monopoly.

While we are bullish about prospects for competition, we recognize difficulties have arisen. "Equal access" implementation has proven difficult. AT&T has proven a formidable and effective competitor.

The logistics of equal access require close attention. In this respect, we endorse the recent commendable initiatives of the Antitrust Division regarding equal access obligations.

Sound policy dictates that any transition from pervasively regulated monopoly toward unregulated competition be as fair as possible. Both the perception and the reality of fairness affects capital costs and the likelihood of future competitive entry. The competitive carriers now face rapid, albeit warranted, increases in their access costs, coupled with possible sharp price reductions by the company that has enjoyed historical advantages. The competitive carriers are being squeezed at both ends.

Price reductions are a desirable policy objective. After equal access is essentially implemented in September 1986, less regulatory scrutiny will be warranted. After that date, should there be legitimate questions regarding proposed lower rates, it may be appropriate for the FCC to err on the side of lower prices. Until then, however, the FCC should continue carefully to monitor proposed AT&T rate reductions.

The FCC should also address persistent industry service problems. Quality of service is the other half of the common carrier price equation. There are no good reasons for the delays which too many customers have encountered. Industry and Government should redouble efforts to solve this problem.

Federal/State Jurisdiction

There historically have been differences between Federal and state officials over the best means of accommodating communications industry competition. As competition and change accelerate, these differences may become a short-run problem. Over time, however, Federal and state officials should be able to work affirmatively together.

The advisory joint board mechanism provided by section 410 of the Communications Act affords a good means of minimizing Federal and state problems. The problems which must be addressed will differ, however, so there should not be any single, permanent joint board.

1. Local Competition

New competitors of local phone companies may become targets of those who feel competitors will "creamskim" or otherwise harm local company finances. Issues of local service pricing must be viewed in the context of local competition which is likely to continue increasing. State officials should consider means other than barring local competition to deal with "bypass" issues, including moving local service rates closer to cost. At the same time, state officials should continue to ensure service to those who truly cannot afford the cost of telephone service.

2. Toll Issues

Intrastate competition is increasing. Some states are resisting pressures to allow intraLATA competition, but in so doing they are risking preemptive Federal actions which we believe are undesirable.

State agencies should require intraLATA equal access and permit intraLATA competition. This would reduce pressures on the FCC to preempt state authorities. Specifically, we would

not yet urge the FCC to preempt with respect to shared tenant and related services, but rather give the states an opportunity to address these matters. Allowing the Bell companies to provide these services, which may require changes in the AT&T consent decree, would reduce the chance of Federal-state conflict.

Indications are the states appreciate the need to avoid emergence of a "crazy quilt" of differing regulations. Where differences arise, they are most likely to reflect legitimate local concerns and differing conditions. Many of the major state regulatory agencies, moreover, are acting in general congruence with Federal policies.

Depreciation and Capital Recovery

Depreciation and capital recovery once were obscure issues that provoked little controversy. Rules were set by consensus and established long periods for amortizing capital investment, which minimized depreciation expense in the current period and kept local phone rates down. Competition and rapid technological change, however, have impaired the viability of traditional depreciation practices. Change is necessary to ensure customers have access to the latest technology and to minimize adverse effects on the industry.

Ameritech and USTA/GTE have both put forward constructive proposals that merit close examination. NTIA does not endorse any particular program of proposed depreciation changes. We believe that as a matter of fundamental policy, however, any changes should reflect these goals: (a) speeding up capital cost recovery for future investments; and (b) equitably apportioning among ratepayers and shareholders the cost of making up for large depreciation reserve deficiencies. Equitable apportionment is especially important since both shareholders and ratepayers benefited from past policies. The FCC should consider empaneling a Federal/State Joint Board soon to address depreciation and capital recovery issues.

Rural Issues

Delivering high quality, reasonably priced telecommunications service to rural Americans has been and should continue to be an important Federal and state policy goal. In rural areas, we support efforts to smooth the transition to cost-based pricing through "target efficient" subsidy mechanisms like the Universal Service Fund.

To facilitate wider availability of competitive service options in rural America, means must be devised to allow for traffic aggregation. If this requires revisions in the AT&T

consent decree to allow Bell companies serving rural areas to aggregate traffic and provide competitive alternatives, such steps should be taken.

Adoption of cost-based pricing is also important to stimulate the development of new, lower cost technology to meet rural communications requirements. The subsidies built into today's rates tend to generate incorrect pricing signals and deter such new technologies. As prices for local service move closer to cost, the development of cost-reducing technologies should accelerate.

Attention should also be paid to affording rural telephone companies broader access to the latest technology and system engineering information. This could be done by permitting the independent telephone companies to have access on a contractual basis to Bell Communications Research. It could also be accomplished by allowing the independents to establish consortiums or other groups to address common rural communications problems.

Trade Implications

Telecommunications is increasingly a global market. Domestic regulatory and judicial policies thus have important trade implications. Our market has been opened to foreign competition, while too many overseas markets remain closed to American competitors.

Handicapping American firms or curtailing their access to world markets has the potential seriously to affect this important high-tech business. Too many American domestic policies reflect an apparent assumption that U.S. industry resources, and ability to withstand Government intervention, are limitless.

Absent more affirmative American communications policies, our international trade posture will be eroded further. This possibility can be lessened through adoption of policies that: (1) ensure the trade implications of domestic actions are taken more into account; (2) eliminate or alter the AT&T consent decree's restrictions on Bell company international activities; (3) remove needless anticompetitive restraints placed on AT&T and the Bell Operating Companies under the FCC's regulations; (4) seek to expand overseas market access on the part of U.S. firms; and (5) encourage more cooperative research and development activities.

Underlying Goals

The guiding principle behind the telecommunications policies of the future must be the interests of the residential consumer and business user. For the most part, this will mean an industry where no firm or group of firms is artificially protected from competition. It will also mean imposing minimal, if any, restrictions on competitors in this important industry.

Resort to the full range of regulatory actions should occur only when there is no alternative. The FCC commendably has pursued a policy of maximum forbearance. This policy should be continued and its application broadened.

Relying to the maximum extent on competitive free enterprise, the American economic system has become the driving force in the world. There is no reason why comparable maximum possible reliance on a free marketplace should not be our goal in the telecommunications sector.

APPENDIX

Notice of Inquiry: Commenting Parties

Allnet
American Library Association
American Newspaper Publishers Association
Ameritech Mobile Communications
Ameritech Corp.
American Petroleum Institute
Association of Data Processing Service Organizations (ADAPSO)
AT&T
Bell Atlantic Corp.
BellSouth Corp.
California, State of, Public Utilities Commission
The Competitive Telecommunications Association (CompTel)
Contel Service Corp.
County of San Diego
Geller, Shooshan, Jackson and Sloan
Gilbert, Greg, George Washington University
GTE Corporation
Harms, L.H., University of Hawaii
Hawaii Public Television
IBM
Independent Data Communications Manufacturers Association
(IDCMA)
ITT Communications and Information Services Inc.
Kahn, Alfred E., NERA
Kentucky Public Service Commission
Lexitel Corp.
Mately, Ben, Ventura College
M/A Com Corp.
Maui Community College
MCI Communications Corp.
Missouri, State of, Public Service Commission
Minnesota, State of, Telecommunications Council
Motorola Corp.
Moore, Gwen, Member of the California State Assembly
National Association of Regulatory Commissioners
National Cable Television Association
New Jersey Board of Public Utilities
New York, State of, Public Utilities Commission
New York City, Department of Consumer Affairs
North American Telecommunications Association
North Dakota, State of, Public Service Commission
NYNEX Corp.
Ohio, State of, Consumer's Counsel
Oklahoma Corporation Commission
Pacific Telesis
Regulatory Information Services
RCA Communications
Rural Telephone Coalition

Salkoski, Ione, George Washington University
Satellite Business Systems
Shooshan and Jackson Inc.
Siecor Corp.
Southern New England Telephone
Southwestern Bell Group
TDX Systems Inc.
Telocator Network of America
Telematics Resource Group
Teltec Savings Communications
Tennessee Public Service Commission
Utilities Telecommunications Council
U.S. Telecom Inc.
United Telecommunications, Inc.
United States Telephone Association
US West
Vermont, State of, Public Service Board
Virginia, Commonwealth of, Corporation Commission
Washington Independent Telephone Association

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