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TELECOMMUNICATIONS

Development of Competition in Local Telephone Markets

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Contents

Abbreviations

AT&T	American Telephone and Telegraph
DOJ	Department of Justice
FCC	Federal Communications Commission
LATA	local access and transport area
OSS	operations support systems
UNE	unbundled network element

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The Honorable Mike DeWine
Chairman
The Honorable Herb Kohl
Ranking Minority Member
Subcommittee on Antitrust, Business Rights
and Competition
Committee on the Judiciary
United States Senate

The breakup in 1984 of the American Telephone and Telegraph Company (now called AT&T) promoted competition in the long-distance and telephone equipment markets. The breakup was not, however, designed to promote competition in local telephone service markets[1] since it was assumed that these markets were likely to remain monopolistic. By the early 1990s, some companies had begun to enter local telephone markets and compete against incumbent carriers, particularly in large cities, prompting some states to make regulatory changes to encourage further entry. Ultimately, many experts came to believe that more competition in the provision of local telephone service was possible but would not fully develop without significant revisions to communications law. With the enactment of the Telecommunications Act of 1996 on February 8, 1996, the Congress sought to increase competition in local telephone and other telecommunications markets. The law imposed a variety of obligations on incumbent local telephone companies that were designed to open their networks to competitors. Six months later, the Federal Communications Commission (FCC) issued its first major set of rules implementing the provisions of the act affecting local telephone markets.

[1]Local telephone service includes calls that are made within a designated geographic area or locality without payment of long-distance charges.

You asked us to provide information on (1) the development of competition in local telephone markets and the market strategies employed by new carriers in five states under the 1996 Telecommunications Act and (2) the key issues affecting that development and the enforcement activities of federal and state regulators to address those issues.[2] To respond to these questions, we visited five states: California, Illinois, New York, South Carolina, and Texas. (App. I discusses the criteria we used to choose these states.) In these states, we interviewed competing carriers, incumbent carriers, and state public utility commissions. We also surveyed all 50 state utility commissions to obtain information on the development of competition in local telephone markets and on the state commissions' activities (see app. II). In addition, we reviewed relevant laws and FCC proceedings.

Results in Brief

To date, little competition has emerged in local telephone markets, but new competing carriers are pursuing several different market strategies. According to data from FCC and the industry, incumbent local telephone service providers controlled all but about 3 percent of the traditional wireline local telephone service market as of December 1998—the most recent date for which data were available. The number of lines competing carriers serve has, however, increased rapidly, approximately tripling in 1998 alone. We found, as have FCC and others, that competing carriers have concentrated on serving relatively profitable urban business communities. At the same time, some of the competing carriers we interviewed in the five states we visited were also serving other markets—residential customers and customers outside the largest cities. The competing carriers we interviewed were delivering services through all of the methods envisioned by the 1996 act: reselling—or acting as retailers of—incumbents' services, leasing parts of incumbents' networks, or constructing their own facilities. Finally, an important competitive strategy being undertaken by both competing and incumbent carriers is the

[2]This report is the second in a series of three reports GAO is issuing for your Subcommittee on the development of competition in telecommunications markets. The first report examined competition in the video market. (See GAO/RCED-99-158, July 8, 1999.) The third report will examine the development of competition in the market for Internet services and is scheduled for release later in 2000. It will focus on several issues, including the technical characteristics underlying the provision of Internet access by various types of companies (telephone, cable, wireless) and the legal and regulatory differences governing the provision of Internet access by these companies. As part of that assignment, we plan to review municipal policies on open access issues.

simultaneous marketing and sale of a package of varied telecommunications services including, for example, local and long-distance telephone service, Internet access, wireless telephone service, and video services.

The further development of competition in local telephone markets will depend, in part, on the resolution of several key issues that may have thus far affected that development. In particular, the act requires incumbent carriers to provide competing carriers with access to elements of their telephone networks, such as equipment and facilities, to enable those competing carriers to order and provide service to their own customers. However, our discussions with competing and incumbent carriers in the five states we visited, as well as with FCC staff, suggest that providing this access has been difficult because these incumbents' systems were not originally designed to be accessible to users external to the incumbent carrier. In addition, some competing carriers in the five states told us that negotiating the necessary agreement that details the terms and conditions governing the business relationship between an incumbent and competing carriers—referred to as an interconnection agreement—can take a significant amount of time and thereby delay their market entry. Similarly, some of the competing carriers we spoke with in the five states said that negotiating the placement of their equipment in an incumbent's facilities can take a significant amount of time. Incumbent carriers noted, however, that they had invested money and other resources to make elements of their telephone network accessible to competing carriers, had signed interconnection agreements, and had allowed competing carriers to place their equipment inside their own facilities.

Competing carriers in the five states also told us that the act and accompanying rules needed better enforcement. We found, through our discussions with FCC officials and our survey of staff at the 50 state commissions, that state and federal regulators recognize their role is changing to become less focused on traditional rate-setting regulation and more focused on mediating disputes among carriers and enforcing laws and regulations. Consequently, federal and state regulators are in the process of adjusting their enforcement tools in ways that may lead to a greater focus on enforcement. For example, FCC recognizes the need to develop greater staff expertise on enforcement issues and recently created a new bureau to focus exclusively on enforcement. FCC has also instituted a formal expedited process for resolving complaints against telecommunications carriers called the "accelerated docket." In addition, regulators at the state and federal level are working with carriers to

establish systems that will measure incumbent carriers' performance in providing service to competing carriers and automatically assess penalties against incumbent carriers that are not in compliance with the act.

The 1996 act and its implementing regulations imposed significant changes on local telephone service markets. In the years since the act's passage, competing carriers have developed entry strategies, incumbent carriers have responded to the obligations imposed on them by the act and have simultaneously undertaken their own new strategies, and regulators and the courts have played roles in implementing and interpreting the act. Despite the minimal competition that has emerged thus far in the market, further competition seems likely to develop in local telephone markets because competing carriers continue to expand their market share, these carriers are using all entry modes envisioned by the act, legal and regulatory issues are increasingly becoming clarified, and the packaging of varied telecommunications services may enable firms providing other communications services to effectively compete for local telephone customers. Moreover, FCC and state regulators are taking steps indicative of greater enforcement efforts in the future. This report contains no recommendations.

Background

For the first hundred years after the invention of the telephone, federal and state laws and regulations helped shape the structure of the telecommunications industry. Over that period, the primary focus of these laws and regulations shifted from controlling the market dominance of AT&T to promoting competition in telecommunications markets. During the 1970s and 1980s, much of the effort to promote competition was geared toward the long-distance telephone market, but the Telecommunications Act of 1996 was designed, in part, to open local telephone markets to greater competition. Technological changes in the telecommunications industry have also led to changes in the structure of the telephone industry and in the laws and regulations governing it.

Laws and Regulations Have Helped Shape the Structure of the Telephone Industry

After receiving patents for telephone technology in 1876 and 1877, Alexander Graham Bell and the Bell Telephone Company (later called the American Telephone and Telegraph Company and then AT&T) controlled the developing market for telephone service. Once the patents expired, however, a myriad of independent local telephone service providers entered the market, and by 1907, the independents provided just over 50 percent of local telephone service in the United States. AT&T responded by

reducing its prices in markets directly threatened by competitors, purchasing independent telephone providers, and refusing to allow other carriers to interconnect with its network. This refusal disadvantaged AT&T's rivals because they were unable to route calls from their customers to customers on AT&T's much larger network. These actions made it difficult for independent companies to compete, and many accepted AT&T's offer to acquire them.

By the 1930s, communications had become so important to the country that the Congress passed the Communications Act of 1934, which, among other things, created FCC and gave it authority over interstate telecommunications, while leaving the oversight of intrastate telephone service to state regulators. For many years, AT&T was the primary provider of local telephone service, long-distance telephone service, and telephone equipment in the United States. AT&T carried roughly 80 percent of the nation's local telephone traffic by the early 1980s, and the remaining 20 percent of local traffic was carried by the independent local companies unaffiliated with AT&T. Beginning in the 1950s, new companies began trying to compete against AT&T's monopoly in the telephone equipment and long-distance markets. In 1974, the Department of Justice (DOJ) alleged that AT&T was undertaking anticompetitive actions aimed at stifling this new competition and filed an antitrust suit against the company. This case was resolved when a federal court approved a consent decree entered into by DOJ and AT&T in 1982. Under this decree, known as the Modification of Final Judgment, AT&T was required to divest its ownership of the 22 Bell Operating Companies, its local telephone subsidiaries. However, the company was permitted to continue manufacturing telephone equipment and offering long-distance service and to enter some markets from which it was previously excluded—notably the computer market.

The 22 Bell Operating Companies were reorganized into seven regional entities, which have since been reduced to four companies through mergers. While the consent decree permitted the Regional Bells to provide service within 161 designated local areas that covered much of the country, it limited the lines of business these companies could enter to ensure that their monopoly status in the local telephone market did not affect the development of competition in other telecommunications markets. For example, the Regional Bells were not permitted to provide long-distance telephone service or to manufacture telephone equipment without obtaining a waiver from the federal court.

By the late 1980s, new companies had begun to compete directly against incumbent local telephone carriers in some locations by building facilities that paralleled the incumbent telephone companies' networks—particularly in large cities.[3] To enhance their likelihood of success, however, these companies wanted some regulatory changes that would facilitate the interconnection of their networks with those of incumbent carriers. Some states enacted legislation or adopted regulations, and FCC put forth rules designed to facilitate competitors' entry.[4] Meanwhile, the Regional Bells were becoming increasingly dissatisfied with their exclusion from the long-distance telephone market and the extensive control by the federal court over their activities. These and other changes in the market led many experts, as well as some Members of Congress, to believe that the Communications Act was becoming outdated and that a major revision of the law was needed.

The 1996 Act and Its Implementing Regulations Establish a Framework for Greater Competition in Local Telephone Markets

The passage of the Telecommunications Act of 1996 constituted the first comprehensive amendments to the federal Communications Act since its enactment in 1934. One of the key goals of the act was to encourage competition in local telephone service. To do this, the act imposed a variety of obligations on incumbent carriers designed to facilitate new companies' entry via three modes envisioned in the act. The three modes of entry are as follows:

- Resale. This entry method allows new companies to resell, or act as retailers of, an incumbent's telephone services. Resellers purchase local telephone services from an incumbent at wholesale rates and resell the services to end users at retail rates.

- Access to Network Elements. This entry method enables new companies to lease parts of an incumbent's network—facilities and equipment that are used to provide local telephone service—at cost-

[3]Incumbent local telephone companies include the Regional Bells as well as many other independent local telephone carriers that were providing local telephone service before the 1996 act was passed.

[4]For example, in 1989, the New York Public Service Commission required New York Telephone, part of NYNEX, to allow certain types of competitors to interconnect with its network. Also, in 1995, the Illinois Commerce Commission approved part of Ameritech's "Customer First Plan," under which Ameritech made some pieces of its network available to competing carriers. In exchange, Ameritech expected to obtain pricing flexibility and approval to offer long-distance telephone service in its service region.

based rates. These leased parts of the incumbent's network are generally referred to as "unbundled network elements"—also known as UNEs—because they are specific, or discrete, parts or functions of the telephone network. Entrants provide local telephone service by leasing designated pieces of the incumbent's network or by leasing some pieces and combining them with their own facilities.

- Construction of New Facilities. Finally, carriers may enter local telephone markets by building entirely new facilities. Under a full "facilities-based" method of entry, an entrant builds all the facilities that it needs to serve customers, including the "last mile," or the connection to a user's premises. This method of entry still requires the incumbent to allow entrants to interconnect with the incumbent's network.

To facilitate competitors' entry into local telephone markets using these methods, the act prohibits states from restricting entry into the local telephone market and requires all telecommunications companies to interconnect their networks and facilities with those of others. While other obligations of the act were imposed on all local telephone carriers—for example, all telephone companies must allow users to keep their existing telephone numbers when possible and provide access to operator services and directory assistance without undue delays—additional competition-enhancing obligations were imposed only on incumbent carriers.[5] Among other things, incumbent carriers are required to negotiate, in good faith, agreements that lay out terms governing the interconnection of their networks when requested by competitors; allow entrants to resell the same services that the incumbents provide to their own retail customers; make UNEs available for purchase at rates that are based on their cost;[6] and allow competing carriers to "collocate," or place their own equipment in incumbents' central offices.[7] In addition, the Congress required the Regional Bells to demonstrate that they have adequately opened their networks to competitors before they can provide long-distance[8] telephone service in their designated local service areas.[9] Specifically, the act lays out a 14-point checklist (47 U.S.C. 271), which generally requires that a Bell Company demonstrate to regulators its compliance with the interconnection and network access requirements detailed in earlier sections of the act.[10]

[5]The market-opening obligations discussed here are contained in Section 251 of the Communications Act of 1934, as amended (47 U.S.C. 251).

[6]The act was not explicit about how "cost" should be calculated or defined. However, FCC and state commissions are charged with making this determination.

[7]If the incumbent local exchange carrier can demonstrate to the state commission that physical collocation is not practical for technical reasons or because of space limitations, the carrier may provide for "virtual" collocation. (47 U.S.C. 251(c)(6)).

[8]Long-distance service includes toll calls within "local access and transport areas" (LATA) and across LATAs. The Regional Bells are allowed to provide intraLATA toll service, but not interLATA toll service. In the remainder of this report, when we refer to "long-distance" telephone service, we are referring to interLATA toll service.

[9]The Bell Operating Companies were allowed to provide long-distance telephone service outside their local service areas as of the date of the 1996 act's enactment.

[10]Satisfying the 14-point checklist is a determination that FCC must make in approving a Regional Bell's entry into the long-distance market (see 47 U.S.C. 271(d)(3)).

In August 1996, FCC issued an order implementing the local competition provisions of the act.[11] Among the regulations included in that order, FCC established rules about how interconnection and collocation were to be provided, put forth a method that state commissions should use to establish prices for interconnection and UNEs,[12] and specified which parts of an incumbent's network must be made available to competing carriers (and are, therefore, UNEs). One of the elements that must, under FCC's order, be unbundled and provided to competing carriers as a UNE is an incumbent's "operations support systems"—the computer systems and personnel that entrants use to place orders and provision local telephone service.[13] After FCC released its rules, several telephone service providers and state regulators challenged the rules before the U.S. Court of Appeals for the Eighth Circuit. The Eighth Circuit overturned many of FCC's rules on the grounds that the commission had exceeded its authority and misinterpreted the law. Ultimately, in early 1999, the Supreme Court issued a decision that addressed many of the issues raised in the Eighth Circuit decision.[14] The Supreme Court, noting that the Telecommunications Act of 1996 was vague in some respects, affirmed FCC's rulemaking authority to implement the local competition provisions of the act and upheld most of FCC's rules. The case was sent back to the lower court for further proceedings consistent with the Supreme Court's decision.

Although FCC establishes nationwide guidelines for incumbent telephone service providers and state regulators, state regulators themselves have major roles in implementing key provisions of the act, several of which are directly related to promoting local telephone competition. For example, state commissions must approve or reject interconnection agreements, and they have a role in arbitrating and mediating these agreements if asked to

[11]This order was the first part of FCC's "competition trilogy," a set of rulemakings implementing the 1996 act. 11 FCC Rcd 15499 (released Aug. 8, 1996). The trilogy also includes orders relating to other key facets of telecommunications policy issues—universal service and access charges.

[12]FCC determined that the prices charged by incumbents for UNEs should be based on forward-looking economic costs and adopted a pricing methodology known as "Total Element Long Run Incremental Cost."

[13]FCC also required incumbent carriers to provide resellers with access to their operations support systems under section 251(c)(4) of the Communications Act. FCC further noted that providing nondiscriminatory access to these systems could be viewed as a "term or condition" of unbundling other network elements under section 251(c)(3).

[14]*AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366 (1999).

do so by the negotiating carriers. State regulators are also charged with developing and implementing cost-based prices for interconnection and UNEs.

Technology of Telephone Transmission Has Evolved Over Time

The technology used to transmit telephone calls has evolved since the invention of the telephone in 1877. In the conventional telephone network, "dialtone" is transmitted over a pair of copper wires from a telephone company's facility, known as a central office, to the caller's telephone when the handset is lifted. As the caller dials another party's number, the number pattern is received at the central office, and the call is routed through the telephone network and transmitted to the called party's telephone. When the call is answered, the two parties hear each other's voices because telephones convert sound into electrical signals that are transmitted through the telephone lines at both the calling and receiving ends.

In recent years, the conventional telephone network has been modernized. For example, a new generation of advanced electronic equipment is being installed in incumbents' central offices to improve the transmission of telephone calls. In addition, new delivery systems are being deployed and/or adapted to provide local telephone service. For example, fiber-optic cable—a higher-speed, higher-capacity alternative to copper wire—is being deployed by both incumbent and competitive carriers. Cable companies are also upgrading their facilities to transport two-way voice services over their existing coaxial cable transmission facilities. Wireless technologies, which do not require cables for the transmission of telephone calls, are providing another alternative to traditional wireline local telephone service.

While Little Competition in Local Telephone Markets Has Emerged, New Carriers Are Pursuing Varied Market Strategies

While competing carriers are still serving only a small portion of the local telephone market—approximately 3 percent—several carriers have entered the market using a variety of market strategies. These carriers are serving primarily urban business customers; however, some competing carriers are also serving residential customers and those outside the largest cities. We found that competing carriers were using all of the modes of entry envisioned by the Telecommunications Act of 1996—reselling incumbents' services, leasing UNEs, and building facilities. We also found that the fundamental manner in which telecommunications services are produced and marketed is changing as competing and incumbent carriers are pursuing strategies to offer customers packages of telecommunications

services, such as local and long-distance telephone service, Internet access, and video service.

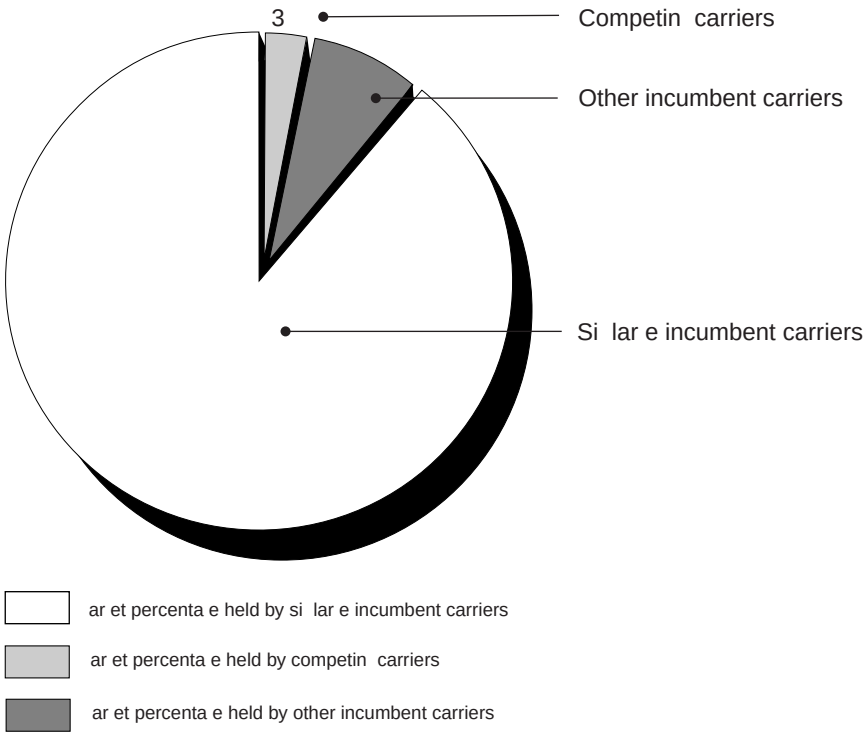
Competing Carriers Provide Only a Small Percentage of Local Telephone Service

According to FCC, as of December 1998—the latest point for which data are available[15]—there were more than 180 million local telephone lines in the United States. Although no comprehensive data are available on the numbers of lines served by different types of carriers, information from FCC's voluntary surveys and analysts' reports suggest that by the end of 1998, approximately 89 percent of these lines were served by six large incumbent local telephone service providers (the four remaining Regional Bell Companies, GTE, and the local telephone division of Sprint), about 3 percent were served by competing carriers,[16] and the remainder were served by the many other independent incumbent carriers (see fig. 1).

[15]At this time, FCC has only preliminary data for June 1999.

[16]Because competing carriers do not have to report the size of their customer base to regulators and few participate in FCC's voluntary surveys, there is no strictly reliable measure of the size of the market that bypasses incumbents' networks. FCC reports that analysts' estimates of the market also vary somewhat, generally placing competing carriers' market share between 2 and 3 percent of the market. Using survey data on competing carriers reported by New Paradigm Research Group, Inc., we estimate that competing carriers are serving about 3 percent of the local market.

Figure 1: Market Shares of the Local Telephone Market, by Type of Carrier

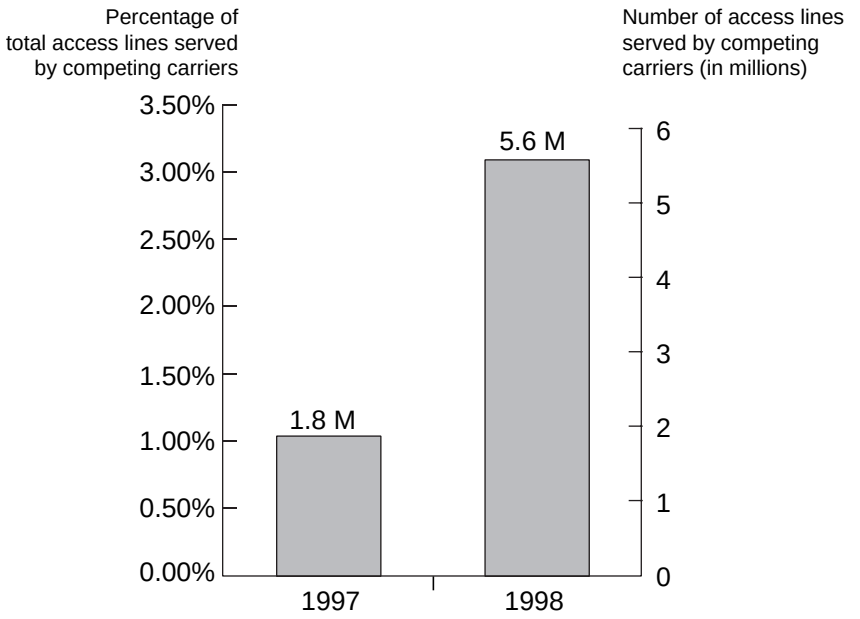


Note: Other incumbent carriers include over 1,300 mostly small local telephone carriers.

Source: GAO's analysis of FCC's and analysts' data.

Despite the small presence of competing carriers, our estimates—based on data from FCC and the industry—show that the number of lines they serve approximately tripled between December 1997 and December 1998 (see fig. 2).

Figure 2: Growth in the Number of Access Lines Served by Competing Carriers, 1997-98



Source: GAO's analysis of data from FCC and *The 1999 CLEC Report*™ from New Paradigm Resources Group, Inc.

While none of the competing carriers were serving large numbers of local telephone lines, some of these carriers are large telecommunications companies. For example, in 1998, one large telecommunications service provider had total revenues of $53.2 billion from its provision of varied telecommunications services—including long-distance and wireless services—although only a small fraction of its total revenues are from local telephone service. At the same time, many of the new companies providing local telephone service are much smaller. For example, 16 of the competing carriers we interviewed serve fewer than 100,000 local telephone lines, and 15 have less than $100 million in revenues. The six large incumbent companies also vary considerably in size—the largest of these carriers as of 1998 earned $26 billion from its provision of domestic telephone services in that year and served about 41 million telephone lines, while the smallest of these carriers earned $5 billion from its local telephone operations and served about 7 million telephone lines.

Our analysis of the status of competition in local telephone markets was limited because systematically collected data were not available on the local telephone service that competing carriers provide throughout the country. FCC recently acknowledged its own difficulties in evaluating the degree of competition in its October 1999 Notice of Proposed Rulemaking on Local Competition and Broadband Reporting.[17] In that notice, FCC stated that more data on companies' provision of local telephone and broadband services (such as high-speed connections to the Internet) are needed to evaluate the effectiveness of the Commission's decisions and otherwise understand the development of competition in these markets. Obtaining such data would allow parties to better understand and evaluate the level of competition in this evolving market.

Most Competing Carriers Focus on Urban Business Markets, but Some Choose to Serve Other Markets

In its August 1999 report on competition in local telephone markets, FCC provided statistical support showing that competition is expanding most rapidly in urban business districts. In addition, staff at the state utility commissions we surveyed reported that competition was developing more rapidly in business markets than in residential markets. For example, staff at 36 state commissions reported to us that large business markets were very or somewhat competitive, while staff at 45 state commissions said that residential markets were not very competitive or had no competition at all. In addition, staff at many of the state commissions explicitly noted in their comments that competition was developing most rapidly in urban business areas within their states. Many of the incumbent carriers we spoke to noted that the urban business market was one of the markets being targeted by competing carriers.

Competing carriers are focusing on the urban business market because it is generally more profitable than other local telephone markets. In particular, the concentration of customers in urban areas reduces the cost of service because it shortens the average length of the telephone line that connects a customer's premises to a telephone company's primary facilities. Additionally, business users can generate more revenue and be less costly to serve because businesses are more likely than residential customers to buy a greater volume and variety of telecommunications services. The greater profitability of serving urban business markets is also related to the prices—set by regulators—that incumbent carriers charge for telephone service. Regulators set the rates that incumbent telephone companies

[17]FCC 99-283, Oct. 1999.

charge for local business telephone service, special features (such as caller ID and voice mail), and long-distance telephone service at levels that are high relative to cost so that they could set the rates for residential and rural local telephone service at levels that are low relative to the cost of providing the service, while still enabling the companies to earn a profit. Thus, new carriers are likely to find it profitable to serve urban business customers because incumbents' prices tend to be high relative to the cost of serving these customers. This pricing structure may change as FCC and the states work, as required under provisions of the 1996 act, to make the subsidies that have been implicit within the rate structure more explicit.

In the five states we visited, we interviewed 24 competing carriers that are using a variety of market strategies and are often serving more than one market segment.[18] Some of these carriers focused mostly on serving large businesses in large cities, while others focused on serving businesses in smaller cities, and more than half served at least some residential customers. In addition, a number of these carriers were providing service outside the urban business market, including the following:

- Some competing carriers had chosen to serve smaller cities or smaller businesses in order to focus their entry in areas where larger competing carriers would be less likely to operate.

- Several competing carriers were targeting small- and medium-sized businesses by offering them the same kinds of personal service that larger carriers offer only their largest business users. These companies told us that by developing highly efficient support systems, they can profitably offer relatively specialized services to these businesses.

- Some competing carriers that were already providing video or long-distance services to consumers in residential markets—in particular, cable and long-distance companies—are focusing their entry in these areas.

[18]One of the carriers we interviewed does not provide voice services.

- In New York City, Chicago, and southern California, competing carriers were choosing to serve residential customers in multiple dwelling units, which include apartment buildings and condominiums. A carrier in southern California told us that this market is attractive because a third to a half of the residential customers in California live in multiple dwelling units. In addition, because residential users are highly concentrated in these buildings, they can be less expensive to serve.[19]
- Some carriers had found a profitable niche serving residential consumers who could no longer obtain telephone service from incumbent providers because they had not paid their bills. These competing carriers charge a prepaid amount as high as $49 a month for service strictly limited to the local calling area.

Competing Carriers Are Using All Modes of Entry Envisioned by the Act

The 1996 act outlined three means by which competing carriers could provide local telephone service: reselling incumbents' services, leasing incumbents' network elements, and constructing their own facilities. National data and our interviews with competing companies indicated that entering companies are pursuing all of these means, to varying degrees.

Resale

FCC reported that in December 1998, about 1.9 percent of the access lines in the United States were being served by resellers.[20] In responding to our survey of the 50 state utility commissions, staff at 25 of the commissions said that resale constituted a major portion of competing carriers' service to residential customers in their states, while staff at 18 commissions said that resale constituted a major portion of competing carriers' services to business customers. In addition, in about 23 states, commission staff reported that they expect the use of resale to increase in both business and residential markets.

Although resale is the most common entry mode employed by competing companies, the resellers we interviewed almost universally told us that resale is not a profitable means of providing local telephone service. They noted that resale can be a good way to enter the market quickly and build a customer base before investing in facilities. However, these carriers told us

[19]Despite their focus on serving multiple dwelling units, competing carriers undertaking this strategy told us they are having problems accessing essential telephone facilities in these properties.

[20]FCC's preliminary data for June 1999 suggest that resale has continued to grow modestly as a percentage of access lines.

that they cannot earn a profit from reselling incumbents' local telephone service because there is not a great enough difference between the wholesale rates resellers pay incumbent carriers for service—rates set by state commissions in accordance with specifications in the 1996 act—and the retail prices resellers can charge their own customers. Nevertheless, one competing carrier told us that carriers may pursue this strategy because of the profits they earn by providing customers with packages of telecommunications services.

Access to Network Elements

FCC reported that in December 1998, only two-tenths of 1 percent of the telephone lines in the United States were being served by competing carriers that were leasing UNEs from incumbent carriers.[21] Nevertheless, FCC's data show that competing carriers have collocated their equipment in the incumbents' central offices that provide almost 50 percent of the nation's local telephone lines, indicating that competing carriers may have the potential to serve many more customers through the leasing of UNEs. Staff at utility commissions in only four states said that competing carriers were using UNEs to deliver a major portion of their service to businesses, and staff in only two states reported that competing carriers were using UNEs to deliver a major portion of their service in residential markets; however, staff at 26 of the state commissions expected the use of UNEs to increase in both residential and business markets in the future. Additionally, 15 of the companies we interviewed were providing local telephone service to some of their customers by combining incumbents' UNEs with elements of their own networks.

[21]FCC's preliminary data for June 1999 suggest that the use of UNEs has grown markedly as a percentage of access lines, although the use of UNEs still accounts for less than 1 percent of the market.

Competing carriers' decisions to provide service using UNEs depended, in part, on the prices of these elements. Like the wholesale rates that resellers pay incumbent carriers, the rates that entrants pay for UNEs are set by state commissions in accordance with provisions of the act and direction from FCC. FCC directed that the states use a forward-looking economic cost methodology to set these rates.[22] Under this approach, rates would be based on the forward-looking cost to incumbent carriers of providing the UNE using the most efficient technologies currently available—a method that may lead, in many cases, to rates that are lower than would be realized under other cost methods.[23] In the five states we visited, the commissions were in various stages of setting prices for UNEs.

Some competing carriers are attempting to provide local telephone service by leasing an incumbent's entire set of UNEs—a method that has come to be called the UNE-Platform. Although the act did not specifically mention the UNE-Platform as an entry method, it did allow competing carriers to purchase combinations of network elements. Some competing carriers told us that because UNEs must be sold at rates based on cost, this entry method can be more cost-effective than resale but still has the advantage of requiring minimal investment. According to FCC, very little service is currently being offered using the UNE-Platform. In responding to our survey, staff at only one state commission reported that the UNE-Platform was the major method being used by competing carriers to provide service to both business and residential users in their state. In one of the five states we visited, the Bell Company was being explicitly required to offer the platform, and a competing carrier reported that, as a result, the company had acquired upwards of 60,000 new local residential customers in that state during the first 5 months of 1999.[24]

Construction of Facilities

The degree to which local telephone service is provided by competing carriers that rely entirely on their own facilities is not well known because these providers do not have to report information about their businesses to

[22]The appropriateness of the forward-looking cost method is currently under review by the U.S. Court of Appeals for the Eighth Circuit.

[23]FCC has also directed states to "deaverage" UNE rates across urban and rural regions so that UNE prices more accurately reflect the differential cost to incumbents of providing UNEs in these different settings.

[24]In another of the states we visited, the incumbent carriers were being required to offer the UNE-Platform as part of the standard interconnection agreement.

regulatory authorities and do not purchase services on an individual telephone line basis from incumbents. These full-facilities-based competing carriers are employing a variety of strategies. For example, we spoke to some carriers that were targeting business customers by deploying fiber-optic cable within and around cities. Additionally, some carriers we spoke to are reconfiguring existing cable systems or building new systems to provide local telephone service mostly to residential customers. While estimates show that full-facilities-based carriers were providing local telephone service to only about 1 percent of the national market at the end of 1998, FCC estimates that the amount of fiber-optic cable owned by competing carriers increased fivefold between 1995 and 1998. Some full-facilities-based carriers are also using wireless technologies. For example, the wireless carrier we interviewed was using a fixed wireless technology to serve customers primarily in multiple dwelling units in large cities.

Competing and Incumbent Carriers Are Providing Packages of Telecommunications Services and Entering New Markets

Both competing and incumbent carriers are providing packages of telecommunications services—including local telephone service, long-distance service, data services, Internet access, video service, wireless telephone service, and directory assistance—to consumers.[25] This focus is generally attributed to consumers' desire for a "one stop shop" for their varied telecommunications needs. Additionally, some savings in the cost of providing these services can occur when several services are offered over the same infrastructure or when the marketing and administrative functions for several services can be combined. The tendency of carriers to provide an array of telecommunications services is fundamentally changing how carriers operate in the market and how telecommunications services are bought and sold.

To provide an array of services, many communications companies are redesigning their infrastructures to expand their capabilities. For example, cable television companies are modifying their networks—which were initially designed for one-way video transmission over coaxial cable wire—to accommodate high-quality, two-way voice and data transmissions as well. Similarly, incumbent telephone companies are developing higher-capacity transmission technologies to remain competitive in the market for

[25]Another new line of business for incumbent carriers—though not a part of the package of services they supply to retail customers—is the wholesale services (i.e., resale and UNEs) they provide to competing carriers. Officials of several of the incumbent carriers said they recognize that these wholesale operations are becoming increasingly important.

high-speed interactive data transmission (for example, Internet access). In addition, some mobile and fixed wireless companies are providing telephone service, data services, and, in some cases, video services.

Both competing and incumbent carriers are also entering new markets, sometimes through corporate mergers. For example, some of the incumbent carriers told us they were starting to enter other incumbents' traditional territories to compete—that is, they are becoming competing carriers in other incumbents' regions. In addition, both competing and incumbent carriers are entering new markets by merging with other companies whose telecommunications infrastructures or service offerings complement their own. For example, some of the competing carriers have been acquired by long-distance companies. Also, Bell Atlantic expanded its service area by acquiring NYNEX, and SBC expanded its area by acquiring PacTel, Southern New England Telephone Company, and Ameritech. US WEST is awaiting FCC's approval of its proposed merger with Qwest, a provider of data and long-distance telephone services.

A unique challenge for the Regional Bell Companies in attempting to offer a competitive package of telecommunications services is the prohibition on their providing long-distance service within their service region until they have received approval from FCC through the process outlined in the 1996 act. In December 1999, Bell Atlantic received approval from FCC to enter the long-distance market in its New York region.[26] On January 10, 2000, SBC Communications filed an application with the FCC to provide long-distance service within the state of Texas. The two remaining Regional Bell Companies are pursuing FCC's approval but have made varying degrees of progress toward attaining it.

Several Issues Affect the Development of Competition in Local Telephone Markets

Several issues may have slowed the development of competition in local telephone markets. Competing carriers, incumbent carriers, and regulators cited difficulties in making incumbent carriers' operations support systems—needed to perform critical business functions—accessible to competing carriers. Competing carriers and regulators also cited difficulties in negotiating interconnection agreements and obtaining adequate collocation space as problems that may have inhibited or delayed market entry. Additionally, some competing carriers stated that greater

[26]After FCC's approval of the Bell Atlantic 271 application, AT&T and Covad Communications challenged this approval in federal court.

enforcement of the act would help to foster a more competitive environment in local telephone markets.

While Critical to the Development of Competition, Equivalent Access to Incumbent Carriers' Operations Support Systems Has Been Difficult to Achieve

In its order on local competition implementing the 1996 act, FCC required incumbent local telephone carriers to give competitors access to the incumbents' computer systems and personnel that competing carriers need to perform critical business functions—systems known collectively as operations support systems (OSS).[27] FCC specified that competitors must have access to incumbents' OSS so that they can perform business functions such as ordering, provisioning, and maintaining telephone service for their customers.[28] According to FCC, competing carriers must be able to use these systems to perform these business functions as easily as incumbents perform these functions for themselves in terms of quality, accuracy, and timeliness. If incumbent carriers access these business functions electronically, then they are required to provide competitors with equivalent electronic access to these functions; likewise, if incumbents perform these functions manually—by telephone or fax—then the same access is required for competitors.[29] In responding to our survey, staff at nearly all of the state regulatory commissions said that competitors' access to incumbents' OSS functions is very important to the development of local telephone competition.

Obtaining equivalent access to OSS functions is important for competing carriers to attract and retain customers. The competing carriers we interviewed often cited deficiencies in access to OSS functions as a serious impediment to the development of competition. Some competing carriers noted that incumbents' systems were frequently unable to complete electronically placed orders without manual intervention, especially for

[27]In its local competition order, FCC identified OSS as an "unbundled network element" and determined that incumbents must provide access to OSS functions under their duty to provide UNEs and their duty to offer resale services. Incumbents must provide access to computer systems that contain information related to telephone service, such as available service plans and installation options, customer profiles, and the availability of telephone numbers.

[28]FCC specified five critical business functions: (1) pre-ordering (developing the customer profiles—e.g., name, address, and existing telephone services—necessary to place accurate orders for potential customers); (2) ordering; (3) provisioning (executing customers' requests for local telephone service); (4) maintenance and repair; and (5) billing.

[29]For OSS functions for which there is no retail analog, incumbents must provide access sufficient to give efficient competitors a "meaningful opportunity to compete."

complex orders. In addition, competing carriers noted that ordering services from more than one incumbent carrier can be cumbersome because incumbents use different ordering systems. Competing carriers also told us that incumbents were not confirming orders and assigning installation dates in a timely manner. Additionally, competing carriers told us that incumbents occasionally left customers without telephone service by failing to transfer them to the competitor's system at the designated time. Some carriers also claimed that they are not notified in advance if the facilities at a customer's site require special preparation before installation and are then charged excessive fees for the special preparation. Finally, competing carriers noted that incumbents' wholesale operations staff often failed to handle service requests in a timely and effective manner, a problem that carriers attributed partially to a lack of training and experience on the part of incumbents' wholesale personnel.

Incumbent carriers acknowledged that there have been problems with adapting their OSS to the needs of entering companies. Incumbents said that providing comparable access to their support system functions is difficult, however, because these computer systems were designed at an earlier time for internal use by the incumbent, not for external use or use by other companies. Incumbents also noted that giving competitors access to these complex systems requires significant technical modifications, resources, and time. They said they are expending significant effort to improve the ability of competitors to access these system functions. For example, one incumbent carrier said that it now offers competing carriers the choice of five electronic systems and provides an electronic handbook on the Internet to facilitate competitors' access. That incumbent also showed us materials that it is using to train competing carriers' personnel to better use the available systems, while another incumbent said that it is training its own personnel to provide better service to its wholesale customers. However, incumbent carriers said that problems still occur when competing carriers' personnel make errors or are unwilling to use the appropriate electronic systems.

An FCC official agreed with incumbents that an important reason access to OSS is difficult to provide is that such systems were designed for internal use. FCC officials further noted that there were no national standards for OSS and, as a result, these systems varied considerably across carriers. A DOJ official and state officials also told us that problems in accessing OSS functions pose the primary impediment to the development of local telephone competition. Additionally, staff at 27 state commissions reported that the Regional Bell Company in their state was working to address OSS

issues and had made at least "some" progress. In the states where the Regional Bell Companies are seeking authority to provide long-distance service, the state commissions have been helping to address OSS issues by testing incumbents' OSS. In one region, several state commissions are cooperating with each other and with the incumbent carrier to test its OSS functions.

Some Competing Carriers Cited Difficulties Negotiating Interconnection Agreements

The 1996 act requires incumbent carriers to negotiate agreements that stipulate how and under what conditions competing carriers will connect their facilities and equipment with those of incumbents.[30] The act and FCC's implementing rules provide competing carriers with several options for developing interconnection agreements: negotiating their own agreement, adopting an agreement that another carrier has negotiated with the incumbent in that state, or choosing provisions from other signed agreements within the state to form a new agreement or to combine with other newly negotiated provisions.[31] The act authorizes state utility commissions to mediate or arbitrate interconnection disputes between the carriers if requested by the carriers and requires the state commissions to approve or reject all agreements.

Some competing carriers were concerned that difficulties they are having negotiating interconnection agreements may delay their market entry. These carriers told us that incumbent carriers did not always negotiate contracts in a timely manner and that disputes involving the agreements were sometimes slow to be resolved. For example, one carrier told us that it can take almost a year to negotiate an agreement with an incumbent. In an arbitration proceeding involving another carrier, the arbitrator stated that the incumbent carrier had not been negotiating in good faith as required by the act. Some competing carriers told us that they opt into existing contracts even when the contracts are not relevant to their needs because doing so eliminates costly and time-consuming negotiations.

[30]The terms and conditions of interconnection agreements are to be just, reasonable, and nondiscriminatory.

[31]The last of these options, known as "pick and choose," has been the subject of court challenges; however, in Jan. 1999, the Supreme Court affirmed FCC's interpretation of the statutory language that requires an incumbent carrier to allow competing carriers to choose options from prior contracts signed by that incumbent.

Incumbent carriers, on the other hand, said they are working to facilitate negotiations on interconnection agreements and point to a large number of signed interconnection agreements as evidence that there are no major problems for competitors in this area. According to a telecommunications trade association, incumbent and competitive carriers had signed over 5,400 interconnection agreements nationwide as of February 1999, 3 years after the 1996 act became law. One incumbent carrier we interviewed said it had concluded over 400 agreements that had been approved by the state and was currently negotiating another 750.[32]

The five utility commissions in the states we visited had approved and arbitrated interconnection agreements. For example, in 1998, the Illinois utility commission approved 37 agreements. In Texas, the public utility commission has responded to complaints from some competing carriers by developing a preapproved interconnection agreement that competing carriers may adopt. While one competing carrier expressed concern that the terms of the proposed interconnection agreement would not meet its needs, the staff of the Texas commission noted that the agreement provides consistency and addresses certain issues that earlier interconnection agreements did not discuss.

Some Competing Carriers Reported Difficulties Obtaining Adequate Collocation Space

Under the 1996 act, an incumbent carrier must allow competing carriers to collocate, or place their equipment in the incumbent's central offices, on nondiscriminatory, just and reasonable rates, terms, and conditions. Several of the competing carriers we interviewed reported difficulties in obtaining adequate collocation space. These difficulties included insufficient collocation space, long delays in providing space, high rates for providing the cages (metal frames) within which competing carriers store their facilities, and inconvenient access to collocation equipment. For example, after an incumbent carrier reported having no space in its central offices, the state commission found that the incumbent could convert space that was being used for less important functions. Even when collocation space is available, staff at a state utility commission said it takes as long as 18 months for competing carriers to obtain collocation space. Additionally, some competing carriers alleged that incumbents charge high rates for collocation. Finally, competing carriers reported that incumbents adopted policies that made it inconvenient for the competing

[32]This incumbent reported that only 60 of the 440 companies with which it has reached an interconnection agreement are actually providing local telephone service.

companies to service their collocation equipment. For example, some competing carriers told us that their access within central offices is so limited that, in some cases, they cannot use restrooms, elevators, or other facilities in the offices.

Competing carriers were collocating equipment in many incumbents' central offices in the five states we visited. According to FCC's August 1999 report on local telephone competition, as of the end of 1998, approximately 50 percent of the incumbents' customer telephone lines were served by central offices where competing carriers had collocation arrangements. Incumbent carriers told us that collocation space is expensive to prepare and maintain. Additionally, while incumbent carriers told us that collocation space is limited, one such carrier also described its efforts to provide space when requested. For example, this carrier showed us space that had been converted from a break room for employees to collocation space. Another incumbent carrier also told us that it had made restrooms and frame rooms available to designated employees of competing companies.

Staff at several state commissions mentioned collocation as one of the 1996 act's most difficult requirements to satisfy. Until recently, FCC allowed incumbent carriers to require competing carriers to place their equipment in a cage that is at least 100 square feet—specifications that competing carriers believed increased the difficulty and cost of obtaining adequate collocation space. Recognizing that collocation was a continuing problem for new entrants, FCC issued new rules on March 31, 1999, that allow collocators to share a collocation cage with other competing carriers or to install their equipment in uncaged space. Some of the competitors with whom we spoke believed that the new rules would improve their ability to collocate their equipment in incumbents' central offices.

Competing Carriers Consider Enforcement Necessary to Open Local Telephone Markets to Competition

FCC and state utility commissions have the primary responsibilities for enforcing the 1996 act. However, according to the competing carriers we spoke with, the act is not being adequately enforced. Incumbent carriers also expressed concerns about the regulators' implementation and enforcement of telecommunications laws. As a result of the act, federal and state regulators are having to adapt to changing roles, and many are taking actions that may improve enforcement, such as resolving complaints more quickly and adopting performance measures.

Competing Carriers Say Enforcement Is Critical to Their Success

Although many competing carriers told us that the Telecommunications Act of 1996 does not need to be revised, several said that swifter enforcement of the law is needed. In particular, carriers emphasized that their market strategies are often contingent on their ability to enter the market rapidly and develop a customer base. Therefore, quickly resolving the problems that they described to us, such as difficulties in accessing an incumbent's OSS, negotiating interconnection agreements, or obtaining collocation space, is crucial for the successful implementation of their business plans. Moreover, several competing carriers told us that regulators do not impose penalties, do not assess penalties in a timely manner, or levy penalties that are too small to influence an incumbent's behavior or fully compensate a competing carrier for the loss of its customers.

Despite their desire for greater enforcement, many competing carriers expressed concern about making direct complaints to enforcement authorities because they were reluctant to jeopardize their relationships with their only wholesale suppliers. These and other carriers were worried about losing their retail customers if those customers were alerted to problems the carriers were having with their primary wholesalers. Finally, some companies did not have the time or resources to be involved in protracted regulatory processes.

Some competing carriers noted that the process that Regional Bells must go through to gain approval to enter the long-distance market—known as the section 271 process—serves as an incentive for the Regional Bell Companies to open their markets to competition. These competing carriers said that Bell Companies seeking approval to offer long-distance service were more responsive to the concerns of competing carriers than were other incumbents that are already permitted to offer long-distance service in their service regions. These competing carriers are concerned about the loss of this incentive when the Bell Companies gain approval to enter the long-distance market.

Incumbent Carriers Also Express Concerns About Regulators' Implementation and Enforcement of Telecommunications Laws

The incumbent carriers we spoke with expressed some concerns about how regulators are implementing and enforcing the Telecommunications Act of 1996. The incumbents were concerned primarily about what they saw as a lack of clear guidance from FCC on what the Regional Bell Companies must do to pass the 14-point checklist required for entry into the long-distance telephone market. One incumbent carrier told us that it thought it was in compliance with the items on the checklist only to find that FCC considered its progress insufficient. However, FCC did not, in the

opinion of officials at this Regional Bell Company, provide adequate guidance on what actions the company would need to take to be in compliance with the checklist. One incumbent carrier suggested that FCC had raised the "hurdle" over time, increasing the requirements for satisfying the checklist. Representatives of some of these companies told us that even today, they do not have a clear sense of what will enable their companies to pass the checklist and gain approval to enter the long-distance market. However, one incumbent did say that FCC's replies to applications from Bell Companies to enter the long-distance market had provided somewhat more detailed guidance over time.

Regulators Adapt Enforcement Tools and Role to Changing Market

At the federal level, the Congress charged FCC with implementing the local competition provisions of the 1996 act. FCC has a variety of enforcement tools that can be used to implement these provisions, including, for example, the authority to issue penalties and resolve complaints. As previously noted, FCC also has the authority, after consultation with DOJ and the relevant state commission, to approve an application by a Regional Bell Company to enter the long-distance market in its local telephone service area.[33] In addition, states and state utility commissions have enforcement authority under the 1996 act and their own laws. In responding to our survey, staff at some state utility commissions indicated that their commissions had certain tools for enforcing their laws. For example, the authority to issue civil penalties or revoke carriers' operating licenses. Many of the states have an expedited process for handling complaints similar to FCC's, and some other states are considering the adoption of an expedited process. Staff at many of the state commissions believe, however, that their authority to assess fines is not adequate to enforce the laws and regulations that govern local telephone companies. Staff at some state commissions said that they have no fining authority and must rely on a court or other state agency to issue monetary penalties against a carrier or have fining authority that is restricted to specific retail abuses.

According to FCC officials, the 1996 act has shifted the balance between FCC's roles as an industry regulator and a market facilitator in such a way

[33]FCC is required to give substantial weight to DOJ's evaluation. If FCC determines that a Bell Operating Company has fallen out of compliance with the competitive checklist after authority to provide in-region long-distance service has been granted, FCC may issue an order directing the company to correct the deficiency, impose a penalty on the company, or suspend or revoke such authority.

that FCC now focuses more on mediating and refereeing differences among telecommunications providers. In particular, FCC officials told us that as telecommunications markets become more competitive, there will be less need for FCC to regulate carriers and more demand for the agency to ensure the efficient functioning of the market by mediating disputes and enforcing compliance with the law. Recognizing these changes, the relevant congressional committees recently approved FCC's plan for an enforcement bureau to strengthen the agency's efforts to enforce the law. This plan was implemented in November 1999. FCC officials also told us that the Commission recognizes the need for staff training in the enforcement area. FCC has likewise recognized the importance of swifter enforcement and has instituted an "accelerated docket," a formal expedited process to resolve all forms of complaints against telecommunications carriers.[34] In addition, FCC has used its authority to impose conditions on recent merger approvals as a way to encourage incumbents to further remove impediments to competition. For example, in approving the Bell Atlantic-NYNEX merger, FCC required the merged company to improve competing carriers' access to OSS by offering them a uniform computer interface in the states where Bell Atlantic now operates.

According to FCC officials, under FCC's authority to approve applications by Regional Bell Companies to enter the long-distance market in their local telephone service areas, the Commission has spent considerable resources clarifying the entry requirements for these companies. These officials said that they provided early guidance on satisfying the entry requirements set forth in the 14-point checklist in their August 1996 order implementing the local competition provisions of the 1996 act and in their response to the first application for entry into the long-distance market by a Bell Company. More recently, the officials said, they addressed the requirements for all 14 points in an October 1998 order denying Bell South's second application to enter the long-distance market in Louisiana. And, in a December 1999 document approving Bell Atlantic's application to enter the long-distance market in New York, they again provided guidance for satisfying all 14 points.

When we asked staff at the state utility commissions whether the role of the commissions had changed since the act's passage, staff at 48 commissions said that the role had changed, and staff at 36 of these

[34]In addition to formal proceedings, regulators are also using informal procedures to resolve many complaints.

commissions said that the role had changed greatly. Staff at some commissions said they were doing less traditional regulation, such as rate setting, while staff at many commissions said they were more involved in resolving disputes among carriers. These state commission staff characterized their roles since the act's passage as mediators, arbitrators, and referees. In addition, staff at 31 of the 50 state commissions reported at least some increase in the resources devoted to the regulation of telephone service during the act's first 3 years. However, staff at 40 commissions noted that at least some increase in resources was needed to address the increased workload that has occurred since the act's passage; staff at 31 of these commissions said they needed a moderate or large increase in resources.

Regulators and Carriers Believe Performance Measures Are Necessary to Ensure Compliance

One of the actions that regulators are taking to better enforce laws and regulations is to develop better information about the services incumbents are providing to competing carriers. In general, telephone companies use "performance measures" to measure the quality of the services they provide. For example, one performance measure might indicate how long it takes, on average, to install a customer's telephone service. Another measure might track the time required to repair a customer's telephone service. Competing carriers and regulators have urged the development of performance measures to ensure that incumbent carriers comply with the 1996 act's requirement to provide the same quality of service to competing carriers as they provide to their own retail customers. In addition, one senior DOJ official stated that performance measures are important for the development of competition in local telephone markets. Similarly, staff from 40 of the state commissions claimed that performance measures were very important for opening local markets to competition.

Performance measures are being designed to enable regulators, competing carriers, and incumbent carriers themselves to monitor incumbents' performance. In several of the performance measurement plans being considered by the state commissions, monetary penalties paid to a competing carrier are automatically imposed on an incumbent when one or more of the performance measures indicate that the incumbent has not provided adequate service to the competing carrier. Furthermore, some plans give state regulators the authority to impose additional financial penalties on an incumbent carrier that continues to provide inadequate service to its competitors. In its December 1999 approval of Bell Atlantic's application to enter the long-distance market in New York, FCC said that it will use the performance measures developed in New York to monitor Bell Atlantic's performance for at least 1 year after that company enters the

long-distance market. FCC says that if those measures fall sufficiently below the ones submitted by Bell Atlantic when it applied to enter the long-distance market in New York, FCC will take enforcement action, including the possible suspension or revocation of the company's authority to offer long-distance service in New York.

Incumbent and competing carriers hold different views on how performance measures should be evaluated, how many are needed, and how great the penalties should be.

- Incumbents and larger competing carriers differ over which statistical measures provide the most reliable and cost-effective information on incumbents' performance. Smaller competing carriers are generally more interested in whether measures of an incumbent's overall performance will appropriately reflect the quality of the service being provided to individual companies.
- The number of required performance measures varies among the states that have developed performance plans. Some incumbent carriers told us that often there were more performance measures than needed to comply with the act's requirements, while competing carriers favored additional measures to ensure that they have adequate data to determine whether incumbents are providing all of the required services.
- Incumbent and competing carriers also had different views on provisions in some of the performance plans that impose monetary penalties on incumbent carriers if they do not provide required services to competitors. Incumbents noted that the penalties in plans proposed by some states, including annual maximums, are sufficiently high. Competing carriers told us that the penalties in several of these plans are not high enough to encourage compliance with the performance standards and deter misconduct.

Observations

The Telecommunications Act of 1996 fundamentally changed the laws and regulations governing the telecommunications industry. However, some of the companies and regulators we spoke with noted, as did the Supreme Court, that the act was not entirely clear about how some provisions were to be implemented. In the 4 years since the act was passed, regulatory actions and court decisions have clarified some of these issues, while others are awaiting resolution or clarification. During the same 4 years, an array of companies—both incumbents and new competing carriers—have spent considerable resources responding to the incentives and obligations

created by the act. They have pursued new business plans, developed new technologies, invested in new facilities, adapted existing facilities, restructured their businesses through mergers, and otherwise refocused their companies toward the future. Thus, the time since the act's passage has constituted a necessary period of adjustment, for regulators and companies alike.

Given the many changes that have taken place and are ongoing, it is difficult to determine whether the degree of competition that has emerged in local telephone markets thus far should be viewed as disappointing or as about what should have been expected. Moreover, the market for local telephone service is continuing to evolve. For example, some forms of communication, such as mobile wireless telephone service and electronic mail, are already being substituted at times for traditional voice telephone service, and the Internet may soon provide further alternatives. Most important, the carriers we spoke with noted that customers are increasingly influenced in their selection of local telephone service providers by whether carriers can also provide other telecommunications services, such as long-distance service and Internet access. That is, consumers now focus less on purchasing individual telecommunications services and give more attention to simultaneously purchasing a package of these services. This packaging is thus blurring the traditional distinctions among telecommunications services and among providers, as firms that once provided only certain services broaden their market offerings. Understanding this trend is important for analyzing the further development of competition throughout this industry. As the marketplace continues to change, one of the many remaining challenges for regulators and the Congress will be to obtain the information needed to measure and track the development of competition.

Agency Comments

We provided a draft of this report to the Federal Communications Commission (FCC) and to the Department of Justice (DOJ) for review and comment. DOJ officials did not have any comments on this report. FCC officials, including the Associate Chief, Common Carrier Bureau, provided oral comments to us. They stated that that they had no significant disagreement with the overall findings and conclusions of the report. In addition, they provided a variety of technical clarifications and comments that we incorporated as appropriate.

We conducted our review from April 1999 through December 1999 in accordance with generally accepted government auditing standards. For more information on our scope and methodology, see appendix I.

As agreed with your offices, unless you publicly release its contents earlier, we plan no further distribution of this report until 14 days after the date of this letter. At that time, we will send copies of this report to interested congressional committees; the Honorable William E. Kennard, Chairman, Federal Communications Commission; the Honorable Joel Klein, Assistant Attorney General, Antitrust, Department of Justice; and other interested parties. We will also make copies available to others on request.

If you or your staff have any questions about this report, please contact me at (202) 512-7631. Key contributors to this report are listed in appendix III.

Stanley J. Czerwinski
Associate Director, Housing, Community
Development, and Telecommunications Issues

Objectives, Scope, and Methodology

To obtain information about competition in local telephone markets, the Chairman and the Ranking Minority Member of the Subcommittee on Antitrust, Business Rights, and Competition, Senate Committee on the Judiciary, asked us to conduct a study on emerging competition in local telephone markets. In response to this request, we analyzed (1) the development of competition in local telephone markets and the market strategies employed by new carriers in five states under the 1996 Telecommunications Act, and (2) the key issues affecting that development and the enforcement activities of federal and state regulators to address those issues. To obtain information about how competition is developing in local telephone markets, we visited five states—California, Illinois, New York, South Carolina, and Texas—that had varying demographic and telephone usage characteristics (see table 1). We chose these states because they varied by the date when competing carriers first entered the marketplace, contained urban and rural areas, varied in the status of the Bell Company's application for entry into the long-distance market, and had public service commissions with different focuses. In addition, these were among the states recommended by trade association officials and other experts whom we asked for recommendations.

Table 1: Income and Telephone Data for the Five Selected States

Criterion	California	Illinois	New York	South Carolina	Texas
Median household income in 1998	$40,934	$43,178	$37,394	$33,267	$35,783
Percentage of households with telephone service in July 1999	96.5%	91.7%	95.4%	91.1%	93.5%
Total number of telephone lines as of December 1998 (in thousands)	22,222	8,209	12,844	2,248	12,617
Percentage of total state lines provided to competing carriers for resale as of December 1998	1.4%	2.4%	1.9%	2.6%	3.0%
Percentage of resold lines provided by large incumbent carriers serving residences as of December 1998	51.5%	42.6%	23.8%	59.3%	59.4%
Percentage of total U.S. telephone revenue in 1997	11.8%	4.4%	7.4%	1.3%	6.9%

Sources: These data were the most recent available. The median household income numbers are from the U.S. Bureau of the Census, *State and Metropolitan Area Data Book 1997-98;* the remaining information is based on data in FCC's *Trends in Telephone Service* (Sept. 1999).

In these five states, we interviewed and collected information from officials of the Regional Bell Companies and other incumbent carriers, state public utility commissions, and 24 competing carriers. We chose the competing carriers by talking to experts and officials at state utility commissions. In each state, we attempted to identify competing carriers that served different markets and used different technologies to deliver local telephone service. To gain information about how competition is evolving more broadly and how well state officials feel they are able to implement the 1996 act, we mailed surveys to staff at the public utility commissions of all 50 states and received responses from all of them. The survey was sent to staff members who were charged with ensuring that knowledgeable staffers completed it. To ensure that all commissions participated in the survey and that we fully understood the answers to our questions, we telephoned all 50 state public utility commissions to pose follow-up questions and record all survey responses. In addition, some state commissions provided written responses by mail. The survey administered to the Alaska and Hawaii commissions differed from the one administered to the other 48 commissions because Alaska and Hawaii do not have Regional Bell Companies and, therefore, some of the questions were not applicable. Because we did not speak to commissioners, the survey responses represent the views of commission staff. See appendix II for the survey responses.

To identify the key issues affecting the development of competition and the enforcement activities of federal and state regulators to address those issues, we interviewed and collected information from officials at the Regional Bell Companies and other incumbent carriers, the state public utility commissions, and competing carriers in the selected states. We also used, as appropriate, information from our surveys of the state public utility commissions. In addition, we interviewed officials at and gathered information about FCC, DOJ, trade associations, and other experts. Moreover, we conducted literature searches and legal and regulatory research related to relevant federal and state legislation and legal documents.

Responses to Survey of State Utility Commissions

Note: Numbers show the number of commissions selecting each response.

Some questions were not answered by all respondents and therefore totals do not necesarily add to 50 states.

GAO Survey on Local Telephone Competition

Abbreviations/Definitions

BOC Bell Operating Company

CLEC competitive local exchange carriers, includes IXCs (interexchange carriers)

ILEC incumbent local exchange carriers, includes BOCs

Introduction

The U.S. General Accounting Office (GAO), a federal agency that reviews federal programs for the U.S. Congress, is surveying public utility commissions in the 50 states and the District of Columbia. This survey asks questions about implementation in your state of local telephone competition as provided by the federal Telecommunications Act of 1996. We plan to report the information from this survey and other sources in a report on the opening of local telephone markets to competition.

The information we are requesting focuses on the experiences of each state with its different mix of residents, businesses, and access to telephone services. This is the only way we can inform the Congress about the opening of markets to telephone competition on a nationwide basis.

We recognize that this survey is one of many that you receive, including others from our agency. Hence, we simplified the questions and omitted information that requires timely research. It should take 20 to 25 minutes for a knowledgeable person to complete the questionnaire.

If you have questions about this survey, please call Nancy Barry of our Boston office at 617-565-8871 or the GAO evaluator who contacted you.

Thank you for your assistance.

1

Please provide the following information.

Name: _____

Title: _____

Phone: _____

State: _____

Roles and Resources

1. To what extent, if any, has your state's role as a telecommunications regulator changed as a result of the passage of the 1996 Telecommunications Act? *(Check one.)*

1. [11] Very great change
2. [25] Great change
3. [7] Moderate change
4. [5] Some change
5. [0] Little or no change
6. [0] No basis to judge
7. [2] Other *(Please describe.)*

Note: Alaska and Hawaii were not asked questions regarding Section 271 and regional Bell carriers since they do not have such carriers.

2

2. How have the resources devoted to the regulation of local telephone service in your state changed over the last three years? *(Check one.)*

   1. [13] Increased greatly
   2. [18] Increased somewhat
   3. [14] Stayed about the same
   4. [2] Decreased somewhat
   5. [3] Decreased greatly
   6. [0] No basis to judge
   7. [0] Other *(Please describe.)*

3

3. How, if at all, has your state commission's use of the following sources of technical help changed since your state's implementation of the 1996 Telecommunications Act? *(Check one for each row.)*

	Increased greatly (1)	Increased somewhat (2)	No change (3)	Decreased somewhat (4)	Decreased greatly (5)	*No basis to judge (6)*
a. Hiring employees with technical expertise for our commission staff	4	16	28	2	0	0
b. Technical training for our commission staff	6	21	22	1	0	0
c. Using staff from our other state agencies for technical help	1	6	41	0	0	2
d. Using outside consultants for technical help	10	13	26	0	1	0
e. Contacting other state commissions for technical help	7	25	17	0	0	1
f. Contacting FCC staff for technical help	7	27	14	0	1	1
g. Contacting trade associations for technical help	4	11	33	0	0	2
h. Contacting local exchange carriers	10	16	21	0	0	1

i. Please list any other major sources of technical help below.

4. Which of the choices below best describes your state commission's most likely approach to addressing forward-looking pricing (such as TELRIC) for interconnection and network elements? *(Check one.)*

   1. [18] Develop our own state approach
   2. [0] Adapt another state's approach
   3. [7] Use approach developed by telephone carrier(s)
   4. [18] A combination of the above
   5. [0] Not planning to implement forward-looking pricing in our state
   6. [1] No basis to judge
   7. [6] Other *(Please describe.)*

5. Do you think that your state commission has access to the technical expertise you need to develop and/or use forward-looking prices? *(Check one.)*

   1. [19] Definitely yes
   2. [15] Probably yes
   3. [4] Uncertain
   4. [6] Probably not
   5. [2] Definitely not
   6. [0] No basis to judge
   7. [4] Other *(Please describe.)*

6. Please consider your state commission's current resources (staff, budget) compared to what you need in order to regulate local telephone service. What change, if any, do you need in your current resources? *(Check one.)*

   1. [9] Need large increase
   2. [22] Need moderate increase
   3. [9] Need some increase
   4. [7] Can stay about the same
   5. [1] No basis to judge
   6. [2] Other *(Please describe.)*

5

Competition for local telephone service

7. Below is a list of items from the 1996 Telecommunications Act that are related to opening local telephone markets to competition. As of August 1, 1999, please indicate whether the Bell Operating Company (BOC) in your state has satisfied your state commission's criteria for each item. *(Check one for each row.)*

Has the BOC satisfied your state commission's criteria for ...	Yes (1)	No (2)	*Uncertain (3)*
a. Collocation	7	9	31
b. Interconnection	17	9	20
c. Access to network elements	9	14	23
d. Access to poles, conduits, and rights-of-way at reasonable rates	21	5	20
e. Local loop transmission (unbundled)	12	9	25
f. Local transport from trunk side of LEC switch (unbundled)	13	7	26
g. Local switching (unbundled)	13	9	24
h. Access to 911	19	5	22
i. Directory assistance	16	6	24
j. Operator call completion services	17	4	24
k. White pages listings for other carrier's customers	21	5	20
l. Access to telephone numbers for assignment to other carrier's customers	22	3	21
m. Access to data and signaling for call routing and completion	17	5	18
n. Number portability	19	6	21
o. Local dialing parity	29	3	14
p. Reciprocal compensation	19	7	20
q. Resale of local telephone service	23	4	18

6

8. Please estimate the portion of local **business** telephone service in your state that is currently provided by CLECs. *(Check one.)*

   1. [0] None
   2. [13] Less than 1 percent
   3. [23] 1 to 5 percent
   4. [4] 6 to 10 percent
   5. [3] Over 10 percent
   6. [6] No basis to judge
   7. [1] Other *(Please describe.)*

9. Please consider the local **business** telephone service currently provided by CLECs in your state. About what portion, if any, is provided in each of the following ways? *(Check one for each row.)*

   If no CLECs currently offer local **business** telephone service in your state, please check this box and skip to the next question. → [ ]

	Portion of current CLEC service to business customers				
	Major portion (1)	Moderate portion (2)	Minor portion (3)	None (4)	*No basis to judge (5)*
a. Resale	18	6	14	1	10
b. UNE-Platform (UNE-P)	1	1	12	23	11
c. Facilities-based UNE (such as unbundled loops)	4	8	17	7	13
d. Total bypass of the local loop	3	14	14	2	16

10. Please give your best estimate of the changes you expect, if any, in the ways that CLECs will provide local **business** telephone service in your state over the next two years. *(Check one for each row.)*

	Increase greatly (1)	Increase somewhat (2)	Stay about the same (3)	Decrease somewhat (4)	Decrease greatly (5)	*No basis to judge (6)*
a. Resale	5	19	11	2	1	12
b. UNE-Platform (UNE-P)	14	16	7	0	0	12
c. Facilities-based UNE (such as unbundled loops)	13	18	7	0	0	12
d. Total bypass of the local loop	8	24	4	1	0	13

11. Please estimate the portion of local **residential** telephone service in your state that is currently provided by CLECs. *(Check one.)*

1. [4] None
2. [26] Less than 1 percent
3. [12] 1 to 5 percent
4. [0] 6 to 10 percent
5. [1] Over 10 percent
6. [6] No basis to judge
7. [1] Other *(Please describe.)*

8

12. Please consider the local **residential** telephone service currently provided by CLECs in your state. About what portion, if any, is provided in each of the following ways? *(Check one for each row.)*

If no CLECs currently offer local **residential** telephone service in your state, please check this box and skip to the next question. → [ ]

	Portion of current CLEC service to residential customers				
	Major portion (1)	Moderate portion (2)	Minor portion (3)	None (4)	*No basis to judge (5)*
a. Resale	25	3	7	0	11
b. UNE-Platform (UNE-P)	1	1	5	27	12
c. Facilities-based UNE (such as unbundled loops)	2	2	13	17	12
d. Total bypass of the local loop	3	3	11	13	16

13. Please give your best estimate of the changes you expect, if any, in the ways that CLECs will provide local **residential** telephone service in your state over the next two years. *(Check one for each row.)*

	Increase greatly (1)	Increase somewhat (2)	Stay about the same (3)	Decrease somewhat (4)	Decrease Greatly (5)	*No basis to judge (6)*
a. Resale	8	23	4	3	0	12
b. UNE-Platform (UNE-P)	8	18	8	0	0	16
c. Facilities-based UNE (such as unbundled loops)	5	21	10	0	0	14
d. Total bypass of the local loop	8	23	5	0	0	14

14. How would you characterize the current state of competition for **local** telephone service in your state for the types of service listed below? *(Check one for each row.)*

	Very competitive (1)	Somewhat competitive (2)	Not very competitive (3)	No competition (4)	*No basis to judge (5)*
a. Service for **large** businesses (for example, 100 lines or more)	9	27	12	0	2
b. Service for **medium** and **small** businesses (for example, fewer than 100 lines)	0	23	24	0	3
c. Service for residences	0	3	33	12	2

15. Over the next two years, how competitive do you think the following types of connections to customers will be in the market for local telephone service in your state? *(Check one for each row.)*

Connection to customer	Major competitor (1)	Moderate competitor (2)	Minor competitor (3)	Little or no presence (4)	*No basis to judge (5)*
a. Wireline operated by BOC or another ILEC	27	9	7	1	*6*
b. Wireline operated by CLEC (including IXCs)	5	25	13	1	*6*
c. Cable	4	19	10	5	*12*
d. Wireless	4	20	19	0	*7*
e. Other *(Please specify.)*	0	1	1	0	*2*

Section 271 of the 1996 Telecommunications Act

16. Has there been an active 271 docket in your state? Such an active docket would consider a Bell Operating Company's (BOC's) application for providing long distance telephone service under Section 271 of the 1996 Telecommunications Act. *(Check one.)*

    1. [18] Yes, there is an active docket open now
    2. [5] Yes, there was an active docket at one time, but it was closed without approval
    3. [7] No active 271 dockets
    4. [2] Already recommended approval for 271 application
    5. [6] Other *(Please describe.)*

17. What is your best estimate for when your state utility commission will recommend that the BOC in your state be allowed into the long distance market under the 271 process? *(Check one.)*

    1. [3] Have already recommended approval for 271 application
    2. [1] 1999
    3. [5] January 2000 – June 2000
    4. [9] July 2000 – December 2000
    5. [6] 2001
    6. [1] 2002 or later
    7. [19] Uncertain
    8. [0] Do not expect a 271 application to be submitted in this state
    9. [3] Other *(Please describe.)*

18. As of August 1, 1999, what progress has the BOC in your state made on the following items that relate to meeting the Federal Communications Commission's (FCC's) criteria for Section 271 approval? *(Check one for each row.)*

	Criteria completely satisfied (1)	Criteria almost satisfied (2)	Some progress (3)	No progress (4)	*Uncertain (5)*
a. Operating support system (OSS)	2	4	21	5	15
b. Uniform pricing for interconnection and network elements that is "forward-looking"	6	13	13	3	12
c. Performance measures for quality of services provided by BOC/ILEC to CLEC	1	4	21	7	14

19. Considering the current technologies (such as copper wire, fiber optics, cable, wireless) used to provide local telephone service in your state, how important are the following items for establishing competition in the local telephone market in your state? *(Check one for each row.)*

	Very important (1)	Moderately important (2)	Somewhat important (3)	Not very important (4)	*Uncertain (6)*
a. Operating support system (OSS)	46	2	1	0	0
b. Uniform pricing for interconnection and network elements that is "forward-looking"	33	10	6	0	0
c. Performance measures for quality of services provided by BOC/ILEC to CLEC	40	8	1	0	0

20. In your opinion, how difficult is it for the BOC to complete the **technical** steps needed to obtain your state commission's recommendation for approval of the BOC's 271 application? *(Check one.)*

1. [0] Extremely difficult, if not impossible
2. [10] Very difficult
3. [13] Moderately difficult
4. [7] Somewhat difficult
5. [4] Not difficult
6. [13] No basis to judge
7. [0] Other *(Please describe.)*

21. Has FCC provided enough specificity in its rule-makings for your state commission to know what the FCC requires for 271 approval? *(Check one.)*

1. [7] Definitely yes
2. [21] Probably yes
3. [8] Uncertain
4. [6] Probably not
5. [2] Definitely not
6. [2] No basis to judge
7. [1] Other (*Please describe.*)

13

Performance measures

22. In your opinion, what is the most appropriate level for establishing uniform performance measures for the quality of service provided by the BOC/ILEC to the CLEC? *(Check one.)*

    1. [8] National
    2. [15] Regional
    3. [24] State-wide
    4. [2] No basis to judge
    5. [1] Other *(Please describe.)*

23. ***Considering your answer to the previous question,*** which of the following groups would be most useful to help design these uniform performance measures for local telephone service? *(Check one for each row.)*

	Very useful (1)	Somewhat useful (2)	Not very useful (3)	*No basis to judge (4)*
a. Telephone industry forum or other group representing telephone companies	31	15	3	1
b. Groups representing users/consumers	19	20	6	5
c. Contract with independent third party	10	16	13	11
d. FCC	15	27	2	6
e. Your state commission	33	13	0	2
f. Other state commissions	18	27	0	5
g. Other	1	3	0	1

24. Please rate the helpfulness of FCC's ARMIS monitoring data. *(Check one.)*

1. [2] *Do not use ARMIS data*
2. [14] Very helpful
3. [8] Generally helpful
4. [19] Somewhat helpful
5. [2] Not very helpful
6. [5] Uncertain
7. [0] Other *(Please describe.)*

Enforcement

25. Considering both informal and formal complaints that your state commission has received, what portion of the complaints by a CLEC about an ILEC were formal? *(Check one.)*

1. [9] All/Almost all
2. [6] More than half
3. [4] About half
4. [9] Less than half
5. [15] Very few
6. [3] None
7. [3] No basis to judge
8. [1] Other (*Please describe.*)

15

26. On average, how much time elapses from the point at which your state commission receives a **formal** complaint from a CLEC (including IXCs) about an ILEC until the complaint is resolved? *(Check one.)*

1. [5] Less than 3 months
2. [16] 3 to 6 months
3. [10] 7 to 12 months
4. [2] 13 to 18 months
5. [0] 19 to 24 months
6. [0] Over 2 years
7. [12] No basis to judge
8. [5] Other (*Please describe.*)

27. Since the passage of the 1996 Telecommunications Act, what is the longest period of time your commission spent to resolve a **formal** complaint by a CLEC about an ILEC? *(Check one.)*

1. [2] Less than 3 months
2. [4] 3 to 6 months
3. [13] 7 to 12 months
4. [6] 13 to 18 months
5. [6] 19 to 24 months
6. [5] 2 to 3 years
7. [0] Over 3 years
8. [2] *No complaints filed yet*
9. [9] No basis to judge
10. [3] Other (*Please describe.*)

28. Does your state commission have an expedited process for handling formal complaints by CLECs concerning an ILEC? *(Check one.)*

1. [17] Yes
2. [9] No, but are considering one
3. [23] No
4. [1] No basis to judge
5. [0] Other (*Please describe.*)

29. What is the maximum fine that your state commission can use to enforce state laws and commission orders that relate to local telephone competition? *(Check all that apply.)*

1. [11] No fines are allowed
2. [16] Per event maximum

→ a. What is that amount?
(*Enter number.*)

$ _____

3. [23] Per day maximum

→ b. What is that amount?
(*Enter number.*)

$ _____

4. [2] No basis to judge
5. [14] Other (*Please describe.*)

30. Considering Sections 251 and 271 of the 1996 Telecommunications Act, do you feel that the fines available to your state commission are high enough to adequately enforce related state laws and commission orders? *(Check one.)*

1. [2] Definitely yes
2. [12] Probably yes
3. [10] Uncertain
4. [7] Probably not
5. [4] Definitely not
6. [8] *No fines allowed, but should have them*
7. [6] Other *(Please specify.)*

a. If you checked "4," "5," or "6" for Question 30 above, what fine would be high enough?

$ _____ per _____

31. Are there any other effective penalties that your state commission can use currently to enforce your state laws and commission orders regarding local telephone competition? *(Please describe.)*

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