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June 24, 1998

***BY HAND DELIVERY***

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Secretary
Federal Communications Commission
Room 222
1919 M Street, N.W.
Washington, D.C. 20554

RECEIVED
JUN 24 1998
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**Re:** **Petitions of Bell Atlantic Corp., US West Communications, Inc. and Ameritech Corp. to Remove Barriers to Investment in Advanced Telecommunications Capability, CC Docket Nos. 98-11, 98-26, and 98-32**

**Petition of the Alliance for Public Technology Requesting Issuance of Notice of Inquiry and Notice of Proposed Rulemaking to Implement Section 706 of the 1996 Telecommunications Act, RM No. 9244**

**Petition of the Association for Local Telecommunications Services for Declaratory Ruling Regarding Section 706, CC Docket No. 98-78**

**Southwestern Bell Telephone Company, Pacific Bell, and Nevada Bell Petition for Relief from Regulation Pursuant to Section 706 of the Telecommunications Act of 1996 and 47 U.S.C. § 160 for ADSL Infrastructure and Service, CC Docket No. 98-91**

Dear Ms. Salas:

Yesterday, on behalf of LCI International Telecom Corp. ("LCI"), the undersigned of Hogan and Hartson L.L.P., and Douglas Kinkoph, Vice President, Regulatory and Legislative Affairs, of LCI International Telecom Corp., met with Thomas Power, Legal Advisor to Chairman William E. Kennard. The purpose of the meeting was to discuss points made in the comments and reply comments filed by LCI in the referenced

dockets, and to discuss the attached LCI White Paper titled "CLEC Access to xDSL Technology: A Necessary Predicate for Widespread, Competitive Deployment of Broadband Telecommunications Services."

I have hereby submitted two copies of this notice to the Secretary, as required by the Commission's rules. Please return a date-stamped copy of the enclosed (copy provided).

Please contact the undersigned if you have any questions.

Respectfully submitted,

Linda L. Oliver

Linda L. Oliver
Counsel for LCI International Telecom Corp.

Enclosure

cc: Thomas Power (w/o enclosure)

## CERTIFICATE OF SERVICE

I, Barbara E. Clocker, hereby certify that on this 25th day of June, 1998, a copy of the Reply Comments of LCI International Telecom Corp. filed in CC Docket No. 98-78 was hand delivered or sent by first class mail (where indicated) to the parties listed below.

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# CLEC Access to xDSL Technology:

# A Necessary Predicate for Widespread, Competitive Deployment of Broadband Telecommunications Services

## LCI International Telecom Corp.

## June 1998


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## EXECUTIVE SUMMARY

The technology is now available to enable customers -- in particular, residential and small business customers -- to obtain high-speed access to corporate networks and the Internet over the same twisted pair of copper wires that now provides them with telephone service and relatively low speed Internet access. The potential of such technology -- generically referred to as "digital subscriber line" or "xDSL" -- is great. For that potential to be fully realized, however, it is essential that the local market-opening provisions of the Communications Act continue to apply as the local exchange network evolves to a broadband capability.

### The Section 706 Petitions

Three regional Bell operating companies (RBOCs) have asked the Federal Communications Commission to forbear from applying the unbundled network element and resale provisions of the Communications Act to their investments in xDSL technology. They argue that such forbearance is necessary to provide them the appropriate incentives to invest in such network improvements, even though each of them is already making such investments. The Association for Local Telecommunications Services (ALTS) also has filed a petition under Section 706, asking the FCC to make clear that the Act's market-opening provisions make no distinctions on the basis of the nature of technology used, or whether the local network is used to provide voice or data services.

As this White Paper shows, the ability of consumers to reap the fruits of competition in the local exchange, and to have a choice of providers of broadband telecommunications services (as well as Internet service providers), will depend on the ability of competitors to access the xDSL capabilities in the ILEC network.

## xDSL as the Next Step in the Evolution of Technology that Boosts Network Capability

All of the RBOCs and GTE have announced the commercial roll-out of xDSL-based services for small business and residential customers. This technology represents the next step in a natural evolution of improvements that boost the capability and speed of the existing network. Over time, telecommunications networks have moved from analog to digital transmission, from in-band to out-of-band signaling (SS7), from copper to fiber optic facilities, and from circuit-switched to packet-switched transmission systems. xDSL is just another step in this natural progression. It involves the use of electronics on the existing copper wires to increase the capacity of those wires -- just as ISDN services and T-1 lines (using HDSL electronics) have been provided.

## Three Entry Strategies

The Communications Act makes available three paths for entry into the local exchange market: (1) competition by construction of new local facilities and interconnecting with the incumbent; (2) lease of the ILEC's network elements (in whole or in part) to provide competing service; and (3) resale of the ILEC's retail

services at a wholesale rate. The RBOC petitions attempt to deny competitors the ability to employ the second and third strategies when it comes to xDSL capability.

Requiring competitive local exchange carriers (CLECs) to provide their own xDSL electronics and to collocate at central offices if they wish to provide xDSL services contradicts the letter and purpose of the Act. The Act allows neither regulators nor ILECs to decide when and where it is cost-effective to construct facilities in lieu of using ILEC network elements. By allowing new entrants to take full advantage of incumbent LECs' scale and scope economies, the Act enables competition to proceed more rapidly and to reach more broadly, to include customers that cannot be economically served by competitors if they must construct new facilities.

**No Legal Basis to Fence Off xDSL Technology**

The Act's forbearance provisions do not permit the FCC to forbear from applying the unbundling and resale provisions of Section 251(c) until that section is "fully implemented." The Commission therefore lacks authority to forbear. Section 706, upon which the RBOCs rely, does not confer additional forbearance authority on the FCC. Rather, Section 706 simply encourages the FCC and state commissions to use any of a number of tools they already possess to encourage the spread of advanced technologies. One of those tools, in fact, is the promotion of local competition -- a goal that would be thwarted by grant of the RBOCs' petitions.

In seeking forbearance, the RBOCs implicitly concede that the Section 251(c) unbundling and resale obligations apply to xDSL technology, and properly so.

The Act's definition of "network element" is broad, and includes all "features, functions, and capabilities" of a "facility or equipment used in the provision of a telecommunications service." 47 U.S.C. § 153(29). Nothing in the definition of network element or in the Act limits this provision to existing technology, to voice services, or to circuit-switching technology.

Loops equipped with xDSL electronics, and the local switching and transport associated with xDSL transmissions, are squarely within the definition of a network element. It would be incorrect to define a loop without regard to the electronics attached to the loop, which make the loop capable of transmission. The deployment of digital loop carrier (DLC) electronics in remote terminals is but one example of the integral role of electronics in enabling the loop to function.

**The High Costs Facing Competitors to Deploy Duplicate xDSL Technology**

In their petitions, the RBOCs claim to need extra incentives to deploy the large investment required to provide on a broad basis xDSL-based services. Yet they also claim that their competitors, who begin with virtually no local market share, should be required to make this same investment before serving a single customer, even though such competitors, by definition, do not have the volumes necessary to justify collocating DSLAM electronics in every central office and creating a duplicate, high capacity interoffice network that could haul the xDSL traffic back from every central office to the competitor's packet switch.

US West claims that it will not serve the less densely populated central offices without the extra incentive of being able to shield its investment in xDSL technology from competitors. But if US West can barely afford to serve those areas, it is clear that competitors, who can expect to gain much smaller volumes, will not economically be able to provide service in those areas (as well as in other more dense areas). The consequence of forcing competitors to install their own xDSL electronics, switching and local transport will be that few consumers will have a competitive choice of broadband telecommunications service providers.

Using the Dallas/Forth Worth LATA as an example, it becomes clear that with the typical charges now levied for physical collocation of DSLAM equipment, a new entrant the size of LCI could not economically serve the vast majority of central offices in that LATA. Even if physical collocation were made less expensive, or if alternatives to physical collocation were pursued, the result still is that many central offices are not likely to be served. Such calculations do not even take into account the huge cost disadvantages faced by entrants to duplicate the existing interoffice transport network of the ILEC, and does not consider the higher per-line costs faced by CLECs -- including, for example, the cost of hiring and dispatching technicians; engineering the network; maintenance, repair, and remote testing; and coordinating with the ILEC for installation. It also does not consider the delay and cost of negotiating, arbitrating, and resolving disputes with the ILEC.

## Consistency with the Future

Providing CLECs with access to xDSL technology also should help to ensure a competitive environment for Internet Service Providers (ISPs), because they would not face a potentially monopolistic provider of broadband telecommunications services. As pointed out by the Commercial Internet Exchange Association, the market-opening provisions of the Act are critical to ensuring the healthy development of a competitive market for ISPs.

It also would be both legally and technically unsustainable to attempt to create a more liberal regulatory regime for packet-switched networks and data services. The Act does not make such distinctions, and it is likely that voice will eventually be provided over broadband data networks. Regulators should refrain from drawing lines on the basis of technology and cost assumptions that will necessarily become obsolete as technologies develop and cost characteristics change.

## No Added Incentives Needed

The RBOCs do not need the added incentive of deregulated treatment of advances in technology. All the RBOCs and GTE have announced major commercial rollouts of xDSL based services, and will likely continue to expand such efforts. Deregulated treatment would mean, instead, that the ILECs would extend their current dominance in the local exchange into the future.

Enforcing the Act's market-opening provisions equally for all technologies and services is the best way to ensure wide deployment of advanced technology and the broad availability of competitive choices in advanced telecommunications services for all consumers.

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## INTRODUCTION

A number of RBOCs have asked the Federal Communications Commission (FCC) to forbear from requiring them to make available to their competitors the advanced capabilities of their incumbent local exchange networks. In particular, they seek to shield from competitors access to "xDSL" technology, which increases the capacity and speed of existing copper subscriber loops. 1/ These RBOCs (Bell Atlantic, US West, and Ameritech) rely on Section 706 of the 1996 Telecommunications Act, which prompts the FCC to take appropriate action to encourage the broad deployment of advanced technology, and requires it to conduct an inquiry this summer into that subject. 2/

The Association for Local Telecommunications Services (ALTS) also recently filed a petition under Section 706.3/ In that petition, ALTS urges the

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1/ Petition of Bell Atlantic for Relief from Barriers to Deployment of Advanced Telecommunications Services, filed January 26, 1998, CC Docket No. 98-11; Petition of US West Communications, Inc. for Relief from Barriers to Deployment of Advanced Telecommunications Services, filed February 25, 1998, FCC Docket No. 98-26; Petition of Ameritech Corporation to Remove Barriers to Investment in Advanced Telecommunications Capability, filed March 5, 1998, CC Docket No. 98-32.

2/ 47 U.S.C. § 157(note). In this paper, we limit our discussion to the availability of xDSL technology to competitors, and do not address the RBOCs' requests for interLATA relief for their data services or their other requests for forbearance from important regulatory requirements.

3/ Petition of the Association for Local Telecommunications Services for Declaratory Ruling Establishing Conditions Necessary to Promote Deployment of Advanced Telecommunications Capability Under Section 706 of the Telecommunications Act of 1996, filed May 27, 1998, with the Federal Communications Commission.

Commission to make clear that the Communications Act requires the incumbent local exchange carriers ("ILECs") to open their local networks for competition in the provision of *all* telecommunications services, whether data or voice, and regardless of the technology used. Such competition, ALTS correctly points out, is what will form the basis for competition and consumer choice in broadband telecommunications services.

In their petitions, in contrast, the RBOCs contend that the only way to create incentives for them to develop technologically advanced networks is to permit them to fence off network improvements from competitors and to relieve the RBOCs of regulatory requirements that are intended to protect the public from their exercise of market power. In essence, these RBOCs ask the Commission to allow them to evade the critical local competition provisions of the Act by freezing the local exchange network in time, relegating competitors to use of inferior technology, depriving competitors of the ability to compete as the network evolves, and robbing consumers of the chance to enjoy the benefits of competition in broadband-network-based services. 4/

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4/ Under the RBOCs' plans, they would be free to: (1) offer new or advanced services without providing other carriers access to the underlying facilities needed to provide those services, contrary to the pro-competitive unbundling requirements of Section 251(c)(3); (2) deny competitors the ability to resell those services pursuant to Section 251(c)(4); (3) construct and use interLATA transmission facilities without first complying with the local market-opening requirements of Section 271, and (4) engage in these activities without the protections of the structural separation requirements of Section 272. 47 U.S.C. §§ 251(c)(3), 251(c)(4), 271, 272.

Consumer choice of broadband service providers, and competitive pricing of those services, will depend completely on the ability of competitors to access the xDSL capabilities in the ILEC networks. Residential customers and small businesses, in particular, will be harmed if the network unbundling and resale requirements do not apply to advanced services. Section 706 itself contemplates that local competition is one important mechanism for delivering advanced services more quickly and more broadly. 5/ Grant of any part of the RBOCs' petitions would chill the development of that competition in broadband telecommunications services, leaving most small businesses and consumers with no choice of broadband service providers.

## I. CONSUMER CHOICE OF BROADBAND PROVIDERS DEPENDS ON COMPETITIVE ACCESS TO XDSL CAPABILITIES IN THE ILEC NETWORK.

### A. The Consumer Potential of xDSL Technology

Customers, particularly residential and small-business customers, increasingly are demanding the delivery of high speed, digital, broadband telecommunications services. The use of Digital Subscriber Line ("DSL" or "xDSL") electronics with existing copper (or copper and fiber) loops can help to meet this demand in a cost-effective manner. 6/

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5/ Section 706 requires the Commission to use "measures that promote competition in the local telecommunications market" as one means to stimulate deployment of advanced technology. 47 U.S.C. § 157 note.

6/ Put simply, "DSL" or "xDSL" is a technology that employs electronics to boost the capacity, speed, and capability of existing telephone lines. In Appendix A we set

For the majority of small-business and residential customers, the limited capacity of the copper local loop has been the single most important obstacle to their access to broadband telecommunications services. Since the mid-1990s, the increasing deployment of xDSL electronics has made possible the delivery of broadband telecommunications services at a cost that is within the reach of most small businesses and many consumers. Over xDSL-equipped loops, 7/ these consumers can enjoy high-speed access (in the megabits per second range) to the Internet or to corporate networks, instead of the hypothetical top speeds of 56 kilobits per second provided by voice-grade modems. BellSouth estimates, for example, that its ADSL service can provide speeds of up to 50 times that of conventional modems. 8/

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forth the different forms of xDSL and their characteristics. Appendix B is a diagram of xDSL technology deployed in a "home run copper" installation (where a copper pair runs from the customer premises all the way to the central office). Appendix C is a diagram of xDSL technology deployed in a remote "digital loop carrier" (remote DLC) installation. In a DLC installation, the copper pair runs from the customer premise to a remote DLC terminal, where it is multiplexed with other lines onto fiber (or sometimes copper) facilities that run directly into the ILEC central office switching facilities. In Appendix D we set forth in detail a description of xDSL technology and how it works, both for home run copper and DLC installations.

7/ By "xDSL-equipped loop" we mean the transmission facility from the customer premises to the switch -- i.e. the xDSL modem, the copper wire or fiber, the DSLAM, and (for loops connected to the switch by a DLC) the DLC (including the line cards and FOTS).

8/ News Release, "BellSouth Announces Aggressive 30 Market Roll-Out of Ultra-High Speed BellSouth.Net FastAccess ADSL Internet Services," May 20, 1998, at www.bellsouthcorp.com.

The increased use of xDSL-equipped loops also reflects the increasing importance of data telecommunications relative to voice. Internet traffic is growing at 1,000% a year and data traffic over the public switched network is doubling annually. 9/ By contrast, voice traffic is expanding at only single-digit rates. 10/ Data traffic already accounts for over half the total traffic of most U.S. carriers. One analyst estimates that by the year 2005, the volume of data traffic is expected to be 23 times the volume of voice traffic. 11/

xDSL electronics can help accommodate a large share of the data demand from small businesses and consumers without much additional investment in network infrastructure. It leverages investments that incumbent local exchange carriers ("ILECs") already have made (in twisted copper pair, Digital Loop Carrier electronics in the field, and fiber feeders in the local distribution plant), enabling the existing local exchange network to support higher-bandwidth telecommunications services to a far greater number of customers. xDSL thus can form the basis for the expansion of consumer choice into the broadband world -- but only if the ILECs' investments in xDSL remain subject to the local competition provisions of the Communications Act.

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9/ "Lucent Agrees to Buy Yurie for $1 Billion" Wall Street Journal, April 28, 1998.

10/ Id.

11/ Id., quoting Christopher Stix of Cowen & Co.

### B. xDSL is a Manifestation of the Natural Evolution of the Network to Higher Speeds and Greater Digital Capabilities.

xDSL is only the most recent manifestation of the natural evolution of the telephone network to increased digital capabilities and higher speed transmission. Over time, telecommunications networks have moved from analog to digital transmission, from in-band to out-of-band signaling (SS7), from copper to fiber optic facilities, from circuit-switched to packet-based transmission systems, and so on. xDSL technology is just another step in this natural progression.

xDSL also is just another example of the use of electronics in the network to boost the capabilities and the capacity of the existing infrastructure. For example, multiplexers deployed in the ILEC network can multiply by many factors the speed of traffic over the same copper or fiber-optic strand. ISDN technology deployed at either end of a copper loop (or at the remote digital loop carrier, in the case of DLC installations) can create digital capability, additional lines, and higher speed on that existing copper facility. xDSL is no different.

xDSL also does not require the use of radically new functionalities. Indeed, ILECs have used xDSL electronics for over five years to maximize the efficiency of their networks. For example, ILECs have used a version of xDSL known as HDSL to support high bandwidth (T-1) transport for both end users and carrier-customers. 12/ Those T-1 lines can be used by customers for both voice and

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12/ A channelized T-1 service is the equivalent of 24 64 kbps (voice-grade equivalent) channels and operates at 1.544 Mbps speeds.

data transmissions at high capacity. In a similar manner, placement of xDSL electronics in the local loop allows subscribers to place voice calls over the circuit-switched network and to access data networks simultaneously over a single line, and to obtain high speed access to data networks.

In sum, although the ILECs attempt to paint xDSL technology as somehow different (and thus off-limits to competitors), in fact xDSL is another in a long line of advances in network technology -- advances that are sure to continue, and sure to evolve in as-yet unanticipated ways.

## II. IT IS ESSENTIAL TO PRESERVE THE THREE ENTRY STRATEGIES GUARANTEED BY CONGRESS AS THE INCUMBENT LEC NETWORK EVOLVES.

The Communications Act 13/ specifically makes available three entry strategies to CLECs that wish to provide competing local telecommunications services. First, a competitor may provide such services entirely over its own facilities. Congress recognized that even such facilities-based CLECs would require access to the ILEC networks in most cases and, therefore, required ILECs to provide nondiscriminatory interconnection to their networks. See 47 U.S.C. § 251(c)(2). Second, a CLEC may enter the market for local telecommunications services through the use of unbundled network elements (either all or some of the elements required to provide the service). See 47 U.S.C. § 251(c)(3). Finally,

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13/ Communications Act of 1934, as amended, 47 U.S.C. § 151 et seq. (hereafter "the Act")