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January 12, 2000

Via Hand Delivery

David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243

RE: Petition for Arbitration by ITC^DeltaCom Communications, Inc. with BellSouth Telecommunications, Inc., Pursuant to the Telecommunications Act of 1996; Docket No. 99-00430

Dear Mr. Waddell:

Enclosed for filing are the original and 13 copies of the Federal Communications Commission's Third Report and Order in Docket No. 98-147 and Fourth Report and Order in Docket No. 96-98.

This is the result of an agreement between the Authority, BellSouth Telecommunications, Inc. ("BST"), and ITC DeltaCom Communications, Inc. that the Authority will take official notice of this decision (and others furnished by BST) in lieu of supplemental briefs.

A copy has been furnished to BST's local counsel.

Sincerely,

H. LaDon Baltimore
LDB/dcg
cc: Nanette Edwards, Esq.
David Adelman, Esq.
Guy Hicks, Esq.

FILE

BEFORE THE

TENNESSEE REGULATORY AUTHORITY

January 12, 2000

In Re:	)	
	)	
Petition for Arbitration of ITC^DeltaCom Communications, Inc. with BellSouth Telecommunications, Inc. Pursuant to the Telecommunications Act of 1996	)	**Docket No. 99-00430**

FILING BY ITC^DELTACOM COMMUNICATIONS, INC. OF THE FEDERAL COMMUNICATIONS COMMISSION'S THIRD REPORT AND ORDER IN DOCKET NO. 98-147 AND FOURTH REPORT AND ORDER IN DOCKET NO. 96-98

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matters of	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147
and	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98

THIRD REPORT AND ORDER IN CC DOCKET NO. 98-147
FOURTH REPORT AND ORDER IN CC DOCKET NO. 96-98

Adopted: November 18, 1999 **Released: December 9, 1999**

Before the Commission: Commissioner Furchtgott-Roth concurring in part, dissenting in part, and issuing a statement.

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I. INTRODUCTION AND OVERVIEW

1. Among the fundamental goals of the Telecommunications Act of 1996 (1996 Act)[1] is the promotion of innovation, investment, and competition among all participants and for all services in the telecommunications marketplace, including advanced services.[2] The Commission has issued three orders in this proceeding to date, and has issued other decisions intended to promote competition in the advanced services market.[3] In this Third Report and Order we take additional, important steps toward implementing Congress's goals for the deployment of competitive advanced services by instituting line sharing obligations for incumbent LECs, and establishing spectrum management policies and rules.

2. Carriers are increasingly transmitting electronic communications in digital, rather than analog form, and by means of "packet switching."[4] Packet-switched transmission of

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[1] Telecommunications Act of 1996, Pub.L. 104-104, Feb. 8, 1996, 110 Stat. 56, codified at 47 U.S.C. § 151 *et seq.* (1996 Act). The 1996 Act amended the Communications Act of 1934. We refer to the Communications Act of 1934, as amended, as the "Communications Act" or the "Act."

[2] Joint Statement of Managers, S. Conf. Rep. No. 104-230, 104th Cong. 2d Sess. 1 (1996) *(Joint Explanatory Statement)*. For purposes of this order, we use the term "advanced services" to mean high speed, switched, broadband, wireline telecommunications capability that enables users to originate and receive high-quality voice, data, graphics and video telecommunications. The term "broadband" is generally used to convey sufficient capacity -- or "bandwidth" -- to transport large amounts of information. As technology evolves, the concept of "broadband" will evolve with it: we may consider today's "broadband" services to be "narrowband" services when tomorrow's technologies appear.

[3] *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 24012 (1998) (*Advanced Services Order and NPRM); Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, First Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 4761 (1999) (*Advanced Services First Report and Order or Advanced Services First Report and Order and FNPRM*); *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Second Report and Order, FCC 99-330 (rel. Nov. 9, 1999) (*Advanced Services Second Report and Order*). *See also GTE Telephone Operating Companies Tariff No. 1*, Docket No. 98-79, Memorandum Opinion and Order, 13 FCC Rcd 22466 (1998); *1998 Biennial Regulatory Review – Modifications to Signal Power Limitations Contained in Part 68 of the Commission's Rules*, CC Docket No. 98-163, Notice of Proposed Rulemaking, 1998 WL 614472 (Sept. 16, 1998); *Paradyne Corporation Petition for Waiver of the Signal Power Limitations Contained in Section 68.308(e) of the Commission's Rules*, File No. NSD-L-98-93, Order, 14 FCC Rcd 4496 (Com. Car. Bur. Network Servs. Div. 1999) (*Paradyne Order*); *Petition for Waiver of the Signal Power Limitations Contained in Section 68.308(e) of the Commission's Rules*, File No. NSD-L-98-135, Order, DA 99-1350, 1999 WL 556954 (Com. Car. Bur. Network Servs. Div., rel. Jul. 30, 1999) (*Nortel Order*).

[4] *See, e.g., Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket 98-146, Notice of Inquiry, 13 FCC Rcd 15280, 15287-88, paras. 20-22 (1998) (*Section 706 Report to Congress*). Digital transmission technologies have been used for some time in the network 'backbone' facilities, and now are starting to appear in the local feeder and distribution plant. Packet switching technologies segment information into small pieces, called packets, assigning each packet identifying characteristics as well as a destination address. The packets traverse the network, often following many different physical paths, until they arrive at their destination and are reassembled. *See* Newton's Telecom Dictionary, 14th Ed. 1998, at 527.

information promises a revolution in information services, communications services, and entertainment by offering businesses, residential users, schools and libraries, and other end users the ability to access and send large amounts of information quickly, reliably, and at low cost across the street or across the globe. Moreover, for wireline carriers, digital subscriber line technologies are making it possible for ordinary citizens to access various networks, such as the Internet, corporate networks, and governmental networks, at high speeds through the existing copper telephone lines that connect their residences or businesses to the incumbent local exchange carriers' (LEC's) central office. The existing infrastructure is beginning to be used in new ways that make available to average citizens a variety of new services and vast improvements to existing services. The ability of all Americans to access these high-speed, packet-switched networks will spur the growth and development of our nation.

3. Incumbent and competitive LECs are beginning to provide xDSL-based services[5] to customers in major markets nationwide.[6] These xDSL-based services provide high-speed connections between subscribers and packet switched networks, over ordinary copper telephone "loops." Because the advanced services market is still in its developmental stage, robust competition among xDSL providers is just beginning to emerge in many markets. The economic realities of providing advanced services have also caused most xDSL providers to market primarily to large business customers. Nevertheless, both incumbent and competitive carriers appear to have recently begun to make some of the technological investment necessary to compete in the provision of advanced services to residential and small business consumers.

4. In this Order we adopt measures to promote the availability of competitive broadband xDSL-based services, especially to residential and small business customers. We amend our unbundling rules to require incumbent LECs to provide unbundled access to a new network element, the high frequency portion of the local loop. This will enable competitive LECs to compete with incumbent LECs to provide to consumers xDSL-based services through telephone lines that the competitive LECs can share with incumbent LECs. The provision of xDSL-based service by a competitive LEC and voiceband service by an incumbent LEC on the same loop is frequently called "line sharing." In addition, we adopt spectrum management

[5] Today's wireline broadband services include services that use digital subscriber line technology (commonly referred to as xDSL), including ADSL (asymmetric digital subscriber line), HDSL (high-speed digital subscriber line), UDSL (universal digital subscriber line), VDSL (very-high speed digital subscriber line), and RADSL (rate-adaptive digital subscriber line) to send signals over copper wires to packet switches. The small "x" before the letters DSL signify that we are referring to DSL as a generic transmission technology, as opposed to a specific DSL "flavor." Some versions of xDSL are compatible with simultaneous analog voice transmissions over a single copper loop.

[6] Installation of Digital Subscriber Lines (DSLs) grew 300 percent in the United States for the first half of 1999. *SeeTeleChoice, DSL Deployment Surges Well Beyond Projections*, <http://www.telechoice.com/content/pressreleases/08171999.asp> (*TeleChoice Press Release*) SBC Communications Inc. (SBC) has announced plans to invest six billion dollars over a four-year period to provide DSL service to 10 million customers by the end of 1999, and 50 million customers by the end of its four-year plan. Bell Atlantic is accelerating its DSL rollout to deploy advanced services to 21 million customers by early 2000. SBC Communications Inc. News Release, SBC Launches $6 Billion Initiative to Transform it into America's Largest Single Broadband Provider, Oct. 18, 1999, <http://www.sbc.com>. *See also* Roger O. Crockett and Catherine Young, *Industries, Telecommunications, Faster, Faster, Faster*, BUS. WK., Oct. 18, 1999.

policies and rules to facilitate the competitive deployment of advanced services.

5. The record shows that lack of access to the high frequency portion of the local loop materially diminishes the ability of competitive LECs to provide certain types of advanced services to residential and small business users, delays broad facilities-based market entry, and materially limits the scope and quality of competitor service offerings. The record reveals no evidence of substantial technical, economic, operational, or practical barriers to incumbent LEC line sharing with competitors. We believe that line sharing is vital to the development of competition in the advanced services market, especially for residential and small business consumers. We believe that unbundled access to the high frequency portion of the loop can be implemented rapidly and in an equitable manner that balances the needs of both potential competitors and incumbent LECs.

6. In addition, we adopt rules in this Order that apply to spectrum compatibility and management. These rules will significantly benefit the rapid and efficient deployment of xDSL-based technologies. Specifically, we seek to encourage the voluntary development of industry standards while limiting the ability of any one class of carriers to impose unilateral and potentially anti-competitive spectrum management or compatibility rules on other xDSL providers. We believe that the spectrum policies we adopt in this Order will ensure the compatibility of technologies and minimize the risk of harmful spectrum interference among transmission services. As such, these policies will ensure that American consumers will not face undue delay in receiving the benefits of technological innovation.[7]

II. EXECUTIVE SUMMARY

LINE SHARING

- Unbundling Analysis. The high frequency portion of the loop meets the statutory definition of a network element and must be unbundled pursuant to sections 251(d)(2) and (c)(3). An incumbent LEC's failure to provide such access impairs the ability of a competitive LEC to offer certain forms of xDSL-based services. The record shows that lack of access would materially raise the cost for competitive LECs to provide advanced services to residential and small business users, delay broad facilities-based market entry, and materially limit the scope and quality of competitor service offerings. Our decision to unbundle the high frequency portion of the loop is consistent with the 1996 Act's goals of rapidly introducing competition and promoting facilities-based entry. This will promote the rapid deployment of advanced services to all Americans as mandated by section 706 of the 1996 Act.

[7] In this proceeding, we emphasize that we are only addressing line sharing on the network side of the demarcation point; and spectrum management policy pertaining only to the network side of the demarcation point. We clarify that equipment and lines located on the customer side of the demarcation point are subject to Part 68 of our rules. In a separate proceeding, CC Docket No. 99-216, we have held fora and solicited comment on changes to our customer premises equipment (CPE) connection rules under Part 68. *See Common Carrier Bureau Will Hold Fora on Deregulation/Privatization of Equipment Registration and Telephone Network Connection Rules*, Public Notice, CC Docket No. 99-216, DA 99-1108 (rel. June 10, 1999) (*Part 68 Notice*). Thus, the policies and rules promulgated herein do not apply to, and will not affect, CPE.

- Line Sharing Requirements.
  - In order to ensure that line sharing does not significantly degrade analog voice service, incumbent LECs must provide unbundled access to the high frequency portion of the loop only to carriers seeking to provide xDSL-based service that meets one of the Commission's criteria regarding the presumption of acceptability for deployment on the same loop as analog voice service. Currently, ADSL is the most widely deployed line sharing technology meeting that presumption. As additional xDSL-based technologies that can co-exist on the same loop as analog voice service are demonstrated to meet that presumption, incumbents must permit requesting carriers to deploy those technologies as well.
  - Incumbent LECs must provide unbundled access to the high frequency portion of the loop to only a single requesting carrier, for use at the same customer address as the analog voice service provided by the incumbent.
  - Incumbents are not required to provide unbundled access to the high frequency portion of the loop if they are not currently providing analog voice service to the customer.
  - Subject to certain obligations, incumbent LECs may maintain control over the loop and splitter equipment and functions.
- Loop Conditioning. Incumbent LECs must condition loops to enable requesting carriers to provide acceptable forms of xDSL-based services over the high frequency portion of the loop unless such conditioning would significantly degrade the incumbent's analog voice service. We conclude that it would be unreasonable for incumbents to refuse to condition loops under 18,000 feet. For loops over 18,000 feet, an incumbent LEC must make an affirmative showing to the relevant state commission that such degradation will occur.
- Subloops. Incumbent LECs must unbundle the high frequency portion of the loop even where the incumbent LEC's voice customer is served by digital loop carrier (DLC) facilities.
- Operational Issues. The record shows that incumbents should be able to resolve operational issues associated with implementation of line sharing, including modifications to operations support systems, within six months. The record shows that incumbents have a number of process alternatives available and we will allow them the flexibility to choose the best and most economically feasible of them.
- Timing of Implementation. The rules advanced in this Order will go into effect 30 days from the date of publication in the Federal Register. We encourage parties to amend their interconnection agreements to provide for line sharing as soon as possible.
- State Authority. States may, at their discretion, impose additional or modified requirements for access to this unbundled network element, consistent with our national policy framework

SPECTRUM MANAGEMENT

- Standards-Setting. The charter of the Network Reliability and Interoperability Council (NRIC) will be amended to charge NRIC with advising the Commission on spectrum compatibility and management of xDSL-based and other advanced services. In this capacity, NRIC will receive input from industry standards bodies, such as T1E1.4, and monitor developments within them. The NRIC will report periodically to the Commission and prepare recommendations for it.

- Spectrum Compatibility. We decline to adopt a federal rule on specific methods of achieving spectrum compatibility and instead will defer to the conclusions to be reached by industry standards setting bodies on this issue. As a general matter, however, the use of generic power spectral density (PSD) masks and/or a calculation-based approach appears to be the best means to address spectrum compatibility. Taken together, these two mechanisms should protect network integrity while maximizing deployment of new competing technologies.

- Presumption of Acceptability for Deployment. We codify as permanent rules the rules we previously adopted on an interim basis that will govern when a loop technology is presumed acceptable for deployment. The circumstances include when the technology: (1) complies with existing industry standards; (2) has been approved by an industry standards body, the Commission, or any state commission; or (3) has been successfully deployed by any carrier without significantly degrading the performance of other services. We rely upon the states to determine whether a particular technology has significantly degraded the performance of other services.

- Degradation of Signals. Although we recognize the value of objective criteria to measure significant degradation, we do not have a basis in the record before us to adopt specific, objective criteria. We encourage industry standards bodies to continue addressing this issue. Based on the record before us, we believe that an objective measurement of what constitutes significant degradation should account for reductions in a service's distance (reach) and/or speed (rate), among other factors. Until industry standards bodies adopt an objective standard, carriers must apply the subjective standard we previously enunciated in the *Advanced Services First Report and Order*, namely, that significant degradation is an action that noticeably impairs a service from a user's perspective.

- We reaffirm our conclusions from the *Advanced Services First Report and Order* regarding resolution of interference disputes. In the event that a LEC demonstrates to the relevant state commission that a deployed technology is significantly degrading the performance of other advanced services or traditional voice band services, the carrier deploying the technology shall discontinue deployment of that technology and migrate its customers to technologies that will not significantly degrade the performance of other services. We now adopt an exception to this rule: where the only service experiencing interference is itself a known disturber, that service shall not prevail against the newly deployed technology. We conclude that analog T1 service is a known disturber.

- Interfering Technologies. The only permissible forms of binder group management are the segregation of known disturbers and the use of the spectrum compatibility (interference

protection) techniques described above. The states should determine disposition of known interfering technologies. The states may select one or more of several approaches towards disposition of known disturbers, including segregation or sunsetting of known disturbers, consistent with the national policy framework adopted in this Order.

III. BACKGROUND

A. DSL Technology

7. The circuit–switched public telecommunications network (PSTN), which interconnects virtually every home and business, was designed to provide superior voice telephony. Until recently, carriers did not consider the PSTN's architecture well suited for the provision of interactive video or high-speed data communications. Specifically, the PSTN is predominately "circuit-switched," maintaining an end-to-end channel of communication for the duration of each telephone call. Although this is an efficient technique for transmitting ordinary voice telephony, it is not efficient for transmitting digital information. In addition, carriers did not generally consider the copper "local loop," the telephone wire running the "last mile" to each home, capable of carrying more than a relatively modest stream of information.

8. In the near future, xDSL-based technology and packet-switched networks may account for a large portion of the telecommunications facility.[8] xDSL-based technology permits the transmission of data over the copper loop at significantly higher speeds than can be achieved by current "dial-up" analog data transmission systems and circuit-switched network systems.[9] xDSL transmission systems consist of an xDSL terminating device attached to each end of an unmodified copper wire local loop. Combining xDSL-based technology with packet switching is more efficient than circuit-switched networks for the transmission of packetized data.[10]

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[8] Current projections indicate the following expected total xDSL line deployment levels: 575,000 by the end of 1999, 2,107,000 by the end of 2000, 5,103,000 lines by the end of 2001, and 7,655,000 lines by the end of 2002. Note that these numbers combine incumbent and competitive LEC-deployed lines, but excludes HDSL lines. *TeleChoice xDSL Deployment Tracking Survey*, End of Third Quarter 1999, <http://www.xdsl.com/content/resources/deployment_info.asp>. *See also* Robert Rosenberg, *Hard to Beat ATM is the Carrier's Silver Bullet*, America's Network, May 15, 1998, <http://www.americasnetwork.com/issues/98issues/980515/980515_insight.html>.

[9] In the United States, an ordinary voice channel generally allows transmission of digital information at the rate of up to 56,000 bits per second. By contrast, the most widely deployed xDSL service (known as ADSL) allows data to be transmitted to the home or residence at up to several million bits per second, depending on loop length, loop design, and the technology deployed. Provision of xDSL service is subject to a variety of important technical constraints. One is the length of the subscriber loop: ADSL, the most widely deployed xDSL-based service, generally requires loops of less than 18,000 feet using current technology. Another is the quality of the loop, which must be free of excessive bridged taps, loading coils, and other devices commonly used to aid in the provision of analog voice and data transmission, but which interfere with the provision of xDSL services. "Conditioning" loops to remove those impediments, or constructing fiber-based digital loop carrier systems to overcome loop length difficulties, can be expensive.

[10] K.G. Coffman and Andrew Odlyzko, *The Size and Growth Rate of the Internet*, First Monday, Issue 3_10, <http://www.firstmonday.dk/issues/issue3_10/coffman/index.html>.

9. In circumstances in which the xDSL-equipped line carries both POTS ("plain old telephone service") and data channels, the carrier must separate those two streams when they reach the telephone company's central office. Generally, this is done by two pieces of transmission equipment, a Digital Subscriber Line Access Multiplexer (DSLAM) and a splitter.[11] The DSLAM sends the customer's voice traffic to the public, circuit-switched telephone network and the customer's data traffic (combined with that of other xDSL users) to a packet-switched data network. Once on the packet-switched network, the data traffic is routed to the location selected by the customer, for example, a corporate local area network or an Internet service provider. That location may itself be a gateway to a new packet-switched network or set of networks, like the Internet.

B. History of the Proceeding

10. In March 1999, we released the *Advanced Services First Report and Order*, in which we adopted several measures to promote competition in the advanced services market.[12] Specifically, we strengthened our collocation rules and implemented certain spectrum compatibility rules. In the accompanying *Further Notice of Proposed Rulemaking* (*FNPRM*), we solicited comments to guide the further development of spectrum compatibility and management requirements and proposed line sharing requirements to enable competitors to offer advanced services to end-users using the same telephone line the LEC uses to offer voice services. We proposed these measures to enable advanced services providers to develop and deploy more rapidly new technologies and innovative services, benefiting consumers through lower prices and increased product choice.[13]

11. We are aware, however, that US WEST has sought judicial review of the Commission's decision that advanced services, including those utilizing xDSL-based technologies, are either exchange access or telephone exchange services. US WEST further argues that the requirements of section 251(b) and (c) do not apply to its provision of advanced services.[14] We note that the Commission has requested, and has received, a remand from the United States Court of Appeals for the District of Columbia Circuit to address US WEST's argument that the Commission is without statutory authority to require incumbent LECs to

[11] The splitter's primary function is to separate the high frequency, xDSL signals, from low frequency (voiceband) analog signals traversing the copper loop. In some circumstances, the DSLAM and the splitter are combined in the same piece of equipment.

[12] We initiated this proceeding in August 1998, in response to six petitions suggesting actions we should take to speed the deployment of advanced services by wireline carriers. *See Advanced Services Order and NPRM*, 13 FCC Rcd at 24023, 24035, paras. 21, 47-48 (noting Congress' intent to open local markets to competition by reducing inherent economic and operational advantages possessed by incumbents, particularly with respect to interconnection, access to unbundled network elements, and collocation). *See also Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd 4784-85, at para. 42 nn.100 & 102.

[13] A list of parties that filed comments and replies in response to the *Advanced Services FNPRM* is provided in Appendix A.

[14] US WEST Comments at 56 n.122.

provide access to unbundled elements used in the provision of advanced services.[15] We further note that the Commission has received a more complete administrative record on this matter and we intend to fully address US WEST's arguments in the *Advanced Services Memorandum Opinion and Order and NPRM* remand proceeding.[16] The Commission must address the issues raised by US WEST within 120 days from the date of the D.C. Circuit Court's Order.

12. In remanding back to the agency, the court declined to vacate portions of the *Advanced Services Memorandum Opinion and Order and NPRM* challenged by US WEST. Accordingly, our decision in that Order that xDSL-based services are "either" telephone exchange service or exchange access service remains in effect during the pendency of the *Advanced Services Memorandum Opinion and Order and NPRM* remand proceeding.[17] We therefore have the authority to consider whether unbundling the high frequency portion of the loop meets the impairment standard established in the *Local Competition Third Report and Order*.

IV. LINE SHARING

13. In this section, we adopt a requirement that incumbent LECs unbundle the high frequency portion of the loop to permit competitive LECs to provide xDSL-based services by sharing lines with the incumbent's voiceband services.[18] We find that unbundling this network element is technically feasible, presents no substantial operational issues, is legally justified, and serves the public interest. We also find that line sharing promises to bring broadband access to residential and small business consumers, and conclude that incumbents should be able to provide line sharing within 180 days of release of this Order.[19] Our decisions herein should ensure that residential and small business consumers receive the benefits of competition and innovation promised in the Act.

14. The rules and standards we adopt in this Order build on industry development and technological advances that have occurred in the telecommunications marketplace since the advent of the 1996 Act. Both incumbent LECs and requesting carriers are beginning to deploy innovative technologies to meet the demand for high-speed, high-capacity advanced services. To encourage competition, the market for these services must be conducive to investment and

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[15] *See US WEST v. Federal Communications Commission*, Order No. 98-1410 (D.C. Cir. Aug. 25, 1999).

[16] *See Comments Requested in Connection with Court Remand of August 1998 Advanced Services Order*, Public Notice, CC Docket Nos. 98-11, 98-26, 98-32, 98-78, 98-91, 98-147, Notice, DA No.99-1853 (rel. Sept. 9, 1999).

[17] *Advanced Services Order and NPRM*, 13 FCC Rcd at 24032, para. 40.

[18] Voiceband services, such as POTS, are analog telecommunications services that utilize the lower frequency portion of the local loop spectrum, from 300 Hertz to at least 3000 Hertz, and potentially up to 3400 Hertz, depending on equipment and facilities.

[19] Although, in many areas, incumbent LECs are already providing both voice and xDSL services on the same loop, we believe that incumbents require approximately six months to adapt their "back office" systems to comply with the two-carrier line sharing requirements set out in this Order. *See infra* Sections IV.C.2. and IV.D.4).

innovation, and responsive to the needs of consumers. The requirements we adopt in this Order for access to the unbundled high frequency portion of the local loop are designed to fulfill these criteria, and to be administratively practical and responsive to business needs.

A. Commission Authority to Require Incumbent LECs to Unbundle the High Frequency Portion of the Loop

1. Background

15. In the *FNPRM*, we tentatively concluded that we have authority to require line sharing and sought comment on that tentative conclusion.[20] Competitive LECs, advocacy organizations, and state and federal agencies generally agree that we have authority to mandate line sharing as an unbundled network element (UNE) pursuant to section 251(d)(2) of the Act.[21] Several commenters also argue that we have authority to mandate line sharing as an interstate special access service under sections 201 and 202 of the Act.[22] Incumbent LECs, however, argue that we lack authority to mandate line sharing either as an UNE or as an interstate special access service. Specifically, these commenters claim that the high frequency portion of the loop cannot be considered a network element, that such consideration is premature, and that, regardless of such consideration, access to that portion of the loop is not necessary for advanced service deployment under section 706 of the 1996 Act.[23]

2. Discussion

16. We conclude that we have authority to require incumbent LECs to provide unbundled access to the high frequency spectrum of a local loop pursuant to our authority to identify a minimum list of network elements that must be unbundled on a nationwide basis.[24] Section 251(c)(3) imposes a duty on all incumbent LECs to provide to competitors access to network elements on an unbundled basis.[25] Section 251(d)(2) provides that, in determining which network elements should be unbundled under section 251(c)(3), the Commission shall consider, "at a minimum, whether -- (A) access to such network elements as are proprietary in

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[20] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4808, para. 98.

[21] California PUC Comments at 4-5; Oklahoma CC Comments at 17; ALTS Comments at 8; Primary Comments at 5; @link Comments at 5; Prism Comments at 12; NAS Comments at 8-9; NorthPoint Comments at 23, Rhythms Comments at 3-5, Rhythms Reply Comments at 5; Covad Comments at 14; Covad Reply Comments at 4.

[22] ALTS Comments at 4, 14; MCI Comments at 10; Covad Comments at 14-17, 20-23; Intermedia Comments at 2 NAS Comments at 12; NEXTLINK Comments at 1-4, 11; NEXTLINK Reply Comments at 2; NorthPoint Comments at 23.

[23] GTE Comments at 4, 18; RTC Comments at 6-8, 10; US WEST Comments at 17-19.

[24] The Supreme Court decision in Iowa Utils. Bd. supports our authority to develop a national list of unbundled elements. *AT&T v. Iowa Utils. Bd.*, 119 S. Ct. 721, 733 (1999) (*Iowa Utils. Bd.*).

[25] Certain rural telephone companies may be exempt from the unbundling provisions of section 251. *See* 47 U.S.C. § 251(f).

nature is necessary; and (B) the failure to provide access to such network element would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."[26] As discussed below, we conclude that the high frequency portion of the loop is a network element that must be unbundled pursuant to section 251(c)(3) and section 251(d)(2).

17. Line sharing generally describes the ability of two different service providers to offer two services over the same line, with each provider employing different frequencies to transport voice or data over that line.[27] Section 3(29) of the Act defines a network element as "a facility or equipment used in the provision of telecommunications services" including "features, functions, and capabilities, that are provided by means of such facility or equipment."[28] As discussed in detail below, the frequencies above those used for analog voice services on any loop are a capability of that loop.[29] Therefore, those otherwise unused frequencies that can be used for xDSL or other applications meet the definition of a "network element."

18. Specifically, sections 51.307(d) and 51.309(c) of our rules address the requesting carrier's right to loop access. These rules provide, respectively, that an incumbent LEC must provide competitors with "access to the facility or functionality of a requested network element separate from access to the facility or functionality of other network elements." The rules also state that a requesting carrier is "entitled to exclusive use" of an "unbundled network facility."[30] Consequently, although we conclude that to the extent section 251(d) is satisfied requesting carriers may access unbundled loop functionalities, such as non-voiceband transmission frequencies, separate from other loop functions, they are also "entitled," at their option, to

[26] 47 U.S.C. § 251(d)(2).

[27] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4805-06, para. 92. *See* GSA Comments at 5-6; Covad Comments at 4-5 and Affidavit of Anjali Joshi at 2 (Covad Joshi Aff.). Line sharing through the simultaneous use of discrete electromagnetic frequencies on a single wire pair to provide separate communications services, is the only form of line sharing considered in this Order, and is only possible on metallic loops. Thus, fiber-based transmission systems are not considered in this Order, except if specifically noted otherwise.

[28] 47 U.S.C. § 153(29).

[29] This reasoning is consistent with our treatment of other unbundled network elements. For instance, in the *Local Competition Third Report and Order*, we affirmed that switch capabilities, e.g, call waiting, are part of the switching network element because a competitor's ability to access such capabilities are contingent upon access to switching. In the same order, however, we identify sub-loops and Network Interface Devices (NIDs) as separate network elements, even though the loop network element includes sub-loops and NIDs, because a competitor's sub-loop or NID access is not contingent upon its access to the entire loop. *See Implementation of the Local Competition Provisions of the Telecommunications Act of 1996,* CC Docket No. 96-98, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, FCC 99-238, at paras. 163-318 (rel. Nov. 5, 1999) (*Local Competition Third Report and Order*). *See also Iowa Utils. Bd.*, 119 S. Ct. at 734 (discussing the breadth of the network element definition in section 153(29) and the reasonableness of our earlier decisions). In this Order, we identify the high frequency portion of the loop as a separate network element because a competitor need not access the entire loop to utilize only the high frequency portion.

[30] 47 C.F.R. §§ 51.307(d)), 51.309(c).

exclusive use of the entire unbundled loop facility.[31]

19. Under the interpretation of section 251 that underlies these rules, we conclude that we have authority pursuant to section 251 to require unbundled access to the high frequency spectrum of a local loop so that carriers may use those frequencies to provide xDSL-based services while the incumbent LEC uses the voiceband frequencies for analog voice service. In light of our conclusion below to designate the high frequency spectrum as an unbundled network element, we need not and do not address the arguments of some parties that we have authority to order line sharing as a special access service.[32]

B. Designation of High Frequency Loop Spectrum as an Unbundled Network Element

1. Background

20. In the *Advanced Services FNPRM*, we tentatively concluded that incumbent LECs must provide requesting carriers with access to "the transmission frequencies above that used for analog voice service on any lines that LECs use to provide exchange service."[33] We observed that without line sharing, a competitive LEC's ability to competitively provide advanced services is impaired because the competitive LEC must obtain a new unbundled loop from the incumbent LEC to provide advanced services, while the incumbent LEC can provide advanced services, at little additional expense, by using the existing local exchange service line. We also noted that line sharing would enrich consumer choice by enabling customers to keep their analog voice service with the incumbent local exchange company, while choosing a competitive LEC to provide high-speed digital services over the same line without incurring the additional expense of a second line.[34]

21. Additionally, we sought comment on whether we should more precisely define the network element that would permit shared line access, so that it is clear to all parties what the incumbent must unbundle to satisfy our line sharing requirements.[35] In particular, we asked commenters to evaluate the possibility of setting a specific dividing line between a low frequency channel and a high frequency channel on the loop. We were concerned, however, that doing so would arbitrarily freeze technological development and deny carriers opportunities to use the loop to provision services that use different frequency bands.[36] We tentatively concluded that our line sharing requirements should not mandate a particular technological approach to the use of a

[31] Covad Comments at 19, n.34. *See also* ALTS Comments at 15.

[32] *See, e.g.,* Covad Comments at 14-18; NEXTLINK Comments at 4.

[33] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4808, para. 99.

[34] *Id.*, 14 FCC Rcd at 4806-07, para. 96.

[35] *Id.*, 14 FCC Rcd at 4809, para. 100.

[36] *Id.*

line for multiple services.[37]

22. We recently set forth our framework for determining which elements should be unbundled pursuant to sections 251(c)(3) and 251(d)(2).[38] We look first to what is happening in the marketplace to determine whether and to what extent alternatives to the incumbent's facilities are available. In the *Local Competition Third Report and Order*, we concluded that the incumbent LEC's failure to provide a non-proprietary element "impairs" a requesting carrier if, considering the availability of alternative elements outside the incumbent's network, lack of access to that element materially diminishes the requesting carrier's ability to provide the services it seeks to offer.[39] In determining whether alternative sources of network elements are actually available as a practical, economic, and operational matter, we look at specific factors including cost, ubiquity, quality, timeliness, and operational impediments.[40]

23. In the *Local Competition Third Report and Order*, we stated that in addition to the "necessary" and "impair" standards set out in section 251(d)(2), the language of section 251(d)(2) and the Supreme Court decision suggest we should consider whether unbundling is consistent with the overall goals of the Act. We thus consider whether creating an unbundling obligation would (1) encourage competitors to rapidly enter the local market to serve the broadest number of consumers; (2) advance the development of facilities-based competition, while encouraging investment and innovation in new technologies and services; (3) reduce regulation where warranted; (4) provide market certainty to facilitate the creation and execution of viable new business plans; and (5) be administratively practical to apply.[41] We refrained, however, from assigning any particular weight to the individual factors, but stated that we would consider the relationship among various factors when determining whether a particular network element should be unbundled.[42]

24. In the *Local Competition Third Report and Order*, we applied the necessary and impair standards and weighed the above factors to establish a list of network elements that must be unbundled on a national basis.[43] In addition, several parties to that proceeding requested that

[37] *Id.*, 14 FCC Rcd at 4809, para. 101.

[38] *Local Competition Third Report and Order*, at paras. 21-116.

[39] *Id.*, at para. 51.

[40] *Id.*, at paras. 62-100.

[41] *Id.*, at paras. 101-116.

[42] *Id.*, at para. 106.

[43] The national list of unbundled network elements adopted in the *Local Competition Third Report and Order* include: (1) local loops, including dark fiber and high-capacity loops; (2) subloops; (3) network interface devices; (4) local switching, except under certain conditions; (5) interoffice transport; (6) signaling and call-related databases; (7) operations support systems; and (8) in very limited situations, packet switching. 47 C.F.R. § 51.319; *Local Competition Third Report and Order*, at paras. 163-465.

we identify access to the high frequency spectrum of a local loop as a network element that must be unbundled.[44] We declined to address unbundled access to the high frequency spectrum of a local loop in the *Local Competition* proceeding, however, because the record in the instant proceeding more fully addresses this matter.

2. Discussion

25. As discussed below, we conclude that access to the high frequency spectrum of a local loop meets the statutory definition of a network element and satisfies the requirements of sections 251(d)(2) and (c)(3). It is technically feasible for an incumbent LEC to provide a competitive LEC with access to the high frequency portion of the local loop as an unbundled network element.[45] An incumbent LEC's failure to provide access impairs the ability of a competitive LEC to offer, on a competitive basis, certain forms of xDSL-based service that are capable of line sharing with voice services. The record shows that lack of access to the high frequency portion of the local loop would materially raise competitive LECs' cost of providing xDSL-based service to residential and small business users, delaying broad facilities-based market entry, and materially limiting the scope and quality of competitors' service offerings.[46] Moreover, access to the high frequency portion of the loop encourages the deployment of advanced telecommunications capability to all Americans as mandated by section 706 of the 1996 Act. Because some residential and small business markets may lack the economic characteristics that would support competitive entry in the absence of access to the high frequency spectrum of a local loop, it is clear that spectrum unbundling is crucial for the deployment of broadband services to the mass consumer market.

a) Definition

26. We define the high frequency spectrum network element to be the frequency range above the voiceband on a copper loop facility used to carry analog circuit-switched voiceband transmissions.[47] We affirm our tentative conclusion that any rules we adopt should not mandate a particular technological approach to the use of a line for multiple services.[48] As

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[44] A list of parties that filed comments relating to spectrum unbundling in response to *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Second Further Notice of Proposed Rulemaking, FCC No. 99-70 (rel. Apr. 16, 1999) (*Local Competition Second FNPRM*) is provided in Appendix A.

[45] *See infra* Section IV.C.2.

[46] California PUC Comments at 5; Oklahoma CC Comments at 4, 11; ALTS Comments at 6-7, 12; @link Comments at 4; CIX Comments at 2, 10; Covad Comments at 2, 18-22, 36-38; Inline Comments at 3; NAS Comments at 3-5, 10; NorthPoint Comments at 9-15; Primary Comments at 6; Prism Comments at 12; Rhythms Comments at 6.

[47] *See infra* Section IV.C.2. for a technical description of voiceband and non-voiceband copper loop transmission frequencies. We note that the issue of whether the voiceband meets the definition of a network element that must be unbundled pursuant to sections 251(d)(2) and (c)(3) is not before the Commission in this proceeding.

[48] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4809, para. 101.

we acknowledged in the *Advanced Services First Report and Order and FNRPM*, line sharing relies on rapidly evolving technology and our requirement that incumbent LECs provide the high frequency spectrum of a local loop as an unbundled network element should stimulate technological innovation.[49] We seek to ensure that, in the future, carriers are not denied the opportunity to provision services that rely on different frequency bands within the loop. Consequently, we do not set a specific dividing line between the low frequency channel and a high frequency channel on the loop.[50]

27. As we discuss in detail in section IV.D.1.b) below, we support the use of any transmission technology that is presumed acceptable for shared-line deployment with analog voice service according to the criteria already identified in the *Advanced Services First Report and Order and NPRM* and codified herein.[51] We note that industry standards are constantly evolving, and are supported by carriers that share mutual interest in avoiding service quality degradation. We believe that compliance with the criteria supporting a presumption of technical acceptability that we identify in section V.B.3 of this Order will facilitate the development and deployment of new technologies that utilize the high frequency spectrum of the local loop to provide consumer services, while ensuring the integrity of the PSTN and legacy services.

b) Proprietary Concerns Associated with Requiring Access to the High Frequency Spectrum of the Local Loop

28. The record indicates that there are no proprietary concerns associated with unbundled access to the high frequency spectrum of the local loop.[52] No commenters argue that

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[49] *Id.*

[50] This "dividing line" is generally referred to as the "guard band." We do not define specifically the frequency ranges for voiceband, guard band, and advanced services transmissions. We believe that doing so may risk arbitrarily freezing technological development, and our intention in this order is to ensure that the high frequency spectrum network element definition will apply to new, as well as current, technologies that do not interfere with the provision of analog voice service. Instead, we rely on a presumption of acceptability for deployment. *See infra* Section V.B.3.

[51] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802-05, paras. 80-91. A loop technology is presumed acceptable for deployment when the technology meets any one of the following circumstances: (1) it complies with existing industry standards; (2) it is approved by an industry standards body, the Commission, or any state commission; or (3) it has been successfully deployed by any carrier without "significantly degrading" the performance of other services. *See infra* Section V.B.3. Some xDSL technologies can "share lines" with voice service, because they do not use the frequencies in or immediately above the voiceband, thus ensuring compatibility with concurrent voiceband traffic. Not every xDSL technology, however, can be used for line sharing. HDSL and SDSL, for example, utilize voiceband frequencies, and thus are not acceptable for deployment on a shared line. *See* Covad Comments at 5.

[52] *See* ALTS Comments at 11-13; NAS Comments at 8-9; NorthPoint Comments at 26-27; Rhythms Reply Comments at 8. In the *Local Competition Third Report and Order*, we stated that section 251(d)(2) establishes separate standards that apply to proprietary and non-proprietary network elements. Specifically, we stated that the "necessary" standard in section 251(d)(2)(A) is a higher standard that applies to proprietary elements or to proprietary functions within an element, and that the "impair" standard in section 251(d)(2)(B) applies to non-proprietary elements. In that order, we adopted a limited definition of "proprietary" that generally tracks the intellectual property categories of patent, copyright, and trade secrets. A proprietary network element is

loop spectrum is proprietary under section 251(d)(2)(B). We do not discern any copyright, patent, or trade secrecy implications to unbundled access to the high frequency spectrum UNE. Carriers do not generally rely upon loop spectrum to differentiate themselves from their competitors. Thus, the high frequency spectrum is not proprietary, and we need not analyze requiring access to this unbundled loop spectrum according to the "necessary" standard. We therefore apply the "impair" standard of section 251(d)(2), to determine whether the high frequency portion of the loop is subject to the Act's unbundling obligations.

c) Analysis for Unbundled Access to the High Frequency Spectrum of a Local Loop Network Element

29. Applying the standard we announced in the *Local Competition Third Report and Order*, we conclude that a lack of access to high frequency spectrum of a local loop impairs a competitive carrier's ability to offer certain forms of xDSL-based service. As described below, just as the loop itself remains a facility available only from an incumbent LEC, so too is a competitor seeking to offer certain xDSL-based services impaired if it does not have access to the high frequency spectrum of the local loop available from an incumbent LEC.[53]

30. We recognize that in the *Local Competition Third Report and Order*, the Commission concluded that cable companies and competitive LECs are actively deploying xDSL-based advanced services.[54] We held there that competitors are not impaired in their ability to provide advanced services to medium and large business users without access to the incumbents' packet switching, a component of xDSL based advanced services. We found that requesting carriers may be impaired in their ability to offer xDSL-based services to residential and small business customers without packet switching capability, but declined to order unbundling of incumbent LEC packet switching capability because of the nascent nature of the advanced services market.[55] However, we also specifically stated that impairment with regard to residential and small business segments may be due "in part, to the cost and delay of obtaining collocation in every central office where the requesting carrer provides service using unbundled loops."[56] Thus, our impairment analysis for packet switching rests in part on the assumption that the impairment results from the intermediate step of getting to the loop, not from use of the loop.

"necessary" within the meaning of section 251(d)(2)(A) if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting carrier or acquiring an alternative from a third party supplier, lack of access to that element would, as a practical, economic, and operational matter, preclude a requesting carrier from providing the services it seeks to offer. *Local Competition Third Report and Order*, at paras. 34-40.

[53] We note that the 1996 Act does not permit the leveraging of a historic monopoly into a nascent industry or market. *See generally*, 47 U.S.C. § 251. Section 706 of the Act, however, encourages us to facilitate consumer access to low cost, high speed advanced services. Line sharing supports both of these mandates. *See* Pub.L. 104-104, Title VII, § 706, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. § 157.

[54] *Local Competition Third Report and Order*, at para. 307.

[55] *Id.*, at para. 306.

[56] *Local Competition Third Report and Order*, at para. 306.

Using the loop to get to the customer is fundamental to competition. The issue before us now, whether competitive LECs are impaired without access to the high frequency portion of the loop when they seek to provide various forms of xDSL-based services, is a different question than whether requesting carriers are impaired without access to unbundled packet switching.

31. Section 251 requires incumbent LECs to provide unbundled access to a network element where lack of access impairs the ability of the requesting carrier to provide the services that it seeks to offer.[57] In the *Local Competition Third Report and Order*, we found that it is appropriate to consider the specific services and customer classes a requesting carrier seeks to serve when considering whether to unbundle a network element.[58] In general, competitive LECs seeking access to the unbundled high frequency portion of the loop only seek to offer voice-compatible xDSL-based services.[59] We thus ask whether such carriers are impaired in their ability to offer such services without access to this network element.

32. As part of this analysis, we need to consider actual market activity. As we stated in the *Local Competition Third Report and Order,* what is occurring in the marketplace is relevant to our analysis of whether the cost of self-provisioning an element or obtaining it from a third party impairs the ability of a requesting carrier to provide the service it seeks to offer. [60] Looking to the marketplace, we find that most xDSL lines have been deployed to residential or small business consumers, and incumbent LECs provide service on the vast majority of these lines where their xDSL-based service shares the line with their voice service. According to one survey, incumbent LECs have gained a more than 17-1 advantage in deploying voice-compatible xDSL-based services to residential and small business subscribers. In contrast, competitive carriers are generally not providing voice-compatible xDSL-based services to residential and small business consumers. [61]

33. There is no question that incumbent LECs are offering xDSL on the same line as their voice service, and competitive LECs are at a significant disadvantage in offering xDSL-based services over the same line that is used to provide voice service. Incumbent LECs generally deploy forms of xDSL-based services that can coexist with voice service on a single line.[62] This enables incumbent LECs to utilize the full capacity of the copper local loop to

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[57] 47 U.S.C. § 251(d)(2).

[58] *See Local Competition Third Report and Order*, at para. 84.

[59] GSA Comments at 7; ALTS Comments at 12; Covad Comments at 32-35; NAS Comments at 4-5; NorthPoint Comments at 14-15.

[60] *See Local Competition Third Report and Order*, at para. 82.

[61] Specifically, at the end of the third quarter of 1999, incumbent LECs served approximately 178,000 residential and small business customers, while competitive LECs served less than 11,000. *See* Telechoice Deployment Tracking Survey at 1, <http://www.xdsl.com/content/resources/deployment_info.asp>. (*TeleChoice Survey*).

[62] For instance, Ameritech uses ADSL. *See* Ameritech SpeedPath Frequently Asked Questions for Homes, <http://www.ameritech.com/navigation/site/1,1935,233,00.htm>.

efficiently provide both voice and data service to a customer. As discussed below, competitive LECs seeking to deploy xDSL-based service to customers subscribing to the incumbent LEC's voice telephone service cannot deploy their xDSL with the same efficiency or at the same cost. Incumbent LECs currently do not permit competitive LECs to access the high frequency portion of the loop to provide xDSL-based services, even though the incumbent LECs utilize the high frequency portion of the loop to deploy their own services. As discussed below, this situation materially diminishes the competitive LEC's ability to provide the particular type of xDSL-based service that it seeks to offer.

34. In contrast, we conclude that competitors are not impaired where they seek to deploy those versions of xDSL-based services that require a dedicated local loop, such as SDSL or HDSL, because they can procure unbundled loops to deploy such service.[63] We recognize that for larger business users, competitive and incumbent LECs have to date maintained a degree of competitive parity, acquiring similar customer volumes.[64] The larger business market tends to favor robust, high-capacity, symmetrical forms of xDSL, such as SDSL. These types of xDSL are not compatible with voice service provided over the same line in a line sharing arrangement, because they utilize the whole loop frequency spectrum. Thus, both incumbent and competitive LECs must deploy these forms of xDSL over dedicated loops. We believe that the comparable levels of market penetration between incumbent and competitive LECs indicates that competitive LECs are not impaired where they can procure unbundled loops to provide these services.[65] Moreover, the record does not indicate otherwise.

35. As discussed below, we are convinced that line sharing will level the competitive playing field and enable requesting carriers to accelerate the provision of voice-compatible xDSL-based services to residential and small business customers who, to date, have not had the same level of access to competitive broadband services as larger businesses.[66] Therefore, because we expect residential and small business customers to demand voice-compatible xDSL-based services, we find that unbundled access to the high frequency portion of the loop offers the best opportunity to see these nascent markets evolve into competitive markets, just as early indications in the high-capacity offerings to larger business customers suggest that competition

[63] *See* 47 C.F.R. § 51.319(a).

[64] By the end of the third quarter of 1999, incumbent and competitive LECs had deployed approximately 41,000 business xDSL lines each. HDSL is not represented in these statistics, nor in the analysis below. HDSL has mostly been deployed by incumbent LECs as a substitute for analog T1 services. *See TeleChoice Survey* at 1.

[65] The TeleChoice survey reveals that competitive LECs have deployed 79 percent of their voice compatible xDSL services to business customers while incumbent LECs have deployed 19 percent of the voice compatible xDSL service to business customers. In the residential market, competitive LECs have deployed only 21 percent of their voice-compatible xDSL service to the residential market while incumbent LECs have deployed 81 percent of their voice-compatible xDSL service to the residential marketplace. The survey also points out that small business users generally choose the residential offerings of competitive and incumbent LECs. *See id.*

[66] *See generally*, NorthPoint Comments at 15 (arguing that incumbent contentions that competitive carriers are not impaired without shared line access are "nothing more than a naked attempt to extend their voice monopoly into broadband.").

will take hold.[67]

36. Alternatives in the Marketplace. When we look to alternatives in the marketplace, we consider whether the competitive LEC can provide voice compatible forms of xDSL by self provisioning its own loop, by purchasing a second loop from the incumbent, by purchasing the first loop as an unbundled network element, or by obtaining the higher frequency portion of the loop from third party sources. We examine each alternative in turn, using the framework developed in the *Local Competition Third Report and Order*. We conclude that each alternative either is significantly more costly or not available ubiquitously, or both.

37. Self-Provisioning Loops. The record is conclusive that carriers seeking to deploy voice-compatible xDSL-based services cannot self-provision loops.[68] This finding is consistent with our conclusion in the *Local Competition Third Report and Order*, wherein we found that self-provisioning entire loops is not a viable alternative to the incumbent's unbundled loop because replicating an incumbent's vast and ubiquitous network would be prohibitively expensive and delay competitive entry.[69]

38. Second Loop. There are several reasons why purchasing or self-provisioning a second loop is not possible as a practical, operational or economic matter. First, second loops are not ubiquitously available.[70] Refusing to unbundle the high frequency portion of the loop in this situation forecloses competitive access to the segment of consumers that lack additional copper pairs to their homes or small businesses. Where a customer premises is only addressed by one copper loop, or where end users have exhausted the facilities that serve them by installing multiple phone, modem, and fax lines, end users will have no additional facilities available at

[67] Although we highlight the dramatic impact that line sharing promises with respect to residential and small business customers that are more price-sensitive and do not consume high volumes of data transport on a per-line basis, we note that requesting carriers providing voice-compatible xDSL services to medium and large business customers are also impaired without access to the unbundled high frequency portion of the loop. This impairment occurs for much the same reason that requesting carriers are impaired in their provision of voice-compatible xDSL service to residential and small business customers. The impairment suffered by a competitor that cannot access the high frequency portion of the loop to provide voice-compatible xDSL service occurs on a line-by-line basis, in that the incumbent with access to the high frequency portion of a loop will always have an advantage over the competitor lacking such access, regardless of the nature of the customer. So long as the customer is best served with the provision of a voice-compatible line sharing technology, no amount of loop density in a geographic region will alleviate the impairment that the competitor suffers on a per-line basis.

[68] ALTS Comments at 11-12; @link Comments at 5; Covad Comments at 19; Inline Comments at 3; NorthPoint Comments at 7, 27; Rhythms Reply Comments at 4-5; Letter from A. Richard Metzger, Jr., to Lawrence Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 98-147, at 2 (filed Nov. 9, 1999) (NorthPoint Nov. 9 *Ex Parte*).

[69] *Local Competition Third Report and Order*, at paras. 188-89.

[70] *Id.* at para. 182. Letter from Florence Grasso, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, audio tape (filed Sept. 22, 1999) (*Aug. 31 Technical Forum*).

their premises which a competitive xDSL service provider could use to provide service.[71] In those situations, competitive xDSL service providers are precluded from providing the services they seek to offer, and consumers are deprived of the benefits of competition. This is particularly a problem in rural areas, where spare copper facilities are less common.[72] Without a requirement that the incumbent LEC must provide competitors with access to the high frequency portion of these loops, only the voice service provider that already controls the entire loop can provide xDSL-based service to that customer. In virtually all cases, this provider will be the incumbent LEC.[73] Thus, lack of access to the high frequency portion of the loop reduces the efficient use of existing loop plant and diminishes the scope of potential customers to whom competitive LECs can market xDSL-based service, thereby limiting the competitive choices available to consumers for whom additional copper loops are not available.[74] In addition, such lack of access can accelerate the depletion of copper loops in entire communities, necessitating inefficient capital expenditures that will increase costs imposed on consumers and competitors alike. Even if there are spare pairs in the "drop" to a home or business, there are not corresponding pairs in the feeder plant connecting the neighborhood to the central office.

39. Second, if competitive LECs were to purchase or self-provision a second unbundled loop to provide voice-compatible xDSL-based services, their provisioning of service would be materially more costly, and coincidentally less efficient, than purchasing the unbundled high-frequency portion of the loop.[75] The inability of competing carriers to provide xDSL-based services over the same loop facilities that the incumbents use to provide local exchange service makes the provision of competitive xDSL-based services to customers that want a single line for both voice and data applications -- typically small businesses and mass market residential consumers -- not just marginally more expensive, but so prohibitively expensive that competitive LECs will not be able to provide such services on a sustained economic basis.[76] Accordingly, a requesting carrier providing voice-compatible xDSL-based services is impaired without access to the unbundled high frequency portion of the loop.

40. Specifically, incumbent LECs refuse to permit competitive LECs to deploy xDSL-based service to their customers on the same customer loops through which incumbents provide voice services, although incumbents regularly deploy both services on the same loop.[77]

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[71] *See* Oklahoma CC Comments at 12-14; Rhythms Reply Comments at 4; CompTel Reply Comments at 5; NorthPoint Nov. 9 *Ex Parte* at 1.

[72] *See, e.g.,* RTC Comments at 13-16.

[73] *Aug. 31 Technical Forum*; Covad Comments at 22; Rhythms Reply Comments at 4.

[74] NorthPoint Nov. 9 *Ex Parte* at 2; Rhythms Reply Comments at 4-5.

[75] NorthPoint Nov. 9 *Ex Parte* at 1. *See* Rhythms Reply Comments at 4-5; MCI WorldCom Reply Comments at 15. *See also infra* Section IV.E.2.

[76] *See* Covad Comments at 8, 19; NorthPoint Comments at 27.

[77] *See, e.g.,* Oklahoma CC Comments at 11 ("the OCC is convinced that line sharing, if it is to be accomplished, must be mandated by the FCC").

As a result, a competitive LEC providing xDSL to a customer subscribing to an incumbent LEC's voice service must provide a second customer loop for the customer's xDSL service, effectively doubling the line access charges for that customer's voice and xDSL services, and providing a distinct cost advantage to incumbent LEC-provided xDSL products.[78] The record shows that the combined collocation and unbundled loop costs, exclusive of incremental and fixed network, equipment, and overhead costs, incurred by a competitive LEC seeking to deploy xDSL service can exceed 100% of the retail price for the comparable shared-line xDSL that the incumbent offers to the same customer that the competitor is vying for.[79] The record also shows that incumbents charge requesting carriers almost as much or more, on a monthly basis, for an unbundled, conditioned loop, as the incumbent charges its retail customers for xDSL service.[80] This price discrepancy between what an incumbent can charge its customer for its own shared-line xDSL and what a competitor must pay to the incumbent just to gain access to that customer materially diminishes the ability of the competitive carrier to offer voice-compatible xDSL-based services in competition with incumbent LEC.

41. It is not economical for competitive LECs to self-provision or purchase the entire loop as a second line just to obtain access to the high frequency portion of the loop.[81] The record indicates that incumbent LECs generally allocate virtually all loop costs to their voice services, then deploy a voice-compatible xDSL service such as ADSL on the same loop, allocating little or no incremental loop costs to the new resulting service.[82] In contrast, when the competitive LEC

[78] *GTE Telephone Operating Cos. GTOC Tariff No. 1 GTOC Transmittal No. 1148*, CC Docket No. 98-79, Memorandum Opinion and Order, 13 FCC Rcd 22466 (1998) (*GTE DSL Tariff Order*). *See* also NorthPoint Nov. 9 Ex Parte.

[79] For example, in the San Francisco Bay area, NorthPoint's wholesale loop and collocation costs are 116% of Pacific Bell's total retail, residential, shared-line xDSL product price, before NorthPoint begins to recover the incremental and fixed costs of network, equipment, or overhead. NorthPoint Comments at 8.

[80] For example, Bell Atlantic charges $29.95 per month, with volume and term discount, as per Bell Atlantic Trans. No. 1138 for its ADSL service. In Virginia, Bell Atlantic will charge from $19.87 to $41.26 per month for an unbundled, conditioned loop. In Maryland, Bell Atlantic charges from $13.63 to $27.40. In New York, the rates are $21.02 and $28.26. In New Jersey, Bell Atlantic charges from $15.02 to $25.12. In Massachusetts, Bell Atlantic charges from $19.87 to $32.84. In Pennsylvania, the rates range from $13.16 to 27.74, and in Delaware, from $11.68 to $18.21. These prices do not include non-recurring line conditioning costs. Perhaps the most sharply contrasted case is New Hampshire, where Bell Atlantic charges $42.44 per month for an unbundled, conditioned loop, $12.49 above its retail xDSL price. *See* Covad Comments at 20; Rhythms Reply Comments at 8. *See also* 47 C.F.R. § 51.513(c)(1), Proxies for Local Loops.

[81] *See* Covad Comments at 21; NorthPoint Nov. 9 *Ex Parte* at 2 ("in cases where a separate loop is available . . . DSL competitive LECs must incur 'additional non-trivial costs' by purchasing a second loop to serve their customers, whereas an incumbent LEC may use a single copper pair to offer voice and DSL services"); Rhythms Reply Comments at 8-10. *See, e.g.,* Letter from Jonathan Askin, Vice President – Law, ALTS, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 at 6 (filed July 29, 1999) (ALTS July 29 *Ex Parte*).

[82] *See Bell Atlantic Telephone Cos., et al*, Memorandum Opinion and Order, FCC 98-317 (rel. Nov. 30, 1998) at para. 11 (noting incumbent LEC statements that there are no loop costs to be imputed to ADSL service). *See also* NorthPoint Comments at 7-8 (describing NorthPoint's wholesale loop and collocation costs ranging from 115% to 230% of the incumbent LECs' retail price for residential xDSL services).

procures a second loop, it must pay the incumbent LEC the full price of that unbundled loop as an unbundled network element. The cost of that additional loop often accounts for 30 to 50% of the competitor's total cost of providing service.[83] Thus, the incumbent LEC's voice-compatible xDSL service enjoys substantial cost advantages over a competitive LEC's xDSL offerings.[84]

42. Third, a competitive carrier faces a competitive disadvantage in providing xDSL over a second line when competing against the incumbent's single line offering. The incumbent is able to market its own service to customers as a quick and convenient add-on service, while the competitive carrier must persuade the customer to purchase a second line.[85] For example, Bell Atlantic, BellSouth, and US WEST emphasize in their advertising that consumers can subscribe to their xDSL-based products without incurring the installation and additional monthly expense of acquiring an additional telephone line.[86] In comparison, consumers that desire to obtain xDSL service from competitive LECs must encounter complications and expenses, including the need to arrange for a technician to install service, that do not arise if they procure the exact same service from the incumbent LEC. Providing competitive LECs with access to the high frequency portion of the loop would remove that additional burden from consumers that prefer to obtain xDSL service from competitors.

43. Finally, we disagree with CoreComm that a decision to unbundle the high frequency portion of the loop should be no different than the Commission's analysis of DSLAMs and packet switches, which the Commission decided not to unbundle.[87] CoreComm argues that the same reasons which led the Commission to decline to unbundle packet switching should lead to a Commission decision to refrain from creating a high-frequency portion of the loop UNE. We disagree. Self-provisioning switches is vastly easier, less expensive, less time consuming, less complicated, and less risky than self-provisioning the outside plant that constitutes the ubiquitous loop network. Moreover, when we considered the impairment issue with regard to

[83] *See* Letter from Rodney L. Joyce, Counsel for Network Access Solutions Corp., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 98-147, at 1 (filed Oct. 13, 1999) (NAS Oct. 13 *Ex Parte*). *See also* Letter from Florence M. Grasso, Covad Communications, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 98-147, Attachments (filed Oct. 5, 1999) (Covad Oct. 5 *Ex Parte*).

[84] *See* NorthPoint Nov. 9 *Ex Parte*; *See also* Letter from Jason Oxman, Senior Government Affairs Counsel, Covad, to Carol Mattey, Chief, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 98-147 (filed Oct. 13, 1999) (Covad Oct. 13 *Ex Parte*).

[85] Rhythms Reply Comments at 9; Sprint Reply Comments at 5-6; CompTel Reply Comments at 14.

[86] *See* Bell Atlantic Infospeed DSL advertisement, <http://www.bellatlantic.net/home/dsl>; BellSouth FastAccess Service advertisement, <http://services.bellsouth.net/external/adsl>; US WEST MegaBit Services advertisement, <http://www.uswest.com/features/megabit> (stating that MegaBit installation is easy. "We provide the step-by-step instructions, plus a toll free number," indicating that customers can install their own shared-line MegaBit xDSL service. Connecting an additional line requires a technician to visit the customer's premises, adding to installation difficulties and expenses). *See also* Rhythms Reply Comments at 17.

[87] *See* Letter from James J. Valentino, Attorney for CoreComm, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 (filed Nov. 10, 1999) (CoreComm Nov. 10 *Ex Parte*).

packet switches in the *Local Competition Third Report and Order*, we held that the presence of "multiple requesting carriers providing service with their own packet switches is probative of whether they are impaired without access to unbundled packet switching."[88] To follow CoreComm's line of reasoning in the situation before us, we would be looking at whether competitive LECs have self-provisioned loops, or more precisely, have self-provisioned the high frequency portion of the loop in order to provide xDSL-based services. There can be little dispute that requesting carriers have not duplicated the incumbent LEC's ubiquitous loop plant and generally are not providing service with competitive loop facilities. Thus, we disagree with CoreComm that we should consider loops and packet switches as identical and therefore must be treated similarly for unbundling purposes.[89]

44. Purchasing the First Loop. We believe that if competitive LECs were to provide voice service in addition to xDSL-based service, they would be impaired in their ability to provide the data services they seek to offer. First, concluding that competitive LECs should be able to provide voice service on the customer's first line would impose on requesting carriers all of the cost and operational issues associated with providing circuit-switched voice services. To the extent the competitive carrier invests in its own switching facilities, it would face the same cost and operational impairments associated with collocation and the coordinated cutover process that we found in *the Local Competition Third Report and Order*.[90] Competitive carriers providing voice service would also incur the costs of providing E911 service and number portability.

45. Furthermore, requiring competitive LECs to provide voice services could require large investments in circuit switching network architectures that may have little to do with a requesting carrier's intention to offer advanced data services. Investments in circuit switched networks may only be justified by carriers that have attained sufficient scale and scope economies to justify deploying large-scale circuit switched networks.[91] For other entrants, requiring this investment diverts financial resources and management focus away from competitive LECs' ability to offer advanced services and frustrates a requesting carrier's plan to migrate telecommunication services from circuit switched to packet switched networks.[92] We find that frustrating the development of packet switched networks capable of bringing advanced telecommunications capability to all Americans is wholly inconsistent with the goals of section 706 of the 1996 Act and the deployment of efficient networks.

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[88] *Local Competition Third Report and Order*, at para 306.

[89] *See* CoreComm Nov. 10 *Ex Parte* at 4.

[90] *Local Competition Third Report and Order*, at para. 266. We note that pursuant to our line sharing requirements, requesting carriers may provide data services without the incumbent LEC having to take the voice customer out of service through the coordinated cutover process.

[91] NEXTLINK Comments at 6.

[92] Covad Comments at 34-35; NEXTLINK Comments at 6; Rhythms Reply Comments at 10.

46. In the *Local Competition Third Report and Order*, we stated with regard to subloops, if competing carriers that need only a portion of the loop must either pay for the entire loop or forego access to that loop altogether, many consumers will be denied the benefits of competition.[93] That reasoning applies with equal force here.

47. Incumbents argue that competitors have the same competitive options as incumbents, that they are free to provide both analog voice and data services in combination, using unbundled network elements, and that as a result, competitors are not impaired without access to the high frequency portion of the loop.[94] We acknowledge that self-provisioning a circuit-switched network is not the sole means of providing voice service. In particular, requesting carriers could obtain combinations of network elements and use those elements to provide circuit-switched voice service as well data services.[95] This would relieve a competitive carrier from the need to make significant investments in switching technology that may soon become obsolete.

48. We find, however, that despite its ability to purchase transmission facilities from the incumbent to provide voice service, a competitor is still impaired if it must provide analog voice service in order to enter the market for voice-compatible xDSL services. There are additional costs associated with being a provider of voice service than the cost of the circuit switches. In particular, a competitive carrier would need to develop marketing, billing, and customer care *infra*structure designed to service the needs of its voice customers. In addition, competitive LECs seeking to enter the traditional voice services market must deploy sales and marketing forces, and invest in creating a recognizable brand. To compete against incumbent LECs that have a long history providing voice services, competitors must overcome the substantial goodwill, experience and market power of the incumbent LECs. These factors make it a considerable challenge for competitive LECs to motivate a consumer to adopt a new local exchange provider that offers much the same service that the consumer already receives from the incumbent LEC.[96]

49. We are confident that competitors can rise to this challenge. At this time however, we find that competitive LECs would be impaired even if they attempted to provide multi-service offerings including voice-compatible xDSL services. In addition, we note that it is likely that competitive market entry would take longer to accomplish because competitors would need to develop all of these additional capabilities. To be sure, competitive LECs may well decide to

[93] *Local Competition Third Report and Order*, at para. 211.

[94] Bell Atlantic Comments at 5-6; GTE Comments at 24, 26; USTA Comments at 5.

[95] In this scenario, a requesting carrier would essentially share the line with itself by attaching a splitter to the loop at a technically feasible point and separating the voiceband from the high frequency portion of the loop to provide both voice and xDSL services.

[96] One means by which the competitor can entice the consumer to switch is to provide analog voice services at a lower price. Local voice service, however, is priced in response to a number of historical, public policy, and regulatory factors, such as Universal Service obligations, and various state and local regulations. Carl Shapiro and Hal R. Varian, *Information Rules*, HARV. BUS. SCH. PRESS, 1999, at 212-214.

diversify their offerings at some point in the future. But such action should occur in response to marketplace forces, not regulatory fiat. To conclude otherwise would be to ignore the statutory directive in section 251(d)(2) that requires the Commission to consider whether a requesting carrier is impaired "to provide the services that it seeks to offer."[97]

50. Our unbundling analysis acknowledges that requesting carriers may address the impairment they face in the absence of line sharing by capturing their own efficiencies and offering integrated or innovative product offerings to customers.[98] For example, in the absence of line sharing, requesting carriers could offer multiple services, such as voice and data, over a single loop to capture the additional revenues associated with local and long distance voice services. Alternatively, requesting carriers could offer innovative bundles of services to customers to counter an incumbent LEC who provides voice and data services on a single loop.[99]

51. As discussed above, however, our unbundling analysis favors an analytical approach that considers the totality of the circumstances a requesting carrier will face, rather than a specific business case analysis, to determine whether lack of access to particular network elements materially diminishes a requesting carrier's ability to provide the services it seeks to offer. We do not rely upon the presence of a particular innovative business plan as a response to whether a requesting carrier is impaired because of the variety and difficulty of predicting the success of such a plan. We held in the *Local Competition Third Report and Order* that "such an approach would require the Commission to make specific assumptions regarding the competitor's business model, including which technology a competitor would choose to deploy, which market a competitor would choose to enter (e.g., business and/or residential), and what services a competitor would choose to offer."[100] We find no evidence in the record to support the conclusion that a requesting carrier's ability to spread the costs of a loop between multiple services fully addresses a requesting carrier's impairment without access to line sharing. Accordingly, we disagree with parties who contend that a requesting carrier can adopt a business plan that requires it to provide voice services to address the impairment associated with the lack of access to line sharing.[101]

52. Nothing in our decision to require incumbent LECs to implement line sharing pursuant to specific rules adversely affects a requesting carrier's ability to provide new services or execute innovative business plans. To the contrary, there is evidence that requesting carriers

[97] 47 U.S.C. § 251(d)(2).

[98] *See Local Competition Third Report and Order*, at para. 258. ("We find however, that facilities-based competitors need not deploy switches in exactly the same network configuration as an incumbent, thus allowing competitors to achieve their own unique and competitive efficiencies by deploying their own switches.")

[99] *See* Letter from A Richard Metzger, Jr., Counsel for NorthPoint, to Magalie Roman Salas, Secretary, Federal Communications Commission (filed Nov. 4, 1999) (NorthPoint and Tandy Nov. 4 *Ex Parte*).

[100] *Local Competition Third Report and Order*, at para. 257.

[101] *See* Ameritech Comments at 3-6; Bell Atlantic Comments at 2-7; BellSouth Comments at 12-13; SBC Comments at 14-16; US WEST Comments at 20-22; CoreComm Nov. 10 *Ex Parte* at 3-4.

have premised innovative marketing arrangements upon the presence of a line sharing requirement.[102] Requesting carriers providing only voice compatible xDSL services also propose to offer innovative voice over xDSL services when commercially practicable.[103] By requiring line sharing, requesting carriers are able to begin to build a base of data customers and focus their innovation efforts upon providing packet-switched services which may substitute for traditional voice services over time. We find that requiring incumbent LECs to provide line sharing therefore, does not harm innovation. Conversely, requiring requesting carriers to provide voice services would divert a requesting carrier's resources away from innovative packet-switched services, such as voice over xDSL, that requesting carriers seek to provide.

53. Third Party Sources: Finally, the record also shows that requesting carriers are not presently obtaining the high frequency portion of the loop from third-party sources rather than from an incumbent LEC under the section 251(c) unbundling obligation. At this time, there is no evidence of such alternatives in the record, nor are we aware of competitive LECs that provide analog voice services offering to partner with competitive LECs offering data services to share unbundled loops obtained from incumbent LECs, although such partnerships could develop in the future. CoreComm notes that some competitive LECs are beginning to form alliances with the intention of offering combined data and voice-over-DSL and integrated voice and data transmission packages.[104] We support this type of cooperation, but distinguish voice-over-DSL and other forms of packetized voice transmission from the analog voiceband transmission that is fundamental to the line sharing we consider in this Order. Packet-based voice services are not yet a market substitute for traditional analog voice service. Packet-based services do not provide lifeline services during emergency situations such as power outages and do not generally offer E-911 functionality.[105] As we held in the *Local Competition Third Report and Order*, our unbundling analysis looks to what is occurring in the marketplace today, not hypothetical business cases.[106]

54. Goals of the Act: Our decision to unbundle the high frequency portion of the loop is consistent with the 1996 Act's goals of rapid introduction of competition and the promotion of facilities-based entry. Moreover, our decision to require spectrum unbundling is consistent with Congress's mandate that the Commission encourage the deployment of advanced telecommunications capability in section 706 of the 1996 Act.[107] We are convinced that line

[102] *See* NorthPoint and Tandy Nov. 4 *Ex Parte*.

[103] CIX Comments at 11; Oklahoma CC Comments at 21; NEXTLINK Comments at 6-7; Sprint Reply Comments at 11.

[104] CoreComm Nov. 10 *Ex Parte*.

[105] E-911 functionality requires that the voice-over-DSL service terminate on a circuit switch, creating the same sort of difficulties and impairments that competitive LECs face when trying to deploy circuit-switched analog voice services.

[106] *Local Competition Third Report and Order*, at para. 257.

[107] The principle section of the 1996 Act concerning advanced telecommunications services is Section 706, Pub.L. 104-104, Title VII § 706, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. § 157. *See also* CIX

sharing will enable requesting carriers to accelerate the provision of xDSL-based service to residential and small business customers who, to date, have not had the same level access to competitive broadband services as larger businesses.[108]

55. Because line sharing ensures the deployment of xDSL technologies and ensures that consumers will have at least a single choice in xDSL providers, even where only one loop is available, it also benefits the residents of rural areas. For example, because of the increasing constraints on the availability of second, stand-alone loops and the high cost of provisioning data services on such loops, failure to unbundle the high frequency spectrum of the local loop would cause residential and small business customers to forego competitive alternatives or the ability to receive xDSL-based service at all, particularly in rural areas. In instances where only one loop is available, a requesting carrier cannot obtain line sharing, and if the incumbent LEC chooses not to offer xDSL-based services, a consumer will not be able to obtain x-DSL based services. In instances where two loops are available and the incumbent LEC chooses to offer xDSL-based services, absent line sharing, a competitive LEC seeking to offer xDSL-based service would likely encounter a Hobson's choice between providing xDSL-based service at a significantly higher price than the incumbents, or take a significant economic loss in order to compete against the incumbent's price. The incumbent's price, however, is significantly lower because the incumbent deploys its voice-compatible xDSL service at little or no incremental cost by utilizing the same loop that it uses for local exchange service.[109] Should the competitive LEC choose to bypass a rural area because of this situation, rural customers are then afforded only the option of subscribing to the incumbent LEC's xDSL service. It is an important goal of this Commission that competitive providers of xDSL and other broadband services do not bypass rural areas as competition brings more choices to consumers, in terms of price, quality, and types of services.

56. Some commenters argue that unbundling the high frequency portion of the loop will dampen investment by competitive LECs that offer voice services.[110] We do not believe that facilitating competition in xDSL services will necessarily diminish the competitive opportunity in the provision of voice services. Certainly, offering voice service is not a technical prerequisite

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Comments at 8.

[108] Rhythms Reply Comments at 5.

[109] *See* Covad Comments at 21. For the purposes of this discussion, we assume that the competitor's retail price includes the cost of the extra customer access line, regardless of whether that line is purchased by the customer from the incumbent, or by the competitor as an unbundled network element. Thus, where the competitive carrier relies on the customer to procure the second line, and the incumbent and the competitor's xDSL offerings are, for example, retail priced at $29.95 per month, the apparent cost, from the customer's perspective, of the competitor's service, is higher than that of the incumbents by the amount that the incumbent charges for the second line, since a second line is not required for the incumbent's product. Where the competitor procures the second line as an unbundled network element, the competitor's cost for that line constitutes a large cost element (and a revenue stream for the incumbent) that the incumbent does not incur in its retail xDSL offering. *See* NEXTLINK Comments at 6-7; Rhythms Reply Comments at 7-9.

[110] Bell Atlantic Comments at 4; GTE Comments at 1-2; RTC Comments at 5; USTA Comments at 4, 7; CoreComm Nov. 10 *Ex Parte* at 3.

to the provision of xDSL service on a particular loop. Rather, it is the fact that the incumbent is already providing voice service on a loop that makes the preservation of competitive access to the high frequency portion of that loop so vital. Without line sharing, competitors would face substantial barriers to market entry, such as additional required investment for voiceband equipment and facilities, and the difficulties of competing against an entrenched, market-dominant competitor.[111] Requiring that competitors provide both voice and xDSL services, or none at all, effectively binds together two distinct services that are otherwise technologically and operationally distinct. Such bundling, whether through self-provisioning or through partnerships, will not drive additional investment dollars toward voice, because it does not make voice more lucrative, but will drive investment away from the provision of advanced services, such as xDSL-based services, undermining the Congressional intention articulated in section 706 of the 1996 Act.[112] In addition, without line sharing consumers would need to forego their current voice service provider, virtually always an incumbent LEC, in order to subscribe to a competitive LEC's xDSL service, which robs consumers of market choices.[113]

57. Moreover, the availability of shared-line access will encourage data carriers to continue investing in network facilities such as DSLAMs, interoffice networks, and backbone facilities, and should promote further innovation in xDSL technologies.[114] We conclude that unbundling the high frequency portion of the loop will not deter investment by facilities-based competitive LECs that plan to offer a full range of services to consumers, including both voice and data services.[115] We expect that such carriers will be able to differentiate themselves from competitive LECs offering only data services by offering consumers the benefits of one-stop shopping, or by providing access to superior facilities or technology. In addition, we do not agree that providing competitors with the option to deliver data services will permit incumbent LECs to become entrenched in the provision of voice service. We believe that product integration and technological innovation will, over time, enable competitive LECs continue to

[111] Covad Comments at 32-35; NorthPoint Comments at 13-15.

[112] NorthPoint Reply Comments at 8; Rhythms Reply Comments at 4.

[113] NorthPoint Reply Comments at 9.

[114] *See* Covad Comments; Letter from Thomas M. Koutsky, Assistant General Counsel, Covad, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 at 3 (filed Sept.1, 1999) (Covad Sept. 1 *Ex Parte*) (arguing that the availability of competitive advanced services will drive investment and innovation such as fiber transport to suburban and low-density areas, and the implementation of next-generation remote-terminal technology). *See also* Oklahoma CC Comments at 21-22; ALTS Comments at 7; Sprint Comments at 15; Rhythms Reply Comments at 4.

[115] *See* CoreComm Nov. 10 *Ex Parte*, at 1-2, 4. ("It is difficult to see why the Commission would expect [competitive LECs] to construct their own loop facilities or to procure unbundled [incumbent LEC] loops if a rival can offer both voice and high-speed data services over the same loop but without having to pay the full TELRIC price of that loop.") *See also infra* Section IV.D.1) (discussing requirement that competitive LEC may only access the high frequency portion of the loop where an incumbent LEC is already providing analog voiceband service on that loop). We note that this arrangement presupposes that the incumbent LEC will be charging the customer the line access charge, which exceeds the TELRIC price for an unbundled loop.

compete with incumbents for the provision of a full range of services.[116]

58. We also disagree with US WEST's argument that the *Advanced Services FNPRM* fails to recognize the Commission's "hands-off treatment of the dominant providers of advanced services – cable operators – and its heavy regulation of incumbent LECs."[117] US WEST states that the requirement that incumbent LECs unbundle the high frequency loop spectrum network element to permit competitive LECs to provide xDSL services "violates principles of competitive neutrality" in the advanced services market.[118] US WEST contends that, contrary to its treatment of incumbent LECs, the Commission has refrained from imposing any unbundling obligations on cable operators.[119]

59. We note that the Act explicitly makes distinctions based on a common carrier's prior monopoly status.[120] Therefore, US WEST's argument is inapposite to the issue at hand. We have not yet determined whether the provision of Internet access through a cable modem is a cable service,[121] telecommunications service,[122] or information service,[123] and therefore potentially subject to Title VI or Title II of the Communications Act.[124] We have determined, however, that lack of access to the high frequency portion of the incumbent's local loop impairs a competitive carrier's ability to offer advanced services, and that unbundling this network

[116] NEXTLINK Comments at 6.

[117] US WEST Comments at 3. *See* SBC Reply Comments at 9.

[118] US WEST Reply Comments at 32–33. *See* Bell Atlantic Comments at 6–7; BellSouth Comments at 12–13.

[119] US WEST Reply Comments at 33.

[120] Compare, for example, section 251(b), which describes the interconnection obligations placed on all LECs, to section 251(c), which places additional obligations on incumbent LECs.

[121] The term "cable service" means "(A) the one-way transmission of (i) video programming, or (ii) other programming service, and (B) subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service." 47 U.S.C. § 602(6).

[122] A "telecommunications service" is defined as "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of facilities used." 47 U.S.C. § 3(46).

[123] An "information service" is defined as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service. 47 U.S.C. § 3(20).

[124] The Commission's Cable Services Bureau recently stated that it "is not persuaded that consumers are at risk of cable establishing a bottleneck monopoly in broadband services in the absence of immediate regulatory action." *Broadband Today, A Staff Report to William E. Kennard, Chairman, Federal Communications Commission*, at 42, Oct. 1999, <http://www.fcc.gov/csb/>.

element furthers the goals of the Act.[125] Therefore, we conclude that it is appropriate to unbundle access to the high frequency portion of the local loop, regardless of the regulatory status of cable modem Internet access.

60. While we cannot predict the impact that technological developments will have upon the ongoing need for the line sharing rules that we establish in this Order, our actions at this time need only respond to, and are well justified by, current market, technology, and industry conditions. Given the rapid changes in technology, competition, and the economic conditions of the telecommunications market, however, we expect that the conditions justifying our line sharing requirements will change over time. We therefore expect to reevaluate the applicability of unbundling obligations to the high frequency spectrum of the local loop in the course of our periodic review of the national rules for unbundled network elements.[126]

61. Specifically, we expect to reexamine our national list of network elements that are subject to the unbundling obligations of the Act every three years.[127] As we stated in the *Local Competition Third Report and Order*, we believe that revisiting our national network element unbundling rules in three years will provide carriers and capital markets the time and regulatory certainty they need to implement business plans.[128] Thus, combining the review of our line sharing rules with our review of our other national rules for unbundled network elements will facilitate a more comprehensive and technologically neutral approach.

C. Technical Feasibility of Spectrum Unbundling

1. Background

62. In the *Advanced Services FNPRM*, based on the record as it existed at that time, we tentatively concluded that line sharing is technically feasible and sought comment on that tentative conclusion.[129] We also observed that incumbent LECs already provide both voice and advanced services though a single line, and may also share lines with other service providers.[130]

2. Discussion

63. We adopt our tentative conclusion that there exists no *bona fide* issue of technical feasibility with regard to line sharing. In fact, individual LECs commenting in this proceeding

[125] *See supra* Section IV.B.

[126] *See Local Competition Third Report and Order*, at para. 146. *See also* 47 U.S.C. §§ 251(d)(1) - (2).

[127] *Id.*, at para. 149.

[128] *Id.*

[129] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4809, para. 103.

[130] *Id.*, 14 FCC Rcd at 4809-10, para. 103.

no longer dispute whether line sharing can be provided to requesting carriers as a technical matter.[131] It is clear from the record that incumbent LECs already provide both analog voice and high-speed data services over one loop by connecting the local loop facility to their DSLAM to utilize the loop's non-voiceband frequency data transmission capability for their own xDSL services.[132] We conclude that two-carrier line sharing, where the incumbent LEC's analog voice service shares the line with a competitive LEC's data service, can be accomplished in the same manner.[133]

64. The local loop can support transmissions on a wide range of frequencies. Analog voice service occurs on the lower "voiceband" frequency range, at least between 300 Hertz and 3,000 Hertz, and possibly up to 3,400 Hertz depending on equipment and facilities.[134] Some forms of xDSL, such as ADSL[135] use a higher frequency range, generally above 20,000 Hertz, that does not interfere with voiceband transmissions.[136] xDSL services that do not use the voiceband frequency range can "share" a copper loop with voiceband services, such as POTS, without impairing the performance of either service. Therefore, the customer purchasing the

[131] Bell Atlantic Comments at 11; BellSouth Comments at 16; GTE Comments at 29.

[132] GSA Comments at 6; ALTS Comments at 7-8; CIX Comments at 3; Covad Comments at 2; Rhythms Reply Comments at 15-16; CompTel Reply Comments at 4.

[133] Line sharing between one carrier providing voice service and another providing data service most closely resembles current methods of shared line service deployment, comports with current industry standards, and provides a competitive market entry opportunity for carriers seeking to provide data services to small and residential businesses. While it is technically feasible for more than two carriers to share a loop, the record does not contain substantial support for requirements to facilitate such arrangements. Rhythms Reply Comments at 15. *See infra* Section IV.C.

[134] 1 Hertz is one cycle per second. Analog voice and modem transmissions up to 56 kilobits per second (kbps), generally utilize frequencies from 300 to 3000 or 3400 Hertz. *See* Covad Comments at 5, n. 7.

[135] Asynchronous Digital Subscriber Line (ADSL) is the most common "flavor" of xDSL used for residential and small business applications. Using digital coding schemes and transmitting above the voiceband frequency range, ADSL modems are capable of transmitting at up to 120 times the speed of 56 kilobits per second (kbps) dial-up modems without interrupting basic voice services. Specifically, ADSL modems are capable of receiving up to 8 megabits per second (Mbps) "downstream," and transmitting up to 1 Mbps "upstream." The nomenclature "asymmetrical" refers to the asymmetry between the maximum upstream and downstream transmission rates. Actual downstream transmission speed decreases, however, in relation to the distance and the number of line impairments between the user and the serving central office. Thus, ADSL subscribers will generally experience downstream data rates from 1.54 to 6.14 Mbps, and upstream data rates from 176 to 640 kbps.

[136] These xDSL technologies do not use the frequencies immediately above the voiceband, preserving them as a "buffer" zone to ensure the integrity of voiceband traffic. ADSL technologies, including the relatively new Universal ADSL Working Group (UAWG) "G.Lite" standard, as well as Rate-Adaptive DSL and Multiple Virtual Lines (MVL) transmission systems reserve the voiceband frequency range for non-DSL traffic. Not every xDSL technology, however, avoids use of the voiceband frequency range. HDSL and SDSL are two systems that utilize voiceband frequencies. xDSL transmission systems that use the voiceband frequency range are not generally suitable for line sharing. *See* Covad Comments at 5; Rhythms Reply Comments at 16.

xDSL service may continue to receive analog circuit-switched POTS from the incumbent LEC.[137]

65. Most voice telephone customers are connected to the PSTN though a copper local loop circuit that runs from their premises, through the outside loop plant, to the main distribution frame (MDF) in the incumbent LEC's central office.[138] All telecommunications services using the local loop are connected, directly or indirectly to the MDF.[139] For traditional voice service, the customer's loop is "bridged," or cross-connected, at the MDF to a copper wire pair that connects to the incumbent LEC's Class 5 switch.[140] The Class 5 switch passes the voice traffic to and from the circuit-switched network.

66. xDSL service can be added to a local loop that is being used for "traditional" voice service by deploying special equipment at each end of the subscribing customer's local loop. Specifically, passive signal filters, or "splitters," are installed at each end of the customer's loop to accomplish this operation.[141] One splitter is installed at the customer's premises, and another at the central office or remote terminal.[142] A splitter bifurcates the digital and voiceband signals concurrently traversing the local loop, directing the voiceband signals through a pair of copper wires to the Class 5 switch, and directing the digital traffic though another pair of copper wires to a DSLAM attached to the packet-switched network.[143]

67. The record indicates that incumbents that provide their own xDSL services on the same line that they are providing analog voice service are utilizing the single copper pair in the same manner as if the incumbent's voice service shared the line with a competitive carrier's data service.[144] Incumbent LECs have not refuted that the same architecture that an incumbent uses to provide its own shared-line xDSL services is capable of providing shared line access to requesting carriers with minimal modifications.[145] Specifically, after the xDSL traffic has passed

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[137] Covad Comments at 5 and Joshi Aff. at 2; Rhythms Reply Comments at 4-5.

[138] NorthPoint Comments at 21.

[139] *Id.*

[140] *Id.*

[141] Splitters are generally standardized products, manufactured to comply with ANSI T1.413-1998, Annex E.1, Figure E.1. Covad Comments at 5, n.11 and Joshi Aff. at 4. *Cf.* Paradyne Oct. 12 *Ex Parte* (arguing that no single POTS splitter design will accommodate all technologies).

[142] The splitter at the customer end handles one line, and the splitter at the central office can handle multiple lines simultaneously. *See* Covad Comments at 5, n.11 and Joshi Aff. at 3.

[143] Covad Comments at 6, NorthPoint Comments at 21.

[144] GSA Comments at 6; ALTS Comments at 7-8; CIX Comments at 3; Covad Comments at 2-5, NorthPoint Comments at 21; Rhythms Reply Comments at 4-5.

[145] Covad Comments at 4-6.

though the splitter and into the output copper wire pair, it may be routed to a competitive carrier's DSLAM collocated in the incumbent's central office.[146] We are persuaded that there is essentially no technical difference between sending xDSL traffic to a competitor's DSLAM and to the incumbent's DSLAM.[147] Moreover, as commenters supporting line sharing emphasize, certain types of xDSL, including ADSL, were specifically developed to utilize this sort of architectural arrangement to share loops with voiceband services without degrading the voice service or causing harm to the network.[148] The only technical limitations regarding the implementation of line sharing appear to be that the requesting carrier has collocated a DSLAM at the incumbent's central office,[149] and that the requesting carrier deploy an xDSL technology that is designed not to interfere with voiceband services.[150]

68. Accordingly, we require incumbent LECs to provide access to the high frequency portion of the loop based on the criteria for presumed acceptability for deployment that we establish below. By requiring conformance with this criteria, we ensure that competitive LECs utilize technology that does not interfere with analog voice frequencies. We believe that implementation of line sharing in compliance with the criteria for presumed acceptability for deployment will speed delivery of competitive services without impeding the development of new technologies. Moreover, spectrum unbundling based on this criteria will permit incumbents to implement line sharing promptly because they will be informed of their obligations and requirements with certainty and precision.

D. Operational Issues Associated with the Implementation of Line Sharing

1. Parameters for Line Sharing Deployment

a) Background

69. In the *FNPRM* we requested comment on several issues regarding the implementation of line sharing to help us determine exactly how incumbents might provide access to the high frequency loop spectrum network element. These issues include: whether carriers should be allowed to request only the high frequency portion of the local loop; whether carriers should be allowed to request any unused portion of a line; whether different customers should be allowed on the same physical loop; which carrier should manage the multiplexing

[146] *Id.* at 6.

[147] *Id.* and Joshi Aff. at 3.

[148] *Id.* at 6; NorthPoint Comments at 21; Rhythms Reply Comments at 4-5; Covad Sept. 1 *Ex Parte* at 2.

[149] Virtual collocation at the incumbent's remote terminal may also permit line sharing. *See infra* Section IV.D.3 for a discussion of digital loop carrier systems.

[150] Covad Comments at 6-7. *See infra* Section V.B.3 for discussion regarding the Commission's presumption of acceptability for deployment.

equipment;[151] and the effect of digital loop carrier (DLC) facilities on xDSL service.[152]

b) Discussion

70. As described in detail below, we require incumbent LECs to provide access to this network element to a single requesting carrier, on loops that carry the incumbent's traditional POTS, to the extent that the xDSL technology deployed by the competitive LEC does not interfere with the analog voiceband transmissions.[153] By imposing these limitations, we do not limit the availability of line sharing to any particular technology, but only seek to preserve the analog voice channel from significant degradation.[154] We note that in adopting unbundling requirements based on a presumption of acceptability for deployment, we do not limit the availability of the high frequency portion of the local loop to competitive carriers providing only data services utilizing ADSL technology. Instead, we require that competitive LECs seeking to line share may deploy only xDSL-based services that conform with our criteria supporting a presumption of acceptability for deployment to ensure that that these services will not interfere with analog voice frequencies.

71. Voice-Compatible Forms of xDSL. We require incumbent LECs to provide unbundled access to the high frequency portion of the loop to any carrier that seeks to deploy any version of xDSL that is presumed to be acceptable for shared-line deployment in accordance with our rules.[155] xDSL technologies that meet this presumption include ADSL, as well as Rate-Adaptive DSL and Multiple Virtual Lines (MVL) transmission systems, all of which reserve the voiceband frequency range for non-DSL traffic.[156] Among these, ADSL is the most widely

[151] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4811, para. 105.

[152] *Id.* at para. 104. Digital loop carrier (DLC) systems digitally encode an individual voice channel into a 64 kilobit per second (kbps) digital signal, and aggregate, or "multiplex," the traffic from up to 24 subscriber lines into DS1 or higher signals to improve transmission efficiency and range. DS1 channels carry 1.544 megabits per second (Mbps) of data, the digital equivalent of 24 x 64 kbps analog voice channels. In a DLC system, analog signals are carried from the customer's premises to a remote terminal (RT), at which they are converted to digital information, multiplexed with other signals, and transported, generally through fiber facilities, to the LEC central office. Integrated digital loop carrier (IDLC) systems, a specific type of DLC system, establish a direct, digital interface with the LEC central office switch, making it difficult, if not impossible, for requesting carriers to access individual loops at that location.

[153] *See infra* Section V.B.3.

[154] *See* @Link Reply Comments at 2; NorthPoint Comments at 18-19; Rhythms Reply Comments at 16.

[155] *See infra* Section V.B.3. *See also* NorthPoint Reply Comments at 21; SBC Comments at 27; Bell South Comments at 27.

[156] *See* Covad Comments at 5. *See also Paradyne Order*, 14 FCC Rcd. 4496; *Nortel Order*, 16 Communications Reg. (P&F) 1143. The relatively new Universal ADSL Working Group (UAWG) "G.Lite" standard may meet the criteria for the presumption of acceptability for deployment as well. We note that, although it is successfully deployed, MVL is a proprietary technology that is not compliant with the T1.413 Annex E splitter. *See* Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Line (ADSL) Metallic Interface (ANSI T1.413-1995) (ANSI T1.413) (ANSI T1.413 standard presents the electrical and other characteristics of the ADSL signals appearing at the network interface).

deployed version of xDSL that is currently presumed acceptable for deployment on a shared line.[157] Because line sharing as contemplated by this Order can occur only on lines that carry traditional analog voiceband service, lines that are not used for these services could not be shared.[158] We conclude, therefore, that incumbent LEC arguments that we should not require unbundling of the high frequency portion of the loop because not all forms of xDSL technology are compatible with a line sharing arrangement are misplaced. Our rules ensure that xDSL technologies deployed in line sharing arrangements will not cause substantial interference to simultaneous voiceband services.

72. Incumbent Remains the Voice Carrier. Incumbents are not required to provide unbundled access to carriers seeking just the data portion of an otherwise unoccupied loop (often referred to as a "dry loop.")[159] As stated previously, line sharing contemplates that the incumbent LEC continues to provide POTS services on the lower frequencies while another carrier provides data services on higher frequencies.[160] The record does not support extending line sharing requirements to loops that do not meet the prerequisite condition that an incumbent LEC be providing voiceband service on that loop for a competitive LEC to obtain access to the high frequency portion. Accordingly, we conclude that incumbent LECs must make available to competitive carriers only the high frequency portion of the loop network element on loops on which the incumbent LEC is also providing analog voice service (often referred to as a "wet loop"). We note that in the event that the customer terminates its incumbent LEC provided voice service, for whatever reason, the competitive data LEC is required to purchase the full stand-alone loop network element if it wishes to continue providing xDSL service. Similarly, incumbent carriers are not required to provide line sharing to requesting carriers that are purchasing a combination of network elements known as the platform.[161] In that circumstance, the incumbent no longer is the voice provider to the customer.

73. GTE requests that we clarify that an incumbent carrier can disconnect a shared line if a customer does not pay its local voice telephone bill.[162] If the incumbent carrier has disconnected the customer's voice service in compliance with applicable federal, state and local

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[157] *See* ANSI T1.413.

[158] NorthPoint Comments at 19; NorthPoint Reply Comments at 16. *See generally supra* Section IV.B.2.

[159] We do not, however, preclude carriers from providing "dry loops" on a wholesale basis. For example, it may be in the incumbent LEC's interest to continue to provide access to the high frequency portion of local loops on which it is not providing voice service, such as where voice service has been switched to a fiber technology such as DLC, but the incumbent wants to continue to recover income from its extant copper plant.

[160] As previously discussed, we do not find impairment where the incumbent LEC is not providing voice service on the customer's loop, or where the competitive LEC is seeking to deploy a form of xDSL that is not compatible with voice service provided on a shared line. *See supra* Section IV.B.2

[161] The platform refers to combinations of loop, switching and transport unbundled network elements used to provide circuit-switched voice service. *See Local Competition Third Report and Order*, at para. 12.

[162] GTE Comments at 30.

law, then there is no longer an incumbent voiceband service with which the competitive LEC can share the loop. The same holds true if the customer voluntarily cancels incumbent LEC provided voiceband services on the shared loop. In those situations, in order to continue to provide data services to that customer, the competitive LEC must purchase the entire unbundled loop and must pay the incumbent LEC the forward looking cost for that unbundled network element.[163] We would find it unacceptable, and potentially discriminatory under section 201 or a violation of section 251 obligations, however, for the incumbent to cause or require any interruption of the competitive LEC's service in order to execute such a loop access status change.[164]

74. Single Requesting Carrier, One Customer Per Loop. We agree with both incumbent and competitive LECs that the unbundling obligations should be defined to permit only a single competitor to share the line with the incumbent.[165] The record indicates significant support for two-carrier line sharing arrangements, with an incumbent LEC providing analog, circuit-switched voice service and a competitive LEC providing data service. It is clear from the record that the complexities involved with implementing line sharing dramatically increase where more than two service providers share a single loop.[166] We believe that serving multiple customers would be very costly, time consuming, and would lead to complex operational difficulties. Moreover, the record does not sufficiently support the establishment of multiple customer line sharing requirements.

75. While we recognize that technology exists that will support more than two services on a single copper loop, we do not believe that requiring LECs to contemplate and accommodate more complex, but unlikely, multi-carrier or multi-service line sharing arrangements will benefit the public interest at this time. Indeed, the record does not support the need for multiple customer or multiple service line sharing.[167] Thus, we have tailored our line

[163] We do not, however, preclude incumbent carriers from providing, as an alternative, loop access on a wholesale basis. Moreover, we note that if the customer switches its voice provider from the incumbent LEC to a competitive LEC that provides voice services, the xDSL-providing competitive LEC may enter into a voluntary line sharing agreement with the voice-providing competitive LEC. NorthPoint Reply Comments at 17.

[164] We envision that a loop access status change can be accomplished by manipulating the connections to the splitter serving the customer line at the central office. Changes to the voice circuit on the carrier side of the splitter should not affect the competitor's continuing xDSL connection to the splitter.

[165] SBC Comments at 28-29; NorthPoint Reply Comments at 14-16.

[166] Although incumbent LECs state that provisioning xDSL through shared lines to multiple customers would be unduly complex, these commenters did not provide an example of a multiple customer scenario. We assume that one such possible scenario would involve several customers sharing a single xDSL connection in a single geographic location, such as an office building. We do not find that line sharing necessarily is required to prevent a competitor from being impaired in that type of situation, and note that the record does not indicate that such situation is likely. Thus, we do not require incumbents to preemptively prepare for such occurrence. *See* SBC Comments at 28-29; BellSouth Comments at 16.

[167] We note that multiple customer installations, such as office buildings, generally utilize completely digital services, such as T-1 lines or HDSL. In this proceeding we do not consider competitive impairment with respect to these high-capacity, non-line sharing compatible services. *See supra* section IV.B.2 for a discussion of competitive parity in business-oriented xDSL services.

sharing rules to avoid needlessly burdening the industry with requirements that far exceed the needs stated by the parties. Our intent in requiring incumbent LECs to provide unbundled access to the high frequency loop spectrum is to facilitate the deployment of advanced services to customers that seek both a data and a voice service on a single line. These customers typically are residential and small business customers. We believe that defining the unbundling obligation as described in this section will further that goal without imposing unreasonably burdensome, unnecessary, or excessive requirements upon incumbent LECs.

76. Control of the Loop and Splitter Functionality. We conclude that, subject to certain obligations, incumbent LECs may maintain control over the loop and splitter equipment and functions. In fact, both the incumbents and the competitive LECs agree that subject to certain obligations, the incumbent LEC may maintain control over the loop and the splitter functionality if desired.[168] Incumbent LECs and competitive LECs both argue reasonably for the right to control the splitter and to choose to isolate the splitter or incorporate it into the DSLAM. Incumbent LECs are concerned that passing incumbent LEC voiceband traffic through competitive LEC facilities could lead to voiceband service degradation.[169] Competitive LECs have similar concerns with regard to xDSL service degradation caused by the incumbent LEC. Competitive LECs are amenable, however, to incumbent LEC ownership and control over the splitter, but they are concerned that the incumbent LEC's ownership and control of the splitter will permit the incumbent LEC to limit the competitive LEC's ability to deploy competitive services.[170]

77. We find that an incumbent LEC seeking to maintain control of the splitter must promptly accommodate, in response to a competitive LEC request to do so, any line sharing technology that meets the deployment criteria established in this proceeding.[171] Specifically, we expect that in response to such a request, the incumbent LEC will not delay its actions to procure the necessary equipment, and will inform the requesting carrier of what action it takes, and when the equipment can be installed. We also expect that it should take no longer to obtain and install

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[168] SBC Comments at 27, NorthPoint Reply Comments at 17-18. *But see* Letter from Kent D. Bressie, Counsel for Paradyne, to Magalie Roman Salas, Secretary, Federal Communications (filed Nov. 12, 1999) (Paradyne Nov. 12 *Ex Parte*) (arguing that xDSL provider should control splitter in order to ensure future innovation).

[169] *Aug. 31 Technical Forum*; Letter from Kathleen B. Levitz, Vice President – Federal Regulatory, BellSouth, to Magalie Roman Salas, Secretary, Federal Communications Commission (filed Aug. 31, 1999) (BellSouth Aug. 31 *Ex Parte*) (arguing that permitting the competitive LEC to own the splitter would create issues regarding management of circuit terminations); Letter from Kathleen B. Levitz, Vice President – Federal Regulatory, BellSouth, to Magalie Roman Salas, Secretary, Federal Communications Commission, Attach. at 4 (filed Nov. 3, 1999) (BellSouth Nov. 3 *Ex Parte*) (arguing that competitive LEC ownership of splitters eliminates incumbent LEC's ability to properly police data services).

[170] *See* NorthPoint Comments at 22; NorthPoint Reply Comments at 17-18; Sprint Comments at 12.

[171] We note, moreover, that the incumbent and requesting carrier may reach a voluntary agreement pursuant to which the competitive LEC will either purchase and collocate its own splitter, whether or not incorporated into the DSLAM, or purchase a splitter that complies with the deployment standards adopted herein and transfer that splitter to the incumbent. *See infra* Section IV.E.2.

such equipment in response to a competitive LEC's request than it would take the incumbent to procure and install the same equipment for itself. Any failure to make this accommodation in a reasonably prompt manner would constitute a violation of the incumbent LEC's section 251 unbundling obligations.

78. As described by NorthPoint, the passive splitter called for in the T1E1.413 ADSL standard directs the voice and data traffic to the appropriate transmission equipment and is available from an array of vendors.[172] These splitters are generally located at or adjacent to the main distribution frame (MDF) at an incumbent's central office. That configuration permits the incumbent to easily control the local loop and the splitter functions and reduces the possibility of signal attenuation.[173] Allowing the incumbents to maintain control over the loop and the splitter addresses concerns that the competitive LEC might be able to use its control over the splitter to degrade the incumbent LEC's voice signal or to disconnect the customer without regard for the customer's voice service.[174] This decision also addresses the incumbent's concern that the competitive LEC would be able to violate the privacy of an end user's voice communications when the end user's loop goes through a competitive LEC DSLAM.[175]

79. If a state commission finds that an incumbent has unreasonably refused to accommodate the competitive LEC's preferred technology or requested equipment upgrades in a prompt fashion, the state commission may authorize the competitive LEC to purchase and collocate its own splitter, whether or not incorporated into the DSLAM. The incumbent LEC would then receive the voiceband signal by connecting to the competitive LEC's collocated splitter. Alternatively, the state commission may authorize the competitive LEC to purchase a splitter that complies with the deployment standards we adopt in this Order, and transfer that splitter to the incumbent.[176] Where the competitive LEC obtains some degree of control over the splitter, the state commission should ensure that the integrity of the incumbent LEC's voice transmission's passing through the competitive LEC's equipment and do not interfere with the performance of the incumbent LEC's central office and network equipment.[177]

80. Line Sharing Does Not Impede Incumbent LECs' Ability to Manage the Loop

[172] NorthPoint Reply Comments at 18.

[173] The further from the MDF the splitter is installed, the more likely the signal will experience some attenuation. *See* Appendix 2. *See also* NorthPoint Reply Comments at n.50 (citing <http:/www.cisco.com/univercd/cc/td/doc/product/dsl_prod/6200/copots.htm> installation instructions for Cisco POTS splitter chassis).

[174] SBC Comments at 24. *See also* Covad Reply Comments at 6-7.

[175] SBC Comments at 22.

[176] Letter from Charles W. Logan, Counsel for NorthPoint, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, at 4-5 (filed Oct. 8, 1999) (NorthPoint Oct. 8 *Ex Parte*).

[177] We expect that incumbents and competitors will resolve issues and disputes relating to splitter deployment in the context of the collaborative process we discuss below. *See infra* Section IV.D.4.

Plant. We are not persuaded by incumbent LEC claims that they would be unable to manage properly their loop plant if required to provide unbundled access to the high frequency portion of the loop.[178] When an incumbent LEC upgrades its loop plant from copper to fiber, the incumbent LEC rarely removes the existing copper, but instead lays the fiber along the existing copper routes.[179] We believe that this practice allows the incumbent LEC to upgrade its plant by laying fiber, while allowing the competitive LEC to retain access to copper loops, including line-shared loops, they are currently leasing from the incumbents to offer xDSL-based services to end-users. We do not intend, however, to prevent incumbent LECs from constructing new facilities or decommissioning old facilities. We note that the incumbent LEC is not restrained, in the course of normal loop plant maintenance and improvement activities, from migrating customers from copper to fiber loop facilities. Where such activity takes place, however, the competitor may be required to forego access to only the high frequency portion of the loop serving that customer, and may have to obtain access to the entire unbundled copper loop or find another alternative to maintain service.[180] We expect that incumbent and competitive LECs will be able to resolve these issues in the course of section 252 arbitration and negotiation proceedings.[181] We also note that the Commission has previously defined the specific rights and responsibilities of each party in similar situations.[182] Moreover, the retail xDSL service currently being offered by the incumbents themselves requires the same loop plant that CLECs require to offer shared line xDSL. Accordingly, we believe that the spectrum unbundling requirements we establish in this Order will not infringe the incumbents' ability to rearrange or replace their loop plant in an equitable and pro-competitive manner.

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[178] AT&T Comments at 18; Ameritech Comments at 7,10; Bell Atlantic Comments at 5 and Jackson Stmt. at para. 13; BellSouth Comments at 18-19; SBC Comments at 24,27; USTA Comments at 21-24; US WEST Comments at 14-15.

[179] *See* NorthPoint Reply Comments at 19.

[180] *See infra* Section IV.D.3 for a discussion of digital loop carrier systems.

[181] 47 U.S.C. § 252.

[182] In the *Local Competition First Report and Order*, we discussed the parties' duty to negotiate in good faith in accordance with section 252 imposed on incumbents by section 251(c)(1). We also established rules, in section 51.301 governing the duty to negotiate, and we interpret these rules in this Order to ensure that line sharing negotiations will proceed in good faith and for mutual advantage. *See Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd 15499, 15569-15578 (1996) (*Local Competition First Report and Order*), aff'd in part and vacated in part sub nom., *Competitive Telecomunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997) and *Iowa Utilities Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997), petition for cert. granted, Nos. 97-826, 97-829, 97-830, 97-831, 97-1075, 97-1087, 97-1099, and 97-1141 (U.S. Jan. 26, 1998) (collectively *Iowa Utils. Bd. v. FCC*), aff'd in part and remanded, *AT&T Corp., et al. v. Iowa Utils. Bd. et al.*, 119 S.Ct 721 (1999); Order on Reconsideration, 11 FCC Rcd 13042 (1996), Second Order on Reconsideration, 11 FCC Rcd 19738 (1996), Third Order on Reconsideration and Further Notice of Proposed Rulemaking, FCC 97-295 (rel. August 18, 1997), further recons. pending. *See also* 47 C.F.R. § 51.301.

2. Loop Conditioning

a) Background

81. In the *Advanced Services FNPRM*, we tentatively concluded that, although there might be circumstances where loop conditioning activities such as the removal of loading coils and repeaters to enable the transmission of high frequency, non-voiceband signals would diminish voice service quality, such situations are isolated and can be remedied. We tentatively concluded, therefore, that loop conditioning should not interfere with the incumbent LEC's general obligation to share the line with requesting carriers.[183] We also tentatively concluded that when an incumbent LEC can demonstrate to the state commission that digital loop conditioning would interfere with the analog voice service of the line, line sharing should not be considered technically feasible on that particular line, and line sharing obligations would not apply.[184] Finally, we tentatively concluded that incumbent LECs would be required to perform other types of loop conditioning activities, such as removing bridge taps and cleaning up splices, that would not interfere with analog voiceband transmissions.[185]

82. In the *Local Competition Third Report and Order* we clarified that incumbent LECs are required to condition loops to enable requesting carriers to offer advanced services, wherever a competitor requests, even if the incumbent LEC itself is not offering xDSL services to the customer on that loop. We explained that a conditioned loop describes a copper loop from which bridge taps, low-pass filters, range extenders, and similar devices that carriers use to improve voice transmission capability have been removed.[186] We found that because competitors cannot access all of the loop's native "features, functions, and capabilities" unless it has been stripped of all accreted devices, loop conditioning falls within the definition of the loop network element.[187] Moreover, we concluded that although loops of 18,000 feet or shorter normally should not require voice-transmission enhancing devices, these devices are sometimes present on such loops and the incumbent LEC should be able to charge for conditioning such loops.[188]

b) Discussion

83. We conclude that, except in specific circumstances, incumbent LECs must condition loops to enable requesting carriers to provide xDSL-based services on the same loops the incumbent is providing analog voice service, regardless of loop length. We emphasize that shared line xDSL service deployed according to national standards will not impair voice services.

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[183] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4811, para. 104.

[184] *Id.*, 14 FCC Rcd at 4811, para. 104.

[185] *Id.*

[186] *Local Competition Third Report and Order*, at para. 172.

[187] *Id.*, at para. 173.

[188] *Id.*, at para. 193. Where the incumbent LEC has previously agreed, or is obligated, not to charge for line conditioning, this Order does not authorize or require the incumbent LEC to impose line conditioning charges.

The record indicates that the presence of loading coils, bridge taps, and other voiceband transmission enhancing equipment on a particular loop generally precludes the deployment of xDSL either on a stand-alone basis or in conjunction with voice service to the customer served by that loop.[189] Commenters attest, however, that it is rare, particularly on loops that extend less than 18,000 feet from the central office, that such equipment is required to enhance voice transmission, or that the removal of such equipment will have an negative effect on voiceband services.[190] In these instances, consistent with our conclusion in the *Local Competition Third Report and Order*, we require incumbent LECs to provide loops with all their capabilities intact whenever the competitive carrier requests access to the high frequency portion of the loop, even if the incumbent itself is not offering xDSL-based services to the customer on that loop.[191] Specifically, the incumbent LEC is required to remove bridge taps, filters, range extenders, and similar devices where a competitive carrier requests unbundled access to the high frequency portion of the local loop.

84. Until recently, lines over 18,000 feet were not considered amenable to xDSL transmission.[192] Commenters state, however, that these very long length loops are now compatible with certain xDSL transmission technologies, and represent an opportunity for further xDSL product development.[193] Thus, we require incumbent LECs to condition loops of any length for which competing carriers have requested line sharing, unless conditioning of that loop will significantly degrade the incumbent's voice service as described below. We believe that this requirement is technology-neutral and supports the further development and deployment of xDSL-based services.

85. We conclude, however, that if conditioning a particular loop for shared-line xDSL will significantly degrade that customer's analog voice service, incumbent LECs are not required to condition that loop for shared-line xDSL. We recognize that in certain circumstances network architecture may necessitate the use of equipment such as loading coils on a particular line, and that the removal of that equipment would cause degradation of the voiceband already on that line.[194] In such cases, we do not require the incumbent LEC to modify its network architecture in

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[189] NorthPoint Comments at 20.

[190] NorthPoint Comments at 20; NorthPoint Reply Comments at 21; Rhythms Reply Comments at 10. *See Local Competition Third Report and Order*, at paras. 190-195.

[191] *Local Competition Third Report and Order*, at para. 173. *See* 47 C.F.R. § 51.319(a). We note that although the incumbent LEC need not be providing xDSL services over the specific loop, the incumbent must be providing analog voice service on that loop in order for incumbent LEC to be required to provide access to the high frequency loop spectrum network element.

[192] *See* Letter from Frank S. Simone, Government Affairs Director, AT&T, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attachment Lee L. Selwyn, Scott C. Lundquist and Scott A. Coleman, "Bringing Broadband to Rural America: Investment and Innovation in the Wake of the Telecom Act," Sept. 1999 at 10 (filed Sept. 10. 1999) (*Broadband to Rural America*). *See also* SBC Comments at 27.

[193] *See Broadband to Rural America.*

[194] Loading coils are generally required to provide voiceband service only on lines over 18,000 feet. *See* NorthPoint

a way that will significantly degrade a customer's existing voiceband service. [195]

86. We will require that the incumbent refusing a competitive carrier's request to condition a loop make an affirmative showing to the relevant state commission that conditioning the specific loop in question will significantly degrade voiceband services.[196] The incumbent LEC must also show that there is no adjacent or alternative loop available that can be conditioned or to which the customer's service can be moved to enable line sharing.[197] We believe an incumbent LEC will rarely, if ever, be able to demonstrate a valid basis for refusing to condition a loop under 18,000 feet. In addition, if an incumbent LEC claims that a loop cannot be conditioned without degrading the voiceband service, the incumbent LEC cannot then or subsequently condition that loop and provide xDSL service itself without first making available to any requesting carrier the high frequency portion of the newly-conditioned loop.[198] We strongly support state commission actions to deter incumbent LECs from misusing these measures for anti-competitive purposes.

87. Finally, consistent with our conclusion in the *Local Competition Third Report and Order*, we conclude that incumbent LECs should be able to charge for conditioning loops when competitors request the high frequency portion of the loop. The conditioning charges for shared lines, however, should never exceed the charges incumbent LECs are permitted to recover for similar conditioning on stand-alone loops for xDSL services.[199] Accordingly, we conclude that if the incumbent LEC seeks compensation from the requesting carrier for line conditioning activities, or such activity will cause substantial loop provisioning delays, the requesting carrier has the option of refusing, in whole, or in part, to have the line conditioned. A requesting carrier refusing some or all aspects of line conditioning will not, however, lose its right of access to the high frequency portion of the loop.[200]

Comments at 20; SBC Comments at 25, 27.

[195] *See infra* Section V.B.3 (defining significantly degrade).

[196] NorthPoint Comments at 20; NorthPoint Reply Comments at 20-21.

[197] NorthPoint Comments at 20. *See also* Oklahoma CC Comments at 15 (incumbent must "be held to specific set of standards in demonstrating its case").

[198] *See* NorthPoint Comments at 20-21 n.28; NorthPoint Reply Comments at 20-21.

[199] *See infra* Section IV.E.2.

[200] Thus, where the incumbent LEC indicates that the particular loop requested by a competitor must be conditioned, the competitor has the option of declining to have that loop conditioned. The incumbent LEC may independently decide to condition that loop, but may not then require the competitive LEC to pay for loop conditioning, and may not adversely affect or otherwise interfere with the competitive LEC's service provision on that loop. We envision that these issues will be resolved in the course of ordering and provisioning the high frequency portion of the local loop. *See infra* Section IV.F.3.

3. Digital Loop Carrier Systems

a) Background

88. In the *Advanced Services FNPRM*, we noted that in some circumstances advanced services cannot share a line with analog voice service, and sought additional comment to inform us of those situations.[201] Some commenters argue that many rural areas are served by digital loop carrier (DLC) systems,[202] and competitive LECs will not be able to provision xDSL services through DLC systems.[203]

89. In the *Local Competition Third Report and Order,* we found that lack of access to subloop elements would preclude competitors from offering some broadband services to a significant market segment. Accordingly, we concluded that incumbent LECs must provide unbundled access to subloops, wherever technically feasible.[204] In that order, we defined subloops as portions of the loop that can be accessed at terminals in the incumbent's outside plant.[205] An accessible terminal is a point in the loop where technicians can access the wire or fiber within a cable without removing a splice case to reach the wire or fiber within.[206]

90. In the *Local Competition Third Report and Order*, we specifically noted that requesting carriers are functionally precluded from deploying xDSL services where incumbent carriers have deployed DLC systems unless the requesting carrier can otherwise obtain access to the customer's copper loop before the traffic is multiplexed at the incumbent's remote terminal.[207] We also observed that competitors seeking to offer services using xDSL technology need to access the copper wire portion of the loop and, moreover, that most currently available xDSL technologies require that the location of the DSLAM be within 18,000 feet of the customer.[208] In both of these situations, a requesting carrier needs access to unbundled subloops

[201] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4811, para. 104.

[202] DLC systems digitally encode and aggregate, i.e. "multiplex," the traffic from subscriber's loops into DS1 signals or higher for more efficient transmission or extended range beyond that traditionally permitted by copper loops. The analog signals are carried from the customer premises to a remote terminal (RT) where they are converted to digital signals, multiplexed with other signals, and carried, generally over fiber, to the LEC central office. Integrated Digital Loop Carriers (IDLC) establish a direct digital interface with the switch at the LEC central office, making it difficult or impossible for competitors to access individual loops at that location.

[203] RTC Comments at 14-15.

[204] *Local Competition Third Report and Order*, at para. 205.

[205] *Id.*, at para. 206.

[206] We also distinguished terminals from splice cases, which we previously deemed inaccessible because splice cases must be breached to access the wire or fiber within. *Local Competition Third Report and Order*, at para. 206 n.395.

[207] *Local Competition Third Report and Order*, at para. 206.

[208] *See* SBC Comments at 25-27.

to provide service to its customers.

b) Discussion

91. We conclude that incumbents must provide unbundled access to the high frequency portion of the loop at the remote terminal as well as the central office. Our subloop unbundling rules and presumptions allow requesting carriers to access copper wire relatively close to the subscriber, which is critical for a competitive carrier to offer services using xDSL technology over the high frequency network element.[209] For the same reasons, we conclude that incumbent LECs are required to unbundle the high frequency portion of the local loop even where the incumbent LEC's voice customer is served by DLC facilities.

92. We note, however, that the functionality required to accomplish line sharing on DLC systems may not be available by the effective date of our spectrum unbundling rules. We, therefore, apply the same rebuttable presumption that we established in the *Local Competition Third Report and Order*, that for carriers requesting unbundled access to the high frequency portion of the loop, the subloop can be unbundled at any accessible terminal in the outside loop plant.[210] Where the parties are unable to forge an agreement to facilitate line sharing where the customer is served by a loop passing through a DLC, the incumbent carrier bears the burden of demonstrating to the relevant state commission, in the course of a section 252 proceeding, that it is not technically feasible to unbundle the subloop to provide access to the high frequency portion of the loop.[211]

4. Operational Support Systems

a) Background

93. In the *Advanced Services FNPRM*, we asked commenters to provide additional feedback on operational concerns associated with line sharing.[212] In particular, we asked to what extent LEC operations support systems (OSS) need to be modified in order to permit competitors to have access to the high frequency portion of the loop.[213] We also asked who would be responsible for matters such as line testing, maintenance and repair, and how would incumbent

[209] *Local Competition Third Report and Order*, at paras. 207, 217-18.

[210] *Id.*, at para. 218.

[211] *Id.*, at para. 223. *See also* 47 U.S.C. § 252(b).

[212] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4811, para. 104.

[213] Incumbent LECs maintain a variety of computer databases and "back-office" systems that are used to provide service to customers. We collectively refer to these computer databases and systems as operations support systems, or OSS. These systems enable a LEC's employees to process more efficiently customer orders for telecommunications services, provide the requested services to their customers, maintain and repair network facilities, and render bills. To provide these services efficiently to their customers, competitive LECs must have access to the incumbent LEC's OSSs.

and competitive LECs allocate customer service responsibilities.[214]

94. In response, incumbent LECs state that to provide unbundled access to the high frequency portion of the loop, they will have to undertake extensive OSS modifications to provide service ordering,[215] provisioning,[216] and billing functions for the network element. They also state that they will need to undertake significant OSS modifications in order to provide electronic interfaces to requesting carriers that seek access to this network element.[217] The incumbent LECs also state that these OSS changes will be exorbitantly expensive, complicated, and time-consuming.[218] Moreover, incumbent LECs claim that the provision of unbundled access to the high frequency portion of the loop will complicate customer service functions, including line testing, maintenance and repair.[219]

95. Competitive LECs, however, respond that the incumbent LECs can implement quick and relatively inexpensive temporary arrangements and workarounds to permit the provision of unbundled access to the high frequency portion of the loop to requesting carriers within weeks of adoption of an order mandating provision of this unbundled network element.[220] Moreover, the competitive LECs argue that automated OSS changes would not be unreasonably expensive or difficult to implement.[221] Competitive LECs also argue that many of these OSS and customer service modifications are already required to facilitate the incumbents' own xDSL-based services and for the provision of unbundled network elements pursuant to the *Local*

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[214] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4811, para. 105.

[215] Ordering systems include customer request and service order systems. *See* Letter from Melissa Newman, US WEST, Inc., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 at Attach. 3, p. 14 (filed Oct. 7, 1999) (US WEST Oct. 7 *Ex Parte*).

[216] Provisioning system functions include loop assignment and technician dispatch. *See id.*

[217] Electronic interfaces include the Graphical User Interface (GUI), the Electronic Data Interface (EDI) and Electronic Bonding – Trouble Administration interface (EB-TA). *See id.* at Attach. 3, p.4.

[218] BellSouth Comments at 16-17, 21-22; Bell Atlantic Comments, Declaration of Robert Crandall at 4-11 (Bell Atlantic Crandall Decl.) and Statement of Dr. Charles Jackson at 8-11 (Bell Atlantic Jackson Stmt.).

[219] Repair system functions include repair call handling and technician dispatch. *See* USTA Comments at 18-20, 23-24; BellSouth Comments at 8; GTE Comments at 29-30; Bell Atlantic Reply Comments, Declaration of Alfred Khan at 10-13 (Bell Atlantic Reply Khan Decl.); US WEST Oct. 7 *Ex Parte*, Attach. 4, p.14.

[220] "The [incumbent LECs] have raised several OSS issues they say are directly related to [line sharing]. . . . In virtually every instance an immediate work around is available to address the issues raised within 2 to 4 weeks required for implementation and training of [incumbent LEC] staff. In the few instances requiring a more permanent solution, such as ordering, formalization should take less than 12 months. Letter from Michael E. Olsen, NorthPoint Communications, Inc., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, at 13, 38 & 39 (filed Sept. 30, 1999) (Combined Data CLEC Sept. 30 *Ex Parte*).

[221] *See, e.g.,* Covad Comments at 11-12; ALTS Reply Comments at 8; MCI Reply Comments at 17; Rhythms Reply Comments at 17-18; Combined Data CLEC Sept. 30 *Ex Parte* at 13.

Competition Third Report and Order.[222]

b) Discussion

96. We conclude that incumbent LECs have the capability to accommodate the provisioning of the high frequency portion of the loop as a network element. Where incumbent LECs provide shared-loop xDSL services to their voice customers, either through their own subsidiaries or in cooperation with an unaffiliated ISP, the incumbent must resolve many of the same problems that they claim stand in the way of providing competitors with access to the high frequency portion of the loop.[223] We therefore conclude that incumbent LEC arguments that operational issues will take at least 12 months to resolve sufficiently to provide unbundled access to the high frequency portion of the loop are significantly overstated.[224]

97. Current Incumbent LEC OSSs. Incumbent LECs carry out pre-ordering, ordering, service provisioning, billing, and repair and maintenance functions using a set of OSSs that share a common baseline functionality, although each company's legacy systems vary from one another. As described below, these OSSs already support the xDSL-based services currently offered by incumbent LECs, and will be affected by the provision of unbundled access to the high frequency portion of the loop network element.

98. Incumbent LECs use both electronic and manual processes to provide unbundled network elements today, including local loops. These electronic interfaces may include electronic exchange of data (EDI) gateways that incumbents use to receive orders from requesting carriers,[225] and graphical user interfaces (GUIs) for the receipt of orders individually input by requesting carriers.[226] Requesting carriers may also submit orders by fax that the incumbent's personnel manually enter in to the incumbent's OSS.[227]

99. Service Ordering. We conclude that the type of effort required for incumbent LECs to establish appropriate line sharing ordering practices is incremental in nature, and does

[222] *See, e.g.*, Covad Comments at 4; Rhythms Comments at 8; Sprint Comments at 9-10; ALTS Reply Comments at 8; MCI Reply Comments at 16; Combined Data CLEC Sept. 30 *Ex Parte*.

[223] *See* CIX Comments at 9; Covad Comments at 12; NAS Comments at 7-8; NorthPoint Comments at 22; Rhythms Comments at 11; ALTS Reply Comments at 8; CompTel Reply Comments at 9.

[224] *See* SBC Comments at 20-26; SBC Reply Comments at 4 (projecting 12-24 months for OSS development and implementation); Ameritech Comments at 8-9. *See also* Sprint Reply Comments at 7-8; CompTel Reply Comments at 9; NAS Comments at 7; Covad Comments at 7-14; NorthPoint Comments at 18, 21-23. *But see* BellSouth Nov. 3 *Ex Parte*, Attach. at 7, (stating that manual processes with minimal necessary system modifications can be made in 6 months).

[225] *See, e.g.*, Combined Data CLEC Sept. 30 *Ex Parte* at 11.

[226] *Id.* at 12. *See also* Letter from Ruth Milkman, Counsel for NorthPoint, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 at 2 (filed Oct. 19, 1999) (MTG Oct. 19 *Ex Parte*).

[227] Combined Data CLEC Sept. 30 *Ex Parte* at 12; MTG Oct. 19 *Ex Parte* at 2.

not require a major development initiative.[228] Incumbent LECs already accommodate orders for the advanced services, such as ADSL, that they deploy on lines shared with their own voice services. There are substantial operational similarities between the line sharing situation involving a competitive and an incumbent LEC, and the deployment of shared line xDSL provided by an incumbent LEC or an ISP.[229] The OSS capabilities required for incumbent LEC provision of shared-line xDSL services are substantially similar to the OSS capabilities required for competitive LEC provision of shared-line xDSL services, and could be easily adapted to support unbundled access to the high frequency portion of the loop network element.[230]

100. We are not persuaded by arguments that a new ordering standard would have to be adopted by the Order and Billing Forum (OBF) before line sharing could be implemented.[231] The record shows that while changes to the existing fields on the UNE order form/electronic order formats may appropriately involve the OBF for coordination and standardization, incumbents already have made interim modifications to accommodate their own ADSL products.[232] Incumbent LECs argue, however, that competitive LECs will not be satisfied with such workarounds, and will require that automated OSS interfaces must become available immediately. We note that the specific temporary arrangements and workarounds we discuss in this section were largely identified and analyzed by a group of competitive LECs.[233] Consequently, we see no reason to assume that these competitive LECs would complain if

[228] Combined Data CLEC Sept. 30 *Ex Parte* at 17; MTG Oct. 19, 1999 *Ex Parte* at 2.

[229] Combined Data CLEC Sept. 30 *Ex Parte* at 16, citing America's Network, Aug. 18, 1999, <www.americasnetwork.com/news/9908to9912/19990824015318.htm> ("US WEST is adding 500 new ADSL subscribers every day and its total ADSL customer base represents 40% of the xDSL lines in the [United States] today. . . . Clearly, at those volumes and with that embedded base of customers, capabilities exist within US WEST to process [requesting carriers'] line sharing orders."). *See* Oklahoma CC Comments at 17-18; Rhythms Comments at 10-11; NorthPoint Comments at 17, 22-23; Covad Comments at 10-12; CIX Comments at 9; NAS Comments at 7-8.

[230] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 16; ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19, 1999 *Ex Parte* at 2. *But c.f.* Letter from Joseph Mulieri, Director, Government Relations – FCC, Bell Atlantic, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147 at 11 (filed Oct. 19, 1999) (Bell Atlantic Oct. 19 *Ex Parte*). Letter from Louise L. M. Tucker, Senior Counsel, Telcordia, to Magalie Roman Salas, Secretary, Federal Communications Commission, at 1 (filed Oct. 21, 1999) (Telcordia Oct. 21 *Ex Parte*) (stating that many of the OSS changes that are required to provide competitors with unbundled access to the high frequency portion of the loop have been well understood and can be integrated with OSS software updates that will be implemented to accommodate competitor's access to other unbundled network elements.).

[231] Bell Atlantic argues that manual workarounds are simply not feasible, and that modifications to mechanized ordering must be made in sync with Bell Atlantic's Line Sharing Service development, which would take approximately 9 months. *See* Bell Atlantic Oct. 18 *Ex Parte* at 11; Combined Data CLEC Sept. 30 *Ex Parte* at 12.

[232] *See* Covad Comments at 10; NorthPoint Comments at 18; Technical Forum; MTG Oct. 19 *Ex Parte* at 2.

[233] The competitive LECs jointly contributing the Combined Data CLEC Sept. 30 *Ex Parte* are: Bluestar Communications Inc., Covad Communications Company, HarvardNet Inc., Network Access Solutions Corp., NorthPoint Communications, Inc., and Rhythms NetConnections, Inc. Combined Data CLEC Sept. 30 *Ex Parte* at 1.

incumbent LECs quickly implement these workarounds in a manner that affords the competitors nondiscriminatory access to the high frequency portion of the loop on a reasonable and timely basis.[234] Thus, we conclude that the interim arrangements that the incumbents use for themselves can be extended to competitive carriers as well.

101. A key ordering system function is establishing the records necessary for customer service, trouble management, billing, and inventory functions.[235] For the purposes of our analysis, we observe that the incumbent LECs already use two circuit or service numbers to track their own shared-line xDSL services: (1) the existing telephone number to identify the voice service; and (2) a circuit number to identify the xDSL service sharing the line.[236] Based on the record before us, we conclude that incumbent LECs can extend this practice to accommodate two-carrier shared line access to the high frequency portion of the loop network element. Specifically, incumbent LECs can identify a line shared with a competitive LEC by cross-referencing a circuit number with the POTS telephone number. Possible methods for establishing this cross-reference include embedding the telephone number in the incumbent-assigned circuit number or the customer-assigned circuit number, adding it as a cross-reference to the existing account number, making a notation in the remarks field, or by establishing a new field and field identifier (FID).[237] An incumbent LEC could create two internal orders from a competitive LEC's order for access to the high frequency portion of the local loop submitted using the incumbent's UNE ordering process.[238] In that case, one order would be used to establish the requesting carrier's access to the high frequency loop spectrum, and the other would be a record-type order to add line sharing indicators to the customer's analog voice service account and records. This system resembles those used for "from" and "to" orders to accommodate customers that change their address but want to retain the same telephone number, as well as the system that incumbents employ to respond to a customer's change to a competitive local service provider.[239]

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[234] The Combined Data CLECs state that US WEST's Interconnect & Resale Resource Guide (IRRG) provides a detailed explanation of standard UNE ordering procedures, and that these procedures will suffice for during the initial rollout of shared line access to the high frequency loop spectrum network element. Combined Data CLEC Sept. 30 *Ex Parte* at 16. We expect that incumbent LECs will be able to provide automated OSS interfaces in approximately the same time frame that they require to provide similar functionality for their own uses. We note that it is not, per se discriminatory for the incumbent to use, on an interim basis, a less automated OSS methodology. *See infra* Section IV.F.

[235] Combined Data CLEC Sept. 30 *Ex Parte* at 16, 17.

[236] *Id.* at 17 (citing US WEST Comments in FCC 98-188, Affidavit of Mark D. Schmidt at para. 12 (dated Sept. 24, 1998)).

[237] *Id.* at 17.

[238] *Id.*

[239] In that case, the incumbent uses the order to simultaneously establish the competitor's service, and to remove the voice service formerly provided by the incumbent LEC to the customer. Combined Data CLEC Sept. 30 *Ex Parte* at 17. *See also* MTG Oct. 19 *Ex Parte* at 2.

102. Provisioning. As previously discussed, we do not in this Order require incumbents to provide access to the high frequency portion of the loop for multiple competitive carriers. Incumbent LECs do not dispute that additional functionality to provision a second service on a line does not require a massive redesign of the incumbent's inventory system.[240] The record shows that incumbents will use much the same inventory functionality to inventory unbundled access to the high frequency portion of the loop whether for the purposes of providing access to that network element to their competitors, or for themselves.[241] Otherwise, incumbents would have to undertake substantial rebuilds to accommodate their own shared-line xDSL service offerings.[242]

103. Incumbent LECs OSSs already perform inventory and assignment of individual cable and pair loops, digital added main lines (DAMLs), integrated services digital network (ISDN), and xDSL lines. These involve inventorying multiple services on a single loop and are substantially similar functions to those necessary for line sharing.[243] We are persuaded by the record that the capabilities already exist in the Loop Facilities and Assignment Control System (LFACS) to inventory and assign two services on one loop, and that with minor modifications, incumbent LECs can easily use existing capabilities to inventory services on a shared line.[244]

104. Competitive LECs with collocation arrangements are assigned terminations on the incumbent LEC's MDF to terminate the tie cables running to splitters or to the DSLAMs within the collocation space. Incumbent LECs inventory and assign MDF locations using an OSS. When a competitive LEC orders a new UNE loop, it specifies the MDF termination on which the incumbent LEC should deliver the UNE loop. Incumbent LECs generally use one of two methods to cable the splitters connected to loops. The first approach is to cable the high frequency band directly to the DSLAM, and the second is to cable it to another MDF location (or to an intermediate distribution frame (IDF) location,) and then on to the DSLAM.

105. The second approach facilitates easy customer moves and changes as well as

[240] Combined Data CLEC Sept. 30 *Ex Parte* at 19. *See, e.g.,* ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19 *Ex Parte* at 2.

[241] Combined Data CLEC Sept. 30 *Ex Parte* at 19. *Cf.* Telcordia Oct. 21 *Ex Parte* at 1 (stating that the solutions developed by Telcordia for xDSL involve numerous OSS products already used by the incumbents, but that line sharing will require significant additional functionality). *See also* ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19 *Ex Parte* at 2.

[242] Combined Data CLEC Sept. 30 *Ex Parte* at 18. *See generally, Aug. 31 Technical Forum.*

[243] Bell Atlantic states that existing assignment systems, such as LFACS, cannot accommodate line sharing without enhancement to establish a Meet Point and to leave the voice line intact. *See* Bell Atlantic Oct. 18 *Ex Parte* at 11. We believe that Bell Atlantic and the other incumbent LECs can accommodate modifications such as this through their change management process by the time that they must make access to the high frequency portion of the loop available to competitive LECs.

[244] Competitive LECs note, however, that some effort may be required to assign new codes to properly describe the shared line discretely from other similar services and create the logical record holders for the two services. Combined Data CLEC Sept. 30 *Ex Parte* at 20.

changes in the customer's service providers and services. In this situation, the splitter has three connections to the MDF – one to terminate the loop, a second to terminate the voiceband signal and a third to terminate the high frequency loop spectrum. Incumbent LEC OSSs such as the Computer System for Mainframe Operations (COSMOS) and SWITCH[245] can be used to track these connections. Competitive LECs claim that these OSSs could also be used to further cross-reference competitive LEC-owned DSLAM equipment to splitters.[246]

106. We find that, in light of the apparent availability of OSS modifications that will satisfy incumbent LEC inventory needs, there is no justification to withhold requesting carrier's access to the high frequency portion of the loop while OSS modifications are implemented to allow carriers to order line sharing through electronic interfaces. We expect that incumbent LECs may decide to develop new OSSs to accommodate their inventory needs as their product and service offerings increase, or to seek increased OSS efficiency. We find, however, that further incumbent LEC OSS development is not likely to be solely driven by unbundling requirements. Consequently, we urge the state commissions not to permit incumbent LECs to delay the availability of access to the high frequency portion of the loop while they implement automated OSS solutions, nor will we permit incumbent LECs to attribute an unreasonable portion of their OSS development costs to our spectrum unbundling requirements.[247] We expressly make no judgment, however, that such non-automated measures would constitute nondiscriminatory access to OSS interfaces for the purposes of section 271 of the Act.

107. We expect that incumbent LECs will work with competitive LECs on an ongoing basis to design, implement, and maintain efficient and effective OSS interfaces that will support ongoing line sharing requirements. Specifically, we expect that incumbent LECs will implement ordering and provisioning mechanisms and interfaces that provide competitive LECs with the ability to obtain access to the high frequency portion of the loop in the same ordering and provisioning time intervals that the incumbent provides for its own xDSL-based service.[248] We note that a failure to implement OSS modifications within the time frame we contemplate in this Order could be grounds for finding that a BOC is not providing nondiscriminatory access to unbundled network elements under section 271 of the Act.[249]

108. Billing. We also are not persuaded by the incumbent LECs' arguments that implementation of line sharing would require a major overhaul of their billing systems.[250] We

[245] SWITCH inventories and assigns end office facilities that connect the outside plant facilities to the switch. SWITCH is a replacement for COSMOS. *See* US WEST Oct. 7 *Ex Parte*, at Attach. 3, p.16.

[246] Combined Data CLEC Sept. 30 *Ex Parte* at 21.

[247] *See infra* Section IV.E.2.

[248] Historically, the Commission has held that most UNEs do not have a retail analog. xDSL may be different, however, in that the incumbent LEC is newly provisioning xDSL to its own customer, which permits a more direct comparison to the provisioning of a new UNE.

[249] *See* 47 U.S.C. § 271.

[250] Bell Atlantic Jackson Stmt. at para. 14; US WEST Reply Comments at 26. *See also* Combined Data CLEC Sept.

believe, based on the evidence in the record regarding the range of capabilities present in the incumbent LECs' billing systems, there is likely to be little, if any, billing system impact resulting from the provision of unbundled access to the high frequency portion of the loop. Indeed, incumbent LECs have already implemented changes to their billing systems to bill customers for their own xDSL-based services. The incumbent LECs' expanded billing capabilities include the ability to provide billing services for not only their own customers, but also on behalf of other service providers.[251] Thus, we conclude that the billing system modifications necessary to support unbundled access to the high frequency loop spectrum network element are relatively minor compared to the "major overhauls" alluded to by US WEST.[252]

109. Maintenance, Repair, and Testing. We conclude that current industry methods and procedures for customer service, line maintenance, and service quality assurance can largely accommodate the demands of line sharing between competitive LECs and incumbent LECs.[253] Loop plant maintenance is largely a function of adequate testing, repair, and customer service activities. In the following discussion, we examine each of these functions and find that the incumbent's concerns regarding testing, maintenance, and repair are mitigated by the availability of adequate methods and procedures for problem resolution. We also find that, in general, both incumbents and competitors have a significant interest in ensuring that the local loop plant remains fully functional and in good repair.[254] We believe that cooperation and communication among incumbent and competitive LECs are the keys to preserving the vitality of the PSTN and the successful deployment of line sharing.

110. Incumbents contend that testing the metallic loop for one service on a shared line

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30 *Ex Parte* at 33.

[251] Competitive LECs maintain that most incumbent LEC billing systems employ Classes of Service codes, USOCs, FIDs, and logical rules to associate a customer of record (COR) with the products and services for which the COR should be billed, and that this functionality could be utilized to handle the billing of shared loops. Specifically, competitive LECs reason that as the service order moves through processing, the information identifying the two CORs (the customer and the competitive LEC) on the shared line can be propagated into other systems as required. When the new order completes, a double posting process can update both customer records with the xDSL shared line indication and cross-reference the telephone number and Circuit *ID*. Then, as the billing cycle runs, the combination of Class of Service codes and USOCs will result in proper billing of both the POTS and competitive LEC customers by the incumbent LEC. Combined Data CLEC Sept. 30 *Ex Parte* at 34.

[252] US WEST Oct. 7 *Ex Parte* at Attach. 3, pp. 19 & 22. *See* Combined Data CLEC Sept. 30 *Ex Parte* at 19; ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19 *Ex Parte* at 2.

[253] ALTS Reply Comments at 8; MCI Comments at 12. *See also* MTG Oct. 19, 1999 *Ex Parte* at Table 1.

[254] For example, NorthPoint states that it recognizes the business realities and maintenance requirements of the local loop plant and will cooperate with incumbent LECs to permit reasonable line testing, maintenance, and repair activities that accord with industry standards, even when such activities temporary impact NorthPoint's shared-line xDSL service. NorthPoint Comments at 18-22. *See also* CIX Comments at 9; Covad Comments at 10-12; Rhythms Comments at 8.

with traditional test systems will cause a temporary disruption and possibly lead to more serious problems with the other services sharing that line.[255] In addition, the potential for service disruption is highest during installation, maintenance and repair activities relating to any service sharing the loop with other services, regardless of whether one or both of the services sharing the loop is provided by the incumbent LEC.[256] Thus, commenters express a legitimate concern with regard to the establishment of equitable and nondiscriminatory testing access rights and responsibilities among service providers sharing a loop that will enable each carrier to perform testing without disturbing the other carrier's service.[257]

111. Loop Testing. Both incumbent and competitive LECs perform tests to support installation, repair, and maintenance processes. Incumbent LECs generally perform automated mechanized loop tests (MLTs) to diagnose loop performance for the lower, voiceband frequencies. Competitive LECs perform similar tests to ascertain the transmission performance of UNE loops when they order a second line to provide xDSL-based services.[258] To perform loop tests, incumbent LECs generally gain access to the line through the voice switch at the central office. Competitive LECs, however, generally access the line at test points near their DSLAMs, which are usually located in the collocation space at the end office.

112. Competitive LECs state that there are two major loop testing issues that arise with shared line access to the unbundled high frequency portion of the loop.[259] First, the customer must be informed that testing on one of their services will impact the other service sharing the customer's line. We are persuaded that either the incumbent or competitive LEC's customer

[255] *See* Ameritech Comments at 11 ("...performing a simple, routine loop-back test on a shared loop could unavoidably disrupt service to other carrier's customers using that loop."); Bell Atlantic Jackson Stmt. at para. 12 ("the test equipment for [Bell Atlantic's] copper loop ADSL systems is partially integrated with [Bell Atlantic's] ADSL DSLAMs. Testing of the xDSL portion, when provided by a party other than the party providing other services over that same loop[,] could not be done with Bell Atlantic's current test equipment."); GTE Comments at 27 ("...in a unbundled spectrum environment neither carrier will have the ability to isolate or remotely test their services."); Sprint Comments at 11 ("...current automated test systems cannot perform POTS testing in line sharing applications."); US WEST Reply Comments at 27 (" ...routine metallic loop tests, which require disabling ADSL service, could not be accomplished where the competitive LEC's DSLAM powers the data service."). *See also* Combined Data CLEC Sept. 30 *Ex Parte* at 26.

[256] *See id.* at 27.

[257] Ameritech Comments at 11; AT&T Comments at 16; Bell Atlantic Comments at 11-13; BellSouth Comments at 24; US WEST Comments at 15-16. *See* NorthPoint Reply Comments at 26. We also note that both AT&T and US WEST raise operational arguments relating to testing in the context of "mandatory" spectrum unbundling, but not against "voluntary" spectrum unbundling. *See* AT&T Comments at 17-18; US WEST Comments at 24.

[258] Competitive LECs use these tests to determine if the incumbent LEC has delivered the loop on the firm order commitment (FOC) date and to diagnose any obvious line impairments such as the presence of load coils, excessive noise, bad splices, unacceptable loop length, or unacceptable bridge taps. *See* Combined Data CLEC Sept. 30 *Ex Parte* at 26.

[259] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 27.

service operations can provide sufficient customer education on this issue.[260] Competitive LECs note that bringing the customer into the coordination process avoids the potential for conflicts and customer confusion.[261] Doing so would require only minor modifications to existing customer care processes and procedures.[262]

113. The second loop testing issue, however, is more complex. Specifically, both the incumbent and competitive LEC must have access to the shared loop facility for testing, maintenance, and repair activities.[263] Assuming that the competitive LEC owns the DSLAM and installs it in its collocation space in the incumbent LEC end office or remote terminal, a splitter is required to isolate and direct the voice service to the incumbent LEC voice switch and the xDSL service to the competitive LEC's DSLAM.[264] This splitter will likely be installed between the MDF and the other central office equipment. In this configuration, the incumbent LEC retains testing access to the outside part of the loop through the voice switch. The competitive LEC, however, can only access the high frequency portion of the loop at its DSLAM. This precludes the competitive LEC from engaging in certain important types of loop testing that require the competitive LEC to access the loop's whole frequency range.[265] The ability to perform this type of loop testing is important for installation, maintenance, and repair activities in both shared and non-shared line situations.

114. Competitive LECs state that they have invested in automated industry-standard testing capabilities to support their xDSL OSSs, and that these testing capabilities are comparable to those used by incumbent LECs offering their own xDSL-based services.[266] Competitive LECs argue that their access to the voiceband frequency must meet three minimum requirements to facilitate their access to the high frequency portion of the loop. First, competitive LECs claim that they require physical access on the loop side of the splitter for

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[260] For example, when a carrier wants to test a line, or when an end user customer calls a service provider in response to a problem, whether incumbent or competitive, the carrier's OSS system will notify the customer service representative that the customer is receiving service over a shared line. The customer service representative, using the appropriate script, can then inform the customer of the testing impact on both services and obtain permission to conduct the test in order to isolate and repair the trouble. *Id.*

[261] *Id.*

[262] Competitive LECs state that training of customer service representatives on new customer education procedures and developing new scripts represents minor effort. Incorporating the scripts into the customer care systems is also routine in nature and not major development. *Id.*

[263] *Id.*

[264] *See supra* Section IV.D.1. *See also* Combined Data Sept. 30 *Ex Parte* at 27; Letter from Ruth Milkman, Counsel for NorthPoint, to Magalie Roman Salas, Secretary, Federal Communications Commisson, CC Docket No. 98-147, Attachment at 3 (filed July 29, 1999) (NorthPoint July 29 *Ex Parte*).

[265] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 27.

[266] *Id.*

comprehensive loop testing.[267] In addition, competitive LECs argue that such access should be of a type that is suitable for integration into their OSS applications.[268] Finally, competitive LECs state that they require testing access at any incumbent LEC end office where competitive LECs collocate and/or access the high frequency portion of the loop.[269]

115. Competitive LECs state that physical testing access will enable competitive LEC OSSs to access the loop for testing purposes as required. Competitive LECs also note that regardless of the ability of competitors to access the loop for testing, the incumbent LEC retains its access via the voice switch or via the testing access point at the splitter.[270] The competitive LECs suggest that, assuming the splitter is controlled by the incumbent LEC and located between the MDF and the other central office equipment, there are several possible ways to provide testing access to the local loop. First, the incumbent LEC could provide physical test access points to the competitive LEC at the splitter through a cross-connection to the competitor's collocation space.[271] Competitive LECs note that this option is efficient for both the competitive and incumbent LEC because each service provider retains direct loop access and uses its own OSS.[272]

116. The competitive LECs also suggest that their OSS could interface directly with an incumbent LEC OSS through a standardized interface designed to provide physical access for testing purposes.[273] Competitive LECs claim that this interface can be created though the creative use of a test access server that could be shared by multiple competitive LECs while providing appropriate security controls.[274] This testing server could be owned, controlled, and maintained by either the incumbent LEC or the competitive LECs.[275]

117. Finally, competitive LECs state that they could submit testing requests to the

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[267] *Id.*

[268] *Id.*

[269] *Id.* at 28. *See also* NorthPoint July 29 *Ex Parte* at 1; Letter from Raymond L. Strassburger, Director, Government Relations – Telecom, Internet, and Advanced Technology Policy, Nortel Networks, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attachment at 2 (filed June 3, 1999). (Nortel June 3 *Ex Parte*).

[270] Combined Data CLEC Sept. 30 *Ex Parte* at 28.

[271] *Id.*

[272] *Id.*

[273] *Id.*

[274] *Id. See also* NorthPoint July 29 *Ex Parte* at 1.

[275] Combined Data CLEC Sept. 30 *Ex Parte* at 28.

incumbent LEC for processing by the incumbent LEC.[276] We do not support this practice, as it is less efficient from the perspective of the requesting carrier, and creates an opportunity for discriminatory incumbent LEC activity, such as the imposition of artificial delays and requirements for unnecessary and costly manual intervention by either the competitive LEC or incumbent LEC.[277]

118. Based on the record before us, we agree with the competitive LECs that a relatively low level of incumbent LEC effort is required to ensure that competitive LECs have access to appropriate loop testing access points.[278] Thus, we require that incumbent LECs must provide requesting carriers with access to the loop facility for testing, maintenance, and repair activities. We require that, at a minimum, incumbents must provide requesting carriers with loop access either through a cross-connection at the competitor's collocation space, or through a standardized interface designed for to provide physical access for testing purposes. Such access must be provided in a reasonable and nondiscriminatory manner. An incumbent seeking to utilize an alternative physical access methodology may request approval to do so from the state commission, but must show that the proposed alternative method is reasonable, nondiscriminatory, and will not disadvantage a requesting carrier's ability to perform loop or service testing, maintenance, or repair. We stress that incumbents may not use their control over loop testing access points and mechanisms for anti-competitive or discriminatory purposes, and that we will remain attentive and ready to respond to any reported anti-competitive incidents relating to competitive LEC access to loop testing mechanisms.

119. Customer Service, Troubleshooting, and Repair. The incumbent LECs raise a number of general concerns relating to the customer service, troubleshooting, and repair impact of providing access to the high frequency portion of the loop to competitive LECs. In particular, BellSouth states that it is uncertain how ownership will be established for trouble isolation and maintenance of the individual services sharing a line.[279] Bell Atlantic and SBC indicate that there may be significant operational problems, potentially leading to "finger-pointing" in which each organization asserts that the problem is due to the actions of the other organization."[280] Bell Atlantic also argues that "cross-firm testing" of xDSL and voice services and the possibility of "finger-pointing" between the incumbent LEC and competitive LEC are potential sources of disagreement and customer confusion.[281] SBC indicates that trouble resolution and testing will become more complicated, because incumbent LECs may lack testing equipment or training to

[276] *Id.*

[277] *Id.*

[278] We note that the incumbent LECs do not refute these testing requirements.

[279] BellSouth Comments at 24.

[280] Bell Atlantic Jackson Stmt. at paras. 10-11; SBC Comments at 23-24.

[281] Bell Atlantic Comments at 12; NorthPoint Comments at 25-26 (quoting Bell Atlantic Jackson Stmt. at paras. 10-12, 15).

test all of the technologies that competitive LECs may deploy.[282]

120. U S WEST states that it would need to redesign its repair and maintenance systems because its current systems do not allow two providers to service a single facility.[283] US WEST also indicates that service providers "would need to develop new processes to avoid the issuance of two repair tickets for a single problem."[284] Although we recognize that the carriers will have to address these service and maintenance issues, we note that incumbent LECs have successfully deployed cooperative arrangements with ISPs, such as America On Line (AOL), that implicate many of the same issues that arise with competitive LEC line sharing arrangements.[285] Bell Atlantic argues, however, that line sharing between and incumbent and competitive LEC is substantially different from the incumbent's retail ADSL services, as well as their unbundled network element-related OSSs.[286] As illustrated in the preceding discussion, we recognize that existing OSSs will have to be modified to support the provision of access to the high frequency portion of the local loop. The record indicates, however, that these modifications will build upon existing incumbent LEC OSSs and practices.[287] As more fully discussed below, the record also indicates that incumbent LECs can implement these modifications within a period of months.[288]

121. Under some incumbent LEC tariffs for bulk xDSL service sold to ISPs, ISPs purchase the incumbent's xDSL. In those arrangements, the ISP, not the incumbent LEC, provides a high-speed Internet service package that includes xDSL service.[289] These arrangements require that the incumbent LEC's OSS be able to recognize and administer the provision of multiple services on a single local loop. Competitive LECs also state that in a typical non-line sharing situation, the competitive LEC or its ISP partner is responsible for customer service when an xDSL customer served by a competitive LEC using a UNE loop from the incumbent LEC experiences a service difficulty.[290] If the competitive LEC or ISP determines

[282] SBC Comments at 23-24.

[283] US WEST states that it would need new processes to manage trouble tickets in a single repair flow, because there are currently two repair flows: "POTS" and "design" services, and competitive LECs as a group presently can be assigned only to one or the other. US WEST July 22 *Ex Parte* at 26.

[284] Id.

[285] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 28. *See also* ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19 *Ex Parte* at 2.

[286] Bell Atlantic Oct. 19 *Ex Parte* at 3-6.

[287] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 28. *See also* ALTS Comments at 2-3; Covad Comments at 12-14; NorthPoint Comments at 22; ALTS Reply Comments at 8; MTG Oct. 19 *Ex Parte* at 2.

[288] *See infra* Section V.E.1.

[289] *See Advanced Services Second Report and Order*, at paras. 14-19.

[290] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 28.

that there is a problem on the UNE loop, the competitive LEC opens a trouble ticket with the incumbent LEC and the two (or three in the case of an ISP) entities cooperate to restore the end user's loop and advanced service.[291]

122. We conclude that the same would be true where the incumbent provides the high frequency portion of the loop as an unbundled network element because, just as the ISP is the competitive LEC's customer, the competitive LEC is the incumbent LEC's customer, and the end user is a customer of all three. If the problem encountered appears to impact primarily the xDSL service, the end user should call the ISP or the competitive LEC, depending on the customer service relationship between the two entities. If the problem impacts primarily the voice service, the end user should call the incumbent LEC. If both services are impaired, the recipient of the call should coordinate with the other service provider(s). We agree that each service provider has a responsibility to educate the end user regarding which service provider should be called for problems with their respective service offerings.[292] Furthermore, we believe that current incumbent LEC trouble management OSSs have the capability to analyze and correlate multiple related trouble tickets. When related trouble tickets occur today, the incumbent LECs' OSS creates a master trouble ticket and associates the duplicate tickets with the master in a parent/child relationship.[293]

123. Bell Atlantic also states that it will not be able to use its own equipment to test the data portion of the shared line, making Bell Atlantic's ability to maintain those competitors' xDSL services "more difficult."[294] The record does not indicate, nor do we foresee, that incumbent LECs such as Bell Atlantic would have occasion to test a competitive LEC's xDSL equipment or products. The quality of the service that a competitive LEC provides to its customer is not the incumbent's responsibility, so long as the incumbent is providing sufficient quality of service to the requesting carrier. We agree with commenters that if they are provided with access to the high frequency portion of the loop that is of sufficient quality, competitive LECs have ample capability and incentive to ensure the quality of the services they offer to their customers, and the performance of their own equipment.[295]

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[291] *Id.*

[292] The competitive LECs project that since an end user is likely to call only one of the service providers to initiate repair on a shared line rather than calling both, the number of trouble tickets opened by the incumbent LEC could possibly decline, although they allow that it is more likely that there would be no substantial difference in the volume of trouble tickets handled by an incumbent LEC OSS in line sharing versus UNE scenarios. *See* Combined Data CLEC Sept. 30 *Ex Parte* at 29.

[293] Some systems also analyze the various related trouble conditions to assist in pinpointing the problem and isolating the fault for repair. *See* Combined Data CLEC Sept. 30 *Ex Parte* at 29.

[294] Bell Atlantic Jackson Stmt. at para.12.

[295] Furthermore, we understand that incumbent LECs coordinate line testing with alarm companies that procure "alarm loops." *See* Aug. 31 Technical Forum. We are confident that incumbent LECs are capable of coordinating maintenance, testing, and repair activities with competitive LECs as well as they currently do with alarm companies. *See* NorthPoint Comments at 27. *See also* Combined Data CLEC Sept. 30 *Ex Parte* at 26.

124. We envision that incumbent LECs will retain primary responsibility over the loop facility for voiceband trouble tickets and testing of the local loop facilities. We also expect that the incumbent LEC will remain responsible for any problems associated with the voiceband service it sells to the customer - where there is a problem reported with the customer's voiceband service, the incumbent LEC will remain responsible for resolving that problem. If there is a problem with the xDSL service, then we expect that the competitive LEC will resolve that problem. Should the customer become disenchanted with the complexity of obtaining incumbent LEC voiceband and competitive LEC xDSL-based services over the same line, the customer can always opt to procure both from the incumbent LEC, or purchase from an ISP an integrated xDSL and Internet access service package.

125. Furthermore, we find that maintenance, repair, and testing concerns can be handled by utilizing similar methods and procedures to those that incumbent LECs are implementing for the ordering and provisioning of the unbundled network elements identified in the *Local Competition Third Report and Order*. Specifically, the record indicates that incumbent LECs already have methods and procedures in place for the cooperative resolution of trouble and testing problems that arise with competitive LECs.[296] The record also indicates that these methods and procedures can easily be modified to include provisions for escalating shared line trouble issues in a manner that minimizes customer confusion.[297] We note that SBC and Ameritech, through their separate subsidiary proposal, provide an example of how cooperative planning can facilitate customer service, whether among separate affiliates or unaffiliated competitive LECs.[298]

126. Resolution of Operational Issues. Incumbents have voiced a number of concerns regarding the "back-office" processes that will be affected by providing competitors with access to the unbundled high frequency portion of the local loop.[299] The record shows that these problems are not substantially unique, and that the process modifications required to resolve these issues are already supported by existing incumbent LEC OSS functionality, processes and procedures. The record also shows that incumbent LECs can implement suitable OSS modifications within the time frame we establish for implementation of this obligation.[300] We

[296] NorthPoint Reply Comments at 25-29.

[297] *See* NorthPoint Reply Comments at 27.

[298] Applications of Ameritech Corp. and SBC Communications Inc., For Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95 and 101 of the Commission's Rules, CC Docket No. 98-141, Memorandum Opinion and Order, FCC No. 99-279, Appendix C at 12-13, para. 4(j) (rel. October 8, 1999) (establishing procedures for resolution of trouble reports in a nondiscriminatory manner). *See* also NorthPoint Comments at 25.

[299] Ameritech Comments at 9-11; Bell Atlantic Comments at 11-13; BellSouth Comments at 5, 21; GTE Comments at 5, 30; SBC Comments at 20-24, USTA Comments at 23-27.

[300] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 32. As discussed in detail below, the record shows that incumbent LECs should be able to implement system changes necessary to provide requesting carriers with nondiscriminatory access to the high frequency portion of the local loop within 180 days from release of this Order.

believe that any remaining implementation or OSS problems are best remedied through the cooperative development of standard business practices and regular communications between the two service providers sharing a loop.[301] We note, as an example of the potential for cooperation, that incumbent LEC and competitive LEC technicians currently perform co-operative testing for acceptance purposes, when the incumbent LEC technician is at the customer premise installing the UNE line to the demarcation point.[302] We note, moreover, that carriers could address issues such as whether a service provider has an obligation to notify a customer before tests impacting both voice and xDSL services are conducted, contact information, and complementary customer services script on a collaborative basis. In addition, these tasks do not appear to be significantly different from the coordination activities that regularly occur among other service providers that share the PSTN.

127. The record indicates that incumbent LECs have already modified their OSS systems to accommodate their own xDSL products, and that those modifications and those required for line sharing are substantially similar.[303] We believe that incumbent LECs can adapt expediently existing incumbent OSS systems to handle line sharing with a single requesting carrier.[304] The record also indicates that incumbent LECs can perform the incremental modifications to the existing ordering processes required to provide competitive LECs with access to the high frequency portion of the loop in an expedient manner and at modest expense. The record also shows that in the absence of fully automated OSS interfaces, incumbent LECs have a variety of means available with which they can accommodate competitive LEC orders for the unbundled high frequency portion of the local loop, including the use of manual overrides of their current UNE ordering methods and procedures.[305]

128. We recognize that unless incumbent and competitive LECs collaborate to establish OSS interfaces, regularized processes, and business practices for ordering, provisioning, billing, testing, maintenance, and repair responsibilities, disputes among incumbent and competitive LECs sharing the same local loops are likely to arise. We are concerned that these disputes may lead to delays and consumer confusion, frustrating the pro-competitive effect of providing unbundled access to the high frequency portion of the local loop. Accordingly, we

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[301] For instance, we note that NorthPoint has proposed that incumbent LECs and competitive LECs establish methods and procedures for "warm transfers" of customer service calls, which it claims to be similar to those that incumbent LECs use to provide wholesale shared line xDSL to companies such as America Online. *See* NorthPoint Comments at 27.

[302] These co-operative tests are to further assure that the UNE loop meets typical voice standards and usually include a test that shorts the tip and ring to take advantage of the technician's presence at the premise to make a far end test. *See* Combined Data CLEC Sept. 30 *Ex Parte* at 26.

[303] CIX Comments at 9; Covad Comments at 12; NAS Comments at 7-8; NorthPoint Comments at 22; Rhythms Comments at 11; ALTS Reply Comments at 8; CompTel Reply Comments at 9.

[304] Telcordia has commenced development of OSS solutions for providing access to the high frequency portion of the loop, including central office and DSLAM support. Telcordia Oct. 21 *Ex Parte* at 1.

[305] *See* Combined Data CLEC Sept. 30 *Ex Parte* at 17-18.

urge requesting carriers and incumbent LECs to engage in a collaborative process at the regional level to develop solutions to incumbent LEC provision of shared line access. We believe that a publicly available plan of record that identifies a collaborative mechanism or forum wherein competitive and incumbent LECs will interface to solve problems that arise in the course of providing access to the high frequency portion of the local loop to competitive LECs will assist all entities by centralizing communications and reducing administrative costs.[306] Accordingly, we urge incumbent LECs to post their collaboration plan, OSS interface information, and related methods and procedures on their Internet sites, and to modify and update this information on a regular basis to ensure that it remains accurate. We believe this public posting would benefit small entities and small incumbent LECs in particular by enabling multiple carriers to join in a single, region-wide, collaborative process.

129. We suggest that the plan include specific details of the process including, a timeline outlining how the collaborative effort will proceed, with milestones for resolution of issues, and the names and all necessary contact information for the employee who will be responsible for addressing business complaints that arise in the collaboration process and during the negotiation of the relevant interconnection agreements or amendments.[307] We expect that these plans will form the basis for collaboration among the incumbent and competitive LECs on the establishment of common OSS interfaces as well as testing, maintenance, and repair responsibilities and procedures.

130. We do not identify or require incumbent LECs to make specific OSS methods and procedures, or facilities changes, and we do not prejudge whether specific OSS functionalities are necessary to fulfill an incumbent LEC's nondiscrimination duty. The record clearly shows that incumbent LECs have a number of process alternatives through which they can make line sharing available to requesting carriers in accordance with our rules. The record indicates that incumbent LECs should be able to develop and implement the majority of systems modifications necessary to provide access to the higher frequency portion of the loop 180 days from release of this order.[308] As discussed in detail above, the record also indicates that there are alternatives, to those system modifications that can not be implemented in 180 days, and that these alternatives

[306] We note that the Minnesota PUC requires a similar effort from US WEST. Minnesota requires US WEST and competitive LECs interested in obtaining line sharing to work together "collectively and on a carrier-to-carrier basis," to develop the terms and conditions under which US WEST will provide line sharing to competitive LECs. Minnesota also requires the incumbent and competitive LECs to "work with each other on this project in good faith and [guided by the understanding that US WEST should] provide line sharing to the [competitive LECs] on the same terms and conditions . . . that it provides to itself." *See Commission Initiated Investigation into the Practices of Incumbent Local Exchange Companies Regarding Shared Line Access*, Order Requiring Technical Trials, Good Faith Resolution of Operational Issues, and a Resulting Report, Docket No. P-999/CI-99-678, (Minnesota Public Utilities Commission, Issued October 8, 1999) at 6 (*Minnesota Line Sharing Order*).

[307] As an additional measure of protection, we encourage the incumbents to include in the plans the names and contact information for at least two levels of complaint escalation contacts, at least one of who has region-wide responsibility.

[308] *See* BellSouth Nov. 3 *Ex Parte*, Attach. at 7. *Cf.* Combined Data CLEC Sept. 30 *Ex Parte* at 5 (stating that "[t]he few minor incremental upgrades, primarily for ordering, could be formally completed over the next 3 to 12 months").

can be deployed in six months. Thus, the record shows that incumbent LECs should be able to implement system changes necessary to provide requesting carriers with nondiscriminatory access to the high frequency portion of the local loop within 180 days from release of this order.

E. Economic, Pricing Methodology, and Cost Allocation Issues

1. Background

131. In the *Advanced Services FNPRM*, we requested comment on the economic, pricing, and cost allocation issues that may arise from line sharing.[309] Specifically, we asked how line sharing might affect federal and state access charge regimes and universal service mechanisms.[310] We requested comment on the pricing consequences of requiring line sharing, and asked, among other things, whether the entire cost of the loop should be allocated to the voice channel or divided equally or otherwise between the two services sharing the facility.[311] In addition, we requested comment on the cost allocation issues, if any, that are raised by line sharing.[312]

132. In this Order, we establish guidelines to assist the states in applying our unbundled network element pricing rules to line sharing when they arbitrate modifications to interconnection agreements or otherwise adopt permanent prices for this unbundled network element. These guidelines either follow directly from the Total Element Long Run Incremental Cost (TELRIC) methodology that the Commission set forth in the *Local Competition First Report and Order*[313] to govern interconnection and unbundled network element pricing, or, if not a direct outgrowth of those principles, are consistent with them in the context of this particular unbundled network element. We note, in this regard, that virtually all states have already adopted the TELRIC methodology in setting prices for other unbundled network elements.

2. Discussion

133. The impetus behind ordering line sharing is the need to expedite the deployment of xDSL-based advanced services while simultaneously fostering meaningful competition in the provision of those services.[314] In the current environment, competitive LECs must purchase access to additional lines in order to offer xDSL-based services, while the incumbent LECs use their own voice loops to offer these same services. The incumbent LECs' xDSL services are, in fact, sharing the local loop facility with their voice services. In setting prices for interstate xDSL services, moreover, incumbent LECs currently attribute little or no loop cost to those services.

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[309] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4812, para. 106.

[310] *Id.*

[311] *Id.*

[312] *Id.*

[313] *Local Competition First Report and Order*, 11 FCC Rcd at 15814-15868, at paras. 625-727.

[314] *See* 47 U.S.C. § 251.

The competitive LECs, on the other hand, are forced to purchase access to a second line, and pay the related unbundled network element rates for an entire loop. This puts competitive LECs at a severe competitive disadvantage when they offer xDSL-based services to the public. In some cases, the unbundled network element rate for a loop is so close to the rate the incumbent LEC charges for its xDSL-based services that it is not possible for the competitive LEC to offer service at a competitive price.[315] Even if line sharing is made available to competitive LECs, however, it will not promote competition unless it is priced in a way that permits competitive LECs to enjoy the same economies of scale and scope as the incumbent LECs.[316]

134. The Telecommunications Act of 1996 requires the states to set prices for unbundled network elements that are cost-based and nondiscriminatory, and that may include a reasonable profit.[317] The Commission concluded in the *Local Competition First Report and Order* that the state commissions should set arbitrated rates for interconnection and access to unbundled network elements pursuant to a forward-looking economic pricing methodology, known as TELRIC, that sets prices for unbundled network elements based on "the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs."[318] As the Commission anticipated, the states now conduct cost studies and apply an economic costing methodology consistent with the TELRIC methodology in arbitrating interconnection disputes and setting unbundled network element rates.[319]

135. By requiring line sharing, we are creating a new unbundled network element. We conclude that, when arbitration is necessary, the price of this new element should be set by states in the same manner as they set the price for other unbundled network elements. We further conclude that offering the state commissions guidance to assist in pricing this new unbundled network element will facilitate consistency among the states and ensure that our line sharing guidelines do, in fact, promote competition in the provisioning of xDSL-based services. We note in this regard that California urged us to establish costing and pricing rules to further this purpose.[320]

136. Based on the record, we find that there are five types of direct costs that an incumbent LEC potentially could incur to provide access to line sharing: (1) loops; (2) OSS; (3) cross connects; (4) splitters; and (5) line conditioning. We discuss each of these costs and their pricing methodology below.

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[315] Letter from Jason Oxman, Covad Communications Company, to Carol Mattey, Chief, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 98-147 (filed October 13, 1999) (Covad Oct. 13 *Ex Parte*).

[316] *Local Competition First Report and Order*, 11 FCC Rcd at 15846, para. 679.

[317] 47 U.S.C. 252(d)(1).

[318] *Local Competition First Report and Order*, 11 FCC Rcd at 15813, para. 682. *See also id.*, at para. 620.

[319] *See, e.g.*, Covad Oct 5 *Ex Parte* (providing state commission-set local loop rates for five states).

[320] California PUC Comments at 6.

(1) Local Loop

137. The parties to this proceeding have suggested several approaches for pricing the loop facility over which line sharing will be provided. Several competitive LECs argue that we should permit the incumbent LECs to charge the competitive LECs whatever the incumbent LECs calculate the loop costs to be when they offer the same services. If an incumbent LEC allocates zero loop costs to xDSL service when it offers such services over a voice line, then it cannot charge the competitive LECs any loop cost for access to a line for the purpose of offering those same xDSL services. This approach, it is argued, would give the incumbent LECs the incentive to allocate those costs more reasonably.[321] Parties supporting this approach also contend that, regardless of the precise allocation of costs between the incumbent voice services and the line sharing network element provided to the competitive LEC, incumbent LECs will still recover the full embedded cost of the local loop.[322] Full recovery of local loop costs through voice services would leave the incumbent LEC whole even if the competitive LEC had access to the shared loop facility at a price that included no loop costs at all.[323] On the other hand, there could be a double recovery if the incumbent LEC recovered the full cost of the loop from its voice and related services while, recovering an additional amount for loop costs from a competitive LEC for access to that same loop.

138. We note that the TELRIC methodology that the Commission adopted in the *Local Competition First Report and Order* does not directly address this issue. More specifically, the Commission in that order noted that the TELRIC methodology was designed to price "discrete network elements or facilities," rather than services.[324] In the case of line sharing, however, the facility in question is, by definition, also used for two incumbent LEC services (local exchange service and interstate access service). We are thus presented with the question of how to establish the forward looking economic cost of unbundled bandwidth on a transmission facility when the full embedded cost of that facility is already being recovered through charges for jurisdictional services. Accordingly, we must extend the TELRIC methodology to this situation and adopt a reasonable method for dividing the shared loop costs.

139. We conclude that, in arbitrations and in setting interim prices, states may require that incumbent LECs charge no more to competitive LECs for access to shared local loops than the amount of loop costs the incumbent LEC allocated to ADSL services when it established its interstate retail rates for those services. This is a straightforward and practical approach for establishing rates consistent with the general pro-competitive purpose underlying the TELRIC

[321] @Link Comments at 7. @Link adds that, under no circumstances should the amount allocated to the competitive carrier be greater than 50 percent of the cost of the shared equipment. *Id.*

[322] NorthPoint Comments at 28.

[323] *Id.* at 28. We note, however, that the Federal-State Joint Board on Separations is considering the question of how to allocate local loop plant between voice and data services for purposes of jurisdictional separations in CC Docket No. 80-286. *GTE Telephone Operating Cos. GTOC Transmittal No. 1148*, CC Docket No. 98-79, FCC No. 99-41, Memorandum Opinion and Order, 1999 WL 98039, para 9 (rel. Feb. 26, 1999).

[324] *Local Competition First Report and Order*, 11 FCC Rcd at 15845-46, para. 678.

principles. We find that establishing the TELRIC of the shared line in this manner does not violate the prohibition in section 51.505(d)(1) of our rules against considering embedded cost in the calculation of the forward looking economic cost of an unbundled network element.[325] We also note that this approach was recently approved by the Minnesota PUC.[326]

140. We find it reasonable to presume that the costs attributed by LECs in the interstate tariff filings to the high-frequency portion of the loop cover the incremental costs of providing xDSL on a loop already in use for voice services. Under the price cap rules for new access services, the recurring charges for such services may not be set below the direct costs of providing the service, which are comparable to incremental costs. The rates the incumbent LECs set for their special access xDSL services should cover those costs. The incumbent LECs filed their cost support for their own special access DSL services before we issued the notice giving rise to this Order compelling line sharing, and they have defended their cost support when challenged in petitions to reject or suspend their tariff filings.[327] Since the incremental loop cost of the high-frequency portion of the loop should be similar to the incremental loop cost of the incumbent LEC's xDSL special access service, this approach should result in the recovery of the incremental loop cost of the high-frequency portion of the loop.

141. This approach also helps alleviate any potential price squeeze. A price squeeze may occur when incumbent LECs allocate little or no loop costs to their xDSL services, while competitive LECs, when offering xDSL service, must purchase access to a second line and pay for the related unbundled network element rates, which includes a loop cost for an entire loop. This difference in the cost of offering xDSL services leaves the competitive LECs at a significant competitive disadvantage. By requiring incumbent LECs to provide access to the shared local loops for no more than they allocate to their own xDSL services, the price squeeze may be redressed by ensuring competitive LECs and ILECs incur the same cost for access to the bandwidth required to provide xDSL services.

(2) OSS

142. Incumbent LECs use OSS systems that carry out pre-ordering, ordering, service provisioning, billing, repair and maintenance functions for their current products and services. Although the OSS systems vary among incumbent LECs, they share a common functionality. Competitive LECs exchange information with incumbent LECs through Electronic Exchange of Data gateways, Web GUIs, or via paper fax transmissions. There is no dispute either that incumbent LECs will need to modify their OSS systems somewhat in order to implement line sharing, or that they will incur costs in doing so. The question here is what the incumbent LECs

[325] 47 CFR § 51.505 (d)(1); *See also Local Competition First Report and Order*, 11 FCC Rcd at 15857-59, paras. 704-707.

[326] Specifically, the Minnesota PUC held that it was "not presently concerned with how [US West] resolves the pricing issue, so long as the Company charges data CLECs the same loop rate that the Company presently imputes to its own DSL services." *Minnesota Line Sharing Order* at 5.

[327] *See, e.g., Bell Atlantic Telephone Companies Amendments to Tariff F.C.C. Nos. 1 and 11*, CC Docket No. 99-201, Reply of Bell Atlantic to Petitions to Reject and Investigate at 7 (filed May 28, 1999).

should be permitted to charge competitive LECs for those required modifications.

143. Estimates from the incumbent LECs vary from a low of three and a half to five and a half million dollars,[328] to a high of hundreds of millions of dollars.[329] Bell Atlantic's range of estimates runs from five to twenty-five million dollars.[330] Competitive LECs contend that, because most of the necessary functionality already exists in the incumbent LECs' OSS systems, the costs of modifying OSS systems for line sharing nationwide are no more than GTE's estimate of five million dollars across GTE's entire service territory.[331] A joint *ex parte* filed on behalf of several competitive LECs maintains that the incremental changes needed in OSS to support line sharing would be minimal, and that manual work arounds, where necessary, would be sufficient to implement xDSL line sharing.[332]

144. We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element. We believe that this guideline is consistent with the principle set forth in the *Local Competition First Report and Order* that incumbent LECs cannot recover nonrecurring costs twice.[333] We also reaffirm the conclusions in the *Local Competition First Report and Order*, that the states may require incumbent LECs in an arbitrated agreement to recover such nonrecurring costs such as these incremental OSS modification costs through recurring charges over a reasonable period of time; and that nonrecurring charges must be imposed in an equitable manner among entrants. [334]

(3) Cross Connects

145. Cross connections will be required to connect the competitive LECs' xDSL equipment to the incumbent LECs' facilities in order for the competitive LEC to be able to provide xDSL services via line sharing. The incumbent LECs currently provide cross connects to interconnect loops with the collocated facilities of competitive LECs installed in incumbent LEC offices, and the states are setting prices for the cross connects using the TELRIC

[328] US West Oct. 7, 1999 *Ex Parte*. Note, this is the lower end of US West's estimate.

[329] SBC Comments at 21.

[330] Bell Atlantic Oct. 19 *Ex Parte*.

[331] Combined Data CLEC Sept. 30 *Ex Parte*. *See also* GTE Comments at 28-29.

[332] Combined Data CLEC Sept. 30 *Ex Parte*. This *Ex Parte* was jointly submitted by Bluestar Communications, Inc., Covad Communications Company, HarvardNet, Inc., Network Access Solutions Corp., NorthPoint Communications, Inc., and Rhythms NetConnections, Inc. This *Ex Parte* was jointly submitted by Bluestar Communications, Inc., Covad Communications Company, HarvardNet, Inc., Network Access Solutions Corp., NorthPoint Communications, Inc., and Rhythms NetConnections, Inc.

[333] *Local Competition First Report and Order*, 11 FCC Rcd at 15875, para. 749.

[334] *Id.*, 11 FCC Rcd at 15875 at paras. 749-50.

methodology. We would expect that the costs of installing cross connects for xDSL services in general would be the same as for cross connecting loops to the competitive LECs' collocated facilities, particularly where the splitter is located within the incumbent LEC's MDF. Accordingly, we find it reasonable to establish a presumption that, where the splitter is located within the incumbent LECs' MDF, the cost for a cross connect for entire loops and for the high frequency portions of loops should be the same. We would expect the states to examine carefully any assessment of costs for cross connections for xDSL services that are in excess of the costs of connecting loops to a competitive LECs' collocated facilities where the splitter is located within the MDF. If the splitter is not located within the incumbent LEC's MDF, however, then we would expect the states to allow the incumbent LEC to adjust the charge for cross connecting the competitive LEC's xDSL equipment to the incumbent LECs' facilities to reflect any cost differences arising from the different location of the splitter, compared to the MDF. We would expect that this amount would be only minimally higher than for cross connecting a splitter located within the MDF to the competitive LEC's xDSL equipment.

(4) Splitters

146. We concluded *supra*, that incumbent LECs must either provide splitters or allow competitive LECs to purchase comparable splitters as part of this new unbundled network element.[335] The issue here is the price that incumbent LECs should be allowed to charge for such a device. We note, in this regard, that incumbent LECs do not currently provide access to a splitter as part of an existing unbundled network element offering or as part of a tariffed interstate service.

147. We conclude that, if the incumbent LEC purchases for a competitive LEC the same splitter that it uses itself for providing xDSL services, then a state may require that it only assess the competitive LEC the same amount that it itself pays for a delivered splitter. This guideline is reasonable and consistent with TELRIC principles, because it means that the incumbent LEC will recover the incremental cost it incurred in purchasing the splitter. We further conclude that a competitive LEC, at its option, should be allowed to purchase a splitter that complies with industry standards, and transfer it to the incumbent LEC, in the event that the competitive LEC can complete the transaction more expeditiously or cost effectively than the incumbent LEC. A state may also allow the incumbent LEC to include in its rate structure a charge to recover the cost of installing the splitters.

(5) Line Conditioning

148. Finally, we consider the appropriate price an incumbent LEC may charge a competitive LEC to perform line conditioning, where such conditioning is necessary for the provision of shared-line DSL service. In order to prevent incumbent LECs from charging an excessive price for line conditioning, states may require that the conditioning charges for shared lines not exceed the charges the incumbent LECs are permitted to recover for similar conditioning of stand-alone loops for xDSL services. Furthermore, if the incumbent LEC is providing, or has already provided, xDSL service over a particular shared loop, a competitive

[335] *See supra* Section IV.D.1.

LEC should not be charged with any line conditioning costs if it wins that customer and seeks access to that shared loop for providing xDSL service.

149. On a more general note, the incumbent LECs argue that pricing this new unbundled network element using the TELRIC methodology would discourage investment in new advanced services and technologies. Their argument is two pronged. First, if incumbent LECs must offer line sharing to competitive LECs at TELRIC rates, then the competitive LECs would be less likely to invest in alternative technologies, such as those using terrestrial wireless or satellite circuits.[336] Secondly, if line sharing is mandated everywhere, it will reduce the ability of the incumbent LECs to recover any future fixed costs of developing advanced services which, in turn, will reduce the incumbent LECs' incentives to develop such services.[337]

150. The argument that TELRIC pricing of line sharing will reduce the incentive of competitive LECs to invest in alternative technologies is inconsistent with the Commission's conclusions in the *Local Competition First Report and Order*. In that order, the Commission concluded that setting unbundled network element prices based on TELRIC would encourage efficient levels of investment and entry by competitive LECs.[338] There is no evidence in this record to cause us to alter the Commission's conclusion that pricing unbundled network elements on the basis of TELRIC will not discourage efficient levels of investment and entry by competitive LECs. We also reject the argument that applying TELRIC principles to line sharing will reduce the incentives of incumbent LECs to develop advanced services. To the contrary, we find that the increased competitive pressures caused by the deployment of xDSL-based services by competitive LECs and of cable modem service by cable companies should increase the incentive of incumbent LECs to invest in advanced services.

151. Bell Atlantic argues that, if the Commission sets the price of the high-frequency portion of the loop at its long-run incremental cost (LRIC),[339] this would deprive incumbent LECs of revenues needed to support voice services. Bell Atlantic explains that, if the price of voice service is set below cost,[340] and the price of other services provided over the local loop are

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[336] Bell Atlantic Crandall Decl. at 3.

[337] *Id.*

[338] The Commission further concluded that setting prices based on embedded cost would distort the entry and investment decisions of competitive LECs. *Local Competition First Report and Order*, 11 FCC Rcd 15813, at para. 620.

[339] Where two services are provided over common facilities, the LRIC of the first service equals the difference between the stand-alone cost of providing the second service and the cost of providing both services together. *See, e.g., Telephone Company-Cable Television Cross-Ownership Rules, Section 63.54-63.58*, Memorandum Opinion and Order on Reconsideration and Third Further Notice of Proposed Rulemaking, 10 FCC Rcd 244 (1994) (*Videodialtone Reconsideration Order*). If common costs are large relative to total costs, then the incremental cost of individual services will be low, and possibly zero.

[340] When Bell Atlantic states that the price of voice services is below cost, it appears to mean the total cost of the common facilities, including the loop.

set at incremental cost, then the incumbent LEC may be unable to recover the common costs of the network, including the cost of the loop.

152. We reject Bell Atlantic's argument. To the contrary, we conclude that requiring line sharing and pricing it on the basis of TELRIC should not affect the ability of the incumbent LEC to recover costs associated with providing voice service. Currently, incumbent LECs are recovering the full embedded cost of their loops through revenues received from intrastate business and residential voice services, interstate access charges, and intrastate access charges. Nothing we do today affects the ability of incumbent LECs to continue to receive revenues from those services. Furthermore, the TELRIC methodology allows states to include in the price of an unbundled network element a reasonable allocation of forward-looking common costs. We anticipate, therefore, that states will set interim or arbitrated prices for line sharing to include forward-looking common costs as well as the directly-attributable costs discussed above. States should assign forward looking common costs to this new unbundled network element in the same way that they have assigned such costs to other unbundled network elements. Thus, we see no reason to depart from the use of the TELRIC-based methodology adopted in the *Local Competition First Report and Order* for this new unbundled network element.

153. We note that US WEST and Covad suggested a different method for setting the price of the line sharing unbundled network element as a fixed percentage of the TELRIC-based unbundled loop rate set by a state commission, or possibly as a percentage of the loop proxy ceilings contained in section 51.513 of our Rules.[341] Covad argued that the price should be ten percent of the unbundled network element rate or the loop proxy.[342] US WEST, in contrast, argued that 50 percent of the state-determined unbundled network element loop rate was a reasonable approximation of the value of the shared lines to the competitive LEC.[343] Both proposals dealt with a scenario in which we would set forth interim pricing measures. Since we are not doing so in this Order, these proposals are moot.

154. US WEST further argues that, by requiring line sharing of the local loop we are, in effect, forcing the incumbent LECs to sell the entire local loop to the competitive LEC,[344] and then to buy back that portion of the loop that the competitive LEC does not use. In other words, US WEST argues that competitive LECs seek to purchase an unbundled loop, extend the loop into their collocated space on the incumbent's property, attach their own preferred xDSL electronics, and then force the incumbent LECs to buy back whatever unused spectrum the competitive LEC chooses to let the incumbent use for voice telephony. US WEST then argues that line sharing requires them to bear the risk that its voice channel will not be adversely affected by the competitive LECs' xDSL services. According to US WEST then, the real question is what rebate should the competitive LEC receive for returning the voice channel to the

[341] 47 C.F.R. § 51.513.

[342] Covad Oct. 5 *Ex Parte*.

[343] *See* US West Oct. 7 *Ex Parte*.

[344] US West Comments at 2.

incumbent LEC.[345]

155. We do not see the issue in that manner, as we are not ordering the incumbent LECs to sell the entire loop, and do not agree with US WEST's characterization of what we are ordering. Incumbent LECs already provide voice and xDSL-based services over a shared line. In fact, the Internet sites of these companies would lead one to believe that sharing one's local loop with both voice and xDSL services has no ill effects upon one's voice communications at all.[346] Moreover, we have provided sufficient measures in this Order to ensure that the integrity of the voice component is not compromised. Further, we do not force the incumbent LECs to sell the entire local loop to a competitive LEC for xDSL services by our decision here. The incumbent LEC retains ownership and control of the loop at all times. In light of this conclusion, the rebate question need not be addressed.

156. US WEST also argues that any price set for the higher frequencies in the local loop should reflect the "tremendous value that a [competitive LEC] would obtain by acquiring the loop's data-transmission potential."[347] US WEST contends that the ability to offer voice and data over a single loop is also a function of technological efficiency, and allowing a competitive LEC access to share this efficiency without having to offer voice service could reduce the efficiencies enjoyed by the incumbent LECs, as they would be left with just the voice component and no xDSL component.[348] If the incumbent LECs lose this efficiency, US WEST argues, then, that competitive LECs should pay a premium for acquiring the loop's data-transmission potential.[349]

157. We reject US WEST's value-based pricing methodology. As we stated in the *Local Competition First Report and Order*, the price for unbundled network elements should be based on forward-looking costs. Setting the price for an unbundled network element based upon the competitive value that the facility confers upon another party does not conform with the TELRIC principles set forth both in this Order and in the *Local Competition First Report and Order*.

F. Implementation of Unbundling Obligation

158. As the Commission has continually recognized, the states will play a critical role

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[345] *Id.* at 25.

[346] *See, e.g.*, Bell Atlantic's Infospeed Internet Website at <http://www.ba.com/nr/1998/Oct/19981005001.html>.

[347] US West Comments at 26.

[348] *Id.* at 26. US West's argument regarding a loss of efficiencies is primarily based on the fact that this new unbundled network element will occupy a greater frequency spectrum than voice service occupies over the same loop. It is the loss of that capacity, if offered separately, to which US West objects. US West Oct. 7 *Ex Parte*.

[349] US West Comments at 26. *See* also US West Oct. 7 Ex Parte.

in promoting local competition.[350] Moreover, this Commission shares with the states a commitment towards ensuring the deployment of advanced services to all Americans.[351] We reiterate here our conclusion in the *Local Competition First Report and Order* that state arbitration of interconnection agreements will be expedited and simplified by a clear statement of terms that must be included in every arbitrated agreement, absent mutual consent to different terms.[352] Based on the states' role and our mutual commitment to expeditious and broad-based deployment of advanced services, we have established in this order uniform, national rules for the unbundling of the high frequency portion of the loop. These rules include the specific parameters, set out in section IV.D.1 above, that incumbents and competitive carriers must follow when providing service on a shared loop. We also announce pricing guidelines that we urge the states to apply when they arbitrate modifications to interconnection agreements or adopt permanent prices for this unbundled network element. We expect that these rules and guidelines will allow parties promptly to reach mutually agreeable terms and conditions for shared line access. These rules and guidelines will also assist the states in arbitrating and reviewing agreements under section 252. We believe that the rules and guidelines set out in this order are consistent with Congress' vision of the complementary roles for the Commission and the states with respect to access to unbundled network elements under section 251 of the Act and the deployment of advanced services under section 706 of the 1996 Act.

159. We recognize, however, that while voluntary carrier-to-carrier negotiations will be expedited by the promulgation of these national rules and guidelines, there may be some instances where the parties seek arbitration of unresolved issues pursuant to section 252(b)(1). We urge the states to complete the arbitration on a timely basis and to set minimum requirements for the provision of line sharing in their arbitration awards, including provisioning intervals and penalties for failure to comply. We note that states are free to impose additional, pro-competitive requirements consistent with the national framework established in this order.

160. In addition, as explained in more detail below, we strongly encourage the states to issue interim arbitration awards setting out the necessary rates, terms, and conditions for access to this unbundled network element, with any unresolved issues subject to a true-up when the state commission completes its arbitration.[353] We urge states to issue these awards as quickly as possible after a party petitions the state for arbitration under section 252(b)(1) so that competitive carriers are actually able to begin providing advanced services on a shared loop within 180 days of release of this order.

1. Effective Date of New Rules

161. We firmly believe that any delay in the provision of the high frequency portion of

[350] *Local Competition First Report and Order*, 11 FCC Rcd at 15566, para. 133.

[351] 47 U.S.C. § 157(a). Federal-State Joint Conference on Advanced Telecommunications Services, CC Docket No. 99-294, Order, FCC 99-293 (rel. Oct. 8, 1999) (*Joint Conference on Advanced Services*).

[352] *Local Competition First Report and Order*, 11 FCC Rcd at 15528, para. 56.

[353] NorthPoint Nov. 9 *Ex Parte* at 4.

the loop will have a significant adverse impact on competition in the provision of advanced services to customers that want both voice and data services on a single line, especially in residential and small business markets. Moreover, as stated above, we conclude that incumbent LECs should be able to implement OSS and other loop facility modifications within 180 days of the Commission's release of this order to accommodate requests for access to this new network element. We believe that there may be interim measures that will allow competitive carriers to begin obtaining some form of access to this unbundled network element even before 180 days. Therefore, our rules requiring the unbundling of the high frequency portion of the loop will become effective 30 days from publication of this Order in the Federal Register.

2. States' Role in Fostering Local Competition Under Sections 251 and 252

162. Because we have addressed with specificity the relevant issues necessary to enable the provision of line sharing, parties should be able to negotiate amendments to their interconnection agreements to include line sharing no later than 180 days of release of this order. Although we recognize the right to pursue arbitration under section 252, we are hopeful that parties will not need to do so to obtain interconnection agreements providing for line sharing.

163. If parties seek arbitration, however, modifications to existing interconnection agreements to actually provision this new unbundled network element could take up to nine months from the date that an incumbent LEC receives a competitor's request to commence negotiation.[354] We find that a nine-month delay seriously impairs the rapid introduction of competition in the provision of xDSL-based services on a shared line, especially to residential and small business consumers. If they do not reach an agreement, either party may invoke arbitration in the period from day 135 to day 160, and the state is required to complete the arbitration within nine months from the date of the competing carrier's request.[355]

164. We strongly encourage states to issue binding interim arbitration awards that would require the incumbent to begin provisioning this unbundled network element on interim arbitration terms and conditions within 180 days of release of this order. As detailed throughout this order, we have provided specific guidance for the states regarding arbitration awards. We believe that this is consistent with our goal of federal-state cooperation in facilitating the widespread deployment of advanced services.[356] The state interim arbitration award would remain in effect until such time as the state issues a final award. We believe that such interim arbitration awards will reduce delays and enable swift market entry by new competitors, thereby furthering our joint goal of ensuring deployment of advanced services to all Americans.

165. We expect that such interim arbitration awards would incorporate the rules we adopt in this order and be sufficiently detailed to permit the incumbent LECs to begin providing this new unbundled network element immediately upon the effective date of the interim order. The interim arbitration awards, like final arbitration awards, should include the price of the high

[354] *See* 47 U.S.C. § 252(b)(4)(C).

[355] 47 U.S.C. § 252(b).

[356] *See* 47 U.S.C. § 157(a). *See also Jt. Conference on Advanced Services* at para. 6.

frequency portion of the loop based on the pricing guidelines we set out in this order. We encourage the states, when issuing their interim arbitration awards, to set the price for the unbundled high frequency portion of the loop at the amount that the incumbent assesses in establishing interstate rates for its own competing services. Moreover, we recommend that the states adopt provisioning intervals to be included in both the interim award and the final arbitration award. As discussed below, to the extent that states do not adopt their own provisioning intervals, we adopt guidelines that the states can follow in establishing these provisioning intervals.

166. We believe that interim arbitration awards, to the extent necessary, promote the policy established in section 7 of the Act: "to encourage the provision of new technologies and services to the public," and comports as well with section 706 of the 1996 Act, by "encourag[ing] the deployment . . . of advanced telecommunications capability to all Americans. . ."[357] Both the states and this Commission share the objective of promoting competition among xDSL providers, particularly for residential and small business consumers. This shared objective supports state adoption of binding interim arbitration awards that will expedite market competition. Because incumbent LECs are the only carriers currently able to provide advanced and voice services on a single line, delaying the availability of this unbundled network element to competitive LECs until after the section 252-negotiation/arbitration process is complete could deny mass market consumer access to competitively offered advanced services for nine months or more. If the incumbent is able to exploit its unique control over local loops to dominate the market for single line voice-data applications in the next year, we will have lost a unique opportunity to promote a competitive marketplace for advanced services. Thus, we find that delayed implementation will severely undermine the potentially pro-competitive effects of line sharing between incumbent and competitive LECs.

167. In addition to arrangements reached through section 252-negotiation and arbitration procedures, Bell Operating Companies (BOCs) may prepare and file with a state commission a statement of generally available terms and conditions (SGAT) that they offer to comply with the requirements of section 251.[358] Given the importance of certain and prompt implementation of line sharing to broadband competition, especially in the residential and small business markets, we encourage the BOCs expeditiously to amend their SGATs setting out the terms and conditions pursuant to which they will offer access to shared loops in compliance with the requirements set out in this order. We note that pursuant to section 251(i), competitive carriers will be able to obtain access to the high frequency portion of the loop at the same rates, terms, and conditions offered in any approved interconnection agreement, as well as the BOCs' SGATs.[359] Finally, we note that in the event that a state commission fails to take action in an arbitration proceeding within the nine months prescribed by Congress, we are prepared to act promptly, pursuant to section 252(e)(5) and our implementing rules,[360] to issue an order

[357] 47 U.S.C. § 157(a).

[358] 47 U.S.C. § 252(f)(1).

[359] 47 U.S.C. § 252(i).

[360] *See* 47 U.S.C. § 252(e)(5); 47 C.F.R. §§ 51.801 et seq.

"preempting the State commission's jurisdiction of that proceeding or matter" and thereafter to bring the arbitration to an orderly, expeditious conclusion.

168. We note that a few states have already taken significant steps toward requiring incumbent LECs in their jurisdiction to offer line sharing.[361] Clearly, the Commission's requirement that line sharing be made available on a nationwide basis should not interfere with or delay the laudable efforts of individual states to make residential xDSL competition a reality more expeditiously. Rather, the timetable outlined above for implementing line sharing should be viewed as a maximum period for states that have not yet taken any actions to make line sharing available, either through the exercise of their authority under section 251-252 or pursuant to their authority under state law. We do not intend to constrain states that have undertaken such initiatives that likely will result in delivering the benefits of line sharing to their residential consumers more quickly.

3. Duty to Negotiate in Good Faith

169. The Commission concluded in the *Local Competition First Report and Order*, that the unbundling obligations of section 251 seek to reduce the incumbent LECs ability to leverage their dominant position in the local market into a nascent market, in this instance, the data market.[362] The Commission adopted rules in the *Local Competition First Report and Order* identifying factors or practices that constitute failure to negotiate in good faith.[363]

170. In the *Local Competition First Report and Order*, we found if that a party causes significant delay by refusing throughout the negotiation process to designate a representative with authority to make binding decisions, such an action would constitute failure to negotiate in good faith.[364] Consistent with this conclusion, upon commencement of the negotiation process we expect the incumbent LEC immediately to make available a representative who has region-wide decision-making authority to meet with the requesting carrier and any other competitive carriers seeking shared line access in the incumbent LEC's region at issue.

4. Guidelines for State Arbitration Awards

171. Incumbent LEC implementation of Commission rules designed to facilitate local competition is likely to be pursued more quickly and diligently if the incumbent LECs have an incentive to comply with these rules, and if compliance is swiftly enforced.[365] Accordingly, as

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[361] *See Minnesota Line Sharing Order*; Letter from Harris N. Miller, President, Information Technology Association of America (ITAA) to the Honorable Louis J Papan, California State Assembly, Apr. 6, 1999 (supporting Calif. AB 991 promoting xDSL deployment through line sharing), <http://www.itaa.org/isec/archive/papan.htm>.

[362] *Local Competition First Report and Order*, 11 FCC Rcd at 15570, para. 141.

[363] *Id.*, 11 FCC Rcd at 15574-15578, paras. 148-156.

[364] *Id.*, 11 FCC Rcd at 15577, para. 154. We have also stated that we would impose penalties pursuant to sections 501, 502 and 103 of the Act on parties who fail to negotiate in good faith. *Id.*, 11 FCC Rcd at 15571, para. 143.

[365] As we noted in the *Local Competition First Report and Order*, the section 252-negotiation process bears little resemblance to a typical commercial negotiation. The competitive carrier that seeks access to a shared loop has

discussed above, we conclude that offering to the state commissions guidelines to assist in pricing this new unbundled network element will facilitate consistency between the states and ensure that our line sharing rules, in fact, do level the competitive playing field. We further conclude that, when arbitration is necessary, the price of this new element should be set by states in the same manner as they set the price for other unbundled network elements. In addition to the pricing guidelines we set forth herein for use by the states in establishing a price for the high frequency portion of the loop, we also encourage the states to adopt performance measurements to include in their arbitration awards and to establish penalties for incumbent LEC failure to comply with their obligation to provide unbundled access to the high frequency portion of the loop. We set out below a presumption for the state commissions to use if necessary to establish performance standards for incumbent LEC provision of this unbundled network element. We also suggest that the states consider the imposition of forfeiture penalties on any incumbent LEC that fails to comply with the line sharing rules articulated in this order.

172. Statutory Standard. Section 251(c)(3) requires an incumbent LEC to "provide, to any requesting telecommunications carrier . . . nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms and conditions that are just, reasonable, and nondiscriminatory."[366] In the *Local Competition First Report and Order*, the Commission concluded that the provision of access to OSS functions falls squarely within an incumbent LEC's duty under section 251(c)(3) to provide unbundled network elements under terms and conditions that are nondiscriminatory and just and reasonable. The Commission observed that if competing carriers are unable to perform the functions of pre-ordering, ordering, provisioning, maintenance and repair, and billing for network elements in substantially the same time and manner as the incumbent can for itself, competing carriers will be severely disadvantaged, if not precluded altogether, from fairly competing.[367] For OSS functions that have no retail analogue – namely, the ordering and provisioning of unbundled network elements – an incumbent must offer access sufficient to allow an efficient competitor a meaningful opportunity to compete.[368]

173. As a general matter, the nondiscrimination obligation requires incumbent LECs to provide to requesting carriers access to the high frequency portion of the loop that is equal to that access the incumbent provides to itself for retail DSL service its customers or its affiliates, in terms of quality, accuracy and timeliness. Thus, we encourage states to require, in arbitration proceedings, incumbent LECs to fulfill requests for line sharing within the same interval the incumbent provision xDSL to its own retail or wholesale customers, regardless of whether the

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little, if nothing, to offer the incumbent in a negotiation. The incumbent, however, has control over the critical element the competitive LEC needs to compete. *Local Competition First Report and Order*, 11 FCC Rcd at 15566, para. 134.

[366] 47 U.S.C. 251(c)(3).

[367] *Local Competition First Report and Order*, 11 FCC Rcd at 15763-15764, para. 518.

[368] *Local Competition Second Reconsideration Order*, 11 FCC Rcd at 19742.

incumbent uses an automated or manual process.[369]

174. Provisioning Interval. We urge states to adopt provisioning intervals for this unbundled network element as part of any arbitration award. Because there are currently no state-required provisioning intervals for the high frequency portion of the loop network element, we urge states to consider a standard based on the time required to provision xDSL capable loops. We believe that this is the most accurate analogue that exists currently. We note that the Texas Commission requires that the incumbent LEC provision 95 percent of xDSL orders within 3 business days (for 1-10 loops), 7 business days (11-20 loops) and 10 business days (20+ loops).[370] In Texas, this provisioning interval runs from the application date to completion date for new, terminating, and change orders. The application date is the day that the requesting carrier authorizes the incumbent to provision the xDSL capable loop based on the loop qualification.[371] The completion date is the day that the incumbent completes the service order activity.[372]

175. Where the incumbent LEC is already providing shared line xDSL service to a particular customer, however, the provisioning interval should be significantly shorter, requiring only that the incumbent perform a simple cross-connect. We emphasize that states are free, and indeed, are encouraged to adopt more accurate provisioning standards for the high frequency portion of the loop for inclusion in their section 252 arbitration awards.

176. Penalties and Enforcement. We encourage states to establish penalties for failure to meet provisioning intervals as part of any arbitration award. The state could use the provisioning intervals it establishes as a measure to determine whether the incumbent LEC has failed to comply with its line sharing obligations. For instance, the states could impose penalties on the incumbent LEC each time an incumbent LEC fails to comply with its section 251(c)(3) unbundling obligations, even if the state has already taken action on prior violations by the same incumbent LEC, with respect to the same central office or the same competing carrier. We encourage states to consider adoption of self-executing remedies to minimize litigation in this area. Given the importance of these obligations, we emphasize that, in addition to whatever actions the states may take, we intend to monitor carefully incumbent LEC practices in this area, and to take strong enforcement action in appropriate cases. We also note that carriers may utilize the complaint provisions of section 208 of the Act in the case of disputes regarding the

[369] We do not determine herein whether providing the unbundled high frequency portion of the loop utilizing manual processes meets the nondiscrimination obligations of the incumbent LEC.

[370] SWBT Performance Measurements and Business Rules, Version 1.6, Measurement #55.1, Average Provisioning Intervals for Unbundled Network Elements, at 65 and 69, Installation Interval - DSL.

[371] In the event that the loop qualification determines that no conditioning is required, the day that the loop qualification is returned from the incumbent engineering staff will be the application date. If conditioning is required, the requesting carrier must notify the incumbent of the appropriate action to take. If the requesting carrier supplements the request to order the shared loop, the application date becomes the date that the incumbent receives the supplement. *See* SWBT Performance Measurements and Business Rules, Version 1.6, at 65.

[372] *Id.*

incumbent's obligations to provide the high frequency portion of the loop and our rules implementing line sharing.[373]

177. Implementation Schedule: Section 252(c)(3) requires a state commission, in resolving an arbitration proceeding to "provide a schedule for implementation of the terms and conditions of the parties to the agreement."[374] In light of our conclusion above that parties should be able to resolve all outstanding operational issues in six months or less, we strongly urge the states to adopt an implementation schedule that requires an incumbent to begin provisioning this network element to requesting carriers no later than 45 days after the issuance of an arbitration award. This should provide sufficient time for the parties to the arbitration to submit an interconnection agreement to the state commission for approval, and for the state commission to have an opportunity to act on that agreement as provided for in section 252(e)(4).[375]

V. SPECTRUM POLICY

A. Background

178. In this section, we address two broad and interrelated network issues: spectrum compatibility and spectrum management. Spectrum compatibility refers generally to the ability of a loop technology to reside and operate in the same or an adjacent "binder group" as another loop technology.[376] As we explained in the *First Advanced Services Report and Order and FNPRM*,[377] the continuing development of spectrum compatibility standards should help to minimize crosstalk, the noise caused by extraneous signals combining with the intended signal. This noise can result in the degradation of the intended signal. Spectrum compatibility is

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[373] The Commission, for example, has authority under section 503(b)(1)(B) of the Act, to impose forfeiture penalties and, if such a situation was before it properly, would consider imposing penalties on any incumbent LEC that fails to comply with the line sharing rules articulated in this order. Pursuant to section 503(b)(2)(B) of the Act (47 U.S.C 503(b)(2)(B)) and section 1.80 of the Commission's rules (47 C.F.R 1.80), the amount of the forfeiture would not exceed $110,000 for each violation or each day of a continuing violation up to a total of $1,100,000. We would be prepared to take action each time an incumbent LEC fails to comply with its section 251(c)(3) unbundling obligations, even if we have already taken action on prior violations by the same incumbent LEC, with respect to the same central office or the same competing carrier. *See Local Competition First Report and Order*, 11 FCC Rcd at 15564, para. 127 (ruling that an aggrieved party could file a section 208 complaint with the Commission alleging that the incumbent LEC has failed to comply with the requirements of sections 251 and 252).

[374] 47 U.S.C. § 252(c)(3).

[375] Section 252(e)(4) requires that the agreement will be deemed approved if the state commission does not act to approve or reject the agreement within 90 days from submission by the parties of an agreement adopted by negotiation under subsection 252(a), or within 30 days from submission by the parties of an agreement adopted by arbitration under subsection 252(b). The provision also states that no state court shall have jurisdiction to review the action of a state commission in approving or rejecting an agreement under section 252. 47 U.S.C. §252(e).

[376] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4794, para. 61. A binder group generally consists of 25, 50 or 100 copper pairs bundled together.

[377] *Id.*

achieved when energy that transfers into a loop pair, from services and transmission system technologies on other pairs in the same cable, does not cause an unacceptable degradation of performance. Spectrum management refers to loop plant administration, such as binder group management,[378] and other deployment practices that are designed to result in spectrum compatibility, preventing harmful interference between services and technologies that use pairs in the same cable.[379]

179. Spectrum compatibility and management become a significant concern with the introduction of new high-speed services in a multiple provider environment.[380] Incumbent LECs generally take the position that they have the right to determine unilaterally whether particular xDSL-based or other advanced services may be deployed on the network side of the demarcation point, regardless of whether they or competitive LECs are seeking the deployment.[381] Moreover, to the extent that incumbent LECs have deferred to industry standards-setting bodies for development of spectrum compatibility standards and spectrum management practices, such standards-setting bodies have been slow to respond and their processes have been skewed towards the interests of incumbent LECs. These circumstances have undermined the deployment of the technology to provide competitive deployment of xDSL services, contrary to Congress's goals in section 706 of the 1996 Act that the Commission "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans."[382]

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[378] *Id.*, 14 FCC Rcd at 4799, para. 71. Binder group management refers to choices concerning which technologies are deployed over which pairs. Ideally, binder group management is aimed towards preventing interference and maximizing service deployment.

[379] *See* Committee T1 LB 785, T1E1.4/99-002R4, at 1, § 1.1. Though we conceded in the *Advanced Services First Report and Order* that the terms "spectrum compatibility" and "spectrum management" often are used interchangeably, we drew the further distinction that the former refers to a service provider's general right to deploy a particular technology, while the latter refers to the provider's right to deploy a technology in a particular situation. *Id.*, 14 FCC Rcd at 4794 n.151. Of course, in the latter situation, the provider also has a responsibility to administer the loop plant to achieve spectrum compatibility.

[380] The policies and rules that we set forth in this section concerning spectrum compatibility and management address the coexistence of various loop technologies on different loops within the same or adjacent binder groups. In contrast, the policies and rules that we set forth herein concerning line sharing address the ability of two different service providers to offer service over the same line, with each provider employing different underlying frequencies to transport voice or data over that line. *Id.*, 14 FCC Rcd at 4805, para. 92. While we use the term "spectrum compatibility" in this order solely in the context of analyzing the coexistence of various loop technologies on different loops, the general concept of compatibility between loop technologies also is essential in order to implement line sharing successfully. *See, e.g.*, ALTS July 29 *Ex Parte* ("To avoid problems with service quality arising from potentially incompatible equipment and xDSL technologies, line sharing should be required whenever the applicable standard includes capability for shared provision of voice/data on [a] single loop"); Covad Sept. 1 *Ex Parte* (countering the "myth" that line sharing will cause interference with analog voice services); Letter from Lincoln E. Brown, Director – Federal Regulatory, SBC Telecommunications, Inc., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attach. (filed July 28, 1999) (SBC July 28 *Ex Parte*) (arguing that line sharing is infeasible in some situations, such as when technology used by competitive LECs is not compatible with voice services).

[381] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4798, para. 70.

[382] *See* 47 U.S.C. § 157.

While we strongly prefer to rely on natural market forces and mechanisms to address such network interoperability issues, we find that in order to achieve Congress's goals under section 706, under the circumstances at hand we must intervene to facilitate network deployment of advanced services by multiple providers.[383] Therefore, in order to encourage deployment of innovative technologies and allow competitors the same opportunity as incumbent LECs to deploy advanced services in a multi-provider, multi-service environment, we need to establish ground rules concerning what technologies can be deployed and who has the final say on various deployment issues. By establishing minimal ground rules now, we enable the industry, through its standards-setting bodies, to develop spectrum compatibility standards and spectrum management practices on a continuously ongoing basis, with our assumption of the standards-setting function only in extreme cases where industry standards bodies continue to fail in upholding the general policies that underlie spectrum compatibility standards and spectrum management rules and practices.

180. In the *Advanced Services First Report and Order*, we concluded that the general policies that should underlie spectrum compatibility standards and spectrum management rules and practices are: (1) fostering competitive deployment of innovative technologies; and (2) ensuring the quality and reliability of the public telephone network.[384] In order to promote these policies, we decided to establish certain spectrum management rules.[385] We declared that incumbent LECs may not unilaterally determine what technologies may be deployed. The better approach, we concluded, is to establish competitively neutral spectrum compatibility standards and spectrum management rules and practices so that all carriers know, without being subject to unilateral incumbent LEC determinations, which technologies can be deployed and can design their networks and business strategies accordingly.[386] Similarly, we found that uniform spectrum management procedures are essential to the success of advanced services deployment.[387]

181. In the accompanying *FNPRM*, which we adopted because we found that we did not have a sufficient record to address adequately all of the long-term spectrum compatibility and management issues,[388] we reached several tentative conclusions regarding the standards setting

[383] In a separate proceeding, CC Docket No. 99-216, we have held fora and solicited comment on changes to our customer premises equipment connection rules under Part 68. *See Part 68 Notice.*

[384] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4795-96, para. 63. *See also id.*, 14 FCC Rcd at 4803, para. 84.

[385] *See id.*, 14 FCC Rcd at 4798-99, para. 70.

[386] *Id.*, 14 FCC Rcd at 4796, para. 63; *see id.*, 14 FCC Rcd at 4801-02, para. 79.

[387] *Id.*, 14 FCC Rcd at 4799, para. 71. Notwithstanding our clearly articulated positions in the *Advanced Services First Report and Order and FNPRM,* certain incumbent LECs continue to insist that they should have unfettered jurisdiction over spectrum management. *See, e.g.,* GTE Comments at 11 ("the Commission should assign unambiguous responsibility for network reliability and integrity to the facility owner"); SBC Comments at 12 ("the Commission . . . should leave it to the [incumbent LECs] on how best to manage their networks").

[388] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4796, 4803 and 4805, paras. 64, 84 and 90.

process itself. Specifically, we tentatively concluded that: (1) this process should include the active participation of the incumbent LECs, competitive LECs, equipment suppliers and the Commission; (2) this process should be competitively neutral in both structure and procedure; (3) representation should be spread equitably over all segments of the industry; and (4) representatives should have equal authority, with no party or groups of parties presuming to have greater weight or "veto" power.[389]

182. We sought comment on the best process or forum for developing future power spectral density (PSD) masks[390] and other spectrum compatibility standards. We tentatively concluded that T1E1.4, a working group of Alliance for Telecommunications Industry Solutions (ATIS)-sponsored Committee T1, which is accredited by the American National Standards Institute (ANSI), is the best forum for this task.[391] We also tentatively concluded that T1E1.4 should serve as the forum to establish fair and open practices for the deployment of advanced services technologies.[392] We sought comments on how to foster broader representation and participation in T1E1.4, and solicited suggestions on other fora for, or methods of, guaranteeing fair and timely resolution of spectrum compatibility issues.[393] In addition, we requested that parties comment on whether a voluntary industry effort could address effectively loop management issues, and whether the Commission should solicit the assistance of a third party in developing spectrum compatibility standards and spectrum management policies. We asked what powers such a third party should have and what role it should serve.[394]

B. Discussion

1. Standards-Setting Entities

183. We reiterate our general belief that industry standards bodies can, and should, create acceptable standards for deployment of xDSL-based and other advanced services. ATIS

[389] *Id.*, 14 FCC Rcd at 4801-02, para. 79. No commenter objected to these tentative conclusions.

[390] PSD masks are represented as graphical templates that define the limits on signal power densities across a range of frequencies, so as to minimize interference. A PSD mask charts the maximum power and frequency levels that a particular xDSL technology will attain, enabling engineers to deploy a xDSL technology in a manner that minimizes crosstalk between that xDSL technology and the other technologies deployed within the local loop plant. *See* Letter from Jeffrey Blumenfeld, General Counsel, Rhythms NetConnections Inc., to Stagg Newman and Douglas Sicker, Office of Engineering and Technology, Federal Communications Commission, CC Docket No. 98-147, at 3 (filed Oct. 12, 1999) (Rhythms Oct. 12 *Ex Parte*). We discuss in detail in Section V.B.2 below the use of PSD masks to address spectrum compatibility issues.

[391] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802, para. 81.

[392] *Id.*, 14 FCC Rcd at 4803, para. 85.

[393] *Id.*, 14 FCC Rcd at 4802, para. 81. Similarly, we premised our tentative conclusion that T1E1.4 should serve as the forum to establish fair and open deployment practices on the assumption that a method will be developed to ensure "active participation of all segments of the industry" in T1E1.4. *Id.*, 14 FCC Rcd at 4803, para. 85.

[394] *Id.*, 14 FCC Rcd at 4804-05, para. 89.

standards setting processes, which may culminate ultimately in the ANSI standards approval process, are facially neutral, open to all interested parties, and contain safeguards against domination by any one particular interest.[395] Despite the neutrality and openness principles embedded in these processes, however, several commenters continue to express concerns that T1E1.4 is dominated by incumbent LECs.[396] These commenters are concerned that T1E1.4's standards setting work is proceeding too slowly and, as a result, delays or precludes deployment of certain technologies particularly favored by competitive LECs.[397] We are committed to the goals of reasonable and timely deployment of advanced services for all Americans, and thus we are concerned with any delays.

184. We remain convinced, therefore, that the Commission is compelled to play a role in fostering timely, fair, and open development of standards for current and future technologies.[398] We conclude that the standards setting process must include the involvement of a third party to advise the Commission on spectrum compatibility standards and spectrum management practices.[399] Specifically, the charter of an existing Federal Advisory Committee (FAC), the Network Reliability and Interoperability Council (NRIC),[400] will be amended to charge NRIC with such an advisory function.[401] We find that NRIC is the best choice amongst

[395] *See* ATIS Comments at 5-8, 14, 19-21.

[396] *See* ALTS Comments at 21-24; Covad Comments at 43; GSA Comments at 5; NorthPoint Comments at 43; NorthPoint Reply Comments at 44, 50-52; Rhythms Reply Comments at 37-39 (T1E1 currently is "captured" by incumbent LECs). *But see* BellSouth Comments at 29; Sprint Comments at 2; GTE Comments at 5-6 ("the working groups of Committee T1 already operate in an open, neutral manner. . . . Committee T1 is not dominated by any single interest group").

[397] *See* Covad Sept. 1 *Ex Parte*; Rhythms Reply Comments at 25-26. *See also OMB Circular A-119*, 63 Fed. Reg. at 8555 (when considering use of an industry voluntary consensus standard, an agency "should take full account of the effect of . . . applicable federal laws and policies, including laws and regulations relating to antitrust . . . small business . . . [and] technology development").

[398] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802, para. 80. *See* ALTS Comments at 21; NorthPoint Comments at 32, 40-42.

[399] *See* ALTS Comments at 22-25; Covad Comments at 48, 53-54; Sprint Comments at 5, 7 (proposing an ad hoc industry forum, consisting of incumbent LECs, competitive LECs and manufacturers, to develop spectrum management policies). *But see* BellSouth Reply Comments at 33; SBC Comments at 11 ("adding a third party to the loop spectrum management process would only further complicate matters. . . . [Incumbent LECs], in implementing these standards, have every incentive to manage the network in the most efficient manner and to safeguard the integrity and reliability of all services on the network").

[400] The rechartering of NRIC as NRIC V is a separate process, outside of this proceeding. Our proposal for NRIC V is subject to approval by the Administrator of the General Services Administration. *See* 41 C.F.R. §§ 105-54.201 – 105-54.202.

[401] We note that we sought comment in the *Advanced Services First Report and Order and FNPRM* on whether we should empower any third party, whose assistance we solicited in spectrum compatibility and management matters, to develop binder group management procedures and resolve disputes between carriers over the existence of disturbers in shared facilities. 14 FCC Rcd at 4804-05, para. 89. Because we establish in this order rules governing binder group management and mechanisms for interference dispute resolution between carriers, NRIC will have no

currently established FACs for this task, because its responsibility to assure interoperability of public telecommunications networks includes addressing spectrum compatibility issues.[402]

185. In this capacity, NRIC will receive input from industry standards bodies, such as T1E1.4, and monitor developments within them, in turn reporting periodically to, and preparing recommendations for, the Commission on matters relating to spectrum compatibility and management.[403] To that end, we request that NRIC V provide initial recommendations for resolution of spectrum compatibility and management issues to the Commission within 150 days from the establishment date of NRIC V.[404] Moreover, because we have recognized the continuously ongoing nature of spectrum compatibility standards and spectrum management practices development,[405] we expect NRIC to submit reports to the Commission on standards and practices development issues as further deemed necessary by NRIC or the Commission and, in any event, promptly after NRIC has received appropriate input from industry standards bodies.

186. We anticipate that NRIC will receive the majority of input from, and monitor most closely, the work of T1E1.4 with respect to developing spectrum compatibility standards. This expectation reflects our continued confidence, shared by an overwhelming majority of

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responsibility in these areas other than to report to us on the effectiveness of these rules and mechanisms. *See infra* Sections V.B.3.c. and V.B.4.

[402] Similarly, in its final report to the Commission, NRIC III, whose charter ran from April 1996 through early January 1998, described, inter alia, user interoperability issues involved when mixing ADSL technologies with other digital services. NRIC III concluded that "[s]pectrum compatibility needs to be addressed to resolve these potential interoperability issues." Network Reliability and Interoperability Council, *NRIC Network Interoperability: The Key to Competition*, at 139, § 7.2.2.2.3 (July 15, 1997) <http://www.nric.org/pubs> (*NRIC Interoperability Report*). Both NRIC III and its successor, NRIC IV, were chartered to assure interoperability of public telecommunications networks, among several other objectives. Consistent with this objective, NRIC V will be chartered to address several network interoperability issues, including spectrum compatibility standards and spectrum management processes. *See Id.* at 133-34, § 7.1.2.1 (with respect to access standards development, such as that occurring in Committee T1, NRIC III advised that "to improve compatibility, standards should have a sharp technical focus and standards bodies should strive to minimize the complexity and optionality of requirements. At the same time, standards should focus on achieving a basic level of interoperability, and should not be so specific as to stifle innovative approaches to a problem").

[403] *See generally* NorthPoint Comments at 32, 41, 45-47 (asserting that the Commission should establish a FAC to develop spectrum policy with the input of industry bodies including T1E1, and in a manner that preserves the Commission's ultimate authority to resolve spectrum policy issues, balances the Commission's goals of promoting innovation and protecting existing services from harmful interference, and is open, nondiscriminatory, and participatory). We anticipate that industry standards bodies periodically will report to NRIC on the status of work within them relating to spectrum compatibility and management, and will submit to NRIC standards that they have developed. NRIC also may relay to standards bodies issues on which it is seeking to report to or prepare recommendations for the Commission. Pursuant to the Federal Advisory Committee Act (FACA), but contrary to NorthPoint's suggestion that a FAC "implement and administer spectrum policy," NorthPoint Comments at 32, determinations of actions to be taken and policy to be expressed with respect to matters upon which NRIC reports or makes recommendations shall be made solely by the Commission or Commission staff. 5 U.S.C. App. 2 § 9(b).

[404] *See* 41 C.F.R. § 105-54.202(b).

[405] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802, 4805, paras. 80, 90.

commenters in this proceeding, that T1E1.4 is well equipped to develop future PSD masks and other spectrum compatibility standards.[406] T1E1.4, which maintains a participation list of over 400 representatives from incumbent LECs, competitive LECs, interexchange carriers, equipment manufacturers, and other interested parties, has the expertise and experience to develop spectrum compatibility standards.[407] As we acknowledged in the *Advanced Services First Report and Order and FNPRM*, T1E1.4 has been working on spectrum compatibility standards for over four years and on spectrum management for over a year.[408] Moreover, it already has established technical standards for several varieties of xDSL technologies.[409] In fact, T1E1.4's specific objective is to establish xDSL access standards.[410]

187. We also expect that NRIC will receive the most input from, and monitor most closely, the work of T1E1.4 with respect to fair and open practices for the deployment of advanced services technologies,[411] though we reiterate that NRIC will be open to, and will consider submissions from, any appropriate industry standards body. As we noted in the *Advanced Services First Report and Order,* these spectrum management practices include, for example, "the rules for testing and implementing xDSL-based and other advanced services."[412] To clarify further, deployment practices essentially refer to practices addressing "how" an advanced services technology is deployed in a manner that safeguards spectrum compatibility, and to guidelines for choosing among technologies where they conflict with each other. The former generally are a matter of technical standards-setting, while the latter tend to move more towards policy-making.[413]

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[406] *See, e.g.,* BellSouth Comments at 29; GSA Comments at 5 ("the T1E1.4 working group appears to have ample technical capabilities"); GTE Comments at 8; NorthPoint Comments at 43; Rhythms Comments at 17; SBC Comments at 3; Sprint Comments at 3 ("T1E1.4 is the forum where the industry experts reside, and there is no similar assembly of industry expertise in any other forum in North America").

[407] *See* ATIS Comments at 5, 20.

[408] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4805, para. 90; ATIS Comments at 11, 13-14, 18.

[409] *See, e.g.,* Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Line (ADSL) Metallic Interface (ANSI T1.413-1995) (ANSI T1.413 standard presents the electrical and other characteristics of the ADSL signals appearing at the network interface).

[410] *See* ATIS Comments at 1.

[411] *See, e.g.,* California PUC Comments at 4; GTE Comments at 10.

[412] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4799, para. 71.

[413] The line between policy-making and technical standards-setting often is blurred in the realm of deployment practices, however. The distinction between policy-making and technical standards-setting is significant because, by Committee T1's own procedures, policy-making generally is not an appropriate activity for T1E1.4. *See* ATIS Standards Committee T1 – Telecommunications Procedures Manual, 11th Issue, October 1998 (Revised as of the June 25, 1999 Committee T1 Meeting), at 67, § 8.2.1 (Committee T1 Procedures Manual) <ftp://ftp.t1.org/pub/t1/t1proc.pdf>. These procedures state: "Committee T1 will respond to . . . technical issues as

188. We expect that NRIC's involvement in these issues will help in several ways to alleviate concerns about incumbent LEC domination of T1E1.4, and will help safeguard competitive neutrality in, and the timeliness of, xDSL standards setting for network interoperability generally. First, through our authority to appoint the members of NRIC, we will ensure that NRIC represents a balancing of industry interests.[414] Because NRIC will make recommendations to the Commission based on input and submissions from T1E1.4 and other industry standards bodies, the balanced representation within NRIC should be able to recommend against any issues that are unduly weighted towards any one particular industry segment.

189. Second, because NRIC will be able to consider the processes behind any submissions from standards-setting bodies, and because the potential exists for presentation to NRIC of competing standards and practices from different standards-setting bodies, NRIC's view of which process best reflects competitive balance may and should influence its recommendations to the Commission. Moreover, the basis for NRIC's recommendations may be augmented by appearances before it or statements filed with it by any interested person.[415]

190. Third, though we continue to recognize that the standards development process is by nature lengthy and may result in delay of the deployment of new technologies even in the absence of artificial and subtle delay tactics,[416] we expect that NRIC will not recommend to the Commission the standards developed by a standards-setting body that unduly delays its standards setting process. If a standards-setting body does not submit its standards to NRIC in the same

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commensurate with its primary objective of developing American National Standards . . . Policy issues, on the other hand, are not within the mission and scope of Committee T1." The procedures go on to explain, however, that "[t]here are times when it is very difficult to differentiate between technical and policy issues. Further, it should be recognized that even though a question is presented in technical form, it may evolve policy issues." Responsibility for differentiating between technical and policy issues is vested in Committee T1 or its designate, Committee T1 Advisory Group.

Though we conclude that T1E1.4's charge to establish xDSL access standards renders it the most appropriate industry forum for developing fair and open advanced services deployment practices, and anticipate that NRIC likewise will be most solicitous for contributions from T1E1.4, we believe that, consistent with Committee T1 procedures, ATIS should ensure that the appropriate forum is working on deployment practices. For instance, several commenters advocate one of the subtending fora of ATIS's Carrier Liaison Committee, the forum most commonly mentioned being its Network Interconnection Interoperability Forum (NIIF). *See, e.g.*, ATIS Comments at 23. BellSouth takes a different position altogether, viewing deployment practices not as policy or technical judgments, but rather as business decisions that should not be subject to overall industry input or oversight. BellSouth "strongly oppose[s] vesting any forum with authority" to develop deployment practices. BellSouth Comments at 30-31. *See also* SBC Comments at 10-11.

[414] *See* 41 C.F.R. § 105-54.201(c) ("[a]dvisory committees are established only if there is a . . . truly balanced membership"). NRIC IV and previous incarnations of NRIC have been composed of CEO-level representatives of approximately 35 carriers, equipment manufacturers, state regulators, and large and small consumers.

[415] FACA, 5 U.S.C. App. 2 § 10(a)(3).

[416] *See Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4800-01, para. 77. *See also* Sprint Comments at 3.

timely manner that another standards-setting body submits its acceptable standards, NRIC should not delay in issuing recommendations just to await the latecomer's submission. Finally, NRIC's objective and scope of activity will be defined to ensure that it considers principles of fairness and timeliness in its recommendations for resolution of spectrum compatibility and management issues.[417]

191. We are reluctant to intervene in spectrum compatibility and management matters except in cases, such as here, where industry standards bodies have failed to encourage expeditious and competitively neutral deployment of innovative technologies.[418] Not only will NRIC enhance the Commission's role through the advice, recommendations and reports that it provides to the Commission, but it also will be able to identify issues for consideration by industry standards bodies, based on issues that the Commission believes need to be addressed.[419] Through the recommendations and reports that we receive from NRIC, we will evaluate whether T1E1.4 and other industry standards bodies are acting in a manner consistent with the policies that we have determined should underlie spectrum compatibility standards-setting and formation of spectrum management rules and practices.[420] Should we find that certain industry standards bodies are adopting spectrum compatibility standards or spectrum management practices that continue to fail, in their underlying processes, in safeguarding principles of competitive neutrality and promoting innovation, we will look to other industry standards bodies that uphold these principles or we will exercise our authority to assume the standards-setting function ourselves.[421] Because of our faith in T1E1.4 and other industry standards bodies going forward,

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[417] Similarly, on an ongoing basis NRIC's topic-specific scope of activity will be framed to ensure that NRIC considers principles of fairness and timeliness in its recommendations for resolution of additional topics that we specify.

[418] *See* NorthPoint Comments at 40-41, 45.

[419] We note that our indirect involvement with industry standards bodies with respect to identification of topics on which we seek recommendations falls far short of "compel[ling] industry bodies to adhere to any requirements we establish for the functioning of such bodies," and thus we need not address further our authority to compel industry bodies in such a manner. *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802, para. 79.

[420] *See supra* Section V.A. *See also* ALTS Comments at 20-21, 24. In this respect, we reject arguments that we take a more proactive approach towards the industry standards process in general and the standards determined by T1E1.4 in particular. *See* Oklahoma CC Comments at 6 ("the FCC should have greater weight or 'veto' power over the industry representatives [in industry standards bodies] because the FCC will protect all consumers without bias and, at the same time, balance the competing interests of industry"); Rhythms Comments at 15-18; Rhythms Reply Comments at 39-41; Rhythms Oct. 12 *Ex Parte* at 7. Covad asserts that we are the most appropriate forum for advanced services standards-setting, because we have a public interest mandate, and are not driven by the commercial interests which motivate private industry participants. *See* Covad Comments at 48; Covad Sept. 1 *Ex Parte.*

[421] The Commission previously has found that it "has avoided a dominant role in standards-setting as long as the activities of standards bodies do not frustrate the Commission's goals and policies. However, to the extent that such activities do not support public interest goals, it has reserved a role for itself and could play some part in standards development." *Intelligent Networks, Notice of Proposed Rulemaking,* 8 FCC Rcd 6813, 6820 n.64 (1993).

however, we encourage interested competitive LECs to join such bodies and participate in them fully.[422] We are committed to actively monitoring the activities of T1E1.4.[423]

2. Mechanisms for Demonstrating Spectrum Compatibility

192. In the *Advanced Services First Report and Order,* we sought comment on the best means to address spectrum compatibility.[424] One option was through generic PSD masks,[425] but we asked whether using that approach alone might restrict deployment of technologies that otherwise would not harm the network. We also sought comment on whether a calculation-based approach, in addition to a PSD mask-based approach, provides a better and more accurate tool for defining spectrum compatibility.[426]

193. We decline to adopt a federal rule mandating the use of either generic PSD masks or a calculation-based approach.[427] Instead, we will defer to the conclusions to be reached by industry standards setting bodies on this issue.[428] For instance, T1E1.4 currently is working on spectrum management standards that would allow for demonstration of spectrum compatibility using either PSD masks or a calculation-based (analytical) method.[429]

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[422] *See* Sprint Comments at 3 ("the importance of these issues to competition in broadband communications should be ample incentive for future participation at increased levels from newer entrants into the telecommunications marketplace").

[423] This is consistent with previous recommendations of the industry itself through NRIC, which advised the Commission to commit sufficient resources to provide direct monitoring of standardization activities at meetings of industry standards bodies. *See NRIC Interoperability Report* at 186, § 9.4.3. *See also* ALTS Comments at 16-17; Covad Comments at 53; SBC Comments at 9; Rhythms Reply Comments at 40.

[424] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4802-03, paras. 82-83.

[425] As we explain above, PSD masks define the limits on signal power across a range of frequencies. A generic PSD mask establishes spectral compatibility by defining a general purpose mask that could apply to several technologies. Ideally, use of generic PSD masks could expedite deployment of new technologies, because a new technology may be introduced without having to wait for a standards-setting body to approve a specific mask for the new technology.

[426] Unlike a PSD mask-based approach, which is static, a calculation-based approach uses a computational model for evaluating spectrum compatibility in specific situations. *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4803 n.194. With a calculation-based approach, mathematical and computer simulations are used to determine the power characteristics of a technology, and hence, the new technology's compatibility with other technologies. Thus, a calculation-based approach allows for more flexibility in demonstrating the spectrum compatibility of a new technology.

[427] For example, certain incumbent LECs argue that we should *require* the use of PSD masks. *See* BellSouth Comments at 30; SBC Comments at 3.

[428] *See, e.g.,* Oklahoma CC Comments at 8-9. *But see* Rhythms Comments at 16 ("a policy of deference is not best applied to issues of spectrum compatibility").

[429] *See* T1E1.4/99-002R4. Though this document, containing proposed standards on many issues, was defeated narrowly in an August 1999 Committee T1 Letter Ballot, T1E1 still is considering this approach actively. *Id.* at 10-

194. Notwithstanding our abstention from adopting a federal rule governing methods for defining spectrum compatibility, we observe that the use both of generic PSD masks and a calculation-based approach appear to be the best means to address spectrum compatibility for purposes of spurring competition. Taken together, these two mechanisms should protect network integrity while maximizing deployment of new competing technologies. Depending on the precise approach used, a calculation-based approach, used in conjunction with or in lieu of generic PSD masks, presents several advantages. First, not only does a calculation-based approach, like generic PSD masks, provide a vehicle for swift introduction of a new technology without incurring delays associated with approval by standards-setting bodies of each individual new technology, but it further enables swift introduction where the technology does not fit within one of the already-approved generic masks. Second, it can help to maximize binder group efficiency through analyzing the interference potential of each loop in a binder group, assigning an aggregate interference limit to the binder group, and then adding loops to the binder group until that limit is met.[430] This second benefit is consistent with our expectation, as we articulated in the *Advanced Services First Report and Order,* that incumbents will manage binder groups "in such a manner so as to maximize the number and types of advanced services that can be deployed."[431] Third, it provides a "double check" of the interference environment.[432] Finally, a calculation-based approach addresses the concerns of those who complain that a PSD mask-based approach alone is overly conservative and restrictive.[433] Thus, although we defer at this juncture to T1E1.4 or other industry standards bodies to determine the best approach with respect to spectrum compatibility, we strongly encourage T1E1.4 to continue on its current course of recognizing both PSD masks and an analytical approach in its spectrum management standard, and to define further how the analytical model leads to deployment rules.

3. Conditions for Acceptability of a Loop Technology for Deployment

195. In the *Advanced Services First Report and Order,* we concluded that, "until long-term standards and practices can be established,"[434] a loop technology should be presumed acceptable for deployment under any one of several circumstances.[435] These circumstances

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12. *See* T1E1.4/99-002R4 at 10, § 4.3.3. T1E1.4's analytical method is contained in Annex A, Method B to the proposed spectrum management standards. *See* T1E1.4/99-002R4 at 12, § 4.3.5.

[430] *See* AT&T Comments at 6-8, 10-13.

[431] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4800, para. 76.

[432] *See* US WEST Comments at 6.

[433] *See* GTE Comments at 9. *But see* Oklahoma CC Comments at 8 ("The OCC does not believe that the establishment of PSD masks would restrict the development of new technologies").

[434] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4796-97, para. 66.

[435] Though we established these presumptions in the spectrum management context, in this order we also apply them to deployment of a loop technology for line sharing. *See supra* Section IV.D.1.b).

include that the technology: (1) complies with existing industry standards;[436] (2) is approved by an industry standards body, the Commission, or any state commission; or (3) has been successfully deployed by any carrier without "significantly degrading" the performance of other services.[437] We found that any equipment deployed consistent with at least one of these factors can be connected to the public switched telephone network with reasonable confidence that the loop technology will not significantly degrade the performance of other advanced services, and with reasonable confidence that the technology will not impair traditional voice band services.[438] We also concluded that an incumbent LEC may not deny a carrier's request to deploy technology that is presumed acceptable for deployment unless the incumbent LEC demonstrates to the relevant state commission that deployment of the particular technology will significantly degrade the performance of other advanced services or traditional voice band services.[439] In recognition of the ongoing process of standards development as well as the ongoing innovation in advanced services technologies that we anticipate and hope will ensue, we now codify rules and clarify certain aspects below.[440]

196. We emphasize that in codifying these rules, we have established a national framework, as contemplated by sections 251 and 252 of the Act,[441] governing when a loop technology is presumed acceptable for deployment on the network. Given the states' role within this framework, we believe it appropriate for states to decide when a LEC has successfully rebutted the presumption of acceptability for deployment, when a proposed deployment does or does not establish a presumption, when a deployment significantly degrades another service, and other issues as set forth below.[442] The state commissions which comment on the *Advanced Services First Report and Order and FNPRM* embrace our decision in the *Advanced Services First Report and Order* to accord to them the task of determining whether a specific technology is acceptable for deployment.[443] We also observe that Congress, in section 706(a) of the 1996

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[436] We reject Rhythms' requested clarification that this criterion include any technology that merely complies with a PSD mask which an industry standards body has developed. *See* Rhythms Comments at 19; Rhythms Oct. 12 *Ex Parte* at 8. Industry standards include additional specifications, such as modulation schemes and electrical characteristics.

[437] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4797, para. 67.

[438] *Id.*, 14 FCC Rcd at 4797, para. 66.

[439] *Id.*, 14 FCC Rcd at 4798, para. 68.

[440] Several commenters express support for these rules. *See, e.g.,* NorthPoint Comments at 34, 36 n.57; Rhythms Comments at 18-20; Rhythms Oct. 12 *Ex Parte* at 5.

[441] *See* 47 U.S.C. §§ 251 and 252. *See also* GTE Comments at 13.

[442] If a particular state commission chooses not to accept one or more of the tasks that we accord to state commissions regarding deployment of advanced services, the aggrieved party may present its claims to this Commission. *See* 47 U.S.C. § 252(e)(5); 47 C.F.R. §§ 51.801 and 51.803.

[443] *See* California PUC Comments at 4 ("there will clearly be a role for the states in resolution of disputes arising from actual local deployment practices"); Oklahoma CC Comments at 10 ("the OCC is both willing and able to

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[437] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4797, para. 67.

[438] *Id.*, 14 FCC Rcd at 4797, para. 66.

[439] *Id.*, 14 FCC Rcd at 4798, para. 68.

[440] Several commenters express support for these rules. *See, e.g.,* NorthPoint Comments at 34, 36 n.57; Rhythms Comments at 18-20; Rhythms Oct. 12 *Ex Parte* at 5.

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[443] *See* California PUC Comments at 4 ("there will clearly be a role for the states in resolution of disputes arising from actual local deployment practices"); Oklahoma CC Comments at 10 ("the OCC is both willing and able to

Act, specifically charged this Commission *and each state commission* with taking measures to encourage the deployment of advanced services to all Americans.[444] We will provide further guidance on these matters where requested by a state commission.

197. We reaffirm our conclusion from the *Advanced Services First Report and Order* that ADSL, HDSL, and ISDN services are presumed acceptable for deployment on fully unbundled loops where they comply with any one of certain enumerated standards. Though we recognized that TR28, which defines the technical standards for HDSL, is not a Committee T1 approved standard, we stated that its "universal deployment, however, results in its status as a *de facto* standard."[445] Similarly, in accordance with the second and third criteria outlined above, we grant Rhythms' request that we declare SDSL to be presumed acceptable for deployment.[446] Though, as described below, states will generally have the role of declaring when an advanced services technology is presumed acceptable for deployment by virtue of satisfying the successful deployment criterion,[447] we find that successful deployment of SDSL has been sufficiently widespread that we believe it can be deployed further without appreciable risk of jeopardizing network integrity. Our finding, however, is limited to presuming SDSL acceptable for deployment on a fully unbundled loop. We do not establish here a presumption that SDSL is acceptable for deployment on a shared loop.[448]

a) Successful Deployment Criterion

198. We find the third criterion outlined above – successful deployment of a technology elsewhere without significantly degrading the performance of other services – to be particularly useful for assisting the deployment of new technologies without subjecting them to delays often encountered with industry standards-setting fora. Moreover, as a method to achieve a presumption of acceptability for deployment that does not rely upon industry standards bodies, the successful deployment criterion provides a further antidote against concerns regarding the competitive neutrality of the industry standards-setting process.[449] We reject the argument of certain commenters that the third criterion will lead to interference in the network, due to

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arbitrate these types of disputes"); Texas PUC Comments at 5-6 ("Given that it is impossible to predict every deployment scenario and difficulty, state commissions should be allowed to address these [deployment] issues as they arise. . . . The Texas PUC has also chosen to exercise its authority in determining whether a technology significantly degrades the performance of other services.").

[444] *See* Oklahoma CC Comments at 10.

[445] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4797, para. 67.

[446] *See* Letter from Stephanie Joyce, Blumenfeld & Cohen, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attach. (filed Sept. 2, 1999).

[447] *See infra* Section V.B.3.a.

[448] *Compare supra* Section IV.D.1.b.

[449] *See* Covad Comments at 50; Rhythms Comments at 19-20.

differing mixes of deployed technologies in local networks.[450] Though protecting network integrity is our utmost concern, we must do so in a manner that also fulfills our statutory mandate to promote competition and innovation in advanced services. We conclude that a competing carrier's use of the calculation-based method for demonstrating spectrum compatibility, as a prelude in most cases to initial deployment of a technology, should go far towards allaying the concerns of some commenters over risks of interference to the network from the deployment of a technology that was successfully deployed elsewhere.[451]

199. The LEC also will be able to rebut the presumption of acceptability before a state commission if the technology proposed for deployment poses a real interference threat in a certain area.[452] We are confident that this represents a sufficient safeguard for network reliability. Indeed, because the power to rebut the presumption of acceptability for deployment of a technology before a state commission is an important safeguard for LECs, we decline to make the presumptions that are based on the technology's standardization or other approval by an industry standards body or this Commission irrebuttable.[453] We reiterate, however, that a LEC may not deny a carrier's request to deploy technology that is presumed acceptable for deployment under one or more of the circumstances set forth above, unless the LEC first successfully rebuts the presumption of acceptability before the relevant state commission.[454] Similarly, a carrier should seek redress from the relevant state commission where it encounters opposition from the incumbent LEC to its claim that the proposed deployment falls within the presumption of acceptability.[455] We expect LECs to act in good faith in response to carriers' claims that their requested technology deployments fall within the presumption of acceptability. A LEC's failure to act in good faith in response to a carrier's request to deploy a technology

[450] *See, e.g.,* BellSouth Reply Comments at 28-30; Sprint Reply Comments at 16-19. *But see* NorthPoint Comments at 34 (asserting that consistent with the presumptions of acceptability for deployment, technologies have been, and continue to be, deployed "without incident," thus vindicating our previous tentative conclusion that a significant degradation test is sufficient to prevent actual interference and disruption of services in the network).

[451] *See* Covad Comments at 51.

[452] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4798, 4800, paras. 68, 76.

[453] *See* NAS Comments at 18. Though a LEC may attempt to rebut the presumption that a technology is acceptable for deployment in a specific situation by claiming that deployment of the technology will cause interference in that situation, the designation by this Commission of a technology as generally presumed acceptable for deployment is irrebuttable.

[454] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4798, para. 68.

[455] Where the technology that the carrier seeks to deploy does not conform to existing industry standards and has not been approved by an industry standards body, the Commission, or a state commission, the burden is on the requesting carrier to demonstrate that its proposed deployment meets the threshold for a presumption of acceptability and will not, in fact, significantly degrade the performance of other advanced services or traditional voice band services. *Id.,* 14 FCC Rcd at 4798, para. 69. Where the carrier asserts, however, that the technology does conform to existing industry standards or has been approved by an industry standards body, the Commission, or a state commission, the burden rests with the LEC to prove that the deployment does not fall within the presumption of acceptability.

constitutes a violation of our rules implementing section 251 of the Act.[456]

200. Consistent with the *Advanced Services First Report and Order*,[457] we leave it to the states to determine the specific criteria under which a technology will be deemed successfully deployed under the third presumption for acceptability, above. Leaving this determination to the states is advantageous because states have more familiarity with local network conditions, and thus should be able to gauge best an appropriate definition for successful deployment that suits local network conditions.[458] The widely divergent proposals for a national definition that are contained in the record before us in this proceeding further lead us to the conclusion that at this juncture, determining the definition of successful deployment at the state level will be most fair both to carriers seeking to deploy new technologies and to LECs.[459] Because one of our goals in this proceeding is to develop rules to address long-term spectrum management concerns,[460] we may revisit this issue and establish national criteria if a record is created showing that the criteria utilized by certain states in making determinations of successful deployment are leading to an overly preclusive or overly permissive presumption of successful deployment.

b) Definition of "Significantly Degrade"

201. In the *Advanced Services First Report and Order*, we defined "significantly degrade" as "an action that noticeably impairs a service from a user's perspective."[461] In adopting this definition, we recognized that a certain degree of interference is permissible and harmless. We also acknowledged that this definition is "subject to debate," and for the time being left it to the states to determine when a technology significantly degrades the performance of other services.[462] In the accompanying *FNPRM*, we sought comment on how to define "significantly degrade" more precisely, so as to ensure that consumers have the broadest

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[456] *See* 47 C.F.R. §§ 51.301(a) and (c)(6), 51.305(e).

[457] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4798, para. 69.

[458] *See* Oklahoma CC Comments at 11 ("the OCC, as the agency which regulates the telecommunications industry in Oklahoma, is the entity most informed about the realities of competition in the local exchange market in Oklahoma").

[459] *Compare, e.g.,* Letter from Lincoln E. Brown, Director – Federal Regulatory, SBC Telecommunications, Inc., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attach. (filed Aug. 20, 1999) (technology is successfully deployed when, inter alia, it has been deployed over a minimum of 200 circuits, the deployment constitutes a minimum of five percent penetration level in at least one binder group, and the deployment lasts a minimum of 90 days with no unresolved interference-related service complaints from end users or other carriers) *with* Rhythms Oct. 12 *Ex Parte* at 8 (technology is successfully deployed if deployed in one central office on at least 25 loops for 30 days without interference).

[460] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4805, para. 90.

[461] *Id.*, 14 FCC Rcd at 4797 n.166.

[462] *Id.*

selection of services from which to choose without harming the network.[463]

202. Although we recognize the value of objective criteria to measure "significant degradation," based on the record before us, we are unable to adopt an objective standard for determining whether a technology causes "significant degradation." We believe that an objective measurement of "significantly degrade" should account for reductions in a service's distance (reach) and/or speed (rate), among other factors, but parties to the proceeding have not adequately proposed specific numerical parameters for an objective standard.[464] Accordingly, we reaffirm the subjective definition of "significantly degrade" that we adopted in the *Advanced Services First Report and Order*.[465] We believe, however, that it is in all carriers' interest only to deploy new technologies that will not cause service compatibility problems. Moreover, we believe that deployment of advanced services according to approved PSD masks and/or calculation-based standards adopted by industry standards bodies such as T1E1.4 should prevent noticeable service degradation in most cases.[466] Nevertheless, we encourage industry standards bodies to continue addressing the issue of establishing objective criteria to measure "significant degradation."[467]

203. We also emphasize the "significance" component of the "significantly degrade" test. As binder groups fill up, service rates may decrease. Carriers must be realistic about the service rates that they are marketing. Moreover, as we expressed in the *Advanced Services First Report and Order*, "[w]hile we recognize that some minimal interference may develop as new services are introduced, we believe that it is in the public's best interest to encourage the timely deployment of advanced services."[468] All providers should recognize that cooperation is essential in this shared environment.[469]

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[463] *Id.*, 14 FCC Rcd at 4804, para. 88.

[464] SBC, for example, attempts to provide a multi-component definition, which includes, inter alia, "[m]aterially reducing the distance over which the service can be provided (i.e., significantly reducing its availability and reach to prospective or existing customers)." SBC Comments at 6. The key, of course, is pinpointing what constitutes a material reduction in distance, which essentially brings the question back to square one. Covad advocates an objective definition that assures that deployed technologies do not exceed specific tolerable noise levels, but Covad also does not detail what the threshold noise levels should be. Covad Comments at 48. *See also* Sprint Comments at 6.

[465] *See, e.g.*, ALTS Comments at 20 n.48; GTE Comments at 14; NorthPoint Comments at 35 ("By focusing on the end user's perception, the significant degradation test balances the interest in promoting new technology with the protection of existing services"); Rhythms Reply Comments at 40.

[466] *See supra* Section V.B.2.

[467] *See* Sprint Comments at 6 ("it would be best to attempt to achieve industry consensus on such a definition through the T1E1.4 committee").

[468] *Id.*, 14 FCC Rcd at 4797 n.166.

[469] *Id.*, 14 FCC Rcd at 4800-01, para. 77.

204. Some incumbent LECs argue that they require certain information on a requested deployment in order to be able to assess properly the prospects of the deployment significantly degrading the performance of other services.[470] In the *Advanced Services First Report and Order*, we required incumbent LECs to disclose to requesting carriers information with respect to the number of loops using advanced services technology within the binder and type of technology deployed on those loops. We also required incumbent LECs to disclose to requesting carriers information with respect to the rejection of the requesting carrier's provision of advanced services, together with the specific reason for the rejection.[471] Furthermore, we required incumbent LECs to make available to competitive LECs intending to provide service in an area the procedures and policies that the relevant incumbent LEC uses in determining which services can be deployed.[472] We affirm and codify these policies in this Order. Consistent with the information disclosure requirements that we applied to incumbent LECs in the *Advanced Services First Report and Order*, we agree that competitive LECs must provide to incumbent LECs information on the type of technology that they seek to deploy, including Spectrum Class information where a competitive LEC asserts that the technology it seeks to deploy fits within a generic PSD mask.[473] We further agree that competitive LECs must provide this information in notifying the incumbent LEC of any proposed change in advanced services technology that the carrier uses on the loop, so that the incumbent LEC can correct its records and anticipate the effect that the change may have on other services in the same or adjacent binder groups.[474] We emphasize that incumbent LECs must protect the proprietary rights of deploying carriers, and may use this information for network purposes only, without disclosing who is deploying what advanced services technologies on particular binders.[475] We believe that the benefits of applying such information disclosure requirements to competitive LECs outweigh any burdens,

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[470] For instance, SBC maintains that we should require competing carriers to provide Spectrum Class identification information with their loop orders. *See* SBC Comments at 4-6. *See also* GTE Comments at 14; Sprint Comments at 6.

[471] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4799, para. 73. With respect to PSD mask information in particular, SBC argues that provision by competitive LECs of such information is necessary for incumbent LECs to meet their disclosure obligations concerning the type of technologies deployed on loops. SBC Comments at 4-5. *See also* Sprint Comments at 4-5, 6.

[472] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4799, para. 72.

[473] We agree with Rhythms that where a competitive LEC asserts that the technology it seeks to deploy fits within a generic PSD mask, it need not provide to the incumbent LEC the speed or power at which the particular technology will be transmitted, because the incumbent LEC will be able to discern this information from the PSD mask that the competitive LEC identifies. *See* Rhythms Comments at 27. We add, however, that where a competitive LEC relies on a calculation-based approach to support deployment of a particular technology, it must furnish the incumbent LEC with information on the speed and power at which the signal will be transmitted.

[474] SBC Comments at 5. Thus, we reject Rhythms' stipulation that competitive LECs may change deployed technologies without delay. *See* Rhythms Comments at 27. As with initial deployment of a technology by a competitive LEC, the incumbent LEC must be afforded an opportunity to rebut the presumption of acceptability for deployment of a replacement technology, where such presumption applies.

[475] *See* Rhythms Comments at 27; Sprint Comments at 6.

particularly because we believe that the provision of such information is integral to a claimed presumption of acceptability anyway. Moreover, we anticipate and expect that the provision of such information by carriers will minimize conflicts over whether the proposed deployment falls within the presumption of acceptability.

205. In the *Advanced Services First Report and Order*, we required that a carrier that claims its services are being significantly degraded by another carrier's services "must notify the causing carrier and allow that carrier a reasonable opportunity to correct the problem."[476] Sprint requests that we clarify that incumbent LECs are in all instances the initial point of contact for service degradation disputes among competitive LECs.[477] Various incumbent LECs contend that they should not have to act as clearinghouses for those disputes.[478] We confirm that an incumbent LEC need not act as the initial point of contact in all service degradation disputes. Instead, the carrier that believes its services are being significantly degraded should notify the causing carrier when the carrier experiencing degradation knows with certainty the identity of the causing carrier. We recognize, of course, that a carrier whose services are being degraded may not know the precise cause of the degradation and thus may not know which carrier to contact for corrective action.[479] In this circumstance, the carrier experiencing service degradation must notify each carrier that may have caused or contributed to the degradation, including, where applicable, the incumbent LEC. Where the carrier experiencing service degradation does not know which carriers share the binder group or have deployed services in an adjacent binder group, it should request that the incumbent LEC provide it with the relevant contact information for those other carriers. The incumbent LEC must comply with any such request in the same time frame that the incumbent LEC employs for its own operations.[480]

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[476] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4800, para. 75.

[477] Sprint raises this request in a petition for reconsideration of the *Advanced Services First Report and Order.* Sprint Petition at 6-7; *see* AT&T Comments on Sprint Recon. Petition at 2-3. Because we find this issue relevant to spectrum management rules, we address it here.

[478] *See* Ameritech Comments on Sprint Recon. Petition at 7; Bell Atlantic Comments on Sprint Recon. Petition at 7-10; BellSouth Comments on Sprint Recon. Petition at 12; SBC Comments on Sprint Recon. Petition at 13-14.

[479] For this reason, we also reject the request that Sprint poses in comments on the *Advanced Services First Report and Order and FNPRM,* that we allow the incumbent LEC unilaterally to suspend service from the carrier causing interference, because this would be tantamount to allowing incumbent LECs to suspend all service deployment suspected of causing or contributing to degradation of other service. *See* Sprint Comments at 7. If the Commission were to allow such suspension of service while the incumbent LEC experiencing service degradation searched to ascertain the proper culprit(s), several carriers may be forced to suspend the service deployment in question, and may lose customers or be forced to undergo costly remedial measures which may prove subsequently to have been unnecessary. *Compare infra* Section V.B.4. (where we decline to establish a national sunset period for known disturbers, out of concerns that a blanket sunset period may lead to unnecessary replacement of known disturbers, and lead further to unnecessary network disruption and forcing of carriers to undertake exorbitant replacement expenditures). We find that this scenario provides fertile ground for abuse. Therefore, we reiterate, as we do below, that incumbent LECs must comply with the processes that we set out, rather than taking unilateral action against allegedly interfering competitive LEC data services. *See infra* Section V.B.3.c).

[480] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4799, para. 72.

c) Interference Dispute Resolution

206. In the *Advanced Services FNPRM*, we asked commenters how best to resolve disputes arising out of claims that a particular technology is significantly degrading the performance of other services. We also sought comment on whether a dispute resolution process should rely on an outside party as an arbitrator, such as the state commission, the FCC, or a neutral third party, or whether the process simply should provide the rules by which players must conform.[481]

207. As we held in the *Advanced Services First Report and Order,* a carrier must establish before a state commission that a particular technology significantly degrades another service.[482] We are concerned that some incumbent LECs may plan to take unilateral action against allegedly interfering competitive LEC data services, rather than comply with the processes that we set out in the *Advanced Services First Report and Order.*[483] We emphasize, therefore, that incumbent LECs are required to follow these procedures. Specifically, as we restate above, where a carrier claims that a deployed service is significantly degrading the performance of other advanced services or traditional voice band services, that carrier must notify the deploying carrier and allow the deploying carrier a reasonable opportunity to correct the problem. Any claims of network harm presented to the deploying entity or, if subsequently necessary, the relevant state commission, must be supported with specific and verifiable corroborating information.[484]

208. We reaffirm and codify the policy that we enunciated in the *Advanced Services First Report and Order* to guide states in the resolution of interference disputes. Specifically, where a LEC demonstrates that a deployed technology is significantly degrading the performance of other advanced services or traditional voice band services, "the carrier deploying the technology shall discontinue deployment of that technology and migrate its customers to technologies that will not significantly degrade the performance of other such services."[485] We

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[481] *Id.*, 14 FCC Rcd at 4804, para. 88.

[482] *Id.*, 14 FCC Rcd at 4797 n.166. *See* California PUC Comments at 4 ("[t]he state commissions are the appropriate entities to develop a record and resolve disputes based on the pivotal issue of whether deployment of advanced services 'significantly degrades' the performance of other advanced services and traditional voice services for end users"); ALTS Comments at 20; NorthPoint Comments at 36 n.57.

[483] *See, e.g.,* Letter from Kathleen B. Levitz, Vice President – Federal Regulatory, BellSouth Corporation, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 98-147, Attach., at 4 (filed Sept. 9, 1999) (BellSouth Sept. 9 *Ex Parte*) ("Splitters are necessary to allow [an incumbent LEC] to disconnect data services which significantly degrade voice services (after notice has been given)"); GTE Comments at 13 n.22 (where a competitive LEC's service interferes with GTE's, "GTE must be able to disconnect the [competitive LEC's] loop and subsequently notify the [competitive LEC] of the problem"). *See also* Sprint Comments at 7.

[484] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4800, para. 75. We note that because the incumbent LEC manages the binder group, subject to Commission rules and policies, it has standing to present claims of significant degradation of any other service in the binder group, not merely services that the incumbent LEC itself is deploying.

[485] *Id.*, 14 FCC Rcd at 4798, para. 68. *See* NAS Comments at 19. We note that this rule addresses the concerns of

now add an exception to this rule that we believe will further safeguard competitive neutrality and deployment of new technologies. Specifically, where the only interfered-with service itself is a known disturber, as designated by this Commission,[486] that service shall not prevail against the newly deployed technology.[487] This exception prevents the undue protection of noisier technologies that are at or near the end of their useful life cycle, at the same time preventing the undue preclusion of new, more efficient and spectrally compatible technologies. As we discuss more fully below, in the *Advanced Services First Report and Order and FNPRM* we solicited comment on the appropriate disposition of known disturbers, and we specifically asked whether we should establish a sunset period for known disturbers and whether we should require carriers to replace known disturbers with new and less interfering technologies.[488] Thus, we find that this exception implicates, and is consistent with, other policies that we adopt in this order, pursuant to which, as discussed in detail below, a known disturber may be segregated or phased out in its entirety.[489]

209. We are aware that T1E1.4 currently is considering a "guarded services" approach that would stand as an alternate to the policies that we set forth here.[490] Such an approach would designate automatic winners in the event of interference disputes.[491] Some competitive LECs have raised concerns with respect to this proposed approach. Chief among these concerns is that the guarded services approach is blatantly discriminatory, protecting technologies favored by incumbent LECs at the expense of newly-developed technologies favored by competitive LECs.[492] There also are several other concerns that these commenters raise.[493] First, a guarded,

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incumbent LECs that analog voice services have precedence over data services such as xDSL if the data services interfere with the voice services in any manner. *See* BellSouth Sept. 9 *Ex Parte* at 5; SBC July 28 *Ex Parte*. *But see* Rhythms Oct. 12 *Ex Parte* at 3 n.6 (asserting that this is a non-issue, because "[t]here is no danger of DSL services creating harmful interference with POTS").

[486] *See infra* Section V.B.4. A "known disturber" is an advanced services technology that is prone to cause significant interference with other services deployed in the network.

[487] In accordance with the *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4798, para. 69, this exception applies only where the newly deployed technology satisfies at least one of the criteria for a presumption that it is acceptable for deployment.

[488] *Id.*, 14 FCC Rcd at 4804, para. 87.

[489] *See infra* Section V.B.4.

[490] Though this approach was part of Draft Proposed Standard T1E1.4/99-002R4, which recently was defeated narrowly in Committee T1 Letter Ballot LB 785, the concept still is being considered actively by T1E1.4.

[491] *See* Committee T1 Letter Ballot LB 785, T1E1.4/99-002R4, at 8, § 4.3.1.

[492] *See* NorthPoint Comments at 43; NorthPoint Reply Comments at 49-52; Covad Sept. 1 *Ex Parte* (Covad argues further that the guarded services approach would enshrine a preference for ADSL deployed by incumbent LECs, thereby thwarting deployment of SDSL by competitive LECs); Rhythms Oct. 12 *Ex Parte* at 7.

[493] *See* Covad Sept. 1 *Ex Parte*; Rhythms Oct. 12 *Ex Parte* at 7.

typically incumbent LEC-favored service, need not be deployed, yet merely the threat of its deployment may block deployment of a non-guarded, typically competitive LEC-favored xDSL technology, which could be deployed on a loop prior to deployment of the guarded service, but which then would need to be removed if interference ensued upon the subsequent deployment of the guarded service. Second, an xDSL technology that is spectrally identical to a guarded service yet not identified as "guarded" would not share the same protections as guarded services. Third, the guarded services approach does not define who prevails in interference disputes between guarded services. Fourth, T1E1.4 has proposed a known disturber, analog T1, and a technology that has yet to be deployed but that is "strongly supported" by incumbent LECs, HDSL-2,[494] to become guarded. Fifth, the guarded services approach injects T1E1.4 into policy-setting, contrary to Committee T1 procedures.[495]

210. We share many of these concerns about a guarded services approach. We emphasize that any criteria that favor incumbent LEC services in a manner that automatically trumps, without further consideration, innovative services offered by new entrants is neither consistent with section 706 of the 1996 Act nor with the Commission's goals as set out in the *Advanced Services First Report and Order*.[496] The policies that we reiterate and adopt here as rules with respect to interference dispute resolution protect new technologies against otherwise guarded technologies having carte blanche to be deployed after-the-fact and cause interference.[497] In addition, the exception that we carve out above ensures that noisier technologies that are at or near the end of their useful life cycle do not perpetually preclude deployment of newer, more efficient and spectrally compatible technologies. Though this exception pertains only to Commission-declared known disturbers, we encourage the industry to enhance the "living" nature of these policies and rules by voluntarily removing from deployment older, less efficient technologies which nonetheless do not rise to the level of a known disturber.

211. For all of these reasons, we find that the policies and rules that we reiterate and otherwise set forth here with respect to interference dispute resolution are superior to a guarded services approach, and these policies and rules, rather than a guarded services approach, will guide states in the resolution of interference disputes. We believe that our policies here strike the appropriate balance between protecting the integrity of the network and promoting competitively neutral deployment of innovative technologies. In addition, the policies that we articulate in this section and codify incorporate elements of a "first-in-time" concept that is the mainstay of interference protection within many other communications services.[498] Thus, we apply to a new

[494] *See* Rhythms Oct. 12 *Ex Parte* at 7.

[495] *See supra* Section V.B.1.

[496] *See* NorthPoint Comments at 44.

[497] *See* Rhythms Oct. 12 *Ex Parte* at 7 (observing that all guarded services are acceptable for deployment without restrictions).

[498] For instance, we have stated with respect to the Multipoint Distribution Service and the Instructional Television Fixed Service, which together are referred to commonly as "wireless cable," that "[i]nterference protection rights within these services are based on a 'first in time, first in right' philosophy." *See Amendment of Parts 1, 21 and 74*

medium well-established policies concerning interference dispute resolution. These policies and rules also provide guidance at the national level, in accordance with our finding in the *Advanced Services First Report and Order* that "uniform spectrum management procedures are essential to the success of advanced services deployment" where they are possible, precisely to avoid requiring competitive LECs to conform to different specifications in each state.[499] At the same time, these policies and rules permit the industry to work further towards deriving solutions, as described in the preceding paragraph. Though we do not agree with the concept of guarded services, particularly as it pertains to interference dispute resolution, we believe that the spectrum management work currently being performed in T1E1.4 will prove quite useful in ensuring the evolution of advanced services deployment in a manner that safeguards spectrum compatibility.[500]

4. Binder Group Management

212. In the *Advanced Services First Report and Order and FNPRM*, we asked commenters to consider how to maximize the deployment of new technologies within binder groups while minimizing interference. We sought comment on the development of xDSL binder group administration practices, including specifications on the types and numbers of technologies that can be deployed within a binder group. We also specifically solicited comment on the practice of segregating services based on the technology. As an example, we recognized that incumbent LECs currently assign analog T1 to separate binder groups from other technologies, because analog T1 is a disturber.[501]

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to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions; Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations, MM Docket No. 97-217, Report and Order on Reconsideration, FCC 99-178 (rel. July 29, 1999). *See also Revision of Part 22 of the Commission's Rules Governing the Public Mobile Services*, CC Docket Nos. 92-115, 94-46, RM 8367, CC Docket No. 93-116, Report and Order, 9 FCC Rcd 6513, 6558 (1994) (explaining that under 47 C.F.R. § 22.371, Public Mobile Services licensees who construct or modify towers in the immediate vicinity of AM broadcast stations are obligated to take all necessary steps to correct interference problems caused by the new or modified construction); *Sudbrink Broadcasting of Georgia*, 65 FCC 2d 691, 692 (1977) (in interference dispute between two broadcast stations, "[i]t is clear that the 'newcomer' is responsible, financially and otherwise, for taking whatever steps may be necessary to eliminate objectionable interference"); 47 C.F.R. § 74.703(d) ("When a low power TV or TV translator station causes interference to a CATV [cable] system . . . the earlier user, whether cable system or low power TV or TV translator station, will be given priority on the channel, and the later user will be responsible for correction of the interference"); 47 C.F.R. § 101.105 (establishing interference protection criteria under which fixed microwave services must protect existing or previously applied for systems).

[499] *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4799, para. 71.

[500] *See* SBC Comments at 4.

[501] *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4803-04, para. 86. Rhythms also describes other forms of segregation of analog T1, such as separation of transmit and receive copper pairs into separate binder groups, and the use of binder groups on the outside portion of the feeder cable. Rhythms Comments at 24; Rhythms Oct. 12 *Ex Parte* at 2 n.5.

213. We conclude that the only permissible forms of binder group management are the segregation of known disturbers and the use of the interference protection techniques described above.[502] Several commenters argue that interference protection techniques, including generic PSD masks and/or a calculation-based approach,[503] should go a long way towards ensuring the integrity of the network, if not completely supplanting the need for any other form of binder group management.[504] Most also recognize, however, that some technologies are known disturbers, which are prone to cause significant interference with other services deployed in the network. We believe that the interference that known disturbers in particular are likely to cause in a multi-service environment renders it worthwhile for us to allow incumbent LECs to decide whether to segregate such disturbers as a further measure to protect against interference.[505]

214. Currently, the only technology that we find causes interference with sufficient persistence to rise to the level of a known disturber is analog T1.[506] By indicating generally that technologies we designate as known disturbers may be segregated, however, rather than limiting the segregation technique to analog T1, we seek to minimize interference with future technologies.[507] Because the designation of a technology as a known disturber impacts various national-level rules and policies, such as those governing interference dispute resolution and binder group management, and also triggers the determination by states of how the known interfering technology will be disposed, we will decide which technologies should be considered as known disturbers.[508]

215. In the *Advanced Services First Report and Order and FNPRM*, we specifically sought comment on the development of binder group management procedures allowing for deployment of xDSL-based services in a nonrestrictive manner.[509] Numerous competitive LECs

[502] *See* NorthPoint Comments at 35; Rhythms Oct. 12 *Ex Parte* at 2-3.

[503] *See supra* Section V.B.2.

[504] *See* Bell Atlantic Comments at 19-20; Rhythms Reply Comments at 33; Rhythms Oct. 12 *Ex Parte* at 3-4. As we stated above, use of a calculation-based interference protection approach also may help particularly in maximizing service deployment, including new technologies, in a binder group. *See supra* Section V.B.2.

[505] Though incumbent LECs may segregate known disturbers at their option, we do not require them to do so. *But see* Rhythms Reply Comments at 35-36 (requesting that we require segregation of analog T1). Incumbent LECs also have other options with respect to disposition of known disturbers, such as replacing them with new technologies.

[506] *See* BellSouth Comments at 31; Covad Comments at 50; NorthPoint Comments at 38; Rhythms Reply Comments at 35-36; Rhythms Oct. 12 *Ex Parte* at 5. We recognize that repeatered HDSL poses many of the same problems as analog T1. Therefore, we hope that T1E1.4 will address the spectrum management issue of repeatered HDSL in the near future.

[507] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4803, para. 86.

[508] Going forward, any party seeking designation of a technology as a "known disturber" should file a petition for declaratory ruling with the Commission seeking such designation, pursuant to 47 C.F.R. § 1.2.

[509] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4803, para. 86.

continue to express concern that if we vest in incumbent LECs the right to manage binder groups unfettered, we will provide ample opportunity for incumbent LECs to discriminate against introduction of new technologies and/or to institute binder configurations which significantly favor their own deployed technologies.[510] To illustrate, Covad and Rhythms argue vehemently that SBC's "Selective Feeder Separation" (SFS) technique is anticompetitive.[511] Covad and Rhythms assert that under SFS, SBC relegates competitive LEC non-ADSL loops to spectrally "dirty" binder groups, resulting in degradation of the potential bandwidth on those competitive LEC loops, and SBC over-reserves binder groups dedicated to ADSL, leading to exaggerated claims of spectrum exhaustion and denial of competitive LEC requests to deploy their own advanced services technologies.[512] They also question the technical effectiveness of segregation practices, contending that cable splices during original installation and subsequent maintenance activities compromise binder group integrity, so that pairs carrying xDSL services actually may change binder groups at various points in the cable run.[513]

216. We are persuaded that, for the reasons advanced by Covad and Rhythms, we must limit segregation practices to known disturbers, because only the interference risks of mixing known disturbers with other technologies outweigh the risks of anticompetitive segregation practices.[514] Because we currently do not determine ADSL to be a known disturber,[515] we find

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[510] *See* Covad Comments at 45-47; Rhythms Comments at 23 (binder group management "is generally employed in a pernicious manner as a means for [incumbent LECs] to limit consumer choice of xDSL services and preserve priority for their own ADSL deployment"); Rhythms Oct. 12 *Ex Parte* at 1-2. *See also Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4803-04, para. 86.

[511] *See, e.g.,* Rhythms Oct. 12 *Ex Parte* at 3 (SFS is "simply a means of perpetrating anticompetitive conduct in the name of network safety"). SFS is a binder group management technique that segregates ADSL in the feeder plant. *See* SBC Comments at 8-9. *See also* Sprint Comments at 4 (advocating that different technologies be segregated into different binder groups, and maintaining that "the greatest potential for cross-talk and other interference within binder groups lies in the feeder cable closest to the central office, rather than the distribution cable from an intermediate point of concentration to end-user premises").

[512] Covad Comments at 45-46; Rhythms Oct. 12 *Ex Parte* at 4-5. We note that such practices run afoul of our expectation that incumbents will manage binder groups in such a manner so as to maximize the number and types of advanced services that can be deployed. *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4800, para. 76. *See also* NorthPoint Comments at 39 ("binder management may be an effective tool to maximize the utilization of the network, provided that it is administered on an efficient and nondiscriminatory basis").

[513] In support of their view that the reliability of segregation is questionable, Covad and Rhythms both cite to Bell Atlantic's February 1999 contribution to T1E1.4, which Rhythms claims "actively rejects" the validity of segregation practices. *See* Rhythms Oct. 12 *Ex Parte* at 4. *See also* Covad Comments at 46 (citing Bell Atlantic, "Binder Group Segregation is not Feasible," T1E1.4/99-018 (Feb. 1999)); BellSouth Comments at 28 n.44; BellSouth Reply Comments at 31 ("BellSouth does not support SBC's practice of binder group management").

[514] Nevertheless, if an incumbent LEC segregates a known disturber in a manner such that the anti-competitive effects meet or exceed the interference protection benefits of segregating the disturber, the relevant state commission may choose to sunset the deployment of the disturber or apply another remedial approach towards disposition of the disturber.

[515] *But cf.* SBC Comments at 8 (ADSL is a "major interferer" with other xDSL technologies, but creates little interference with itself).

that SBC may not implement SFS, and we order that SBC dismantle any currently existing SFS implementations. Furthermore, any carrier currently implementing any binder group management techniques that we prohibit, including SFS, must discontinue and dismantle such implementations within 60 days after the release of this order.[516] We emphasize that no carrier may implement any form of binder group management other than use of interference protection techniques and segregation of technologies that this Commission declares to be known disturbers. We further stress that carriers cannot use binder group management to preclude the deployment of new technologies that are otherwise presumed to be acceptable for deployment.[517]

217. Disposition of Known Disturbers. In the *Advanced Services First Report and Order and FNPRM*, we sought comment on whether we should establish a grandfathering process for interfering technologies, and asked whether the Commission should establish a sunset period for services such as analog T1. We further sought comment on whether carriers should be required to replace analog T1 with new and less interfering technologies, and, if so, what time frame would be reasonable.[518] The commenters are divided between those who urge that we establish a three-year sunset period for known interfering technologies, particularly singling out analog T1,[519] those who advocate that disposition of known disturbers be handled by the states,[520] and those who maintain that such disposition should be left to market forces or directed by incumbent LECs.[521]

218. We conclude that the states should determine disposition of known interfering technologies. Consistent with the national policy framework enunciated in this order of encouraging the competitive deployment of advanced services, states may select one or more of several approaches towards disposition of known disturbers. For instance, a state first could allow for segregation of the disturber by the incumbent LEC, as we set forth above with respect to binder group management.[522] If the disturber still interferes or precludes deployment of new and less interfering technologies, the state then could establish a sunset period for it. With respect to new deployment of designated known disturbers, the state could use its enforcement mechanisms to block new, interfering services, such as analog T1, where their deployment constitutes an anticompetitive practice. These are merely a few examples of several approaches that states can take in their own discretion towards new deployment of known disturbers and disposition of disturbers that already have been deployed in the network.

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[516] *See* Rhythms Comments at 26.

[517] *See* Rhythms Oct. 12 *Ex Parte* at 5.

[518] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4804, para. 87.

[519] *See, e.g.,* ALTS Comments at 24; Covad Comments at 50; Rhythms Oct. 12 *Ex Parte* at 5.

[520] *See, e.g.,* Oklahoma CC Comments at 9.

[521] *See, e.g.,* BellSouth Comments at 31; GTE Comments at 11-12; SBC Comments at 11-12; Sprint Comments at 5.

[522] *See* Oklahoma CC Comments at 9; NorthPoint Comments at 39.

219. We find leaving disposition of known interfering technologies to the states preferable to establishing a national sunset period for known disturbers in this proceeding. We are concerned that a blanket sunset period may lead to unnecessary replacement of analog T1 or other otherwise known disturbers, which could lead further to unnecessary network disruption and could force carriers to undertake exorbitant replacement expenditures.[523] In addition, as we acknowledged in the *Advanced Services First Report and Order and FNPRM*, carriers have a substantial base of analog T1 in deployment, and in some areas it provides the only feasible high-speed transmission capability.[524] We also recognized that transitioning customers to less interfering technologies may disrupt service for subscribers.[525] Thus, placing disposition of known disturbers in the hands of the states, who are best equipped to assess the impact of such disturbers on specific areas,[526] strikes the appropriate balance between the "competing goals of maximizing noninterference between technologies and not interfering with subscribers' existing services."[527] At the same time, states are better equipped than incumbent LECs to take an objective view of the disposition of known disturbers, because of the vested interest that incumbent LECs have in their own substantial base of known disturbers such as analog T1.

220. As we stated in the *Advanced Services First Report and Order and FNPRM*, newer technologies may be able to provide the end user with the same amount of bandwidth while causing less interference with other services.[528] We anticipate that few carriers will choose to deploy analog T1, or any other technology that we declare ultimately to be a known disturber, because of the existence of newer technologies that are more efficient and compatible in most cases, and because the deployment of a known disturber could be subject to a state mandated sunset or other measure, such as an enforcement proceeding. Nevertheless, we reiterate our strong belief that industry should discontinue deployment of known disturbers.[529] Likewise, we continue to emphasize that carriers should, to the greatest extent possible, replace known

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[523] For example, SBC's subsidiary Pacific Bell estimates costs in excess of $300 million to replace all analog T1 pairs in California alone. SBC Comments at 12. Similarly, GTE estimates that it would cost approximately $400 million to replace all analog T1 in its network. GTE Comments at 11-12 n.18. SBC also argues that binder group administration techniques are largely sufficient to manage harmful interference due to analog T1 services. *See* SBC July 28 *Ex Parte*.

[524] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4804, para. 87. *See also* SBC Comments at 11; BellSouth Reply Comments at 32-33.

[525] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4804 n.199. *See* also SBC Comments at 12.

[526] *See* Oklahoma CC Comments at 9 ("Considering that the status and nature of technology deployment varies among states, the OCC believes that individual states are better suited to assess the necessary processes and timeframes for grandfathering current technologies").

[527] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4804 n.199.

[528] *Id.*

[529] *Id.*, 14 FCC Rcd at 4800, para. 74.

disturbers, including analog T1, with new and less interfering technologies.[530] We will continue to monitor the disposition of known interfering technologies as it evolves in the states.

VI. OTHER ISSUES

A. State Authority to Enact Additional Line Sharing Requirements

1. Background

221. In the *FNPRM*, we tentatively concluded that nothing in the Act, our rules, or case law precludes states from mandating line sharing, regardless of whether the incumbent LEC offers line sharing to itself or others, and regardless of whether it offers advanced services. We sought comment on that tentative conclusion.[531] Commenting state regulatory agencies advise that we should not preempt states from enacting line sharing requirements.[532] Other commenters, however, argue that we should preempt state authority over line sharing.[533]

222. In the *Local Competition Third Report and Order*, we determined that the 1996 Act permits state commissions to establish access obligations consistent with the Commission's national rules. We also outlined "compelling policy reasons" for not removing elements from the national list on a state-by-state basis. In particular, we noted that disparate state regulations could substantially undermine the reasons for enacting national rules in the first instance, such as the importance of regulatory certainty and national consistency to competitors seeking to roll out new services on a national scale.

2. Discussion

223. In conformance with the rule established in the *Local Competition, Third Report and Order*, we do not permit the states to reduce the unbundling obligations established in this order. As with the presumption of acceptability for deployment of a loop technology on the network,[534] in this order we establish a national framework governing the obligations of

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[530] *Id. See* Oklahoma CC Comments at 9; GTE Comments at 12 n.19 ("GTE uses HDSL for new HiCap service and, through attrition, will remove [analog] T1 technology from its network"); Sprint Comments at 5-6 (in the case of Sprint's incumbent LEC operations, analog T1 lines "are being removed through gradual attrition. . . . It also may be noted that as [incumbent LECs] begin to deploy their own xDSL offerings, they will have a heightened self-interest in replacing older technologies such as [analog T1] that could cause interference with their new service offerings").

[531] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4808, para. 98.

[532] *See generally,* California PUC Comments at Comments at 1-3 (describing the California PUC's efforts to implement line sharing in California); Oklahoma CC Comments at 22 (arguing that state commission should be allowed to implement more stringent standards if there is a need); Texas PUC Comments at 5 (arguing that the Commission should continue to allow states to develop deployment guidelines at their discretion).

[533] *See generally,* ALTS Comments at 8-9; Covad Comments at 7, n.12 (arguing against the proposal to permit incumbents to demonstrate to the state commission that line sharing on a particular line would interfere with analog voice service on that line).

[534] *See supra* Section V.B.3.

Register of OMB approval.

233. As required by Section 604 of the Regulatory Flexibility Act, 5 U.S.C. § 604, the Commission has prepared a Final Regulatory Flexibility Analysis of the possible impact on small entities of the rules and policies adopted in this document. *See* Appendix E. IT IS FURTHER ORDERED that the Commission's Office of Public Affairs, Reference Operations Division, SHALL SEND a copy of this *Third Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Román Salas
Secretary

APPENDIX A

List of Commenters in CC Docket No. 98-147

@link Networks Inc. (@link)
ADTRAN, Inc. (ADTRAN)
Alliance for Telecommunications Industry Solutions, Inc. (ATIS)
Ameritech
Association for Local Telecommunications Services (ALTS)
AT&T Corp. (AT&T)
Bell Atlantic Telephone Companies (Bell Atlantic)
BellSouth Corporation (BellSouth)
Burstein, David
Commercial Internet Exchange Association (CIX)
Competitive Telecommunications Association (CompTel)
Covad Communications Company (Covad)
DSL.net, Inc. (DSL.net)
General Services Administration (GSA)
GTE Service Corporation (GTE)
Independent Telephone and Telecommunications Alliance
Inline Connection Corporation (Inline)
Intermedia Communications Inc. (Intermedia)
MCI WorldCom, Inc. (MCI WorldCom)
Mitretek Systems, Inc. (Mitretek)
Network Access Solutions (NAS)
NEXTLINK Communications, Inc. (NEXTLINK)
Nortel Networks Inc. (Nortel)
Northpoint Communications, Inc. (Northpoint)
Oklahoma Corporation Commission (Oklahoma CC)
People of the State of California and
California Public Utilities Commission (California PUC)
Primary Network Communications (PNC)
Prism Communication Services, Inc. (Prism)
Rhythms Netconnections Inc. (Rhythms)
Rural Telephone Coalition (NRTA, NTCA, Opastco) (Rural Telephone Coalition)
SBC Telecommunications, Inc. (SBC)
Sprint Corporation (Sprint)
Telecommunications Resellers Association (TRA)
Texas Public Utility Commission (Texas PUC)
United States Telephone Association (USTA)
U. S. Small Business Association, Office of Advocacy (SBA)
US West Communications, Inc. (US WEST)

List of Commenters on Spectrum Unbundling in CC Docket No. 96-98

Bell Atlantic
BellSouth
Covad
NAS
Northpoint
Ohio Public Utilities Commission (Ohio PUC)
Rhythms
SBC

APPENDIX B

Final Rules

Part 51 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 51 -- INTERCONNECTION

1. The authority for part 51 continues to read as follows:

Authority: Sections 1-5, 7, 201-05, 207-09, 218, 225-27, 251-54, 271, 332, 48 Stat. 1070, as amended, 1077; 47 U.S.C. 151-55, 157, 201-05, 207-09, 218, 225-27, 251-54, 271, 332, unless otherwise noted.

2. In § 51.5, the following definitions are added in alphabetical order, to read as follows:

§ 51.5 Terms and definitions.

* * * * *

Binder or binder group. Copper pairs bundled together, generally in groups of 25, 50 or 100.

* * * * *

Known disturber. An advanced services technology that is prone to cause significant interference with other services deployed in the network.

* * * * *

3. In Section 51.319, paragraph (h) is added, to read as follows:

§ 51.319 Specific unbundling requirements.

* * * * *

(h) High Frequency Portion of the Loop.

(1) The high frequency portion of the loop network element is defined as the frequency range above the voiceband on a copper loop facility that is being used to carry analog circuit-switched voiceband transmissions.

(2) An incumbent LEC shall provide nondiscriminatory access in accordance with section 51.311 of these rules and section 251(c)(3) of the Act to the high frequency portion of a loop to any requesting telecommunications carrier for the provision of a telecommunications service conforming with section 51.230 of these rules.

(3) An incumbent LEC shall only provide a requesting carrier with access to the high frequency portion of the loop if the incumbent LEC is providing, and continues to provide, analog circuit-switched voiceband services on the particular loop for which the requesting carrier seeks access.

(4) Control of the Loop and Splitter Functionality. In situations where a requesting carrier is obtaining access to the high frequency portion of the loop, the incumbent LEC may maintain control over the loop and splitter equipment and functions, and shall provide to requesting carriers loop and splitter functionality that is compatible with any transmission technology that the requesting carrier seeks to deploy using the high frequency portion of the loop, as defined in this subsection, provided that such transmission technology is presumed to be deployable pursuant to section 51.230.

(5)Loop Conditioning.

(i) An incumbent LEC must condition loops to enable requesting carriers to access the high frequency portion of the loop spectrum, in accordance with sections 51.319(a)(3), and 51.319(h)(1). If the incumbent LEC seeks compensation from the requesting carrier for line conditioning, the requesting carrier has the option of refusing, in whole, or in part, to have the line conditioned, and a requesting carrier's refusal of some or all aspects of line conditioning will not diminish its right of access to the high frequency portion of the loop.

(ii) Where conditioning the loop will significantly degrade, as defined in section 51.233, the voiceband services that the incumbent LEC is currently providing over that loop, the incumbent LEC must either (A) locate another loop that has been or can be conditioned, migrate the incumbent LEC's voiceband service to that loop, and provide the requesting carrier with access to the high frequency portion of the alternative loop; or (B) make a showing to the relevant state commission that the original loop cannot be conditioned without significantly degrading voiceband services on that loop, as defined in section 51.233, and that there is no adjacent or alternative loop available that can be conditioned or to which the customer's voiceband service can be moved to enable line sharing.

(iii) If the relevant state commission concludes that a loop cannot be conditioned without significantly degrading the voiceband service, the incumbent LEC cannot then or subsequently condition that loop to provide advanced services to its own customers without first making available to any requesting carrier the high frequency portion of the newly-conditioned loop.

(6) Digital Loop Carrier Systems. Incumbent LECs must provide to requesting carriers unbundled access to the high frequency portion of the loop at the remote terminal as well as the central office, pursuant to section 51.319(a)(2) and section 51.319(h)(1).

(7) Maintenance, Repair, and Testing.

(i) Incumbent LECs must provide, on a nondiscriminatory basis, physical loop test access points to requesting carriers at the splitter, through a cross-connection to the competitor's collocation space, or through a standardized interface, such as an intermediate distribution frame or a test access server, for the purposes of loop testing, maintenance, and repair activities.

(ii) An incumbent seeking to utilize an alternative physical access methodology may request approval to do so from the relevant state commission, but must show that the proposed alternative method is reasonable, nondiscriminatory, and will not disadvantage a requesting carrier's ability to perform loop or service testing, maintenance or repair.

4. New § 51.230 is added, to read as follows:

§ 51.230 Presumption of acceptability for deployment of an advanced services loop technology.

(a) An advanced services loop technology is presumed acceptable for deployment under any one of the following circumstances, where the technology:

(1) complies with existing industry standards; or

(2) is approved by an industry standards body, the Commission, or any state commission; or

(3) has been successfully deployed by any carrier without significantly degrading the performance of other services.

(b) An incumbent LEC may not deny a carrier's request to deploy a technology that is presumed acceptable for deployment unless the incumbent LEC demonstrates to the relevant state commission that deployment of the particular technology will significantly degrade the performance of other advanced services or traditional voiceband services.

(c) Where a carrier seeks to establish that deployment of a technology falls within the presumption of acceptability under paragraph (a)(3) of this section, the burden is on the requesting carrier to demonstrate to the state commission that its proposed deployment meets the threshold for a presumption of acceptability and will not, in fact, significantly degrade the performance of other advanced services or traditional voice band services. Upon a successful demonstration by the requesting carrier before a particular state commission, the deployed technology shall be presumed acceptable for deployment in other areas.

5. New § 51.231 is added, to read as follows:

§ 51.231 Provision of information on advanced services deployment.

(a) An incumbent LEC must provide to requesting carriers that seek access to a loop or

high frequency portion of the loop to provide advanced services:

(1) information with respect to the spectrum management procedures and policies that the incumbent LEC uses in determining which services can be deployed; and

(2) information with respect to the rejection of the requesting carrier's provision of advanced services, together with the specific reason for the rejection; and

(3) information with respect to the number of loops using advanced services technology within the binder and type of technology deployed on those loops.

(b) A requesting carrier that seeks access to a loop or a high frequency portion of a loop to provide advanced services must provide to the incumbent LEC information on the type of technology that the requesting carrier seeks to deploy.

(1) Where the requesting carrier asserts that the technology it seeks to deploy fits within a generic power spectral density (PSD) mask, it also must provide Spectrum Class information for the technology.

(2) Where a requesting carrier relies on a calculation-based approach to support deployment of a particular technology, it must provide the incumbent LEC with information on the speed and power at which the signal will be transmitted.

(c) The requesting carrier also must provide the information required under paragraph (b) of this section when notifying the incumbent LEC of any proposed change in advanced services technology that the carrier uses on the loop.

6. New § 51.232 is added, to read as follows:

§ 51.232 Binder group management.

(a) With the exception of loops on which a known disturber is deployed, the incumbent LEC shall be prohibited from designating, segregating or reserving particular loops or binder groups for use solely by any particular advanced services loop technology.

(b) Any party seeking designation of a technology as a known disturber should file a petition for declaratory ruling with the Commission seeking such designation, pursuant to § 1.2 of this chapter.

7. New § 51.233 is added, to read as follows:

§ 51.233 Significant degradation of services caused by deployment of advanced services.

(a) Where a carrier claims that a deployed advanced service is significantly degrading the

performance of other advanced services or traditional voiceband services, that carrier must notify the deploying carrier and allow the deploying carrier a reasonable opportunity to correct the problem. Where the carrier whose services are being degraded does not know the precise cause of the degradation, it must notify each carrier that may have caused or contributed to the degradation.

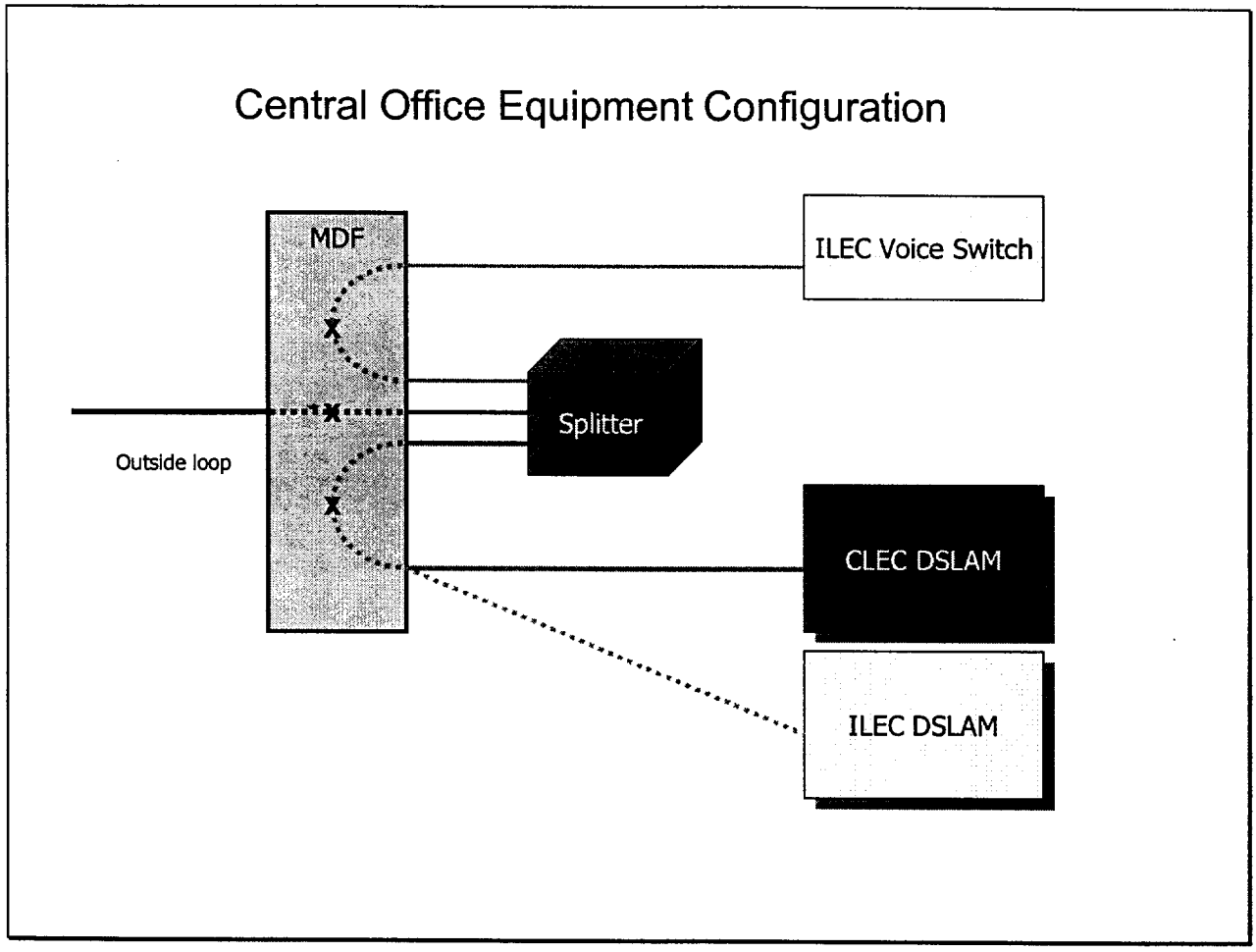
(b) Where the degradation asserted under paragraph (a) of this section remains unresolved by the deploying carrier(s) after a reasonable opportunity to correct the problem, the carrier whose services are being degraded must establish before the relevant state commission that a particular technology deployment is causing the significant degradation.

(c) Any claims of network harm presented to the deploying carrier(s) or, if subsequently necessary, the relevant state commission, must be supported with specific and verifiable information.

(d) Where a carrier demonstrates that a deployed technology is significantly degrading the performance of other advanced services or traditional voice band services, the carrier deploying the technology shall discontinue deployment of that technology and migrate its customers to technologies that will not significantly degrade the performance of other such services.

(e) Where the only degraded service itself is a known disturber, and the newly deployed technology satisfies at least one of the criteria for a presumption that it is acceptable for deployment under section 51.230, the degraded service shall not prevail against the newly-deployed technology.

APPENDIX C


Central Office Equipment Configuration
MDF
ILEC Voice Switch
Splitter
Outside loop
CLEC DSLAM
ILEC DSLAM

APPENDIX D

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Advanced Services First Report and Order and FNPRM*.[2] The Commission sought written public comment on the proposals in the *Advanced Services First Report and Order and FNPRM*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

I. Need for and Objectives of this Third Report and Order and the Rules Adopted Herein.

2. In this Third Report and Order (Order) we take additional, important steps toward implementing Congress' goals for deployment of advanced services by requiring incumbent LECs to unbundle the high frequency portion of the loop, and establishing spectrum compatibility and management policies.

3. First, we amend our unbundling rules to require incumbent LECs to provide unbundled access to a network element, the high frequency portion of the loop. This will enable competitive LECs to provide xDSL service through telephone lines that they share with incumbent LECs, which is frequently called "line sharing." In order to ensure that line sharing does not significantly degrade analog voice service, incumbents must provide unbundled access to the high frequency portion of the loop only to carriers seeking to provide xDSL services that meet one of the Commission's criteria regarding the presumption of acceptability for deployment on the same loop as analog voice service.

4. We also set out specific parameters for line sharing deployment in order to ensure that the analog voiceband is preserved from significant degradation. Incumbents are not required to provide unbundled access to the high frequency portion of the loop if they are not currently providing analog voice service to the customer. Moreover, incumbent carriers must provide unbundled access to the high frequency portion of the loop to only a single requesting carrier, for use at the same customer address as the analog voice service provided by the incumbent. In addition, subject to certain obligations, incumbent LECs may maintain control over the loop and splitter equipment and functions.

5. We also set forth pricing methodologies for the states to use as guidelines when setting the price of this new unbundled network element. Based on the record, we find that there

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[2] *Advanced Services First Report Order and FNPRM,* 14 FCC Rcd at 4826.

[3] *See* 5 U.S.C. § 604.

are five types of direct costs that an incumbent LEC potentially could incur to provide access to line sharing : (1) loops; (2) OSS; (3) cross connects; (4) splitters; and (5) line conditioning.

6. In addition to line sharing requirements, we adopt rules in this Order that apply to spectrum compatibility and management. These rules will significantly benefit the rapid and efficient deployment of xDSL technologies. Specifically, we seek to encourage the voluntary development of industry standards while limiting the ability of any one class of carriers to impose unilateral and potentially anti-competitive spectrum management or compatibility rules on other xDSL providers. We believe that spectrum policies we adopt in this Order will ensure the compatibility of technologies and minimize the risk of harmful spectrum interference among transmission services. As such, these policies will ensure that American consumers will not face undue delay in receiving the benefits of technological innovation.

7. We also adopt rules that will govern when a loop technology is presumed acceptable for deployment. The circumstances include when the technology: (1) complies with existing industry standards; (2) has been approved by an industry standards body, the Commission, or any state commission; or (3) has been successfully deployed by any carrier without significantly degrading the performance of other services.

8. We affirm our conclusions from the *Advanced Services First Report and Order* regarding resolution of interference disputes. In the event that a LEC demonstrates to the relevant state commission that a deployed technology is significantly degrading the performance of other advanced services or traditional voice band services, the carrier deploying the technology shall discontinue deployment of that technology and migrate its customers to technologies that will not significantly degrade the performance of other services. We now adopt an exception to this rule: where the only service experiencing interference is itself a known disturber, that service shall not prevail against the newly developed technology. We conclude that analog T1 service is a known disturber.

9. The only permissible forms of binder management4 are the segregation of known disturbers and the use of the spectrum compatibility (interference protection) techniques described above. The states may select one or more of several approaches towards disposition of known disturbers, including segregation or sunsetting of known disturbers.

II. Summary of Significant Issues Raised by Public Comments in Response to the IRFA.

10. In the IRFA, we stated that any rule changes would impose minimum burdens on small entities, and solicited comment on alternatives to our proposed rules that would minimize the impact they might have on small entities. The Office of Advocacy, United States Small Business Administration (SBA), commented on the issues raised in the First Report and Order and Further Notice of Proposed Rulemaking. SBA argued that the Commission should consider all comments received in response to the FNPRM, but also issue a second Further Notice along

[4] *See supra* Section VI.B.4.

with a revised IRFA that more accurately identifies all small businesses impacted and details the compliance burdens. Moreover, SBA is concerned that the Commission did not provide adequate notice regarding cost allocation and operational issues.

11. First, SBA argues that the *Advanced Services FNPRM* does not adequately identify all small entities affected by the line sharing and spectrum management proposals because the Commission did not identify small incumbent LECs as small entities.[5] In fact, the Commission does include small incumbents in its RFA. While in the IRFA, the Commission stated that "[a]lthough some affected incumbent LECs may have 1,500 or fewer employees, we do not believe that such entities should be considered small entities within the meaning of the RFA because they are either dominant in their field of operations or are not independently owned and operated, and therefore by definition not 'small entities' or 'small business concerns' under the RFA,"[6] the Commission goes on to state that "[o]ut of an abundance of caution, however, for regulatory flexibility analysis purposes, we will separately consider small incumbent LECs within this analysis and use the term 'small incumbent LECs' to refer to any incumbent LECs that arguably might be defined by the SBA as 'small business concerns.'"[7] Moreover, as SBA is aware, the Commission continues formally to include small incumbent LECs in the RFA analysis of recent Commission items.[8]

12. SBA also argues that the IRFA does not describe the possible reporting, recordkeeping, and other compliance requirements stemming from the proposals in the *Advanced Services FNPRM*.[9] The Commission determined in the *Advanced Services FNPRM* that line sharing is technically feasible and requested comments on the operation issues relating to sharing a single line between two service providers. In addition, the Commission sought comment on additional measures the Commission could take to ensure that spectrum compatibility and management concerns are resolved in a fair and expeditious manner. The Commission sought comment on these two issues, and specifically identified issues such as the economic, pricing, and cost allocation implications of the line sharing proposals, as well as the burdens on the industry created by our spectrum policy proposals. As stated in the IRFA, we sought "comments on whether the Commission should establish rules for deployment of central office equipment similar to those set forth in Part 68 of our rules. We also ask[ed] commenters to address whether the Commission should be involved with the actual testing and compliance procedures or whether the industry is better suited to serve this function through the use of independent and accredited labs."[10] The commenters in this proceeding addressed these specific issues in a detailed manner, including any reporting, recordkeeping, and other compliance requirements

[5] SBA Reply Comments at 4-5.

[6] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4853, Appendix C, para. 8.

[7] *See id.*

[8] *See, e.g., Advanced Services Second Report and Order*, at Appendix C, para. 7.

[9] SBA Reply Comments at 5.

[10] *See Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4836, Appendix C, para. 11.

associated with the proposals, suggesting that the Commission proposals were neither vague not insufficient as alleged by SBA.

13. Third, SBA contends that the Commission's IRFA did not discuss any alternatives to the proposals made in the *Advanced Services FNPRM*, and that the Commission's claim that the proposals placed a minimum burden on small entities is unsupported by any analysis of the burdens.[11] In the IRFA, the Commission sought "to develop a record sufficient enough to adequately address issues related to developing long-term standards and practices for spectrum compatibility and management, and to the sharing of loops by multiple providers." In addressing these issues, the Commission sought to ensure that competing carriers, including small entity carriers, obtain access to inputs necessary to the provision of advanced services. We also tentatively concluded that our proposals in the *FNPRM* would impose minimal burdens on small entities. Moreover, we sought comment on these proposals and the impact they may have on small entities."[12]

14. Although the Commission did not describe explicitly each of the alternatives that we considered and rejected, as the proposals in the *Advanced Services FNRPM* make clear, the Commission is not considering proposals that would require small entities to engage in activities in which they are not already required to engage. These activities might require operational, accounting, billing, and legal skills that the small carriers already have. Moreover, certain proposals in the *Advanced Services FNPRM* clearly would benefit all carriers, including small carriers, by ensuring that all carriers have economic incentives to innovate and invest in new technologies. We note that in the text of the *Advanced Services FNPRM*, we did, in many instances, raise questions regarding alternatives to our proposals.[13] These alternatives have the potential to benefit small entities. While we did not reiterate each of these questions in the IRFA, we did describe our actions in the IRFA, which was attached as an Appendix to the *Advanced Services FNPRM*, and as such, we provided sufficient notice for small entities.

III. Description and Estimate of the Number of Small Entities Affected by the Third Report and Order.

15. In the RFA to the Commission's Advanced Services Order and FNPRM, we adopted the analysis and definitions set forth in determining the small entities affected by this order for purposes of this FRFA. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by rules.[14] The

[11] SBA Reply Comments at 5-6.

[12] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4836, Appendix C, para. 12.

[13] *See, e.g., Advanced Services First Report and Order and FNPRM,* 11 FCC Rcd at 4801-4805, paras. 80-91 and 4811-12, paras. 104-107 (noting specifically the impact that our spectrum policies will have on all segments of the industry, including small entities, and requesting comment on the effect our line sharing proposals will have on incumbent and competitive carriers alike, including small entities).

[14] *Advanced Services First Report and Order and FNPRM,* 14 FCC Rcd at 4826.

RFA generally defines "small entity" as having the same meaning as the term "small business," "small organization," and "small governmental jurisdiction."[15] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act, unless the Commission has developed one or more definitions that are appropriate to its activities.[16] Under the Small Business Act, a "small business concern" is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) meets any additional criteria established by the Small Business Administration (SBA).[17] The SBA has defined a small business for Standard Industrial Classification (SIC) categories 4812 (Radiotelephone Communications) and 4813 (Telephone Communications, Except Radiotelephone) to be small entities when they have no more than 1,500 employees.[18] We first discuss the number of small telephone companies falling within these SIC categories, then attempt to refine further those estimates to correspond with the categories of telephone companies that are commonly used under our rules.

16. The most reliable source of information regarding the total numbers of common carrier and related providers nationwide, as well as the numbers of commercial wireless entities, appears to be data the Commission publishes annually in its *Carrier Locator* report, derived from filings made in connection with the Telecommunications Relay Service (TRS).[19] According to data in the most recent report, there are 3,604 interstate carriers.[20] These carriers include, *inter alia*, local exchange carriers, wireline carriers and service providers, interexchange carriers, competitive access providers, operator service providers, pay telephone operators, providers of telephone toll service, providers of telephone exchange service, and resellers.

17. We have included small incumbent LECs in the present RFA analysis. As noted above, a "small business" under the RFA is one that, *inter alia*, meets the pertinent small business size standard (*e.g.*, a telephone communications business having 1,500 or fewer employees), and "is not dominant in its field of operation."[21] The SBA's Office of Advocacy

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[15] 5 U.S.C. § 601(6).

[16] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 5 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition in the Federal Register."

[17] 15 U.S.C. § 632. *See, e.g., Brown Transport Truckload, Inc. v. Southern Wipers, Inc.*, 176 B.R. 82 (N.D. Ga. 1994).

[18] 13 C.F.R. § 121.201.

[19] FCC, Carrier Locator: Interstate Service Providers, Figure 1 (Jan. 1999) (*Carrier Locator*). *See also* 47 C.F.R. § 64.601 *et seq.*

[20] *Carrier Locator* at Fig. 1.

[21] 5 U.S.C. § 601(3).

contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not "national" in scope.[22] We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on FCC analyses and determinations in other, non-RFA contexts.

18. *Total Number of Telephone Companies Affected.* The United States Bureau of the Census ("the Census Bureau") reports that, at the end of 1992, there were 3,497 firms engaged in providing telephone services, as defined therein, for at least one year.[23] This number contains a variety of different categories of carriers, including local exchange carriers, interexchange carriers, competitive access providers, cellular carriers, mobile service carriers, operator service providers, pay telephone operators, PCS providers, covered SMR providers, and resellers. It seems certain that some of those 3,497 telephone service firms may not qualify as small entities or small incumbent LECs because they are not "independently owned and operated."[24] For example, a PCS provider that is affiliated with an interexchange carrier having more than 1,500 employees would not meet the definition of a small business. It seems reasonable to conclude, therefore, that fewer than 3,497 telephone service firms are small entity telephone service firms or small incumbent LECs that may be affected by the decisions and rules proposed in the Notice.

19. *Wireline Carriers and Service Providers.* SBA has developed a definition of small entities for telephone communications companies other than radiotelephone companies. The Census Bureau reports that, there were 2,321 such telephone companies in operation for at least one year at the end of 1992.[25] According to SBA's definition, a small business telephone company other than a radiotelephone company is one employing no more than 1,500 persons.[26] All but 26 of the 2,321 non-radiotelephone companies listed by the Census Bureau were reported to have fewer than 1,000 employees. Thus, even if all 26 of those companies had more than 1,500 employees, there would still be 2,295 non-radiotelephone companies that might qualify as small entities or small incumbent LECs. Although it seems certain that some of these carriers are not independently owned and operated, we are unable at this time to estimate with greater precision the number of wireline carriers and service providers that would qualify as small business concerns under SBA's definition. Consequently, we estimate that there are fewer than

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[22] Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, FCC (filed May 27, 1999). The Small Business Act contains a definition of "small business concern," which the RFA incorporates into its own definition of "small business." *See* U.S.C. § 632(a) (Small Business Act); 5 U.S.C. § 601(3) (RFA). SBA regulations interpret "small business concern" to include the concept of dominance on a national basis. 13 C.F.R. § 121.102(b). Since 1996, out of an abundance of caution, the Commission has included small incumbent LECs in its regulatory flexibility analyses. *See, e.g., Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket 96-98, First Report and Order, 11 FCC Rcd 15499, 16144-45 (1996).

[23] United States Department of Commerce, Bureau of the Census, *1992 Census of Transportation*, Communications, and Utilities: Establishment and Firm Size, at Firm Size 1-123 (1995) ("1992 Census").

[24] 15 U.S.C. § 632(a)(1).

[25] 1992 Census, *supra*, at Firm Size 1-123.

[26] 13 C.F.R. § 121.201, SIC Code 4813.

2,295 small entity telephone communications companies other than radiotelephone companies that may be affected by the decisions and rules proposed in the Notice.

20. *Local Exchange Carriers.* Neither the Commission nor SBA has developed a definition of small local exchange carriers (LECs) or competitive local exchange carriers (CLECs). The closest applicable definition for these carrier-types under SBA rules is for telephone communications companies other than radiotelephone (wireless) companies.[27] The most reliable source of information regarding the number of these carriers nationwide of which we are aware appears to be the data that we collect annually in connection with the Telecommunications Relay Service (TRS).[28] According to our most recent data, there are 1,410 LECs, 129 CLECs,[29] and 351 resellers.[30]

21. Although it seems certain that some of these carriers are not independently owned and operated, or have more than 1,500 employees, we are unable at this time to estimate with greater precision the number of these carriers that would qualify as small business concerns under SBA's definition. Consequently, we estimate that there are fewer than 1,410 small entity LECs, 129 CLECs,[31] and 351 resellers that may be affected by the decisions and rules adopted in the *Order.*

IV. Summary of Projected Reporting, Recordkeeping, and Other Compliance Requirements.

A. Line Sharing

22. We set forth guidelines that states may use in pricing the higher frequencies of their local loops, which will be made available as an unbundled network element. We determine that complying with these guidelines may require use of operational, accounting, billing, and legal skills. These are skills that the carriers already have. We believe, however, that incumbent LECs will already have these skills. The burden of compliance is minimal because they use the higher frequencies of their local loops already to provide the service that will be offered to others pursuant to the unbundled network element.

23. In this *Order*, we identify the high frequency portion of the loop as an additional network element that incumbent LECs are obligated to offer to requesting carriers on an unbundled basis nationwide. We believe that incumbent LECs already have the skills necessary to accomplish this with little or no additional resources because incumbents will not have to hire

[27] 13 C.F.R. § 121.210, SIC Code 4813.

[28] *See* 47 C.F.R. § 64.601 *et seq.*; *Carrier Locator* at Fig. 1.

[29] The total for CLECs includes both CLECs and competitive access providers (CAPs).

[30] *Carrier Locator* at Fig. 1. The total for resellers includes both toll resellers and local resellers.

[31] This TRS category also includes Competitive Access Providers (CAPs).

new staff, or provide additional training to current staff. We note that, pursuant to section 251(c) and (d) of the 1996 Act, incumbent LECs, including those that qualify as small entities, are required to provide nondiscriminatory access to unbundled network elements. The only exception to this rule apply to those carriers that qualify for and have obtained an exemption, suspension, or modification pursuant to section 251(f) of the Act.[32]

B. Spectrum Policy

24. We require competitive LECs to provide to incumbent LECs information on the type of technology they seek to deploy, including Spectrum Class information where a competitive LEC asserts that the technology it seeks to deploy fits within a generic power spectral density (PSD) mask. Where a competitive LEC relies on a calculation-based approach to support deployment of a particular technology, it must furnish the incumbent LEC with information on the speed and power at which the technology will be transmitted. Competitive LECs must provide this information in notifying the incumbent LEC of any proposed change in advanced services technology that the carrier uses on the loop, so that the incumbent LEC can correct its records and anticipate the effect that the change may have on other services in the same or adjacent binder groups. The provision of such information is integral to a competitive LEC's claim that the technology it seeks to deploy is presumed acceptable for deployment. We determine that complying with these rules may require use of engineering, technical, operational, and legal skills

V. Steps Taken to Minimize Significant Economic Impact on Small Entities and Small Incumbent LECs, and Alternatives Considered.

A. Line Sharing

25. The high frequency portion of the loop meets the statutory definition of a network element and must be unbundled pursuant to sections 251(d) and (c)(3). Our unbundling analysis benefits competitive carriers, including small entities, by enabling the carriers to have access to shared loops in order to serve customers who, heretofore, it has been uneconomical to serve. In order to ensure that line sharing does not significantly degrade analog voice service, incumbents must provide unbundled access to the high frequency portion of the loop only to carriers seeking to provide xDSL-based service that meets one of the Commission's criteria regarding the presumption of acceptability for deployment on the same loop as analog voice service. Incumbent carriers must provide unbundled access to the high frequency portion of the loop only to a single requesting carrier, for use at the same customer address as the analog voice service provided by the incumbent. Incumbents are not required to provide unbundled access to the high frequency portion of the loop if they are not currently providing analog voice service to the customer. Subject to certain obligations, incumbent LECs may maintain control over the loop and splitter equipment and functions. The specific parameters pursuant to which incumbent LECs have to provide access to shared lines benefit small entities, both incumbent and

[32] 47 U.S.C. § 251(f).

competitive carriers, by ensuring that carriers do not have to devote scarce resources to address line sharing arrangements, such as multiple carriers and multiple customers on the same loop, in which it is unlikely carriers seek to engage.

26. Moreover, the record shows that incumbents should be able to resolve operational issues associated with implementation of line sharing, including modifications to operations support systems, within six months. The record shows that incumbents have a number of process alternatives available and we will allow them the flexibility to choose the best and most economically feasible of them. The 180-day implementation period will benefit small incumbents who might not have the resources to make immediate changes to their OSSs.

B. Spectrum Policies

27. Although we reiterate our general belief that industry standards bodies should create acceptable standards for deployment of advanced services, we remain convinced, however, that the Commission is compelled to play a role in fostering timely, fair, and open development of standards for current and future technologies. We conclude that the standards setting process must include the involvement of a third party to advise the Commission on spectrum compatibility standards and spectrum management practices. Specifically, the charter of an existing Federal Advisory Committee (FAC), the Network Reliability Interoperability Council (NRIC), will be amended to charge NRIC with such advisory function.

28. Because NRIC will make recommendations to the Commission based on input and submissions from T1E1.4 and other industry standards bodies, that balanced representation within the NRIC should be able to recommend against any issues that are unduly weighted towards any one particular industry segment, we expect that NRICs involvement in these issues will help in several ways to alleviate small business concerns about incumbent LEC domination of T1E1.4, and will help safeguard competitive neutrality in, and the timeliness of xDSL standards setting for network interoperability generally.

29. Should we find that certain industry standards bodies are adopting spectrum compatibility standards or spectrum management practices that continue to fail, in their underlying processes, in safeguarding principles of competitive neutrality and promoting innovation, we will look to other industry standards bodies that uphold these principles or we will exercise our authority to assume that standards-setting function ourselves.

30. We find the criterion for acceptability for deployment outlined above – successful deployment of a technology elsewhere without significantly degrading the performance of other services – to be particularly useful for assisting the deployment of new technologies without subjecting them to delays often encountered with industry standards-setting fora. As a method to achieve a presumption of acceptability for deployment that does not rely upon industry standards bodies, the successful deployment criterion provides a further antidote against concerns regarding the competitive neutrality of the industry standards-setting process. This criterion should benefit small LECs because it relieves the LEC from having to meet the potentially burdensome requirements of the industry standards setting process.

31. The LEC also will be able to rebut the presumption of acceptability before a state commission if the technology proposed for deployment poses a real interference threat in a certain area. We are confident that this represents a sufficient safeguard for network reliability. Indeed, because the power to rebut the presumption of acceptability for deployment of a technology before a state commission is an important safeguard for LECs, we decline to make the presumptions that are based on technology's standardization or other approval by an industry standards body or this Commission irrebuttable. This rebuttable presumption benefits small LECs because it gives them a vehicle to protect the network and their deployed services. Small LECs particularly benefit by the fact that we allow carriers to rebut the presumption of acceptability for deployment before the relevant state commission.

32. We confirm that an incumbent LEC need not act as the initial point of contact in all service degradation disputes. This relieves small incumbent LECs from the potential responsibility for fielding all complaints; a task which could create an administrative burden and a resource drain on small incumbents.

33. We reaffirm and codify the policy that we enunciated in the *Advanced Services First Report and Order* to guide states in the resolution of interference disputes.[33] Specifically, where a LEC demonstrates that a deployed technology is significantly degrading the performance of other advanced services or traditional voice band services, "the carrier deployning the technology shall discontinue deployment of that technology and migrate its customers to technologies that will not significantly degrade the performance of other such services. We now add an exception to this rule that we believe will further safeguard competitive neutrality and deployment of new technologies. Specifically, where the only interfered-with service itself is a known disturber, as designated by this Commission, that service shall not prevail against the newly developed technology. This exception prevents the undue protection of noisier technologies that are at or near the end of their useful life cycle, at the same time preventing the undue preclusion of new, more efficient and spectrally compatible technologies. This rule benefits incumbents, including small incumbents, by protecting the deployment of innovative services. The deployment of known disturbers is not at risk of being displaced by new technologies that do not meet the presumption of acceptability for deployment.

34. Such an approach would designate automatic winners in the event of interference disputes. Chief among these concerns is that the guarded services approach is blatantly discriminatory, protecting technologies favored by competitive LECs. We emphasize that any

[33] For this reason, we also reject the request that Sprint poses in comments on the *Advanced Services First Report and order and FNPRM,* That we allow the incumbent LEC unilaterally to suspend service from the carrier causing interference, because this would be tantamount to allowing incumbent LECs to suspend all service deployment suspected of causing or contributing to degradation of other service. *See* Sprint Comments at 7. While the incumbent LEC experiencing service degradation searches to ascertain the proper culprit(s), several carriers may be forced to suspend deployment in question, and may lose customers or be forced to undergo costly remedial measures which may prove subsequently to have been unnecessary. Therefore, we reiterate that incumbent LECs must comply with the processes that we set out, rather than taking action against allegedly interfering competitive LEC data services.

criteria that favor incumbent LEC services in a manner that automatically trumps, without further consideration, innovative services offered by new entrants is neither consistent with section 706 of the 1996 Act nor with the Commission's goals as set out in the *Advanced Services First Report and Order*. The policies that we reiterate and adopt here as rules with respect to interference dispute resolution protect new technologies often deployed by small carriers against otherwise guarded technologies that tend to be deployed by incumbents who are generally larger than competitive carriers that do not favor the guarded services approach having carte blanche to be deployed after-the-fact and cause interference. These policies also provide guidance at the national level, in accordance with our finding in the *Advanced Services First Report and Order* that "uniform spectrum management procedures are essential to the success of advanced services deployment" where they are possible, precisely to avoid requiring competitive LECs to conform to different specifications in each state. These policies, therefore, benefit small carriers by making it administratively more efficient to deploy advanced services nationwide.

35. We conclude that only permissible forms of binder group management are the segregation of known disturbers and the use of interference protection techniques. We believe that the interference that known disturbers in particular are likely to cause in a multi-service environment renders it worthwhile for us to allow incumbent LECs to decide whether to segregate such disturbers as a further measure to protect against interference. This conclusion helps small incumbent LECs to the extent that they are likely to have some deployment of known disturbers (analog T1), because segregation is much less burdensome on small incumbents than forced replacement. This rule also helps small competitive carriers by prohibiting segregation of services in a discriminatory manner.

36. Numerous competitive LECs, which are often small businesses, continue to express concern that if we vest in incumbent LECs right to manage binder groups unfettered, we will provide ample opportunity for incumbent LECs to discriminate against introduction of new technologies and/or to institute binder configurations which significantly favor their own deployed technologies. We are persuaded that we must limit segregation practices to known disturbers, because only the interference risks of mixing known disturbers with other technologies outweigh the risks of anticompetitive segregation practices. Because we currently do not determine ADSL to be a known disturber, we find that SBC may not implement SFS, and we do order that SBC dismantle any currently existing SFS implementation. We further stress that carriers cannot use binder group management to preclude the deployment of new technologies that are otherwise presumed to be acceptable for deployment.

37. We find leaving disposition of known interfering technologies to the states preferable to establishing a national sunset period for known disturbers in this proceeding. We are concerned that a blanket sunset period may lead to unnecessary replacement of analog T1 or other otherwise known disturbers, which could lead further to unnecessary network disruption and could force carriers to undertake exorbitant replacement expenditures. In addition, as we acknowledged in the *Advanced Services First Report and Order and FNPRM*, carriers that have a substantial base of analog T1 in deployment, and in some areas it provides the only feasible high-speed transmission capability. We also recognize that transitioning customers to less interfering technologies may disrupt service for subscribers. This rule benefits incumbents, including small incumbents, by not imposing an automatic sunset period for known disturbers. Such a sunset

could be expensive and have unnecessary detrimental effects on small carriers. At the same time, states are better equipped than incumbent LECs to take an objective view of the disposition of known disturbers, because of the vested interest that incumbent LECs have in their own substantial base of known disturbers such as analog T1.

VI. Report to Congress

38. The Commission will send a copy of the *Third Report and Order*, including this *FRFA*, in a report to be sent to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996.[34] In addition, the Commission will send a copy of the *Third Report and Order*, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of the *Third Report and Order* and *FRFA* (or summaries thereof) will also be published in the Federal Register.[35]

[34] *See* 5 U.S.C. § 801(a)(1)(A).

[35] *See* 5 U.S.C. § 604(b).

SEPARATE STATEMENT OF COMMISSIONER HAROLD FURCHTGOTT-ROTH

Re: Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147.

I concur in the Commission's decision to require incumbent local exchange carriers to unbundle the high frequency portion of local loops on which an incumbent carrier provides voice service. There are some customers, including some but not all small business and residential customers, who do not need the speed and capacity of the types of advanced services that are offered over a separate line, such as SDSL and HDSL services. These customers prefer the less costly alternative of an advanced services technology that can be provided over a single line, such as ADSL service. If a competitive data carrier must purchase a separate line to deploy advanced services to this segment of the advanced services market, it is placed at a significant disadvantage vis à vis the incumbent carrier, which can serve those customers more cost effectively by offering both voice and data services as a single-loop package. Consequently, I believe that requiring incumbent carriers to unbundle the high frequency portion of those loops on which the incumbent provides voice service is consistent with the requirements of sections 251(c)(3) and 251(d)(2).

At the same time, however, I believe that we should acknowledge the full consequences of our decision. Specifically, a spectrum unbundling requirement that is based on the needs of a narrow class of customers means that the network element will available, without limit, to *all* classes of customers. Data carriers certainly do not need unbundled spectrum to provide service to *all* customers. Indeed, today they are offering profitable services to thousands of customers without this benefit. However, because of section 251(c)(3)'s nondiscrimination principles, I do not believe that the Commission can restrict a carrier's use of an unbundled element to services provided to a narrow class of customers. I would nevertheless have preferred a more candid assessment of the limited need for this new network element and a review of alternatives that might limit the availability of line sharing to those situations in which lack of access to unbundled spectrum actually impairs a competitor's ability to provide service.

I also believe that it is important to acknowledge the following inescapable predicament to which the Commission's new unbundling rules lead: Reducing the impairment of the ability of one category of competing carriers to provide a certain service (in this case, the data carriers) inevitably increases the impairment of a different class of carriers to provide a different service (here, the competing voice carriers). This outcome is not inconsistent with the statute, but it does put the Commission in the awkward position of favoring one class of telecommunications companies over another.

In addition, I wish to emphasize that I do not support the Commission's decision to address this question in an order separate from *Third Report & Order* that was released less

than two weeks ago. See Third Report & Order, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket 96-98 (rel. Nov. 5, 1999). I believe that it would have been more appropriate for the Commission to have implemented section 251's unbundling requirements in a single proceeding, so that incumbent and competing local exchange carriers are given clear guidelines regarding their obligations and rights under the 1996 Act. Given the Commission's long delay in releasing the *Third Report & Order* (which it adopted on September 15, 1999), I see no reason why these issues could not have been resolved simultaneously.

Finally, I dissent from the Commission's decision to reexamine whether line sharing should remain on the list of network elements only after three years have passed. I believe that this decision is inconsistent with section 11's requirement that, "in *every* even-numbered year," the Commission is required to "review *all* regulations issued under this Act in effect at the time of the review that apply to the operations or activities of any provider of telecommunications service" in order to determine whether those regulations continue to serve the public interest. 47 U.S.C. § 161(a) (emphasis added). The Commission has no authority to ignore this requirement, even if it thinks such review is unneeded.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 12th day of January, 2000, a true and correct copy of the foregoing was served by hand delivery, facsimile transmission, overnight delivery or U.S. Mail, first class postage prepaid, to the following:

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H. LaDon Baltimore