DSLnet states that line cards "are integrated, multi-functional equipment that play a vital role in the transmission of non-advanced, as well as advanced, services."[68] And even BellSouth explicitly admits "a '*line card' is an integral part of the loop*" when deployed in a remote terminal environment.[69]

Critically, the equipment manufacturers themselves support this view. Cisco Systems and Alcatel both confirm that the purpose of DSLAMs is to provide *transmission* functionality. Cisco clearly states that the primary function of a DSLAM is "multiplexing," and that the DSLAM also provides other *transport* functions, such as "the ability to forward the voice channels, if present, to a circuit switch, ... the ability to extract data units from the data channels on the loops, ... [and] the ability to combine data units from multiple loops onto one or more trunks."[70] Similarly, Alactel states that DSLAMs provide multiplexing functions and that "'[m]ultiplexing,' regardless of form, is a 'necessary' feature of electronic equipment used" for access to unbundled network elements.[71]

The OCD is also a necessary component of the loop because it, in conjunction with the remote terminal DSLAM, is required in order to enable competitive LECs to access their customers' signals. In a next-generation loop configuration, remote terminal DSLAMs send individual customers' data packets in a commingled manner over a common feeder facility

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[68] DSLnet at 8-9 ("these integrated cards must be included in the definition of the loop because excluding them would limit the functionality of the loop"); *see also* WorldCom at 10 ("[w]ithout access to integrated voice and data card in DLC systems, CLECs are unable to offer a service that can be provided by ILECs, and thus cannot compete in the marketplace to provide consumer services").

[69] BellSouth 2nd NPRM Comments at 6 (emphasis added).

[70] Cisco at 8.

[71] Alcatel at 12.

to the central office. Because the packets enter the central office in commingled form, there must be a means to extract and deliver the packets to the appropriate destination carrier. This function is performed by the OCD located at the incumbent LEC's central office. In this capacity, the OCD provides a demultiplexing/remultiplexing function that simply puts all the packets destined for the same carrier on the same facility.[72]

No carrier -- not even the incumbent LEC itself -- can identify its own traffic until *after* the commingled transmissions of multiple customers and multiple carriers have been demultiplexed. Likewise, the routing (*i.e.*, switching) of data packets to individual carriers' data networks does not -- and cannot -- occur until after this demultiplexing function has been performed. As Conectiv correctly states: "the OCD will be the only feasible point at which CLECs can get access to the ATM's bit streams coming from their customers"[73] because it is only at that point that traffic from an individual customer's data transmissions can be routed to his or her carrier's separate data network, including that carrier's packet switches. Thus, the end of the loop for data signals must be established at the network-side of the OCD (or similar device), *i.e.*, the first place a CLEC can access its customer's signals. It is also important to recognize that by allowing competitive LECs to access this limited functionality of the OCD, the competitive LECs cannot benefit from any "switching" function that the OCD may also be capable of performing in other configurations that the incumbent LEC may design.[74] Thus, although competitive LECs need access to the demultiplexing functionality of the OCD to access

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[72] AT&T at 61-62; Riolo Decl. ¶¶ 57-62.

[73] Conectiv at 33; *see also* @Link at 10; Corecomm at 44; Mpower at 45. Although Catena Networks maintains that the OCD is an ATM switch, it nevertheless confirms this point, stating that the "DSL traffic is unbundled at the OCD and available to the data affiliate and competitive carriers via virtual circuits." Catena at 9.

[74] *See* Riolo Decl. ¶ 61.

their customers' "bits," they cannot use the OCD to provide an advanced service. Therefore, assuming that they are entitled to access the entire loop in the manner requested by AT&T in this proceeding, they have every economic incentive to invest in their own packet switching facilities to do so. Failure to be able to access their customers' "bits" in this way would have exactly the opposite result.

Thus, all of the electronics associated with NGDLC loops must be included in the loop element. Indeed, any other result would simply preclude competitive LECs from providing the same services the incumbent LEC (and its data affiliate) can offer. It would be impossible for competitive LECs to efficiently duplicate this configuration. An incumbent LEC can deploy one OCD to support all the remote terminals homing on a central office and all competitive LECs interconnecting at that office. If the OCD is not treated as part of the loop, however, *each* competitive LEC in a central office would be compelled to establish its own high capacity facility to *each* remote terminal where its customers' copper subloops are terminated. This would be extremely costly and wasteful of transmission capacity. More important, no individual carrier could justify building its own facilities to every remote terminal where it might otherwise wish to serve a customer.

Further, the addition of next-generation electronics does not change the Commission's determination that the customer's premises and the central office constitute the end-points of the loop. Despite incumbent LEC suggestions that the loop ends at the remote terminal instead of at the central office, the Commission has already ruled that the loop is "defined as a transmission facility between a distribution frame, or its equivalent, in an

incumbent LEC *central office*, and the network interface device at the *customer premises*."[75] Moreover, the Commission has held that any intermediary points on the loop, such as the remote terminal, represent subloop endpoints, not the end of the loop.[76]

The incumbent LECs' other attempts to hinder competitive LECs' access to an entire loop should also be dismissed as contrary to established law. For example, some incumbent LECs incorrectly claim that the Commission must make a separate "impairment" determination before unbundling any "piece" of the entire loop.[77] BellSouth, for example, argues that the Commission "must apply its impairment test to advanced services and to newly deployed loop facilities."[78] These arguments fail for the simple reason that the Commission has clearly determined that the loop (including attached electronics) is a single UNE and that access to loops is essential in order for competitive LECs to have a meaningful opportunity to compete.

Moreover, the impairment test for the loop has already been satisfied; thus, there is no need to separately apply the impairment test to each variation in loop design, configuration, or architecture. Indeed, the Commission has recently recognized that "whether a loop is used for conventional circuit-switched telephony or for the provision of an xDSL-based service link, it

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[75] *Local Competition Order* ¶ 380 (emphasis added).

[76] The Commission did not limit its determination of the accessible terminals that could form subloop end points. Rather, the Commission indicated that the subloop endpoints *may* include a terminal near the customer's premises, but may also include another location, such as the FDI, the MDF or the MPOE. *UNE Remand Order* ¶ 206.

[77] *See* BellSouth 5th NPRM Comments at 2, 9-10; SBC at 53-54.

[78] BellSouth 5th NPRM Comments at 10.

typically remains a quintessential bottleneck facility for competing telecommunications carriers."[79]

SBC and BellSouth also argue that the Commission should not require incumbent LECs to provide unbundled access to next generation loops because such a mandate would be inconsistent with the Commission's desire to refrain from regulating retail services.[80] This argument is fundamentally flawed because it ignores the inherent difference between the regulation of network infrastructure and the regulation of services provided over that infrastructure.

The loop facilities and other network inputs are merely raw material or components that carriers need in order to create any telecommunications service offering, including advanced services.[81] The end product is the xDSL or other telecommunications service that results from a provider's combination of these various components with its own facilities, strategies or ingenuity. The raw input material is only available from one source: the incumbent LEC. In contrast, the retail service offering is available from any provider able to access the raw inputs. As the Commission has aptly stated, "the elements in an incumbent's

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[79] FCC Appellate Brief at 22; *see also Local Competition Order* ¶ 389 (noting that the local loop has "the strongest bottleneck characteristics of any network element"). Even if the Commission determined that a separate impairment analysis was needed to address the next-generation loop architecture, the impairment test would certainly be met. *See infra Section* III; AT&T at 62-64; *see also* IP Communications at 5-8 ("in the case of NGDLCs, the impairment test is clearly met. Without unbundling, CLECs will be required to incur substantially higher costs that will make residential and small business customers unservable").

[80] *See* BellSouth 5th NPRM Comments at 20-22; SBC at 60-62.

[81] As the Commission has recently stated, "the most critical network facilities can support a wide range of services; the loop, for example, can be used to provide both conventional circuit-switched voice telephony and also (indeed, simultaneously) advanced telecommunications services such as an xDSL connection to a local area network or an Internet service provider." FCC Appellate Brief at 21.

network are, in all respects relevant here, both conceptually and legally distinct from whatever 'services' an incumbent might happen to provide to its customers."[82]

Regulatory efforts are primarily, and most appropriately, directed at the stage in the product chain where the raw material is only available from one source.[83] As the Commission held, "[i]ncumbent LECs' ability to discriminate against retail rivals stems from their monopoly control over key inputs that rivals need in order to offer retail services."[84] It is for this reason that the Act and this Commission have focused on regulating the basic inputs, such as the loop, and *not* the resulting service provided over those facilities, because by ensuring access by all to the raw materials, the availability of multiple services from multiple providers is virtually assured.[85] The Commission has refused to muddle this analysis by looking to the resale of incumbent LEC services, such as SBC's Broadband Services, as a substitute for basic network inputs.[86] If those inputs remain unregulated and monopolized by only one entity, the retail market for the end product, whether voice or data services, will invariably be distorted.[87] These

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[82] *Id.*; *see also id.* at 19-20.

[83] Indeed, the more appropriately the Commission regulates the inputs, the less the need for regulation of the retail services.

[84] *SBC/Ameritech Merger Order* ¶ 190.

[85] The Commission has consistently recognized that competition cannot succeed unless competitors have the same ability to use the incumbent LECs' loops to their customers' premises, regardless of the technologies used or the services that competitors seek to provide over those lines. *Local Competition Order* ¶¶ 381-383, 385; *Advanced Services Order* ¶ 11, 46-49; *see also* FCC Appellate Brief at 19-21.

[86] "We assign little weight in our 'impair' analysis to the ability of a requesting carrier to use the incumbent LECs' resold or retail tariffed services as alternatives to unbundled network elements." *UNE Remand Order* ¶ 67.

[87] It is for this reason that the Commission should ignore BellSouth and SBC's arguments to deny access to the entire loop based on claims that the incumbent LECs are less able to exert bottleneck control over the advanced services market. BellSouth 5th NPRM Comments at 13-14; SBC at 2. Any service, whether analog voice or packet-based, must be carried from a customer's

principles have been the heart of the 1996 Act and ensuing orders to date, and there is no basis to change them now.

Further, Congress' statutory mandate was purposely focused on incumbent LECs and Congress adopted unbundling, interconnection, and other requirements on incumbent LECs in order to break open their local telephone monopolies.[88] Moreover, Congress had good reason to subject incumbent LEC advanced services facilities to section 251(c). Freeing incumbent LECs from their section 251(c)(3) obligations over such facilities would further entrench their voice monopolies. Consumers are increasingly demanding voice and high-speed data services over a single line. Incumbent LECs are already satisfying that demand today and have made it clear that they consider the ability to offer bundled voice and data services a significant competitive advantage. If UNE-based new entrants are denied access to local loops for advanced services, they simply would be unable to compete for consumers that increasingly demand a single voice/data offering. Congress adopted section 251(c) to prevent incumbent LECs from leveraging their bottleneck monopolies into nascent advanced services "offered over the same bottleneck facilities."[89] Thus, the Commission should reject incumbent LECs' efforts to avoid that mandate.[90]

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premises to a central location, typically the incumbent's central office, via the incumbent's local loops.

[88] At the time of enactment, incumbent LECs controlled 99% of the local telephone market.

[89] FCC Appellate Brief at 27.

[90] *See* BellSouth 5th NPRM Comments at 20-21; SBC at 3, 56-57. Contrary to SBC's claims, the "Commission's rules" that place burdens on the incumbent LECs -- such as the "restrictions imposed by 47 U.S.C. § 271" -- are not discretionary, but, rather, are rules that implement statutory language that Congress *consciously* enacted to apply *only* to incumbent LECs, or, in the case of section 271, to Bell Operating Companies. *See also* Joint Commenters at 30 (Collocation requirements will only be effective if, once CLECs have made a minimal showing of

B. Incumbent LECs' Investment in Next Generation Loop Architecture Will Not Be Impaired by the Commission's Enforcement of Their Existing Statutory Unbundling Requirements.

Both SBC and BellSouth claim that incumbent LECs will have little, if any, incentive to invest and deploy next-generation loop architecture if they are obligated to provide unbundled access to newly deployed electronics and equipment that enhance the delivery of advanced telecommunications services.[91] These arguments are simply not credible; moreover, they have no support in either law or policy and must be rejected. SBC's and BellSouth's claims reflect nothing more than a back-door attempt to evade basic statutory obligations that were carefully designed by Congress to promote competition in the provision of local telecommunications services. The Commission should reject their arguments as a thinly veiled attempt by the incumbent LECs to expand their local telephone monopolies to advanced telecommunications services.

As a threshold matter, the BOCs' arguments are belied by their own vigorous investment strategy.[92] Such investments advance the BOCs' own business plans, and will

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"necessity," the "burden [is placed] on the ILEC to demonstrate that collocation of such equipment should not be allowed.").

[91] SBC at 56; BellSouth 5th NPRM Comments at 20-21.

[92] *See, e.g.*, Duane Ackerman, *Take Another Look at BellSouth*, Remarks at Goldman Sachs 2000 Communicopia IX Conference at 4 (Oct. 4, 2000) ("Ackerman Remarks") ("[w]e have the most robust local network in the U.S., if not the world. Through prudent and consistent levels of investment, we are leveraging this asset by systematically transforming the network to digital broadband and IP. This targeted capital program has put 96 percent of our customers within 12,000 feet of fiber in our top 30 markets"); SBC Communications, *Strong Data, Wireless and Long-Distance Operations Highlight SBC's Third-Quarter Results*, Investor Briefing at 4 (Oct. 23, 2000) ("SBC Investor Briefing") ("SBC continues to make solid progress in developing next-generation broadband networks," because "[d]emand for DSL continues to be very robust"); *Verizon Posts Strong Third Quarter Revenue Growth on Sustained Demand for High-Growth Services* (Oct. 30, 2000) <http://newcenter.verizon.com/proactive/newsroom.vtml?id-44828> ("*Verizon 3Q Results*") ("[w]ith 3,500 DSL installations a day, we're on track to meet our year-end target of 500,000 DSL customers" (quoting Verizon Chairman and co-CEO, Charles R.

proceed without regard to whether they must continue to unbundle the local loop. Indeed, these investments enhance the incumbents' (and their affiliates') ability to make more efficient use of the existing loop plant to provide higher-quality voice and advanced telecommunications services (and new services) to more consumers, and generate significant new revenues in the bargain.[93] These initiatives are clearly an effort to capitalize on the anticipated explosive growth of data traffic on their networks and will continue regardless of the Commission's decision here.[94]

Second, BellSouth claims that its deployment of next-generation loops "depends on being able to reap some financial upside beyond the retail revenues from selling voice and data services to consumers" because it is uncertain "whether sufficient market demand for these additional services -- from consumers or carriers -- will appear."[95] This claim lacks credibility. Consumer demand for high-speed services is extremely robust and the incumbent LECs are well-

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Lee). "With the premier set of local wireline ... assets in the industry, we have the right platform -- a fiber-rich, data-centric network architecture -- on which to build a truly integrated bundle of broadband communications services" (quoting Verizon President and co-CEO, Ivan Seidenberg)).

[93] *See, e.g.*, AT&T at 40-41; Rhythms at 68-69; Catena at 2; Conectiv at 29; WorldCom at 15-16; DSLnet at 8-9.

[94] *See, e.g.*, Ackerman Remarks at 8 ("[l]et me talk about growth in the network today -- in other words, data growth. Data already represents more than half the traffic on our network, and by 2008 we project data will be 90 percent. So the growth is almost built-in").

[95] BellSouth 5th NPRM Comments at 9. *But see* BellSouth CEO Ackerman Remarks at 7 ("[w]e are ramping up and scaling up our DSL marketing and provisioning" because there is "clear evidence that high-speed Internet users are demonstrating a growing preference for DSL over alternative options"). Any "additional" incentives that BellSouth claims it needs to invest in next-generation loop architecture will in fact be met with the additional demand generated by competition. BellSouth's CEO, agrees with this obvious principle, telling investors: "Yes, there is increasing competition. It's growing the whole pie." Ackerman Remarks at 11. Indeed, BellSouth's argument could only ring true only if the incumbent LEC-affiliate relationship is not truly arms-length and provides itself or its affiliate an additional "upside" that is otherwise not available to competitive LECs.

positioned to service it.[96] If there is one thing that virtually everyone agrees upon, it is that today's marketplace has an almost insatiable demand for high-speed data services over telephone lines.[97] Incumbent LECs already have a huge lead in the residential DSL marketplace[98] and are deploying DSL lines at an increasing pace,[99] usually with term commitments for customers.

Accordingly, there is no merit whatsoever to some BOCs' claims that application of the section 251(c)(3) unbundling requirement would "undermine investment because it is "too risky"[100] and would allow "competitors to free ride on [ILECs'] investment at government set prices."[101] The Act and the Commission's pricing principles already ensure that incumbent LECs receive a just and reasonable return on their investment.[102] Since the passage of the 1996 Act, incumbent LECs have repeatedly argued that virtually any application of section 251(c)(3) unbundling obligations to their network elements would cause their downfall and unfairly

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[96] *See Morgan Stanley DSL Report* ("[w]e see the major ILECs taking DSL customers from 1.9 million at 12/00 to 4.8 million at the end of 2001. Even though this is a 150% growth rate we believe this is attainable.... We continue to see intense focus on DSL execution by management teams at the leading ILECs").

[97] *See, e.g.*, Catena at 2; Conectiv at 2-3; Intraspan at 2-3; NorthPoint at 1-2; RCN at 20; @Link at 3; *see also* SBC Investor Briefing at 4 (Oct. 23, 2000) ("[d]emand for DSL continues to be very robust").

[98] *See* TeleChoice DSL Deployment Summary (Nov. 13, 2000) <http://www.xdsl.com/content/resources/deployment_info.asp> (indications that incumbent LECs captured approximately 90% of all residential DSL lines in service at the end of third quarter 2000).

[99] For example, Morgan Stanley predicts that over 25 million consumers will subscribe to DSL service by 2005. *See* Morgan Stanley Dean Witter, *The Global Internet Primer* at 23. SBC, for one, has indicated that it anticipates that it will install between 6,000 and 7,000 DSL customer lines *per day* during the fourth quarter of this year. *See* Ian Simpson, *SBC Profit Falls, Still Beats Street* (visited Oct. 30, 2000) <http://dailynews.yahoo.com/h/nm/20001023/bs/sbc_earns_dc_5.html>.

[100] SBC at 56; BellSouth 5th NPRM Comments at 9.

[101] BellSouth 5th NRPM Comments at 9.

[102] *See* 47 U.SC. § 252(d)(1); 47 C.F.R. §§ 51.507, 51.509.

advantage their competitors. This has not happened. To the contrary, as competitive LECs face increasing financial difficulties in the marketplace,[103] the incumbent LECs have flourished.[104]

Given this alleged ability to "free ride" on incumbent LEC facilities, moreover, a disinterested observer would have expected that incumbent LECs would have invaded each other's territories as competitive LECs utilizing unbundled network elements have done. Tellingly, however, that has not occurred. Instead, the incumbent LECs have largely opted to grow their businesses through consolidation with other incumbent LECs.

And in all events, even if the incumbent LECs could demonstrate that next-generation network investment is more risky -- which they clearly have not done -- [105] the nature of risk in the deployment of loop facilities cannot be the determining factor as to competitors'

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[103] *See* Steven Pearlstein, *Economy Brakes as Funds Slow*, WASH. POST at A1, A6 (discussing the plight of a competitive LEC, ICG Communications Inc., and stating that "[w]ith [competitive] telecom companies' profits shrinking, or nonexistent, and their access to capital markets severely constrained, some industry analysts question whether they will be able to continue building our their networks").

[104] *See, e.g.*, *BellSouth Third Quarter EPS Increases 10%* (Oct. 19, 2000) <http://www.bellsouthcorp.com/proactive/documents/render34282.vtml> ("Strong growth in data revenues represented more than 40 percent of consolidated revenue growth"); *Qwest Communications Reports Strong Third Quarter 2000 Financial Results While Successfully Integrating $77 Billion Company* (Oct. 24, 2000) <http://www.qwest.com/about/media/story.asp?id=336> ("[r]esults exceeded the consensus of analysts' expectations for revenues, earning before interest, taxes, depreciation and amortization (EBITDA) and earning per share for the quarter"); SBC Investor Briefing at 1 ("SBC Communications today reported that its rapidly expanding data services business ... highlighted strong third-quarter results"); *Verizon 3Q Results* ("[r]obust demand for new services drove a 7.2 percent increase in third quarter adjusted consolidated revenues from current operations, to $16.5 billion from $15.4 billion in third quarter 1999").

[105] It is curious that the incumbent LECs have use this argument to target only the unbundling of next generation loops, despite the fact that there have been other improvements in loop technology, *e.g.*, 8db or 5db analog loops or 4-wire or 2-wire digital loops or for that matter DS1 or DS3 (and possibly fiber) loops.

access to those UNEs.[106] If in fact there is such an increased risk, then that risk can be addressed as a factor in pricing proceedings at state commissions.[107]

C. The Comments Reinforce AT&T's Showing that Access to the Entire Loop is Essential to Support Mass-Market Competition.

The incumbent LECs' attempts to preclude competitors from accessing the next-generation loop architecture are merely the latest step in their unceasing efforts to avoid their fundamental unbundling obligations. Adopting the incumbent LECs' proposals would allow them and their affiliates to be the only entities able to benefit from increased economies of scale and scope incorporated into the next-generation loop plant, which other market participants cannot readily replicate.[108]

The plain truth is that competitive LECs have no viable alternatives to obtaining access to an entire loop. In particular, the Commission's requirement that incumbent LECs unbundle *subloops* is not a mass-market alternative to the incumbent LECs' *loop* unbundling obligation. The comments clearly illustrate that, even if physical, adjacent, and virtual collocation may be useful to some competitors in limited circumstances (and thus should remain

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[106] Indeed, section 252(d)(2) requires that the Commission, at a minimum, consider whether the elements meet the "necessary" and "impair" standards in determining what network elements must be unbundled. 47 U.S.C. § 251(d)(2); *see also UNE Remand Order* ¶ 3 n.7.

[107] One way this could be done is to factor any such risk into the forward-looking cost study used to set element prices. In performing any new cost study, however, state commissions must also take into account the fact that, because the next generation loop results in improved network efficiencies, the use of the next generation loop may lead to a lower overall cost per unit for NGLDC loops.

[108] This is hardly a new strategy. The Commission, in determining that the loop is a UNE, recognized that "[b]ecause of the size of their networks, incumbent LECs enjoy advantages of scope that competitors cannot replicate." *UNE Remand Order* ¶ 183; *see also id.* ¶ 209 (finding that "self-provisioning subloop elements, like the loop itself, would materially raise entry costs, delay broad-based entry, and limit the scope and quality of the competitive LEC's service offerings").

a supplemental unbundling obligation that is available as an option), remote terminal collocation is *not* a practical mass-market solution and cannot provide a substitute for access to an entire loop.[109] In addition, the commenters virtually all agree that spare copper does not provide competitive LECs a viable alternative to the entire unbundled loop. Finally, incumbent LEC offers of a "broadband service" cannot substitute for the availability of unbundled loops. In sum, there are no viable alternatives to the unbundling of the entire loop. Thus, the Commission cannot, consistent with the Act's pro-competition and nondiscrimination requirements, allow incumbent LECs and their unregulated data affiliates to be the only entities that can effectively use the incumbent LECs' new loop architecture.[110] Doing so would merely allow the incumbent LECs and their affiliates to increase the scope of their current monopolies.[111] Clearly, the Act bars such behavior.

1. Physical Collocation is Generally Unavailable and Uneconomic. AT&T's comments demonstrate in great detail the many reasons why physical collocation at the

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[109] *See* AT&T at 53-56; Riolo Decl. ¶¶ 67-72; *see also* Catena at 5-8; Alcatel at 19-21; IP Communications at 5-8; Network Access Solutions 18-19; Nortel at 4; Rhythms at 66-74.

[110] The Commission's advanced services affiliate rules are intended (although not effective) to place an incumbent LEC's unregulated data affiliate at parity with similarly situated competitors. *See Non-Accounting Safeguards Order* ¶¶ 15-16 (noting that the separate affiliate "must follow the same procedures as its competitors in order to gain access to BOC facilities," and that "the BOCs must treat all other entities in the same manner in which they treat their [separate] affiliates"); *see also SBC/Ameritech Merger Order* ¶ 461 ("[w]e believe that the affiliate structure ... will ensure that an SBC/Ameritech advanced services affiliate occupies a position in the market comparable not to an incumbent, bur rather to a non-incumbent advanced service competitor[]").

[111] *See* AT&T at 49. In addition, the Commission must not allow incumbents to circumvent the unbundling obligations of section 251(c)(3) by transferring line cards and other electronics at the remote terminal to an unregulated affiliate or to have that affiliate deploy electronics that would, in the ordinary course of events, be deployed by the incumbent LEC itself. *See id.*

remote terminal cannot support mass-market competition.[112] The incumbent LECs' own data confirms this critical point.[113] For example, Verizon explains that physical collocation of equipment in existing remote terminals "is usually not feasible, simply because of insufficient space."[114] In addition, Verizon states that multiple collocations "will quickly exhaust any power capacity that may exist in such terminals."[115] Very simply, as Verizon admits, "remote terminal space remains at a premium, with little or no room for physical collocation."[116]

In addition to the many physical limitations that preclude physical collocation at the remote terminal, physical collocation is economically unsustainable. Qwest offers several options that it claims may alleviate some of the problems with physical collocation at the remote

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[112] *See* AT&T at 53-56; Riolo Decl. ¶¶ 65-81.

[113] *See* Verizon at 23-31; BellSouth 2nd NPRM Comments at 16.

[114] Verizon at 26-27 ("[a]ny unused space is generally needed to support projected voice traffic needs and is unavailable for collocation"); BellSouth 2nd NPRM Comments at 16 ("[s]ince enclosures are sized to meet projected demand, there may be some empty space in existing enclosures at any given time. That does not mean, however, that the space is available for physical collocation"). Verizon admits that "an existing remote terminal may have sufficient space to add only one DSLAM shelf" and that in certain instances "only the first carrier requesting space could be afforded access." Verizon at 12. Clearly, a situation where only one carrier will be able to collocate will not lead to the provision of advanced services by competitive LECs to the mass-market. *See UNE Remand Order* ¶ 54 ("the ability of one or more competitors to serve certain customers in a particular market is not dispositive of whether competitive LECs without unbundled access to the incumbent LEC's facilities are able to compete for other customers in the same market").

[115] Verizon at 27. Verizon readily admits that "[s]pace and power limitations are particularly acute in cabinets, which constitute *the vast majority of remote terminals in the Verizon region.*" *Id.* & n.15 ("[i]n the pre-merger GTE territory, 80% of remote enclosures are cabinets, while in the former Bell Atlantic territory that figure is 62%") (emphasis added).

[116] Verizon at 27. Verizon also notes that the "remote terminal is not a technically feasible point for" cross-connects. Verizon at 28-29 ("the Commission asks whether competitors can technically access the subloop by cross-connecting to the copper distribution plant at remote terminals. Generally, such access is not technically possible") (internal citation omitted).

terminal,[117] but these options cannot resolve the extreme diseconomies of scale that accompany all forms of remote terminal collocation.

The record here and in other related proceedings demonstrate that the costs of central office collocation are very significant.[118] But even if a competitive LEC can afford to expend the resources to collocate at a central office where it typically has the opportunity to reach 10,000 or more potential customers, the economies and costs are clearly prohibitive for collocation at remote terminals that each serve only a few hundred customers.[119] Critically, the comments demonstrate that attempting to provide xDSL services through physical collocation at the remote terminal requires a "significant DSL penetration level for service providers to justify DSL deployment in many remote locations."[120] However, a competitive LEC wishing to serve the mass-market in BellSouth's region faces the need to collocate at the "approximately 36,000"

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[117] *See* Qwest at 25-27. Qwest asserts that it offers to competitive LECs several remote terminal collocation products such as, the offering of DSLAM space on a shelf level at new remote terminals, the ability to lease shelf space on a first-come, first-serve basis, and the offering of a splice point in or near an accessible remote terminal so that a CLEC can access a subloop. *See id.*

[118] *See* Covad at 4. Covad notes that it has received quotes for physical collocation prices from one particular incumbent LEC of $412,226 in a Virginia central office, $368,141 in a New Jersey central office, and $154,711 in one central office in Maryland. *See id.* The prices are so expensive that Covad is compelled to ask why "these prices -- to provide access to a measly 100 square feet -- [are] so much more than the median price of a home." *Id.*

[119] Catena at 7 (arguing that the significant start-up costs essentially preclude competitive LEC entry in the advanced services market by employing physical collocation at the RT); *see also* Network Access Solutions at 18-19 (noting that "a CLEC cannot use RT collocation to provide DSL service to end users served by Verizon's DLC-fed loops as a practical matter" for the simple reason that "while a CLEC pays an average of less than $10 each month per loop for a CO collocation arrangement, it would have to pay at least $29 per month per loop for a typical RT collocation arrangement").

[120] Catena at 7.

remote terminals BellSouth has already deployed, the large majority of which serve a few hundred customers.[121] No competitor could afford to do that.

3. "Adjacent" Collocation is Impractical and Even More Costly than Physical Collocation. The prospects for "adjacent" collocation are no better. In fact, they are worse. Although both Verizon and BellSouth suggest that competitive LECs can use adjacent collocation on a broad scale,[122] their assertions are not only unsupported, but also unrealistic. Indeed, "[t]he economic reality [of adjacent collocation] is that remote deployment of transmission-related electronics by competitive LECs is unlikely to occur in most areas and is not feasible except in the most extraordinary circumstances."[123]

If anything, competitive carriers' ability to employ adjacent collocation is significantly less than their ability to use remote physical collocation. An adjacent collocation strategy would force competitors to rebuild the incumbent LECs' network to achieve ubiquity, which is prohibitively expensive and has already been rejected by the Commission.[124] Adjacent collocation not only requires significant expense for the more complicated collocation itself, but may (and often will) also require competitive LECs to go through the time-consuming and costly process of obtaining rights of way and permits to construct adjacent facilities. Moreover, competitors must also deal with the nontrivial obstacles of neighborhood aesthetics and possible zoning restrictions. And even though the costs of adjacent collocation are *greater* than the costs

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[121] BellSouth 2nd NPRM Comments at 15.

[122] *See* Verizon at 28-29; BellSouth 2nd NPRM Comments at 19-20.

[123] Riolo Decl. ¶ 83.

[124] *UNE Remand Order* ¶ 6.

of physical collocation, there is no corresponding increase in the number of potential customers, thus further exacerbating the competitive LECs' diseconomies of scale.[125]

Ironically, BellSouth's argument against physical collocation at the remote terminal in fact undermines its argument for adjacent collocation.[126] Although BellSouth asserts that adjacent collocation is a viable option for competitive LECs, BellSouth elsewhere acknowledges that it has 36,000 remote electronics enclosures, 32,500 of which are cabinets.[127] Moreover, BellSouth argues that "it would take in excess of 100,000 person/hours just to conduct site inventories."[128] But, if BellSouth believes that it would be too expensive and time consuming for an incumbent LEC even to *inventory* its remote terminals, then it clearly would be commercially impossible for competitive LECs to *duplicate* those remote terminal facilities.

Finally, the Commission has repeatedly rejected incumbent LEC arguments that would require competitive LECs to recreate the incumbents' facilities, especially when it is not economic to do so. The Commission has already determined that requiring competitive LECs to recreate incumbent LEC facilities would delay market entry, postpone the benefits of

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[125] *See* Network Access Solutions at 19 (recognizing that "*adjacent* RT collocation is no less expensive than collocation *inside* of Verizon's RTs" and that any nonrecurring costs that may arise with the use of adjacent collocation at the remote terminal "would be more than eliminated by the higher recurring costs that the CLEC would incur in an adjacent RT collocation arrangement than in an arrangement where the CLEC collocated inside of the Verizon RT"); *see also* IP Communications at 7 (noting that in certain parts of SBC's regions, "[a]t approximately $500,000 per adjacent collocation, a CLEC could be faced with $50,000,000 to ubiquitously cover one central office," and "a CLEC would be required to [be] collocated ... adjacent to up to 20 RTs as compared to one central office").

[126] *See* BellSouth 2nd NPRM Comments at 19-20.

[127] *See id.* at 15.

[128] *Id.* at 16.

competition, and require new entrants to make a huge initial sunk cost.[129] Thus, adjacent collocation cannot provide a mass-market substitute for access to an entire unbundled loop.

3. Virtual Collocation Is Not Available. Nor is virtual collocation a mass-market substitute for access to an entire loop. The record demonstrates significant disagreement regarding the viability of virtual collocation, even among incumbent LECs. For instance, Verizon and BellSouth suggest, to different degrees, that virtual collocation may act as a substitute for physical collocation in remote terminals.[130] Qwest, on the other hand, flatly states that "[v]irtual collocation is not an acceptable substitute for physical collocation in remote locations," citing the similar space constraints that limit remote physical collocation.[131]

Manufacturers also raise a series of issues presented by virtual collocation. Alcatel notes that a competitive LEC's virtual collocation of its "own line cards in an ILEC's NGDLC system" is not feasible, as line cards from different manufacturers vary in physical size

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[129] *See Local Competition Order* ¶ 378 (requiring competitive LECs to "invest immediately in duplicative [loop] facilities in order to compete for customers" would "increase the risk of entry and raise the new entrant's cost of capital"); *UNE Remand Order* ¶ 182 ("[w]e agree with the argument that self-provisioning is not a viable alternative to the incumbent's unbundled loops because replicating an incumbent's vast and ubiquitous network would be prohibitively expensive and delay competitive entry"); *see also id.* ¶¶ 24, 183. Even if the economies of adjacent collocation could work in individual cases, it could not serve as a mass-market solution, as only one or two competitive LECs could employ it at each remote terminal because of concerns with approval from municipalities or other relevant third parties. *See* Qwest at 30. Qwest also questions the adjacent collocation proposals put forth by the Commission. *See id.*

[130] *See* BellSouth 2nd NPRM Comments at 20 ("BellSouth favors virtual collocation over physical collocation," but only where "adjacent collocation is not practical"); Verizon at 28 ("where collocation in remote terminals is necessary for interconnection or access to unbundled network elements and is technically feasible, collocation should be required *only on a virtual basis*").

[131] Qwest at 30.

and face software access restraints.[132] Furthermore, Alcatel claims that manufacturers could not practically develop line cards that could be used with other manufacturers' systems.[133] Nortel agrees that there is a "severe" problem with the ability to provide virtual remote terminal collocation, in that "existing remote terminals were not designed to support this type of functionality and retrofitting is probably impractical."[134] Moreover, virtual collocation of equipment at the remote terminal may have many of the same economic constraints inherent in other collocation options.[135]

Although AT&T supports commenters that seek to maximize competitive opportunities associated with remote virtual collocation (and is not suggesting that competitors should be precluded from obtaining virtual collocation in the limited cases where it is technically and economically feasible),[136] the Commission should recognize that, at a minimum, it will take a considerable amount of time before virtual collocation issues can be resolved and implemented. Critically, however, even then, virtual collocation will not provide an economically viable

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[132] Alcatel at 19-21; Nortel at 4.

[133] Alcatel at 20 ("[t]he combination of mechanical and software requirements that would have to be met would be overwhelming").

[134] Nortel at 3.

[135] *See* Qwest at 30-31 (arguing that the "same constraints that would limit the availability of remote physical collocation would similarly constrain any such virtual collocation in remote premises").

[136] To the extent that virtual collocation is technically feasible, the Commission should maximize competitive opportunities associated with virtual collocation by ensuring that competitors are not locked into the technology choices of the incumbent LECs, and by requiring that incumbent LECs permit the use of compatible line cards.

solution that can support mass-market competition, because it is not likely to be feasible for more than a few competitive LECs in limited circumstances.[137]

4. Spare Copper Is Not a Substitute for an Entire NGDLC Loop. Virtually all commenters that address the issue concede that spare copper facilities that extend between the central office and the customer's premises, *i.e.*, "home-run copper," are not substitute for loops that are provided through the use of shorter copper segments, remotely deployed loop electronics, and fiber feeder facilities.[138] In fact, BellSouth readily admits that spare copper "*would not provide adequate service*" and is likely an unattractive alternative to most competitive LECs.[139] Moreover, BellSouth recognizes that "customers would be better and more economically served with more efficient network facilities."[140] Clearly, the incumbent LECs are deploying the next-generation loop architecture because, compared to home-run copper, the increased bandwidth and efficiencies give them the ability to improve the services they deliver to existing customers and increase their capacity to serve new customers. Competitive LECs are entitled to the same access to serve their customers.

5. "Broadband Service Offerings" Are Not a Substitute for Unbundled Loops. Finally, the "broadband services" proposed by the incumbent LECs are not adequate substitutes for unbundled loops. Incumbent LECs claim that competitors can use such "services" (which include the DSLAM functionality deployed in remote terminals) to provide advanced

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[137] *See* Qwest at 31 ("[w]here space is not sufficient to allow a CLEC to occupy an entire shelf in a remote terminal, then space is not sufficient for a virtual remote collocation as well").

[138] *See, e.g.*, AT&T at 50-52; IP Communications at 5-8; RCN at 21-22, 24-25; Telergy at 55-58; *see also* Rhythms at 88-89 (noting that technical issues may limit the ability of competitive LECs to use a copper plant that parallels the next-generation loop plant).

[139] BellSouth 5th NPRM Comments at 25-26 (emphasis added).

services to end users.[141] The willingness to offer these services is essentially an admission that competitive LECs need access to the functionalities of the entire unbundled loop in the NGDLC architecture, but access via a "broadband service" does not comport with the mandate of section 251(c)(3) to provide unbundled *network elements* on a nondiscriminatory basis.

That the offering of "broadband services" is nothing more than an incumbent LEC effort to avoid this mandate is made manifest in SBC's recent opposition to CompTel's petition for reconsideration of the Commission's order modifying the *SBC/Ameritech Merger Order*.[142] There, SBC specifically opposes CompTel's request for clarification that its "Broadband Offering" is a combination of unbundled network elements, arguing that "[t]he Commission did not take a position on whether the Broadband Offering is subject to sections 251 or 252 or any other provision on the Act."[143] Moreover, SBC asserts that "the elements used in the Broadband Service are *not* UNEs under the Commission's current rules."[144] As demonstrated above, however, the incumbents' NGDLC architecture provides nothing more (and nothing less) than a loop. SBC's efforts to resist this clear conclusion, while unsurprising, must be rejected.

The Commission has long recognized that the Act provides several methods for competitors to enter the local telecommunications marketplace. All of these mechanisms should

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[140] *Id.* at 25.

[141] *See* Verizon at 11-12 ("[c]ompetitors can use this wholesale offering to provide advanced services to the public").

[142] *See Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Ameritech Corporation, Transferor, to SBC Communications, Inc., Transferee*, CC Docket No. 98-141, ASD File No. 99-49, Opposition of SBC Communications Inc. to the Petition For Reconsideration of the Competitive Telecommunications Association (Nov. 2, 2000) (SBC Opposition).

[143] SBC Opposition at 4.

[144] *Id.* at 5 (emphasis added).

be available to competitors, and the Commission should reaffirm that the availability of one entry mechanism such as a resold "service" is not an alternative to a UNE.[145] Indeed, the Commission has explicitly held that "allowing incumbent LECs to deny access to unbundled elements solely, or primarily, on the grounds that an element is equivalent to a service available at resale would lead to impractical results; incumbent LECs could completely avoid section 251(c)(3)'s unbundling obligations by offering unbundled elements to end users as retail services."[146]

The differences between resold "services" and unbundled network elements are significant. For example, there is no ongoing statutory obligation to provide access to a "broadband service." Thus, there is no assurance that the incumbent LECs would not withdraw this service, even if competitive LECs would continue to be impaired without it. In addition, pricing for a "broadband service" (absent vigorously enforced "voluntary commitments") would not be governed by forward-looking cost principles associated with unbundled network elements. The Commission should not permit incumbent LECs to preclude competitive LECs from actually accessing next generation loops as a network element, and should reject the incumbent LECs' "broadband service" proposal because it does not satisfy their obligation under section 251 and 252 to furnish competitive LECs with access to the full capabilities of an unbundled loop.

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[145] *Local Competition Order* ¶ 12; *UNE Remand Order* ¶ 5; *Advanced Services Order* ¶ 21; *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, *First Report and Order and Further Notice of Proposed Rulemaking*, FCC 99-48, ¶14 (rel. Mar. 31, 1999). *See also* Iowa Utils. Bd. v. Federal Comm'n Commission, 120 F.3d 753, 809.

[146] *UNE Remand Order* ¶ 67; *Iowa Utils. Bd. v. Federal Comm'n Commission*, 120 F.3d at 809 ("[w]hile subsection 251(c)(4) does provide for the resale of telecommunications service, it does not establish resale as the exclusive means through which a competing carrier may gain access to such services. We agree with the FCC that such an interpretation would allow the incumbent LECs to evade a substantial portion of their unbundling obligation under subsection 251(c)(3)").

D. Failure to Unbundle NGDLC Loops Would Not Be in the Public Interest Because It Would Stifle All Forms of Local Competition.

It has become increasingly apparent that competitors in the local telephone business must be able to offer customers both voice and data services together as a package in order to be able to compete effectively with incumbent LECs' (and their affiliates') similar offerings. Incumbent LECs, however, have consistently precluded competitive LECs, such as AT&T, from effectively offering such a competitive package using the UNE-platform, chilling local competition in the process.[147] Incumbent LECs' refusal to accommodate the addition of xDSL capabilities to UNE-P voice service significantly hinders competitive LECs' ability to compete in the markets for voice services, data services, and bundles of services.[148]

Competitive LECs cannot provide service at all if they cannot efficiently access their customers' premises and connect them to the competitive LECs' networks.[149] Competitors must have access to an entire loop so that they can compete with incumbent LECs on a level playing field.[150] Absent Commission action, the deployment and implementation of next-generation loop plant will provide the incumbent LECs with the opportunity to raise additional impediments in the path of competitors like AT&T that seek to provide voice and data services

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[147] The Commission has recognized that UNE-P is the most effective broad-based strategy for serving most residential and small business customers. *See UNE Remand Order* ¶ 273 & n.543.

[148] *See* Covad at 4-5 ("[i]n order to prevent competitive xDSL services, incumbent LECs take weeks to deliver loops ordered by competitors, charge non-cost-based upfront charges to deter entry, and assess wildly disparate prices for 'voice' and 'data' loops, despite the fact that these are two names for the exact same piece of copper").

[149] *See, e.g.*, Covad at 4-5; IP Communications at 7-8; RCN at 24-25; Rhythms at 67-71.

[150] *See* IP Communications at 7 ("[t]he necessary step is to clarify that the full NGDLC architecture from the customer's premises to the central office handoff point must be unbundled").

over a single loop as swiftly, seamlessly, reliably, and economically as when an ILEC and its affiliate provide voice and data services.[151]

Recent examples confirm that incumbent LECs are in fact using their control over their bottleneck facilities to block competitors from providing service to customers who want their service.[152] For example, BellSouth has recently informed the Commission that when it has a line-sharing arrangement with a data competitive LEC, the customer will essentially be shut out from changing its voice provider from the incumbent LEC to a UNE-P provider, such as AT&T.[153] BellSouth states that it will reject "any Voice CLEC's request to reuse the existing line shared loop," and that it will "accept only a request for a *new* voice loop from the Voice CLEC" when "an end-user wishes to switch voice providers on a line shared loop."[154] In addition, if a second loop is used to enable a UNE-P provider to reach such a customer, "the end user will be required to perform re-wiring work on the customer side of the demarcation

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[151] *See* Rhythms at 71 ("[e]ither the Commission can permit the ILECs to remonopolize the local infrastructure, relegating CLECs to mere resellers, or the Commission can force the ILECs to embrace facilities-based competition through open and cooperative network design and planning").

[152] Clearly, the incumbent LECs are all too aware of the bottleneck control over last mile facilities as BellSouth's CEO recently acknowledged: "First and foremost, we have last-mile connectivity to our customers. In case you haven't noticed, this is a scarce asset, and it is seriously undervalued on Wall Street." Ackerman Remarks at 4.

[153] *See Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Dockets 98-147, 96-98, Ex Parte of BellSouth (filed Oct. 2, 2000) ("BellSouth 10/2 Letter").

[154] *Id.* at 2 (emphasis added).

point."[155] BellSouth's message to the consumer is clear: "if you want to keep your DSL connection, you cannot change your voice provider."[156]

Clearly, such a practice has drastic effects for local voice competition, as it essentially precludes UNE-P providers from reaching any customer who obtains data services via line sharing. Further evidence of incumbent LECs' use of their bottleneck control of the network facilities is illustrated by data CLECs' description of their efforts to seek to secure UNE-P voice customers who wish to try the data CLEC's service. Rhythms recently estimated that approximately 30 percent of customers interested in its data services are UNE-P customers.[157] However, because incumbent LECs do not yet provide the line splitting necessary to permit data CLECs and voice CLECs -- UNE-P or otherwise -- to work together, customers wishing to try Rhythms' data services must return to the incumbent for their voice service. In either case, the customer is in a lose-lose situation, and the benefits of effective local competition cannot be realized.

These practices allow incumbent LECs to maintain their stranglehold on the local voice services market by using their bottleneck control over their loop facilities to preclude competitors from using the full functionalities of the loop to provide the services that they seek to offer. These anticompetitive actions by the incumbent LECs also have the effect of raising

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[155] *Id.* at 3.

[156] Verizon has employed the same strategy in New York, rejecting UNE-P orders where the customer also received data services on the same line. *See Joint Application for Transfer of Control filed by NorthPoint Communications, Inc. and Verizon Communications*, CC Docket No. 00-157, Comments of AT&T, Declaration of Stephen Huels on Behalf of AT&T, ¶11 (filed Oct. 2, 2000).

[157] *See Case 00-C-0127 Proceeding on Motion of the NY Public Service Commission to Examine Issues Concerning the Provision of Digital Subscriber Line Services*, Brief of Rhythms NetConnections, Inc. at 52 (Aug. 15, 2000).