entering the market, new entrants had to replicate even a small percentage of the 23,000 central office switches then deployed by ILECs.[149] In reaching this conclusion, the Commission specifically refused to consider whether switching was available from alternative sources, or could reasonably and practicably be self-provided. Indeed, in response to arguments by MFS and SBC that access to unbundled local switching was not essential because competitors were likely to deploy their own switches,[150] the Commission stated simply that MFS and SBC had "present[ed] no evidence that competitors could provide service using another element in the LEC's network at the same cost and at the same level of quality."[151] The Commission went on to conclude that "a requesting carrier's ability to offer local exchange service would be impaired, if not thwarted, without access to an unbundled local switching element."[152]

History has proven the Commission wrong. Since the Commission adopted the *Local Competition Order*, the number of switches deployed by CLECs has grown from fewer than 100 to 724 as of March 1999.[153] These switches were not deployed only by large CLECs in major metropolitan areas. To the contrary, they were deployed by 167 different CLECs in 320 cities.[154] Included among those 167 CLECs were many smaller CLECs serving niche markets. For

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[149] *Id.* The Commission based this conclusion on evidence that it would take CLECs up to two years to purchase and install a switch. *Id.* at 15705-06 (citing Supplemental Rebuttal Testimony of Jake Jennings, Office of Policy and Planning, Illinois Commerce Commission, ICC Staff Ex. 1.04, Docket No. 95-0458, at 11-12 (Mar. 11, 1996)). CLECs, however, can deploy switches far more quickly. As discussed below, equipment manufacturers have worked reduced the time to deploy a switch to between 40 days and 28 weeks. *UNE Fact Report* at I-30.

[150] *Local Competition Order*, 11 FCC Rcd at 15711.

[151] *Id.*

[152] *Id.*

[153] Bellcore's Local Exchange Routing Guide (LERG) database listed 724 CLEC switches as of March 1999. UNE Fact Report at I-1. *See also* Council of Economic Advisers, *Progress Report: Growth and Competition in U.S. Telecommunications 1993-1998* at 17 (Feb. 8, 1999) (reporting that the number of CLEC switches had grown to almost 700 as of the end of last year).

example, XIT Communications and RIO Communications have both deployed switches even though they serve limited geographic areas.[155] Similarly, Waller Creek and Otter Tail have deployed switches even though their reported 1998 revenues were $600,000 and $610,000 respectively.[156]

In Ameritech's region alone, 28 different CLECs have deployed a total of 112 switches. Moreover, they have deployed those switches, not only in large urban centers, but in secondary markets as well. Consequently, as shown below, competitive switches now serve more than 47 percent of Ameritech's rate centers.

While CLECs have been busy installing their own switches, not a single one has ordered unbundled local switching from Ameritech – this, despite the fact that CLECs are currently providing service using more than 122,000 unbundled local loops, and an estimated 746,000 of their own access lines.[157] For all these loops, CLECs are providing their own switching. These data show that deploying competitive switches is not only feasible, but also the preferred option for CLECs. Certainly, based on these facts, the Commission's conclusion that the lack of unbundled local switching would impair the ability of CLECs to provide switched telecommunications services is demonstrably wrong.

In light of the Supreme Court's decision, the Commission cannot order ILECs to unbundle local switching in those markets in which CLECs can reasonably and practicably offer local exchange service using their own switches. The easiest way to identify such markets is to

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[154] *UNE Fact Report* at I-1 (citing the LERG database).

[155] XIT serves Dalhart and Stratford, Texas with one Lucent 5ESS Switch, and RIO serves three Oregon cities with a Class 5 switch. *Id.* (citations omitted).

[156] *Id.* (citations omitted).

[157] *UNE Fact Report* at III-15.

examine marketplace facts to identify those markets in which at least one CLEC is offering local exchange service using its own switch.[158] In such markets, CLECs have, by their own actions, established that a reasonably efficient competitor could compete without access to the incumbent's switch. Thus, an ILEC cannot be required to provide unbundled local switching in any market being served by at least one CLEC voice switch.

1. The Commission Must Identify the Markets (i.e., Rate Centers) in Which CLECs have Deployed Alternative Local Switching.

In its December 1998 *Local Competition Report*, the Commission identified the rate center as the appropriate starting point for assessing competition in the provision of switching services.[159] As the UNE Fact Report explains, "the basic building block for the local switching services provided by incumbent carriers is the 'rate exchange area,'" which is a "circle of defined radius drawn around a single point on a map – that point being the 'rate center.'"[160] Industry guidelines, established at the direction of the Commission, generally require every CLEC to obtain a separate numbering code (NXX) from the North American Numbering Plan for each

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[158] As discussed below, the appropriate starting place to assess the availability of competitive local switching is the "rate exchange area" or "rate center." Although the relevant geographic market of a switch is substantially larger than the rate exchange area because CLEC switches are typically assigned to serve multiple (on average 14) rate exchange areas, the Commission need not identify the precise geographic market of competitive switches. That is because competitive switching is plainly available in any rate center to which a CLEC switch has been assigned.

[159] FCC, Industry Analysis Division, *Local Competition* at 41 (December 1998) (*Local Competition Report*).

[160] *UNE Fact Report* at I-3 (citations omitted). "Rate exchange areas are geographically defined areas within which calls that originate and terminate (i.e., remain within the area) are considered local calls." *Local Competition Report* at 41. In many cases, the rate exchange area coincides with the area of the incumbent's serving wire center (that is, the building in which one or more local switching systems are installed). In more densely populated areas (such as urban centers), however, a single rate exchange area may include several wire centers, although the "rate center" coincides with the location of one of the ILEC's central office switches. *UNE Fact Report* at I-4.

rate center in which it provides service using its own switch.[161] Such codes are essential to properly route traffic.[162]

Information concerning the assignment of NXX codes to CLECs is available in the Commission's own reports and in the LERG database.[163] By referring to that information, it is possible to determine precisely which CLECs are using their own switches to serve which rate exchange areas by determining where CLECs have obtained NXX codes.[164]

The UNE Fact Report analyzes this information, and concludes that over one third of all BOC and GTE rate centers were served by at least one CLEC voice switch as of March 1999.[165] Eighteen percent were served by at least two CLEC switches; 12 were served by at least three; and nearly eight were served by four or more.[166]

These numbers are very conservative. As the UNE Fact Report points out, they count only CLEC switches that are up and running, and only conventional circuit switches.[167] They ignore, for example, that CLECs could readily extend the geographic reach of existing switches or deploy more switches.[168] In addition, they do not include packet switches, which handle a

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[161] *UNE Fact Report* at I-9 (citing ATIS, Central Office Code (NXX) Assignment Guidelines, INC 95-0407-008, Reissued Jan. 27, 1999 at 1, 6-7 (*CO Assignment Guidelines*)).

[162] *Id.* (explaining that, in order to offer a switching service, CLECs must be assigned an NXX code because the NXX code tells other switches in the network where to route traffic).

[163] *Local Competition Report* at 41-111 (reporting such information by state and LATA). Bellcore's LERG database compiles the same information, but updates it more frequently. *UNE Fact Report* at I-9.

[164] *UNE Fact Report* at I-9, I-10.

[165] *UNE Fact Report* at I-7.

[166] *Id.*

[167] *Id.* at I-9.

[168] *Id.*

growing volume of voice traffic.[169] Nor do they include rate exchange areas that are served by CLEC switches through ILEC ported numbers, rather than NXXs assigned to them.[170]

In Ameritech's region, 47 percent of Ameritech's rate centers are served by one or more CLEC voice switches.[171] Thirty-six percent are served by two or more, 26 by three or more, and 21 by four or more.[172] In sum, 28 different CLECs have deployed 112 switches in Ameritech's region.[173]

As one might expect, CLECs have deployed a large number of switches – twenty-eight – in the Chicago MSA. One or more competitive switches are assigned to each of Chicago's rate centers, and therefore could serve 100 percent of Ameritech's access lines in Chicago.[174] One or more CLECs also have obtained collocation in 76 percent of Chicago's rate centers, covering 89 percent of Ameritech's access lines.[175]

Likewise, in the Detroit MSA, there are nine CLECs operating 12 different switches.[176] Ninety-four percent of the rate exchange areas in Detroit are currently served by at least one CLEC switch; 91 percent are served by two or more; 58 percent by three or more; and 41 percent by four or more.[177] AT&T operates a DMS 500 switch that serves 111 rate exchange areas, and

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[169] *Id.*

[170] *Id.* As discussed below, CLECs do not need an NXX to can provide service in a particular rate exchange area; instead, they can obtain ported numbers from an ILEC.

[171] *Id.* at I-7, Table 1.

[172] *Id.*

[173] Aron/Harris Affidavit at 57.
[174] Aron/Harris Affidavit at 62.

[175] *Id.*

[176] The Detroit MSA consists of 85 different rate centers. Ameritech is the incumbent LEC in the entire MSA.

[177] *See UNE Fact Report*, Section I, Map 6.

a Lucent 5ESS switch that serves 117 rate exchange areas. MCI WorldCom operates a Siemens DE4 EWSD RCU Switching System that serves 31 rate exchange areas, and Ericcson AXE-10 that serves 17, and a DMS 100 that serves eight. Phone Michigan, Coast to Coast, Focal, WinStar, Teligent, MediaOne and KMC Telecom each currently operates one switch.

CLECs are not limiting deployment of competitive switches only to large metropolitan areas. CLECs are also deploying switches to serve the vast majority of customers in smaller cities. In Indianapolis, for example, CLECs have deployed switches in eight of sixteen rate centers, addressing 93 percent of Ameritech's lines in that market.[178] One or more competitors also have obtained collocation in 25 percent of the Indianapolis rate centers, covering 87 percent of Ameritech's lines.[179] Similarly, CLECs have assigned one or more switches to 92 percent of the rate centers in Columbus, covering 99 percent of the lines in that market. CLECs have also obtained collocation in fifty-four percent of the rate centers in Columbus, covering 89 percent of the lines.[180]

The examples are not atypical – CLECs are operating switches in 26 of the top 27 MSAs served by Ameritech.[181] CLECs, however, have not focused exclusively on the largest MSAs in Ameritech's region. They are also operating switches in secondary markets (that is, MSAs

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[178] Aron/Harris Affidavit at 63.

[179] *Id.*

[180] *Id.*

[181] Internal Ameritech Data (based on LERG data). In 24 of these MSAs, CLECs have physically deployed a switch, while two others (Canton, Ohio, and Peoria, Illinois) are served by switches located in an adjacent MSA. *Id.*

below the top 200), such as Decatur, IL, Bloomington, IN, and Traverse City and Marquette, MI.[182]

Many of these switches have been deployed by small CLECs. Indeed, small CLECs have now deployed 67 (or 58 percent) of the competitive switches in Ameritech's region.[183] And many of these CLECs have deployed more than one switch.[184] Small CLECs are also deploying switches at a much faster rate than the "Big Three" interexchange carriers – between 1998 and 1999, the number of switches deployed by small CLEC's increased 140 percent, versus 29 percent for the "Big Three" interexchange carriers.[185]

2. Competitive Local Switching is More Robust and Extensive than the Number of CLEC Switch Assignments Would Suggest.

To assess the extent of competitive local switching, one cannot simply look at the number of rate centers to which CLEC switches have already been assigned. The percentage of ILEC loops that can be served by CLEC switches is significantly higher than the percentage of rate centers to which such switches have been assigned because many CLECs have initially focused switch deployment on densely populated urban areas. In addition, CLECs can obtain telephone numbers by porting them from ILEC switches, and thus can serve rate centers without actually obtaining additional NXX code assignments. Moreover, many CLECs could easily extend the reach of their existing switches to serve additional rate centers.

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[182] *Id.*

[183] *Id.* The "Big Three" long distance carriers have deployed 49 switches, or 42 percent of the competitive switches in Ameritech's region. *Id.* (based on LERG data).

[184] For example, US Xchange has deployed 10 switches in Ameritech's region; Intermedia Communications has deployed 7, ICG Telecom has deployed 6; McLeod/Consolidated, Phone Michigan, and Winstar have each have deployed 5; Frontier, Teligent, and Netlink each have deployed 4; and Time Warner and Focal have each deployed 3.

[185] Ameritech Internal Data (based on LERG data).

By examining where CLECs have obtained collocation and deployed switches, one can calculate how many of the incumbent's lines CLECs can serve currently using their own switches. In Ameritech's region, for example, one or more CLECs have assigned switches and obtained collocation in Ameritech rate centers that serve 14,389,498 lines, or 70 percent of Ameritech's lines.[186] CLECs have assigned switches, but not yet obtained collocation, in Ameritech rate centers that serve an additional 3,035,790 lines, or 15 percent of Ameritech's lines. Because, as discussed below, physical and virtual collocation space is available in all of Ameritech's central offices, CLECs could quickly and easily serve these additional lines using their own switches. Thus, although one or more CLECs have assigned switches to only 47 percent of Ameritech's rate exchange areas, they can currently (or could soon) serve 85 percent of Ameritech's lines using their own switches.

CLECs can also serve rate exchange areas other than those to which their switches have been assigned by obtaining ported numbers from ILEC switches. Section 251(b)(2) of the 1996 Act requires all LECs to provide number portability in accordance with the Commission's rules.[187] Once an ILEC has implemented number portability (LNP) on a switch, CLECs can port numbers from that switch to CLEC switches located anywhere, as long as the customer's number being ported remains in the same rate center.

Under the Commission's rules, ILECs are required to implement LNP upon request in switches designated by CLECs as competitive targets.[188] In order to ensure that carriers

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[186] Aron/Harris Affidavit at 61.

[187] 47 U.S.C. § 251(b)(2).

[188] *Telephone Number Portability*, First Reconsideration Order, 12 FCC Rcd 7336, 7272-77 (1997) (*First Reconsideration Order*).

deployed LNP in areas where competitors planned to enter, the Commission directed industry and state commissions to focus deployment on those switches in the top 100 MSAs targeted by CLECs.[189] CLECs were therefore required to designate which ILEC switches they intended to compete against. By December 1998, the BOCs and GTE implemented LNP in those switches.

Based on LERG data, CLEC switches can currently obtain ported numbers from 53 percent of Ameritech's switches. These switches serve 43 percent of Ameritech's rate exchange areas.[190]

Many CLECs also could quickly and easily extend the reach of their existing switches to serve additional ILEC central offices. As the Commission itself has acknowledged, CLEC switches typically serve a much larger geographic area than ILEC switches do.[191]

AT&T asserts that, when used with a digital loop carrier, a single switch can readily serve customers within a 125-mile radius.[192] In fact, AT&T is using switches to serve customers over much greater distances. For example, it uses a switch in Grand Rapids, MI to serve Perkins, MI (217 miles), and a switch in Waukesha, IL to serve Eau Clair, MI (159 miles).[193] MCI uses switches in Seattle to serve suburbs in Tacoma, WA (27 miles), in Baltimore to serve Rockville,

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[189] *Telephone Number Portability*, Third Memorandum Opinion and Order on Reconsideration, 13 FCC Rcd 16090, para. 5 (1998).

[190] *UNE Fact Report* at I-21.

[191] *See e.g. Telephone Number Portability*, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8352, 8449 n.539 (1996); Report of the Texas Number Conservation Task Force, posted Jan. 15, 1997 http://www..npac.com/regions/southwest/swdocs/texas/txNumberConservation.htm.

[192] Petition of AT&T Corp. to Deny Application of GTE Corp. Tranferor, and Bell Atlantic Corp. Transferee, For Consent to Transfer of Control, CC Docket 98-184, at 24 (filed Nov. 23, 1998).

[193] AT&T also uses a switch in Peoria, IL to serve Rockford, IL (110 miles), a switch in South Bend, IN to serve Palmer, IN (54 miles) and Muncie, IN (112 miles), a switch in Waukesha, WI to serve Glenview, IL (64 miles), a switch in Peoria, IL to serve Norway, IL (72 miles), and a switch in Akron, OH to serve Columbus, OH (109 miles). AT&T also has switches located in Kentucky and Iowa that have points of interconnection within Ameritech's region.

MD (32 miles), and in New York City to serve Queens (12 miles), lower Westchester Country (15 miles) and Nassau County (16 miles).[194] ITC Deltacom serves much broader areas with its switches; it uses a switch in Birmingham, AL to serve Huntsville (90 miles) and Montgomery (84 miles), and a switch in Columbia, SC to serve Greenville (100 miles), Charleston and Charlotte, NC (85 miles), and Atlanta, GA (190 miles).[195] Focal also serves broad areas with its switches; it uses a switch in Chicago to serve Utica, IL (80 miles) and Morocco, IN (66 miles).[196] And McLeod uses a switch in Taylorville, IL to serve Chicago (182 miles).[197] According to the LERG database, the average CLEC switch in BOC/GTE territory has obtained NXX codes to serve 14 rate exchange areas.[198]

Switch manufacturers, taking into account the special needs of CLECs, have specifically designed their equipment to serve large geographic areas. Nortel, for example, has designed its remote switching center so that it can extend host switch features to subscribers up to 650 miles away from the host switch.[199] Similarly, Lucent's 5ESS switch permits a CLEC to locate a remote switching module in a different LATA and up to 600 miles away from the host switch,

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[194] *UNE Fact Report* at I-23 (citing D. Braun, *Carrier Adds to Network, Broadens Offerings – MCI Goes After Local Phone Market*, Internet Week, Mar. 2, 1997).

[195] *Id.* (citing ITC Deltacom, Inc., Form 10-K, Mar. 30, 1998; Rand McNally, *Commercial Atlas and Marketing Guide* (1999).

[196] *Id.* (citing Focal Communications website, http://www.focal.com/about/af_service_areas.html

[197] Distance in airline miles calculated based on vertical and horizontal coordinates of McLeod's switch, using formula derived from National Exchange Carrier Association, Inc., Tariff F.C.C. No. 4, Section 11, pp. 1-3, issued April 16, 1999.

[198] *Id.*

[199] *Id.* (citation omitted).

allowing CLECs "to expand networks and service offerings cost-effectively."[200] Thus, many CLECs could readily extend service to new rate centers using their existing switches.

3. CLECs Could Also Extend Their Service Territory by Deploying New Switches.

One of the reasons competitive local switching has been so widely deployed is that switches are relatively inexpensive, fully scalable, and can be quickly and easily installed. As a consequence, CLECs can readily expand their service territories by deploying new switches.

Numerous equipment manufacturers are supplying central office switches.[201] It is impossible to determine precisely what these manufacturers are charging CLECs for switches because switch prices are negotiated, and therefore not only vary, but also are confidential. What is clear, however, is that the cost of switching has fallen dramatically due to advances in switch technology.[202] On a per-line basis, prices declined over 60 percent from 1986 to 1996, and were projected to fall another 12 percent by 2000.[203] As a consequence, manufacturers charge new purchasers of switching equipment (including CLECs) far less than they charged purchasers like Ameritech.

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[200] *Id.* at I-23, I-24 (quoting Lucent, *The 5ESS 2000 Switch Product Family*, <http://www.lucent.com/netsys/5ESS/family/sm_switch.html>). Other switch manufacturers too are making switches to accommodate the special needs of CLECs. Castle, for example, asserts that, using its switching platform, "a CLEC serving Chicago can cost-effectively expand to support the Milwaukee area." *Id.* at I-24 (quoting J. Caron, *Switches Get Personal*, tele.com, Jan. 25, 1999).

[201] As noted in the UNE Fact Report, CLECs have purchased switching equipment from at least 10 different manufacturers: Alcatel/DSC, Ericsson, Excel, Harris, Lucent, Mitel, Nortel, Northern Electric, Siemens, and Stromberg-Carlson. *Id.* at I-28.

[202] *UNE Fact Report* at I-28 (citing Deutsche, Morgan, Grenfell, Inc., *Telecom Equipment*, March 27, 1998, at 69).

[203] *Id.* (citing Northern Business Information, *U.S. Central Office Equipment Market: 1996 Database*, Version 1.0, at 27 (Jan. 1997). The cost of switching is typically measured on a per-line basis because switch capacity varies significantly.

These manufacturers are targeting CLECs as a key growth market, and are aggressively seeking to identify and cater to their specific needs by developing modular switches that are fully scalable, offering generous financing arrangements, and providing full technical support. The large, traditional switch manufacturers, like Lucent and Nortel, for example, have developed modular switches that are fully scalable to meet a CLEC's needs as it grows. Because of their modular design, these switches provide CLECs affordable, flexible and full service network capabilities, which can be expanded with minimal investment.[204] Many new, smaller switch manufacturers are also targeting the CLEC market, offering CLECs scalable, cost-effective switching solutions.[205]

Manufacturers have dramatically reduced switch deployment times. Lucent, for example, has developed "prefab central offices" specifically to reduce installation times for CLECs.[206] According to Lucent, the entire process, "from prefab to the deployment of service takes 40 days."[207] E.Spire states that its typical switch installation takes no longer than 28 weeks from the time an order is placed until the time the switch is turned up.[208]

Equipment vendors also offer a variety of support services to facilitate CLEC entry and operations. Among other things, they provide operations support systems and software, technical support and maintenance, and marketing support and billing. Some provide switching

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[204] *UNE Fact Report* at I-28, I-29. These switches support a full range of services, including local and long distance, ISDN, Internet access, wireless PCS, AIN, interactive video and multimedia services.

[205] *UNE Fact Report* at I-29 (citing L. Wirbel, *Startups to Storm Switch Market*, tele.com, Jan. 15, 1999). Sattel, for example, manufactures switches that can be expanded as a CLEC's business grows, and which can be purchased at a relatively low initial cost. *Id.* (citing The Diana Corporation, 1997 Annual Report at 8 (1997)).

[206] *Id.* at I-30 (citing Breakaway Strategies, *Prefab COs Speed Market Entry*, Insight, Fall-Winter 1998, at 9).

[207] *Id.*

[208] *Id.* (citation omitted).

systems on a "turnkey" basis, supplying CLECs with everything they need, including technical support, to get their switches up and running.[209]

In addition, many manufacturers are offering a wide range of financing options for CLEC switch purchases.[210] Lucent, Nortel, and Siemens have all provided, or committed to provide, financing to CLECs for the purchase of switching and other equipment.[211] Even smaller vendors, like Coyote, offer financing to CLECs.[212]

In addition to traditional voice switches, CLECs can and do use a variety of switching options to compete with ILECs. As the UNE Fact Report explains in detail, CLECs can substitute long-distance switches, packet switches, and PBXs for class 5 central office switches.

The Commission's new collocation requirements also facilitate CLEC switch deployment by expanding the number of collocation options available to them.[213] Under the Commission's new rules, ILECs must make available to requesting CLECs shared cage and cageless collocation arrangements.[214] When collocation is exhausted in one location, ILECs must permit collocation in adjacent controlled environmental vaults or similar structures.[215] ILECs also must remove

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[209] *UNE Fact Report* at I-30.

[210] *Id.* at I-30 (citing P. Brown, *Telecom Act Turns Three*, tele.com).

[211] *Id.* at I-30, I-31.

[212] Coyote offers $20 million in lease financing to customers for the purchase of switching and related equipment and services. http://www.cyoe.com/pressrel/pr19990224.asp.

[213] *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 98-147 at paras. 19-60 (rel. Mar. 31, 1999) (*Advanced Services Order*).

[214] *Id.* at para. 8.

[215] *Id.*

obsolete, unused equipment to make room for additional collocated CLEC equipment.[216] In addition, CLECs still have the option of virtual collocation if physical collocation space is exhausted.

Irrespective of the new collocation rules, collocation space exhaustion generally has not been a problem in Ameritech's central offices. Even before the Commission adopted its rules, all of Ameritech's central offices had space available for either physical or virtual collocation. And Ameritech has long offered flexible collocation options. More importantly, Ameritech's central offices will remain open to collocation in the future. As a consequence, the availability of collocation space imposes no impediment to the deployment of new switches.

Dr. Fitzsimmons's analysis confirms that a reasonably efficient competitor could viably and profitably provide competitive local service using self-provisioned switching.[217] For his analysis, Dr. Fitzsimmons developed an economic model, the LECG Entry Model, that simulates the financial performance of reasonably efficient competitive entrants in selected geographic areas in Ameritech's region, assuming that unbundled loops are available from Ameritech, and that new entrants self-supply their own switches, and build and lease their own local transport. The results from the LECG Entry Model show that reasonably efficient CLECs could enjoy significant financial benefits through entry or expansion of competitive local service using self-supplied switching in large and small metropolitan areas, and in wire centers far from existing CLEC switches.[218]

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[216] *Id.*

[217] Affidavit of William L. Fitsimmons, Ph.D., Attachment B, at 2, May 26, 1999 (*Fitzsimmons Affidavit*).

[218] *Id.*

4. At a Minimum, the Commission Should Not Require Unbundled Local Switching in any Rate Center Already Being Served by at Least One CLEC Circuit Switch.

The ready availability of competitive local switching establishes that CLECs do not need access to ILEC switches to compete. The facts plainly show that switches are relatively inexpensive, fully scalable, and can be quickly and easily installed. CLECs can therefore reasonably and practicably offer service using their own switches in any rate center in which collocation is available in an ILEC central office.

In addition, the Commission could not find that a CLEC's ability to provide telecommunications services would be impaired without unbundled switching in any rate center in which at least one CLEC has already deployed a switch. In such rate centers, CLECs have by their own actions demonstrated that self-provided local switching makes economic sense. The Commission therefore must, at a minimum, decline to require unbundled local switching in any rate center that is already being served by at least one CLEC voice switch.

5. Even if Local Switching is Unbundled, Access to ILEC Routing Tables is *Not* Necessary.

Even if the Commission was to conclude that local switching should be unbundled in some areas, it should nevertheless decline to require ILECs to make their routing tables available in those areas. Switch routing tables are proprietary, and access to the ILEC's routing tables is not essential to the proper functioning of the switch. Any reasonably efficient competitor could develop its own routing instructions, which then could be programmed into the ILEC's switch to direct the routing of the CLEC's traffic. Access to the ILEC's routing table therefore is not "necessary" under section 251(d)(2)(A).

As noted above, routing tables are part of the computer software that instructs a switch how to route network traffic. The routing tables are created and updated constantly by network engineers based on a variety of factors, including, among other things, variations in the volume of network traffic, the availability of transport facilities, and information on the different services provided to specific customers (such as centrex, virtual private network, and others). Because these factors vary from switch to switch, routing tables are unique to each switch, and are the product of significant creative effort and expense.

In addition to providing routing instructions for different types of calls, routing tables are also integrated with other network databases and systems to define different classes of service and provide various billing options, among other things. The routing tables therefore contain extremely valuable information concerning the ILEC's network, its customers, and services. Ameritech maintains all such information in strict confidence. The routing tables therefore constitute trade secrets or know-how, and may also be subject to copyright protection. As such, they are proprietary for purposes of section 251(d)(2)(A).

Access to an ILEC's routing table is not "necessary" under section 251(d)(2)(A). Any reasonably efficient competitor could create its own routing instructions (either internally or through outside consultants), which could then be programmed into the ILEC's switch. Indeed, many of Ameritech's large business customers effectively do the same. Ameritech offers these customers an option termed "customized routing." Those customers design their own routing tables, which are then programmed into Ameritech's switch to direct the routing of the customers' traffic over their own interoffice facilities (or facilities leased from Ameritech). The fact that these customers, which are not even telecommunications companies, can develop their own routing instructions demonstrates that any reasonably efficient CLEC could do the same.

The fact that so many CLECs (large and small alike) have developed their own routing instructions for their own switches likewise conclusively establishes that reasonably efficient CLECs could do the same. In fact, every one of the 724 CLEC switches that are in service has a routing table that a CLEC has designed. Thus, even if a CLEC could not earn a normal economic profit in a particular geographic area using its own switching equipment, there is no reason why it could not furnish its own traffic routing instructions. Indeed, the only places in which switching could conceivably satisfy the "impair" test are sparsely populated areas where the network is relatively simple. In such areas, the cost of developing a routing table is significantly reduced. Because the ILEC's routing table is, therefore, not essential to the proper functioning of the switch, the "necessary" test is not satisfied, and ILECs cannot be required to make the routing table available as part of the switch.

b. **Interoffice Transport**

In the *Local Competition Order*, the Commission required ILECs to provide both dedicated and shared interoffice transmission facilities on an unbundled basis.[219] The Commission amended the shared transport requirement in the *Third Order on Reconsideration*.[220] In neither order did the Commission consider whether alternative transmission facilities were reasonably or practicably available from alternative sources, include

[219] *Local Competition Order*, 11 FCC Rcd at 15718.

[220] *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection between Local Exchange Carriers and Commercial Radio Service Providers*, Third Order on Reconsideration and Further Notice of proposed Rulemaking, CC Docket Nos. 96-98, 95-185, 12 FCC Rcd 12460 (1997), *petitions for review denied, Southwestern Bell Tel. Co. v. FCC*, 153 F.3d 597 (8th Cir. 1998), *petition for cert. pending, Ameritech v. FCC*, No. 98-1381 (U.S.). *See also* 47 C.F.R. § 51.319(d)(1)(i) (defining dedicated transport as "transmission facilities . . . between wire centers owned by incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting telecommunications carriers"); *id.* § 51.319(d)(1)(ii) (defining shared transport as "transmission facilities . . . between end office switches, between end office switches and tandem switches, and between tandem switches, in the incumbent LEC network").

self-supply. This failure was inexplicable inasmuch as competitive access providers began deploying fiber networks in urban areas nearly 15 years ago. Since 1996, the number of alternative suppliers of interoffice transport, and the areas served by such suppliers, has grown significantly.

Now, the Commission must consider whether CLECs would be impaired if they are denied access to ILEC interoffice transmission facilities. This, as the Supreme Court held, requires the Commission to consider whether alternative sources of interoffice transmission are reasonably and practicably available. In light of the Commission's previous orders, it is appropriate to evaluate separately the availability of dedicated and shared transport.

1. Dedicated Transport Between CLEC and ILEC Switches.

In the *Local Competition Order*, the Commission required ILECs to provide interoffice transport between ILECs and CLECs[221] because it concluded that "access to these interoffice facilities will improve competitors' ability to design efficient network architecture, and in particular, to combine their own switching functionality with the incumbent LEC's unbundled loops."[222] However, whether access to ILEC interoffice facilities would improve CLECs' ability to design efficient networks or combine their own switches with unbundled loops is irrelevant. Under section 251(d)(2), the test is whether CLECs would be impaired without access to ILEC interoffice transmission facilities. That, as the Supreme Court held, requires an assessment of whether alternative interoffice transmission facilities are reasonably and practicably available from alternative sources, including self-provision.

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[221] As it is configured today, interoffice transport between CLECs and ILECs uses standard technology using public interfaces to effect transmission speeds that include voice grade (DS0), DS1, DS3, and Optical Carrier (OC) levels.

[222] *Local Competition Order*, 11 FCC Rcd at 15721.

A review of marketplace facts discloses that fiber optic interoffice transmission facilities have been deployed by CLECs virtually ubiquitously in dense wire centers serving 40,000 lines or more. CLECs have also widely deployed fiber in many other, and much smaller, markets. In all these markets, CLECs, by their own actions, have conclusively established that access to ILEC interoffice facilities is not necessary to permit a reasonably efficient CLEC to compete viably. Consequently, the Commission could not reasonably conclude that lack of access to ILEC interoffice transmission facilities meets the "impairment" standard: (1) in any wire center serving 40,000 or more lines with existing collocation arrangements, and (2) in *any* central office with collocation if competitive transport facilities have actually been deployed in the wire center serving area.[223]

Even before the 1996 Act, competitive access providers (CAPs) had deployed extensive competitive fiber networks in all major metropolitan areas, and in many smaller markets, as a result of the Commission's expanded interconnection requirements for access services.[224] Deployment of such facilities accelerated following enactment of the local competition provisions of the 1996 Act.[225] Since 1996, the number of CLECs that have deployed fiber

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[223] Even if a CLEC has not yet obtained collocation in a particular end office, access to ILEC interoffice transmission facilities would not satisfy the impairment standard if collocation is available in the wire center and a CLEC has deployed alternative interoffice transmission facilities in the wire center serving area because those facilities could quickly and easily be extended to the wire center itself.

[224] The Commission's expanded interconnection requirements date back seven years and resulted in expanded opportunities for CAPS to provide alternative transport services on concentrated traffic routes between ILEC offices and tandems and IXC POPs. In adopting these requirements, the Commission assumed that ILECs were dominant providers of "last mile" access to end users – either via special access loops or "common lines" associated with the ILECs' local exchange services. The Commission's expanded interconnection orders permitted CAPs to deliver traffic from IXC POPs to ILEC offices for distribution to end users over ILEC special access loops or common lines, or conversely to take traffic that has been aggregated from ILEC loops and common lines and transport it to IXC POPS.

[225] *UNE Fact Report* at II-1. The largest CLECs – AT&T and MCI WorldCom – have taken great steps to bring in-house CAP expertise in dedicated transport and extensive CAP networks in their acquisitions of Teleport/TCG and MFS, respectively.

provisions of the 1996 Act.[225] Since 1996, the number of CLECs that have deployed fiber networks has grown from 29 to 60, and the number of cities served by competitive fiber has grown from 130 to 289.[226] CLECs have deployed fiber in 135 of the top 150 MSAs, and nearly 30,000 miles of fiber in the top 50 MSAs alone.[227] Forty seven of the top 50 MSAs are served by at least three CLEC fiber networks; 29 are served by five or more CLECs, and 16 are served by seven or more.[228]

In the Ameritech region, the results have been equally dramatic. For example, the *UNE Fact Report* shows that, in the Chicago metropolitan area, Ovation has deployed 100 miles of fiber and 21st Century Telecom another 70.[229] That report, however, actually understates the extent of competitive interoffice transmission facilities in some cases. In a recent study commissioned by Ameritech, for example, Quality Strategies found that AT&T/TCG's Chicago network extends for 1000 route miles and that MCI WorldCom and NEXTLINK have fiber networks of 225 miles and 110 miles, respectively.[230] Thus, there is at least 1500 miles of competitively-provided in Chicago alone. But even that figure does not account for competitive fiber deployed by Intermedia and Level 3 because information about the extent of their fiber network in Chicago is not publicly available. Nor does it include the fiber networks that

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[225] *UNE Fact Report* at II-1. The largest CLECs – AT&T and MCI WorldCom – have taken great steps to bring in-house CAP expertise in dedicated transport and extensive CAP networks in their acquisitions of Teleport/TCG and MFS, respectively.

[226] *UNE Fact Report* at II-6.

[227] *Id.*

[228] *Id.*

[229] *UNE Fact Report* at Appendix B.

[230] Quality Strategies: Ameritech CAP/CLEC Network Descriptions, Third Quarter, 1998 (Quality Strategies Report).

Convergent, e.spire, MegsINet, Metromedia, OpTel Telecom, US Xchange and WinStar each are planning to deploy.[231]

In Detroit, Quality Strategies reports that AT&T has already deployed 300 fiber route miles and MCI WorldCom 129 miles, for a total of 429 miles.[232] The *UNE Fact Report* reports that US MidTel has deployed an additional 5 miles, that Level 3 has a network of unknown length, and that Convergent is planning to deploy its own fiber network.[233]

In Cleveland, AT&T has deployed 170 route miles, ICG has deployed 180 miles, NEXTLINK has deployed 180 miles, and MCI WorldCom 70 miles, for a total of 600 miles.[234] E.spire too has deployed facilities, but the extent of those facilities is not available; and Level 3 is planning to deploy additional facilities of unknown length.[235]

In Indianapolis, Time Warner, AT&T, and MCI WorldCom have networks of 400, 200, and 200 miles respectively, totaling 800 miles.[236] Intermedia has deployed a fiber network of unknown length; and Convergent, Hyperion, and Level 3 are planning to deploy their own networks.[237]

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[231] *UNE Fact Report* at Appendix B.

[232] Quality Strategies Report.

[233] *UNE Fact Report* at Appendix B.

[234] Quality Strategies Report.

[235] *UNE Fact Report* at Appendix B.

[236] Quality Strategies Report.

[237] *UNE Fact Report* at Appendix B.

In Milwaukee, Time Warner has 300 miles of fiber, AT&T 300 miles, and MCI WorldCom 65 miles.[238] US Xchange adds 100 miles, and Ovation 75 miles[239] -- for a total of 840 miles.

In Columbus, Time Warner's network measures 550 route miles, ICG's 150 miles, and NEXTLINK's 112 miles – for a total of 812 miles.[240] AT&T's and Hyperion's facilities are still in the planning stages.[241]

Finally, in Grand Rapids, MCI WorldCom's fiber network, building on the network started by Brooks Fiber, already extends 300 miles.[242]

The extent of competitive deployment of interoffice transmission facilities is further demonstrated by the substantial amount of collocation in Ameritech offices – especially in dense wire centers. In Ameritech's region, for example, CLECs have obtained collocation in 71 percent (260 of 365) of Ameritech's wire centers serving 20,000 and more lines, 77 percent (198 of 258) of wire centers of 30,000+ lines, and over 85 percent (150 of 176) of wire centers serving 40,000 and more lines.[243]

Many of these offices have multiple collocation arrangements. Of the 260 20,000+ line wire centers with collocation arrangements, 159 (61 percent) have two or more, 105 (40 percent) have 3 or more, and 71 (27 percent) have 4 or more collocation arrangements.[244] Of the 198

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[238] Quality Strategies Report.

[239] *UNE Fact Report* at Appendix B.

[240] Quality Strategies Report.

[241] *UNE Fact Report* at Appendix B.

[242] Quality Strategies Report.

[243] *UNE Fact Report* at II-8, Table 2.

[244] *UNE Fact Report* at II-18, Table 4.

30,000+ line wire centers with collocation arrangements, 130 (66 percent) have two or more, 89 (45 percent) have 3 or more, and 66 (33 percent) have 4 or more collocation nodes.[245] And, of the 150 40,000+ line wire centers, 109 (73 percent) have two or more, 78 (52 percent) have 3 or more, and 59 (39 percent) have 4 or more collocation nodes.[246] Thus, the larger the wire center, the more likely it is that there will be multiple collocation arrangements.

This look at operational collocation arrangements, however, is conservative because it misses the growth in competitive activity reflected in pending collocation orders. When such orders are included, the numbers of 20,000+ line wire centers with collocation increases from 260 (71 percent) to 303 (83 percent), the number of 30,000+ line wire centers goes from 198 (77 percent) to 222 (86 percent), and the number of 40,000+ line wire centers increases from 150 (85 percent) to 161 (91 percent).[247]

Similarly, including pending collocation orders increases the number of multiple collocation arrangements. Of the 303 20,000+ line wire centers with collocation, 220 (73 percent) have two or more, 157 (52 percent) have 3 or more, and 116 (38 percent) have 4 or more collocation nodes – up from 61 percent, 40 percent and 27 percent, respectively. Similarly, of the 222 wire centers with collocation serving 30,000+ lines, 176 (79 percent) have two or more, 129 (58 percent have 3 or more, and 99 (45 percent have 4 or more collocation nodes – up from 66 percent, 45 percent, and 33 percent, respectively. And, of the 161 wire centers with collocation serving 40,000+ lines, 135 (84 percent) have two or more, 108 (67percent) have 3 or

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[245] *UNE Fact Report* at II-19, Table 5.

[246] *UNE Fact Report* at II-19, Table 6.

[247] *UNE Fact Report* at II-20, Tables 7, 8, and 9.

more, and 86 (53 percent) have 4 or more collocation arrangements – up from 73 percent, 52 percent, and 39 percent, respectively

Given the substantial deployment of competitive fiber facilities and the significant proliferation of collocation arrangements in dense wire centers, CLECs have ready access to the facilities of competitive providers of interoffice transport or can easily deploy competitive facilities themselves. This is especially true in the top seven Ameritech metropolitan areas.[248] In those areas, 126 wire centers serve 40,000 or more lines. Of that number, 88 (70 percent of those offices, representing 74 percent of the lines in those offices) have collocation arrangements connected to facilities provided by non-Ameritech entities. In these cases, CLECs, by their own actions, have conclusively proven that they would not be "impaired" in their ability to provide telecommunications services under section 251(d)(2) if they are denied access to dedicated interoffice transmission facilities as an unbundled network element. Consequently, in such offices, the Commission cannot require Ameritech to offer dedicated transport as an unbundled network element.

In additional 11 offices, representing an additional 8.4 percent of Ameritech's lines, CLECs have active or pending collocation arrangements and deployed competitive fiber facilities that traverse the wire center serving area. In those offices, CLECs could quickly and easily extend these transport facilities to the serving wire center. Consequently, in such cases, a requesting carrier could not demonstrate that it would be impaired if it were denied access to dedicated interoffice transport as an unbundled network element.

[248] The data is being supplied for the Chicago LATA and the Cleveland, Columbus, Detroit, Grand Rapids, Indianapolis, and Milwaukee MSAs.

Based on the availability alternative interoffice transmission facilities, the Commission should not require ILECs to offer dedicated interoffice transport: (1) in wire centers serving 40,000+ lines with existing collocation arrangements; and (2) in *any* office with collocation arrangements if competitive transport facilities are present in the office or traverse the wire center serving area.

2. Shared Transport Between ILEC Switches.

The Supreme Court vacated Rule 319 in its entirety, including the requirement that ILECs provide shared transport. Consequently, the Commission now must reconsider whether "shared transport," as defined in the *Third Order on Reconsideration*,[249] meets the "necessary" and "impair" standards in section 251(d)(2). As shown below, it clearly does not.

As a threshold matter, shared transport is not even an "unbundled" network element within the meaning of Section 251(c)(3). In *AT&T*, the Commission argued that the Eighth Circuit had erred in holding that the term "unbundled" in Section 251(c)(3) meant physically separated. Rather, the Commission (along with AT&T) maintained, two physically connected network elements are "unbundled" if a new entrant has the ability, if it so desires, to acquire one of the elements but not the other.[250]

In reversing the Eighth Circuit, the Supreme Court expressly adopted the Commission's interpretation of the term "unbundled."[251] Thus, while incumbent LECs may be required to

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[249] *Third Order on Reconsideration*, 12 FCC Rcd 12460 (1997).

[250] *See* Brief of the Federal Petitioners, No. 97-826 and consolidated cases, at 44 ("the term 'unbundle' * * * denote[s] giving someone a *choice* of elements at separate prices") (emphasis added); Brief for Petitioners in No. 97-826, at 38-39 ("[t]o provide something on an unbundled basis is * * * simply to state a different price for it and *to give users the option of declining to purchase it as part of a package*") (emphasis added).

[251] *AT&T*, 119 S. Ct. at 737.

provide pre-assembled combinations of unbundled network elements, each element in the combination still must be capable of being purchased separately.

Under the prevailing definition of "unbundled,"[252] shared transport could never be an "unbundled" network element. It is undisputed that shared transport is inextricably linked to local switching.[253] As the Commission expressly has acknowledged, "[r]equesting carriers that purchase shared transport as a network element to provide local exchange service *must also take local switching*."[254] This means, of course, that a requesting carrier does not have the option of obtaining shared transport without also taking local switching.[255] It necessarily follows that shared transport, as defined in the *Third Order on Reconsideration*, is not an "unbundled" element within the meaning of Section 251(c)(3), and thus may not be subject to an unbundling obligation under the 1996 Act.

Irrespective of whether it constitutes an "unbundled" network element, the Commission could not require ILECs to provide "shared" transport in most, if not all, geographic markets because it depends entirely upon access to unbundled local switching. However, as discussed above, unbundled local switching fails to meet the "impair" standard in most, if not all, geographic markets. As a consequence, incumbents cannot be required to provide shared transport in any market in which they are not required to unbundle local switching.

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[252] Having prevailed before the Supreme Court, AT&T is judicially estopped from advocating — and the Commission is judicially estopped from adopting — a different interpretation of the term "unbundled" on remand from that decision. See, *e.g.*, *Davis v. Wakelee*, 156 U.S. 680, 689 (1895); *Astor Chauffeured Limousine Co. v. Runnfeldt Investment Corp.*, 910 F.2d 1540, 1547-49 (7th Cir. 1990). Moreover, any such different interpretation would be arbitrary and capricious.

[253] *See Third Order on Reconsideration*, 12 FCC Rcd at 12486.

[254] *Third Order on Reconsideration*, 12 FCC Rcd at 12488 (emphasis added).

[255] *Id.*

Even if there are some geographic markets in which local switching must be unbundled, the Commission still could not require ILECs to offer shared transport because it would not meet either the necessary or the impair standard in section 251(d)(2). It is beyond dispute that shared transport could not function without access to the incumbent's routing tables resident in the local switch.[256] As discussed above, however, routing tables are a proprietary feature of the switching element that themselves do not satisfy the "necessary" prong of Section 251(d)(2). Because incumbent LECs cannot be required to provide routing tables as part of the switching element, incumbents also cannot be required to provide shared transport (which depends upon those routing tables) as an unbundled network element.

As discussed above, incumbents can provide unbundled local switching without providing access to their proprietary routing tables, and CLECs that purchase unbundled local switching can create their own routing tables, which can be programmed into the incumbent's switch. Because a CLEC can reasonably and practicably obtain interoffice transport between the incumbent's switches and design its own routing tables for such transport, the Commission cannot require incumbents to provide "shared" transport as defined in the *Third Order on Reconsideration*, which required use of the incumbent's proprietary routing tables.

In addition, shared transport, as defined in the *Third Order on Reconsideration*, does not pass the "impair" standard of Section 251(d)(2)(B). In reaching the contrary conclusion in the *Third Order on Reconsideration*, the Commission reasoned, *inter alia*, that "the opportunity to purchase transport facilities on a shared basis, rather than exclusively on a dedicated basis, will decrease the cost of entry," and that "if new entrants were forced to rely on dedicated transport facilities, even at the earliest stages of competitive entry, they would almost inevitably

[256] *See Third Order on Reconsideration*, 12 FCC Rcd at 12482.

miscalculate the capacity or routing patterns."[257] In addition, the Commission concluded, without any record support, that dedicated transport is not economically feasible at low penetration rates. It further concluded that new entrants would be hindered by significant transaction costs if they were to continually reconfigure unbundled transport elements as they acquire new customers.[258]

The Commission's analysis, however, is invalid, having been premised upon a reading of the Section 251(d)(2) "impair" standard that subsequently was struck down by the Supreme Court.[259] Shared transport satisfies Section 251(d)(2) only if lack of access to shared transport would prevent a reasonably efficient competitor from providing the services it seeks to offer within two years and from earning a normal economic profit in so doing.

That standard is not met here, particularly if incumbent LECs are required to provide "dedicated" interoffice transport between their switches to requesting carriers. The difference between shared and dedicated transport is that "shared" transport uses the same exact transmission circuits as the incumbent, while "dedicated" transport uses the same circuit path (*i.e.*, a "shared" conduit – but not the exact circuit used by the incumbent). But all of the circuits on an incumbent-owned interoffice trunk are of the same quality, so a competitor surely could provide service using this form of dedicated transport.

In addition, the most basic tasks that a telecommunications carrier undertakes are forecasting demand, ensuring that it has sufficient transport facilities to carry forecasted traffic, and routing traffic. Although a CLEC might be able to reduce its costs if it could use the same

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[257] *Third Order on Reconsideration*, 12 FCC Rcd at 12481-82.

[258] *Id.*

circuits — and hence the same routing tables — as the incumbent, that is not the standard under the "impairment" test, as the Supreme Court held. Rather, the issue is whether a reasonably efficient competitor could enter within a reasonable time and compete viably without them. In light of the broad array of CLECs offering service over their own interoffice transport facilities, the Commission could not reasonably conclude that a reasonably efficient competitor could not compete without access to "shared" transport, as defined in the *Third Order on Reconsideration*.

The attached network model and economic analysis confirms that a reasonably efficient CLEC could profitably provide service without "shared" interoffice transport, as defined in the *Third Order on Reconsideration*.[260] In the analysis, Ameritech has assumed that the new entrant utilizes unbundled local switching, customized routing (using line class codes), unbundled tandem switching, end office integration, transport and termination service, and dedicated interoffice transport. These options permit the CLEC to evolve its network from end office integration, to DS-1 services provided by Ameritech, to dedicated transport facilities provided by a third party or self-provided by the CLEC. The analysis demonstrates, contrary to the unsupported conclusion in the *Third Order on Reconsideration*, that new entrants can profitably provide usage services to end users served through unbundled local switching without access to "shared" transport, even at early stages of entry. In fact, CLECs can offer usage services between Ameritech switches for a very modest $.0071417 per minute of use, which is approximately one-half of the comparable wholesale usage rate in Illinois, and even further below Ameritech's retail usage rates. Thus, "shared" transport fails the impair test.

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[259] *See AT&T*, 119 S. Ct. at 735 (Commission may not "regard[] any 'increased cost or decreased service quality' as establishing a 'necessity' and an 'impair[ment]' of the ability to 'provide . . . services'").
[260] *See* Attachment C.

The three concerns that that led the Commission to conclude in the *Third Order on Reconsideration* that failure to gain access to shared transport would impair new entrants' ability to enter the local marketplace are addressed in Attachment __. First, CLECs are not required to order dedicated facilities based upon a guess at future traffic volumes at the outset of their service, nor are they penalized for a miscalculation. Through, the use of end office integration, Ameritech will carry on a minute of use basis whatever traffic the CLEC delivers to it, and the CLEC is not required to order any dedicated transport facility until actual volume levels justify it.

Second, as demonstrated above, the alternative arrangement is economical. Indeed, it is economical even at low penetration rates since it terminates traffic for the CLEC on low volume routes and to low volume offices using low minute of use cost-based end office integration and reciprocal compensation rates. As soon as the CLEC can cost justify a DS-1 dedicated transport service, it can replace end office integration on that segment with a DS-1 service, while continuing to use end office integration on other lower volume routes. Later as traffic increases further, the CLEC can elect to build its own transport facilities on high volume routes or subscribe to the services of a third party.

Finally, there are no transaction costs as a CLEC adds new customers at low volume levels. Rather, the CLEC need only pay very modest charges when it converts from end office integration to DS-1 service, when it can cost justify that service based upon the traffic levels involved.

The fact that a competitor could use its own circuits (either by itself or shared with other competitors) and establish its own routing tables should be considered a plus, not a minus, under the 1996 Act. If competitors are allowed to ride off the incumbent's network design and routing

instructions, there would be no innovation, no quality differentiation, and thus no real competition or benefits to consumers.[261] For these reasons, shared transport does not satisfy the impair standard of Section 251(d)(2).

c. Local Loops.

In the *Local Competition Order*, the Commission required ILECs to unbundle local loops, which it 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."[262] This definition, the Commission stated, includes "two-wire and four-wire analog voice-grade loops, and two-wire and four-wire loops that are conditioned to transmit digital signals needed to provide services such as ISDN, ADSL, HDSL, and DS1-level signals."[263]

In the *Notice*, the Commission declared that its "strong expectation" is that "under any reasonable interpretation of the 'necessary' and 'impair' standards of section 251(d)(2), loops will generally be subject to the section 251(c)(3) unbundling obligations."[264]

Ameritech generally agrees that loops satisfy the "impair" standard under section 251(d)(2) at this time. Nevertheless, there is a growing body of evidence that CLECs can reasonably and practicably deploy competitive local loops in certain markets. Indeed, CLECs are already doing so. Where they are, the evidence would suggest that access to ILEC loop facilities may not be necessary.

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[261] *See AT&T*, 119 S. Ct. at 754 (Breyer, J., concurring in relevant part) ("It is in the unshared, not in the shared, portions of the enterprise that meaningful competition would likely emerge").

[262] *Local Competition Order*, 11 FCC Rcd at 15691.

[263] *Id.*

[264] *Notice*, FCC 99-70 at para. 32.

One market in which CLECs have already deployed significant alternative loop facilities is the market for large business customers (those with 20 or more lines) in dense wire centers.[265] These customers, as the Commission and Department of Justice have already recognized, constitute a discrete telecommunications market.[266]

CLECs have aggressively targeted these customers, and can now reach many large- and medium-size business customers directly with their own fiber networks.
CLECs already connect nearly 15 percent of the commercial buildings in the country with their own fiber.[267] They also routinely extend their fiber networks to reach additional large customers, and advertise their willingness to do so.[268] As a consequence, CLECs have deployed fiber in 135 of the top 150 MSAs, and deployed nearly 30,000 miles of fiber in the top 50 MSAs alone.[269]

As explained in the *UNE Fact Report*, the evidence suggests that the overwhelming majority of CLEC-provided loops are serving business customers in dense wire centers (that is, those serving between 20,000+ and 40,000+ loops) that have attracted collocation.[270] Based on the evidence collected in the *UNE Fact Report*, it appears that CLECs are serving with their own loops between 9 and 18 percent of all business lines in wire centers with 40,000+ lines that have attracted collocation.

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[265] The Commission recently defined "large business customers" as those with "twenty or more access lines." *Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information*, Second Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd 8061, 8128 (1998).

[266] *See UNE Fact Report* at III-2 (citations omitted).

[267] *Id.* at III-3 (citations omitted).

[268] *Id.*

[269] *Id.* (noting that CLECs have deployed fiber in all but the 15 of the MSAs ranked between 51 and 150).

[270] *Id.* at III-16.

In Ameritech's region, several carriers have deployed fiber SONET rings and other wireline loops to serve large- and medium-sized business customers in dense wire centers, bypassing Ameritech's loop facilities altogether. Market research establishes that there is significant self-supply of loops in Ameritech's region. MCI WorldCom, for example, provides service to at least 1,058 "on-net" buildings in Ameritech's region using its own fiber loops (including 300 buildings in Chicago, 125 in Detroit, and 40 in Indianapolis).[271] AT&T provides service to at least 317 buildings using its own fiber and some copper twisted pair loops (including 300 buildings in Chicago).[272] And Time Warner provides local service to at least 373 buildings using its own loops.[273] These carriers could easily serve additional buildings, including residential multiple dwelling units, by extending fiber drops to buildings near their existing SONET rings.

These figures strongly suggest that efficient CLECs could reasonably and practicably deploy their own loops, and, therefore, would not be impaired without access to ILEC loops, in dense wire centers. Indeed, the facts show that facilities-based CLECs have achieved substantially greater penetration into business markets than AT&T's competitors achieved in the 1970s and 1980s.[274] As one analyst put it, "CLECs as a group [have] achieve[d] in less than two

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[271] Quality Strategies, *Ameritech CAP/CLEC Network Descriptions Third Quarter, 1998*, Dec. 21, 1998 at 16, 69, 102, 122, 140, 144, 153, 182, 230 (*Quality Strategies Report*).

[272] *Id.* at 31, 78, 114, 161, 214.

[273] *Id.* at 83, 190, 221.

[274] As the *UNE Fact Report* notes, three and a half years after *Execunet II*, AT&T competitors were serving less than 5 percent of business lines, while CLECs today serve between 8 and 18 percent of all business lines in dense wire centers. *UNE Fact Report*, III-17 (citing William Kennard, Chairman, Federal Communications Commission, Statement Before the Subcommittee on Commerce, Justice, State, and the Judiciary, U.S. House of Representatives, March 25, 1998; C. Yang, *Yes, Virginia, There is Phone Competition*, Business Week, Sept. 28, 1998).

years after the Telecom Act what it took MCI and other alternative long-distance carriers over 10 years to achieve in the 1970s and 1980s."[275]

Even the foregoing figures do not give a complete picture of competitive loop deployment because they do not take into account other competitive loop technologies, such as fixed wireless, PCS and cable loops. Each of these technologies is emerging as strong potential competitors to ILEC wireline loops.

Fixed wireless local loops, as the Commission has recognized, is rapidly offering a "replacement for the 'last mile' of copper wire."[276] That is because wireless local loops are relatively inexpensive to deploy (at $500 to $1,000 per line, with costs expected to drop to $200 per subscriber installation), when compared to wireline loops (at $1,000 or more per loop).[277] Wireless local loops are also modular, flexible, scalable, movable, and easier and cheaper than wireline loops to maintain.[278] Wireless local loops also can be deployed much faster than wireline loops – systems can be activated in 90 to 120 days,[279] and offer greater capacity than standard copper loops, with equivalent or better quality of service and speed.[280] As a

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[275] *Id.* (quoting J. Grubman, *et al.*, Salomon Smith Barney, *CLECs Surpass Bells in Net Business Line Additions for First Time*, May 6, 1998.

[276] *UNE Fact Report* at III-10 (citing *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Third Report*, 13 FCC Rcd 19746, App. F at F-1 (1998) (*Third CMRS Report*)).

[277] *UNE Fact Report* at III-10 (citations omitted).

[278] *UNE Fact Report* at III-10, III-11 (citations omitted). Because wireless technology is movable, sunk costs are minimal. *See UNE Fact Report* at III-11 n.23 (quoting F. Dawson, *Are Clouds Clearing Over Wireless Local Loop?*, Inter@active Week, Mar. 2, 1998 ("Wireless allows you to redeploy access facilities on a large scale without losing a large share of embedded investment.")).

[279] *UNE Fact Report* at III-10 (citation omitted).

[280] *UNE Fact Report* at III-11 (citing *Third CMRS Report* at App. F, F-11).

consequence, "fixed wireless technology has developed to the point where it has the potential to provide a competitive alternative to the incumbent LEC network."[281]

In Ameritech's region, a number of carriers have already begun deploying fixed wireless local loops to bypass Ameritech's loop facilities. For example, Winstar, which is serving 125 buildings in Chicago and its surrounding suburbs with fixed wireless technology.[282] Teligent too is deploying fixed wireless technology in Illinois.

Cellular and PCS also offers a functional alternative to wireline local loops. Although advanced digital technology has eliminated the quality gaps between wireline and wireless connections to the network, until quite recently, wireless service was not price competitive with wireline service and therefore did not provide an economic substitute.[283] Now, as the Commission itself has recognized, wireless providers are "using aggressive pricing to position their services as true replacements for the wireline based services of LECs."[284] As a consequence, customers increasingly view wireless services as a potential substitute for wireline services.[285]

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[281] *Amendment of the Commission's Rules to Establish Competitive Service Safeguards for Local Exchange Carrier Provision of Commercial Mobile Radio Services*, 12 FCC Rcd 15668, 15701 (1997).

[282] *Quality Strategies Report* at 44.

[283] *UNE Fact Report* at III-22. (citation omitted)

[284] *Third CMRS Report*, 13 FCC Rcd at 19817.

[285] *See UNE Fact* Report at III-25 (quoting PCIA Press Release, *PCIA Launches Advertising Blitz on Wireless Competition*, Mar. 26 (1998) ("42% of all Americans would consider switching their local phone service to wireless")). The Commission itself expects that customers will increasingly view wireless as a substitute for local service. *See Cellular Telecommunications Industry Association's Petition for Forbearance from Commercial Mobile Radio Service Number Portability Obligations and Telephone Number Portability*, Memorandum Opinion and Order, WT Docket No. 98-229, CC Docket No. 95-116, FCC 99-19 at para. 23 (rel. Feb. 9, 1999) ("We anticipate that as wireless service rates continue their downward trend and the use of wireless services increases, there is a greater likelihood that customers will view their wireless phones as a potential substitute for their wireline phones.") (citing The Yankee Group Report, *Year-End 1998 Wireless Industry Update: The Impact of All-Inclusive Rates*, December 1998, at 11-12).

Cable too has the potential to provide a substitute for ILEC loops to most residential subscribers. Cable providers are rapidly upgrading their systems to provide voice telephony and cable modem services. Indeed, approximately 20 percent of U.S. cable subscribers are already served by cable systems capable of providing two-way services,[286] and the largest MSOs expect to upgrade most of their cable plant by the year 2000.[287] In the Ameritech region, TCI is already offering cable telephony services in Arlington Heights, IL.[288]

Cable is emerging even more quickly as an alternative loop for data traffic. Although data loops account for much of the current growth in ILEC loops – many households obtain second phone lines for fax and Internet services,[289] cable has emerged a strong competitor in the provision of advanced data services. Indeed, cable has taken an early lead over ILEC copper loop technologies in the race to provide such services to the home.[290] One Study projects that deployment of high-speed cable modems will substantially exceed deployment of xDSL over the next several years.[291] Cable therefore will increasingly serve as a competitive substitute for ILEC local loops.

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[286] *UNE Fact Report* at III-20. (citation omitted)

[287] Time Warner expects to upgrade 85 percent of its cable plant by the end of 1999. *Id.* (citing Time Warner News Release, *AT&T and Time Warner From Strategic Relationship to Offer Cable Telephony*, Feb. 1, 1999). TCI projects that it 60 percent of its plant will be upgraded to two-way capability by the end of 1999, and that 99 percent will be by 2000. *Id.* (citing C. Mason, *Where Are CATV's Trump Cards*, America's Network, June 1, 1998). And MediaOne expects that broadband will be available in most of its service areas by the end of 2000. *Id.* (citing MediaOne, *Overview*, http://www.mediaone.com/who_we_are/default.htm).

[288] *UNE Fact Report* at III-19. Table 7.

[289] *UNE Fact Report* at III-21 (citation omitted).

[290] "[C]able modems have clearly taken the early lead in the race to become the residential broadband technology of choice in the United States." *UNE Fact Report* at VI-5 (quoting Henry Samueli, Broadcom Corp., in K. Fong, *et al.*, *Hambrecht & Quist, Inc. Communications Symposium/Data Processing/Telecom. (Transcript) Industry Report*, Rpt. No. 2658327, April 16, 1998, at *11.

[291] *UNE Fact Report* at VI-9 (citing *Study Sees Cable Modem Deployments Surpassing ADSL Installations by 2003*, Broadband Networking News, Aug. 4, 1998).

Readily ascertainable marketplace facts therefore strongly suggest that access to the incumbent's local loop is not necessary to provide a meaningful opportunity for competitive entry by efficient competitors, at least in certain markets. The evidence further suggests that alternative loop technologies are increasingly viable, and exerting ever greater competitive pressure on traditional telephony. Consequently, a single, national rule requiring ILECs to unbundle local loops in all markets appears to be inconsistent, not only with sound economics, but also the requirements of section 251(d)(2) and the Supreme Court's opinion.

If the Commission nevertheless requires loop unbundling in all markets, it must adopt an appropriate sunset, or other, provision to account for the development and deployment of alternative local loops, including alternative loop technologies. Once those technologies become viable competitive alternatives to the local loop, access to ILEC loops will be unnecessary – at which point, ILECs can no longer be required to unbundle local loops pursuant to section 251(d)(2).

d. Operator Services/Directory Assistance.

In the *Local Competition Order*, the Commission required ILECs to unbundle the facilities and functionalities used to provide operator services and directory assistance (OS/DA). In support of this requirement, the Commission stated simply that unbundling such facilities and functionalities would be "beneficial" to competition in the local exchange market.[292] The Commission did not, however, consider whether alternative sources of OS/DA functionality and facilities were reasonably and practicably available from alternative sources, including through self-provision. On remand, the Supreme Court's decision obligates the Commission to undertake

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[292] *Local Competition Order*, 11 FCC Rcd 15772.

precisely that kind of analysis. As discussed below, the evidence clearly establishes that alternative sources of OS/DA are readily available throughout the country, and, in addition, that any reasonably efficient CLEC could quickly and easily offer OS/DA services anywhere in the country using its own facilities. Consequently, OS/DA facilities and functionalities need not be unbundled in any geographic market in the country today.

The market for OS/DA services has become increasingly competitive, with numerous companies offering competitive OS/DA services throughout the country.[293] These providers offer not only interstate OS/DA services, but local OS/DA service as well.[294] Indeed, the Commission itself has recognized this fact, observing that independent "operator service providers (OSPs) compete with local exchange and long distance carriers."[295]

Further acknowledging this competition, the Commission asks whether, "[a]ssuming there is a competitive market for OS/DA, and LECs are obligated to provide those services under section 251(b), . . . a competitor's ability to compete [is] impaired if [OS/DA] functions are not provided by incumbent LECs as an unbundled network element under section 251(c)(3)."[296] There should be no question that the answer to this question is no.

As discussed above, the fundamental principle underlying the necessary and impair standard is the notion that competition and consumer welfare will be maximized by requiring an ILEC to unbundle only those network elements that a reasonably efficient competitor could not

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[293] *UNE Fact Report* at (IV-2, Table 1).

[294] *UNE Fact Report* at IV-1.

[295] *Implementation of Sections 3(n) and 332 of the Communications Act Regulatory Treatment of Mobile Services*, Second Report and Order, 9 FCC Rcd 1411, 1489 (1994).

[296] *Notice*, FCC 99-70 at para. 42. Section 251(b)(3) requires all LECs, including competitive LECs, to permit competing providers of telephone exchange and telephone toll services to have nondiscriminatory access to, among other things, operator services and directory assistance. 47 U.S.C. § 251(b)(3).