

CRITERION ECONOMICS, LLC

1614 Twentieth Street, N.W.
Washington, D.C. 20009
Tel: 202-518-5120

J. Gregory Sidak
Chairman
Direct Dial: 202-518-5121
jgsidak@criterioneconomics.com

March 11, 2009

Jonathan Daniels, Esq.
Vice President, Regulatory Law
Bell Canada
Floor 19
160 Elgin Street
Ottawa, Ontario K2P 2C4
Canada

Dear Mr. Daniels:

You requested an overview of investments made by American incumbent local exchange carriers (ILECs) in next-generation telecommunications networks.

The International Telecommunications Union (ITU) defines a next-generation network as “a packet-based network able to provide Telecommunication Services to users and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent of the underlying transport-related technologies.”¹ In the United States, telecommunications carriers have adopted various types of network architecture strategies to deliver these next-generation services to customers. Each carrier has used a combination of architectures to satisfy financial, technical, and timing imperatives.

Whereas AT&T and Qwest have primarily used a fiber-to-the-node (FTTN) strategy to deliver their next-generation platforms to customers, Verizon has deployed fiber-to-the-premises

1. ITU, Next Generation Networks Global Standards Initiative (NGN-GSI): ITU-T's Definition of NGN, <http://www.itu.int/ITU-T/ngn/definition.html>.

Jonathan Daniels, Esq.
March 11, 2009
Page 2

(FTTP) more aggressively than its peers.² Yet AT&T and Qwest have both used FTTP delivery designs for some of their next-generation infrastructure deployments. On the other hand, Verizon employs a hybrid fiber and VDSL architecture to serve customers in certain circumstances.

American ILECs have spent billions of dollars in the past several years to extend next-generation telecommunications services to their customers. Yet deployment of such offerings was hindered initially by uncertainty regarding whether the U.S. Federal Communications Commission would mandate unbundling for fiber or hybrid fiber-copper networks.³ For instance, when Verizon initially deployed its next-generation network, it did so only in certain western states, where Verizon was not subject to unbundling regulations, and not in many northeastern states because, in the company's words, "We cannot run the risk of having fiber unbundled."⁴

2. The U.S. Federal Communications Commission does not mandate unbundling on these types of next-generation infrastructure. Although the FCC does require unbundling of copper loops and subloops, UNEs (unbundled network element loops) accounted for less than 7 percent of total end-user switched access lines as of the end of 2007. See FEDERAL COMMUNICATIONS COMMISSION, INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2007, at 7 (Sept. 2008) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-285509A1.pdf. Further, UNEs represented 37 percent of the total CLEC switched access line base at the end of 2007, and the number of UNEs declined over 9 percent in 2007 alone. *Id.* at 6. The FCC also reports that non-ILECs provided less than 3 percent of total market share of ADSL lines as of the end of 2007. See FEDERAL COMMUNICATIONS COMMISSION, INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF DECEMBER 31, 2007, at 11 (Jan. 2009), available at http://www.fcc.gov/Daily_Releases/Daily_Business/2009/db0116/DOC-287962A1.pdf.

Although the FCC does not disaggregate the data, one reasonably can assume that a similar proportion of ADSL lines and switched access lines are provided as UNEs. Consequently, approximately one percent of the total ADSL market share is likely offered through unbundling. It is apparent, therefore, that unbundling—and, more precisely, unbundling of copper sub-loops for ADSL service—has proven to be an insignificant and unsuccessful component of the U.S. regulatory regime with respect to broadband service. Moreover, in light of the declining share of non-ILEC ADSL services (2.9 percent in December 2007, 3.1 percent June 2007, 3.3 percent in June 2006, and 3.8 percent in June 2005), any CLEC investment in sub-loop unbundled service is likely negligible. See *id.* For previous years, see FEDERAL COMMUNICATIONS COMMISSION, INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF JUNE 30, 2007, at 11 (Mar. 2008), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-280906A1.doc; FEDERAL COMMUNICATIONS COMMISSION, INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF JUNE 30, 2006, at 10 (Jan. 2007), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270128A1.pdf; FEDERAL COMMUNICATIONS COMMISSION, INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF JUNE 30, 2005, at 11 (Apr. 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-264744A1.pdf.

3. For an economic analysis of the effects of regulatory policy on next-generation network deployment in OECD countries, see Debra J. Aron & Robert W. Crandall, *Investment in Next Generation Networks and Wholesale Telecommunications Regulation* 2 (Nov. 3, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1294910 ("[T]he two largest U.S. incumbent local exchange carriers (Verizon and AT&T), who are now making massive and risky investments in fiber-to-the-home and fiber-to-the-node networks, began those investments in earnest only after the FCC issued its ruling protecting those investments from unbundling obligations.").

4. Declan McCullagh, *Verizon Blames Federal Rules for Broadband Holdup*, CNET NEWS, Aug. 24, 2004, available at http://news.cnet.com/Verizon-blames-federal-rules-for-broadband-holdup/2100-1034_3-5322874.html.

Jonathan Daniels, Esq.
March 11, 2009
Page 3

Further, by failing to promulgate clear and definite rules for unbundling, the FCC created disincentives for next-generation investment and consequently slowed the pace of innovation in the telecommunications industry. Such investment accelerated after the FCC determined in 2003 that it would not require the unbundling of hybrid fiber-copper infrastructure.⁵ As noted by BellSouth (which later merged into AT&T), regarding the FCC's decision not to require unbundling of much hybrid fiber-copper infrastructure, "As a result, we plan to increase deployments of fiber to the curb in 2005 by 40 percent over 2004."⁶ Similarly, Verizon wireline capital expenditures increased by over 16 percent from \$7.1 billion in 2004 to \$8.3 billion in 2005⁷; Verizon investments rose 24 percent to \$10.3 billion in 2006.⁸

AT&T

AT&T has invested billions of dollars in its Project Lightspeed strategy to deploy its fiber optic network since 2004. To allow the network to be rolled out quickly, the project uses both FTTP and FTTN to reach customers. In most existing neighborhoods, AT&T has adopted a FTTN strategy, while in new developments and some multiple dwelling units it uses FTTP.⁹ This hybrid strategy allowed AT&T to pass 17 million living units for its U-verse next-generation service as of the end of 2008, of which over one million subscribed to the service.¹⁰ Subscribership has been expanding rapidly, with only 51,000 subscribers in June 2007 rising to 549,000 in June 2008 and 1,045,000 by the end of December of the same year. In 2008 alone, AT&T had \$13.7 billion in wireline capital expenditures, which was "primarily due to the continued deployment of our U-verse services."¹¹

Verizon

Verizon began deploying FiOS, its fiber-to-the-home service, in 2004,¹² and in 2006 estimated it would spend \$18 billion net to make the service available to half of its homes (almost 20 million) by 2010.¹³ By the end of 2008, Verizon had passed 12.7 million premises for FiOS service, and had 1.9 million FiOS TV customers, approximately doubling the number of

5. See Aron & Crandall, *supra* note 3, at 31; Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Order on Reconsideration, 19 F.C.C.R. 20,293 (2004) (reversing the Commission's earlier decision to subject FTTC to unbundling requirements).

6. Tony Quesada, *FCC Ruling Bolsters BellSouth's Plans for Fiber Development*, JACKSONVILLE BUS. J., Oct. 29, 2004, available at http://jacksonville.bizjournals.com/jacksonville/stories/2004/11/01/story6.html?jst=cn_cn_lk.

7. Verizon Communications Inc., Annual Report (Form 10-K), at 19 (Mar. 14, 2006).

8. Verizon Communications Inc., Annual Report (Form 10-K), at 15 (Mar. 1, 2007).

9. Press Release, AT&T Inc., SBC Communications to Detail Plans for new IP-Based Advanced Television, Data and Voice Network (Nov. 11, 2008), available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=21458>.

10. AT&T Inc., Annual Report (Form 10-K), at 2 (Feb. 25, 2009).

11. *Id.* at 24.

12. See Verizon Communications Inc., FTTP and FiOS News, <http://newscenter.verizon.com/kit/fiber/>.

13. Roger Cheng, *Qwest Treads Slowly in Fiber Rollout—More Financial Flexibility and Threat from Cable May Intensify Push*, WALL ST. J., Feb. 8, 2007, at B4.

Jonathan Daniels, Esq.
March 11, 2009
Page 4

customers from the previous year.¹⁴ Verizon had \$9.8 billion in wireline capital spending in 2008, and it stated that “we are directing our capital spending primarily toward higher growth markets. High-speed wireless data services, fiber optics to the premises, as well as expanded services to enterprise customers, are examples of these growth markets.”¹⁵ Although Verizon relies heavily on FTTP deployment, the carrier nevertheless uses VDSL in some instances to deliver last-mile service to some multiple dwelling units (MDUs), such as apartment complexes or condominiums.¹⁶

Qwest

Qwest, like AT&T, has adopted a primarily FTTN fiber network deployment strategy, but it has also used FTTP in greenfield developments.¹⁷ In 2008 it planned to spend \$300 million on this effort,¹⁸ out of total capital expenditures of \$1.8 billion.¹⁹ Qwest stated that “cash used for investing activities increased in 2008 compared to 2007 primarily due to increased capital expenditures to support the planned growth in our data and Internet services.”²⁰

* * *

FTTN and FTTP strategies offer distinct tradeoffs in terms of costs, speed of deployment, and the ultimate ability to recoup investment.²¹ The main U.S. ILECs have invested billions of dollars to deliver next-generation services to customers quickly. Each has employed a flexible approach to network design, combining various technologies and network architectures in the last mile.

As the FCC observed in its response to unbundling of hybrid fiber-copper infrastructure, the disparate treatment of competing and substitutable transmission technologies can create a profound disincentive to deploy new technology. Firms facing inconsistent or unpredictable regulatory requirements will necessarily be less inclined to invest and to innovate. After the FCC

14. Verizon Communications Inc., Annual Report (Form 10-K) (Feb. 24, 2009).

15. *Id.*

16. Piyush Sevalia, *It's All About Access—A Comparison of Fiber vs Copper in 2008*, CONVERGE NETWORK DIG., Jan. 7, 2008, available at <http://www.convergedigest.com/bp/bp1.asp?ID=503&ctgy=>; see also Raymond McConville, *Fiber-to-the-MDU: Verizon's Manhattan Project*, LIGHT READING, Mar. 28, 2007, available at http://www.lightreading.com/document.asp?doc_id=120485 (describing Verizon's use of coax and VDSL to deliver service to individual dwellings in MDUs).

17. Ed Gubbins, *Qwest Announces First FTTP Deployment*, TELEPHONY ONLINE, Apr. 13, 2005, available at http://telephonyonline.com/ftp/news/qwest_fttp_ridgegate_041305/.

18. Eric Bangeman, *Qwest Finally Jumps on the Fiber Bandwagon with 20 Mbps DSL*, ARS TECHNICA, Apr. 24, 2008, available at <http://arstechnica.com/old/content/2008/04/qwest-finally-gets-in-the-fiber-game-with.ars>.

19. Qwest Communications International Inc., Annual Report (Form 10-K), at 52 (Feb. 13, 2009).

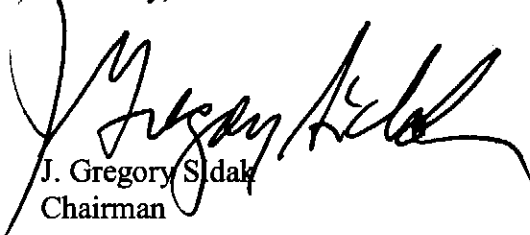
20. *Id.* at 55.

21. For more on the debate on the merits of FTTN compared with FTTH deployment, see Matt Richtel, *Tall in the Saddle at AT&T*, N.Y. TIMES, Mar. 27, 2007; Ken Belson, *Phone Line Alchemy: Copper Into Fiber*, N.Y. TIMES, Oct. 11, 2004; *Turning in to the Future?*, ECONOMIST, Oct. 14, 2006 (U.S. ed.).

Jonathan Daniels, Esq.
March 11, 2009
Page 5

reversed course in 2003 and decided not to require unbundling of next-generation networks, ILEC investments in such infrastructure increased dramatically. If a government's goal is to facilitate the expansion of next-generation services, it would be counterproductive as a matter of economic policy to subject the telecommunications industry to an unbundling regime based simply on the choice of deployment topology.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Gregory Sidak". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

J. Gregory Sidak
Chairman