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

In the Matter of	)	
	)	
Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996	)	GN Docket No. 07-45

FIFTH REPORT

Adopted: March 19, 2008 **Released: June 12, 2008**

By the Commission: Chairman Martin and Commissioners Tate and McDowell issuing separate statements; Commissioners Copps and Adelstein dissenting and issuing separate statements.

TABLE OF CONTENTS

I. INTRODUCTION

1. This is the Commission's Fifth Report examining the availability of advanced telecommunications capability to all Americans, as required by section 706 of the Telecommunications Act of 1996 (1996 Act).[1] Section 706 directs the Commission to encourage the deployment of advanced telecommunications capability to all Americans by using measures that "promote competition in the local telecommunications market."[2] Further, it requires the Commission to conduct a regular inquiry to determine "whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."[3] In this Report, we find, pursuant to the analytical framework established in prior section 706 reports, that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.

II. DEFINITION OF ADVANCED TELECOMMUNICATIONS CAPABILITY

2. Section 706(c) of the 1996 Act describes advanced telecommunications capability as "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."[4] In previous reports, the Commission defined "broadband" – and, in effect, "advanced telecommunications capability" and "advanced services" – as services and facilities with an upstream (customer-to-provider) and downstream (provider-to-customer) transmission speed of more than 200 kilobits per second (kbps).[5] As in these previous reports, we use these terms interchangeably for the purposes of this Report, and we describe service speeds with greater specificity where needed.[6] By contrast, the Commission has used the term "high-speed" to describe services with over 200 kbps capability in at least one direction.[7]

3. In the Commission's *Fourth Report* in 2004, the Commission made clear that 200 kbps service was appropriately considered "first generation" broadband. Also in 2004, the Commission reexamined its Form 477 local competition and broadband data gathering program, and began requiring providers to

[1] 47 U.S.C. § 157 nt.; *see Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45, Notice of Inquiry, 22 FCC Rcd 7816 (2007) (beginning the fifth inquiry under section 706) (*Fifth Report Notice*). The 1996 Act, Pub. L. 104-104, Feb. 8, 1996, 110 Stat. 56, amended the Communications Act of 1934, codified at 47 U.S.C. § 151 *et seq*. We refer to the Communications Act of 1934, as amended, as the "Communications Act."

[2] 47 U.S.C. § 157 nt.

[3] *Id.*

[4] *Id.*

[5] *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Report, 14 FCC Rcd 2398, 2406, para. 20 (1999) (*First Report*); *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913, 20919-21, para. 10 (2000) (*Second Report*); *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Third Report, 17 FCC Rcd 2844, 2850, para. 9 (2002) (*Third Report*); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540, 20551-52 (2004) (*Fourth Report*).

[6] *See infra* para. 33; Appendix B. We note, however, that some of the third-party studies and reports cited in this Fifth Report may use the term "broadband" differently than it has been defined in our section 706 reports.

[7] *See Second Report*, 15 FCC Rcd at 20920, para. 11; *Third Report*, 17 FCC Rcd at 2850-51, para. 9; *Fourth Report*, 19 FCC Rcd at 20551.

submit further information about their broadband deployments.[8] Among other things, the Commission required that filers determine the percentage of their broadband connections that are faster than 200 kbps in both directions and to categorize those connections into five "speed tiers" based on the information transfer rate in the connection's faster direction: (1) greater than 200 kbps but less than 2.5 megabits per second (mbps); (2) greater than or equal to 2.5 mbps but less than 10 mbps; (3) greater than or equal to 10 mbps but less than 25 mbps; (4) greater than or equal to 25 mbps but less than 100 mbps; and (5) greater than or equal to 100 mbps.[9] As a result of this more refined data collection, the Commission is now able to examine the deployment of broadband capable of providing service in excess of 200 kbps on the basis of speed tiers in this and subsequent reports.

4. Given the conclusion of the *Fourth Report* and the availability of suitable data from the Form 477 program, we find it appropriate to evaluate broadband deployment by monitoring the migration of customers and services to higher speed tiers, beginning at the 200 kbps threshold.[10] By doing so, the Commission can evaluate and track broadband deployment over time against a common benchmark to determine whether it is being deployed in a reasonable and timely manner.[11] Thus, in this Report we evaluate broadband deployment by speed tiers for the first time.

5. Variation in services and technologies likewise supports our evaluating broadband deployment over a range of speed tiers. As Connected Nation, the parent company of ConnectKentucky,[12] points out, different broadband technologies have varying capabilities today that may meet particular needs of broadband customers.[13] Further, consumers currently require different speed services depending upon the

[8] *See Local Telephone Competition and Broadband Reporting*, WC Docket No. 04-141, Report and Order, 19 FCC Rcd 22340 (2004) (*2004 Data Gathering Order*).

[9] *See id.* at 22347-48, para. 14.

[10] *See, e.g.*, NATOA *et al*. Comments at 8-9 ("We suggest one option the Commission consider be some sort of tiered approach in defining 'advanced telecommunications capability,' similar in approach to the manner in which the Commission currently obtains information on deployment. . . . By adopting the data collection tiers into the operational definition of 'advanced telecommunications services,' both quantity and quality of broadband deployment can be measured. As a result, all consumers, regardless of the speed of their selected service, will be counted."); TIA Comments at 7 ("Included in the Commission's January report on Internet access, is a set of 'tiers' of broadband divided by technologies and the transmission speeds made possible by them. . . . TIA recommends that the Commission, for purposes of assessment, use these tiers to identify what is available to the consuming public and the kinds of capabilities the tiers enable.") (citation omitted); CTIA Comments at 10 (arguing that the baseline definition should be maintained to allow the Commission to compile a full picture of the advanced telecommunications capabilities available to American consumers); Verizon/Verizon Wireless Comments at 32 (arguing that there is no reason to stop tracking entry-level broadband speeds that continue "to provide many consumers access to the applications and services they desire").

[11] We thus disagree that we should abandon consideration of information of services at the 200 kbps level. *See, e.g.*, APT Comments at 3 (arguing that the 200 kbps standard has outlived it usefulness); NASUCA Comments at 9 (stating its belief that the current definition of advanced services is out of date); NJ Rate Counsel Comments at 10 (arguing that the current speeds have become irrelevant). *But see, e.g.*, TIA Comments at 5 ("Despite the Commission's definition of broadband as 200 kbps, its deregulatory policies have spurred billions of dollars in investment and the availability of better broadband services. So, even though 200 kbps may not be an appropriate definition of broadband in today's market, it is important to note that the definition itself has done nothing to impede innovation.").

[12] For a discussion of the ConnectKentucky project, *see infra* para. 37.

[13] Connected Nation Comments at 2-3 (cautioning against the adoption of an inflexible definition of "advanced telecommunications capability" that might exclude particular technologies, such as the fixed wireless technologies that ConnectKentucky has found to be creative and cost effective solutions in some areas); *see also, e.g.*, OPASTCO

(continued....)

particular applications or services being used, which can in part be a function of other technological developments, such as advances in compression technology.[14] For example, in prior section 706 reports, the Commission has noted that at 200 kbps, consumers can enjoy the most popular applications, including web browsing and email, without the delay experienced by dial-up subscribers.[15] Commenters point out that other applications and services work best with higher-capacity broadband.[16] By examining broadband availability across various speed tiers, we can monitor the availability of broadband associated with a full range of technologies and services.

6. For the reasons described above, in this Report we evaluate the status of broadband according to the historical Form 477 data and terminology. In light, however, of the continuing evolution in technology and consumer demand for advanced telecommunications capability, the Commission must continue to evolve its data collection. The Commission is modifying the Form 477 data collection in order to allow the Commission to gather more detailed information about availability of and subscription to broadband services, such as by adding additional broadband speed tiers.[17]

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Comments at 11-12 (stating that it may be appropriate for the Commission to consider various speeds of broadband services as part of its section 706 analysis "since technological advancements and marketplace demands will likely render any one speed of broadband inappropriate. In addition, a speed-based definition risks rapid obsolescence, as new applications and compression technology change the dynamics of how consumers will utilize broadband. . . . Changes in marketplace demands and technological capabilities are too unpredictable at this point to make alterations based on pre-determined conditions."); NRTC Reply at 4 ("[T]he Commission must note the contribution of satellite and other wireless broadband providers that are delivering advanced telecommunications capabilities and take care not to exclude such providers from any benefits that might be derived from a definition that encompasses such lower speeds.").

[14] *See, e.g.*, OPASTCO Comments at 12.

[15] *See First Report*, 14 FCC Rcd at 2406, para. 20; *Second Report*, 15 FCC Rcd at 20920, para. 10; *Third Report*, 17 FCC Rcd at 2852, para. 11; *Fourth Report*, 19 FCC Rcd at 20551-52. As NATOA *et al*. point out, "the current speed of 200 kbps in each direction, according to the FCC's own report, 'permits users to play interactive games, use VoIP applications, listen to on-line music, and watch compressed video clips.' This functionality – for some – may be sufficient and, because of availability, cost or a combination of these and other factors, these consumers will choose not to upgrade their broadband service. As a result, if the definitional speed is raised higher than 200 kbps, these consumers, even though they have access to broadband, will not be counted. Thus, if we are more interested in getting an accurate assessment of broadband deployment across the country – quantity – we must be careful in not increasing the speed to such an extent that a significant undercount occurs." NATOA *et al*. Comments at 8 (citation omitted); *see also* TIA Comments at 6 ("While broadband continues to be offered at increasingly faster speeds and for some applications speeds as high as several megabits per second are necessary, it remains the case that in many circumstances speeds as low as 200 kbps may be appropriate.").

[16] *See, e.g.*, FTTH Council Comments at 9-10 (citing, for example, the need for capacity ranging from 6 mbps for analog video to 20 mbps for digital, high-definition video, and up to 60 mbps for future "Super HDTV" video, depending upon the compression technology); Consumers Union *et al*. Comments at 15, Fig. 3 (citing different download speeds associated with different applications).

[17] *See Deployment of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Notice of Proposed Rulemaking, 22 FCC Rcd 7760 (2007) (*2007 Data Gathering Notice*); *Deployment of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Report and Order and Further Notice of Proposed Rulemaking, FCC 08-89 (rel. Jun. 12, 2008) (*2008 Data Gathering Order*).

III. DEVELOPMENTS IN LAST-MILE TECHNOLOGIES SINCE THE *FOURTH REPORT*

7. There have been considerable changes and advances in the delivery of broadband since the *Fourth Report*. Here, we highlight a few of these advances for different broadband deployment technologies.

A. Cable Technologies

8. Cable modem technologies continue to provide high-speed data services over cable systems, and in many cases, voice services over the Data Over Cable Service Interface Specification (DOCSIS) platform using PacketCable or other voice over Internet Protocol (VoIP) standards. Since the *Fourth Report*, cable operators have continued to upgrade their hybrid fiber coaxial (HFC) networks and are working to deliver new or improved services to residential and, increasingly, business customers through bandwidth increases and savings. The Commission estimates that high-speed cable modem service is available to 96 percent of the households to which cable system operators could provide cable TV service.[18]

9. Further, cable companies have continued to upgrade the equipment used to deliver broadband services, including a throughput improvement that allows cable operators to deliver additional and more complex services, including VoIP.[19] On August 7, 2006, CableLabs announced the adoption of the new DOCSIS 3.0 specifications that enable cable operators to offer significantly higher data rates to their broadband customers.[20] Specifically, the DOCSIS 3.0 specifications enable downstream data rates of 160 mbps or higher and upstream data rates of 120 mbps or higher.[21] DOCSIS 3.0 also incorporates support for the Internet Protocol version 6 (IPv6), which is the next generation of the Internet Protocol (IP), and greatly expands the number of Internet addresses that operators may use, allowing them to provide consumers with more IP-based services.[22] This new specification promises secure delivery of advanced interactive video that would otherwise require complex engineering in the networks and substantial upgrades to the plant.

10. The transition to DOCSIS 3.0 will take place in two phases. First, the operators must replace the Cable Modem Termination System (CMTS) equipment in the network before offering the service.

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[18] *See* Appendix B, Table 14.

[19] "Throughput" is the actual amount of useful and non-redundant information which is transmitted or processed. *See* Harry Newton, Newton's Telecom Dictionary at 832 (20th ed. 2004).

[20] CableLab's DOCSIS continues to be the dominant standard used to provide high-speed Internet service for cable operators. Cable operators previously have deployed DOCSIS 1.0, 1.1, and 2.0 throughout their systems, allowing capacities of up to 30 mbps. DOCSIS 3.0 has fully replaced the cancelled 2.0b specification, which was identified only as an interim solution.

[21] *See* Press Release, CableLabs, *CableLabs Issues DOCSIS 3.0 Specification Enabling 160 Mbps* (Aug. 7, 2006), *available at* http://www.cablelabs.com/news/pr/2006/06_pr_docsis30_080706.html. To achieve these higher data rates, DOCSIS 3.0 specifies a methodology called channel bonding – a load-sharing technique for logically combining multiple DOCSIS channels – in both the upstream and downstream directions. Downstream channel bonding is possible for a minimum of four channels, approximately 38 mbps each, for a total of more than 140 mbps shared throughput. Upstream channel bonding is possible for a minimum of four channels, 10 to 30 mbps each, for a total of 40 to 120 mbps of shared throughput. *See* John T. Chapman and Shalabh Goel, *The Road to DOCSIS 3.0* (Dec. 1, 2006), *available at* http://www.cable360.net/ct/sections/features/20942.html.

[22] *See* Press Release, CableLabs, *CableLabs Issues DOCSIS 3.0 Specification Enabling 160 Mbps* (Aug. 7, 2006), *available at* http://www.cablelabs.com/news/pr/2006/06_pr_docsis30_080706.html.

Second, partly by a process of natural replacement over time, the cable modems and set-top boxes in consumers' homes will be replaced with DOCSIS 3.0-compatible equipment.[23] Some cable multiple system operators (MSOs) soon will begin to deploy DOCSIS set-top gateways (DSGs), which support more bandwidth intensive interactive video services and provide easier integration of multi-vendor solutions, in addition to supporting the upcoming OpenCable Application Platform (OCAP).[24]

11. The cable industry is also continuing work on its Next Generation Network Architecture (NGNA) project to advance cable operators' transition to all-digital networks and to provide an alternative software-based conditional access system that supports cable operators' existing security. The non-profit company Polycipher intends to continue the work NGNA had begun on the downloadable conditional access system (DCAS) software-based security platform.[25] Further, NGNA intends to unify cable's IP and moving pictures expert group (MPEG) video infrastructures in an effort to drive down equipment costs, reclaim valuable HFC spectrum, and enable high-value digital services. Fulfilling the NGNA vision requires a new class of Digital IP Cable Edge devices that integrate the functionality of a high-density edge quadrature amplitude modulation (QAM) modulator platform, DOCSIS CMTS, and video processing. Ultimately, IP traffic (data, voice, and video) and MPEG traffic (broadcast and on-demand standard and high-definition video) will flow over a common Gigabit Ethernet backbone to the cable network edge. There, the NGNA edge platform will dynamically route the service to the appropriate customer premises device, whether MPEG set-top, IP set-top, cable modem, or PacketCable electronic message transfer agent (E-MTA).[26]

B. Copper Technologies

12. Local telephone carriers primarily use digital subscriber line (DSL) service offerings to provide consumers with broadband services where they have not deployed fiber technologies. As of June 2007, there were over 23.3 million broadband DSL connections.[27] The variety and speed of DSL service offered continues to increase as carriers more fully realize the potential of copper-based technologies. Next generation network facilities, such as asymmetric DSL 2+ (ADSL2+), are capable of offering customers broadband connections of up to 25 mbps, while very high-speed asymmetrical DSL (VDSL2) can achieve speeds of 100 mbps at distances of a few hundred feet and 25 mbps at around 2,500 feet.[28]

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[23] Press Release, ABI Research, *DOCSIS 3.0 Penetration to Reach 60% by 2011* (Aug. 23, 2006), *available at* http://www.abiresearch.com/abiprdisplay.jsp?pressid=710. Many major cable modem vendors, including BigBand Networks, Arris, and Cisco, participated in a weeklong interoperability event in July 2006, and all companies' downstream channel bonding products were able to interoperate with each other. In addition, the vendors successfully performed limited IPv6 testing.

[24] *See* CableLabs OpenCable Website (visited June 25, 2007), *available at* http://www.opencable.com/. The DSGs have embedded DOCSIS modems for the purpose of migrating traditional cable Out of Band (OOB) messaging from a proprietary to standards-based transport. OOB signals typically include conditional access, system information, electronic programming guide (EPG), and emergency alert system (EAS) data.

[25] *See* Jeff Baumgartner, *Polycipher Key to Cable's Downloadable Conditional Access Effort*, CED Magazine (Aug. 17, 2006), *available at* http://www.cedmagazine.com/article.aspx?id=120534.

[26] *See* Light Reading's Cable Digital News, *Next-Generation Network Architecture (NGNA)* (Oct. 30, 2006), *available at* http://www.lightreading.com/document.asp?doc_id=109381&site=cdn.

[27] *See* Appendix B, Table 2.

[28] *See* Covad Comments at 3; NuVox/XO Comments at 5; Telecommunications Industry Association, *2007 Technology & Policy Primer* at 32 (visited July 30, 2007), *available at* http://www.tiaonline.org/policy/publications/white%5Fpapers/documents/TIA2007Primer.pdf.

13. In addition to DSL, carriers are using copper-based technologies to provide other services. For instance, copper loops can provide Ethernet services at speeds approximating 50 mbps on loops of up to 12,000 feet.[29] Advanced services, like Internet Protocol television (IPTV) and high-definition television (HDTV), are also now available over copper-based networks.[30]

C. Fiber Technologies

14. Fiber technology deployments have increased dramatically since the *Fourth Report.* Specifically, at the time of the *Fourth Report*, fiber-to-the-home (FTTH) was just beginning to impact the market for advanced telecommunications services, but has since experienced marked growth. For example, Verizon's FiOS FTTH network offers speeds of up to 30 mbps downstream and up to 5 mbps upstream (and even up to 50 mpbs downstream and up to 10 mbps upstream in select locations) and is now available to 6.8 million homes and businesses.[31] Carriers have also deployed other fiber technology offerings such as fiber-to-the-curb (FTTC) and fiber-to-the-node (FTTN), where fiber is deployed from the central office to a location near – but not all the way to – the customer's premises. The fiber is connected to an optical network unit (ONU) or similar electronics at that location, from which copper and, often, coaxial cable are connected to each customer premises.[32] For example, AT&T is in the process of deploying its "U-Verse" offering, which will include IP-based video, broadband, and VoIP services, to 18 million households through a combination of FTTN and FTTH by the end of 2008.[33] In addition, many small providers are deploying FTTH networks.[34]

D. Unlicensed Wireless Technologies

1. Wi-Fi

15. Since the *Fourth Report*, Wireless Fidelity (Wi-Fi) access to the Internet has continued to grow with an ever-increasing number of hotspots, *i.e.*, a place where the public can access Wi-Fi service, either for free or for a fee.[35] Also, a number of cities have joined the Wi-Fi expansion with municipal

[29] *See, e.g.*, Covad Comments at 4-7; NuVox/XO Comments at 4-5.

[30] *See* NuVox/XO Comments at 5.

[31] *See* FTTH Council Comments at 4; Verizon/Verizon Wireless Comments at 1; News Release, Verizon Communications Inc., *Innovation and Telecom Companies' Advanced Networks Power Telecom Future, Seidenberg Tells NXTcomm; Broadband, IP and Mobility are Key for Customers; Verizon FiOS All-Fiber Network Now Connected to More Than 1 Million Internet and Nearly 500,000 TV Customers, Seidenberg Say* (June 20, 2007), *available at* http://newscenter.verizon.com/press-releases/verizon/2007/innovation-and-telecom.html.

[32] *See, e.g.*, Letter from Glenn Reynolds, Vice President – Federal Regulatory, BellSouth, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Att. at 6 (filed Sept. 17, 2003).

[33] *See* AT&T, Media Kits (visited July 30, 2007), *available at* http://www.att.com/gen/press-room?pid=5838.

[34] *See* FTTH Council and TIA, *FTTH/FTTP UPDATE* at 11-12 (Apr. 1, 2007), *available at* http://www.ftthcouncil.org/documents/800832.pdf (noting that 341 small providers have deployed FTTH).

[35] Wi-Fi refers to any device using the 802.11 family of standards developed by the Institute of Electrical and Electronics Engineers (IEEE) for wireless local area networking. The IEEE 802.11 family of standards for Wi-Fi include 802.11a for networking devices using the 5 GHz frequency band at speeds up to 54 mbps; 802.11b for networking devices using the 2.4 GHz frequency band at speeds up to 11 mbps; 802.11g for networking devices using the 2.4 GHz frequency band at speeds up to 54 mbps; and the latest draft standard 802.11n, scheduled to be ratified in 2008, for networking devices using either the 2.4 GHz or 5 GHz frequency band with promises of maximum speeds up to 600 mbps. Although 802.11n is still in draft form, the Wi-Fi Alliance has begun certifying products to this draft standard, which has promoted market availability of pre-802.11n certified products. *See*

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wireless networks.[36] As of August 2007, MuniWireless's website estimates that there are 415 cities and counties in the United States deploying, planning, or running Wi-Fi networks.[37] Wi-Fi computer chips are also becoming ubiquitous and are appearing in devices such as memory cards for digital cameras, allowing the camera to send digital photos directly to a Wi-Fi-enabled printer or to any Internet photo processing website.[38]

16. Where communication between Wi-Fi-enabled devices has generally consisted of data communication from devices such as computers and personal digital assistant devices, Wi-Fi-enabled telephones now allow voice communication over the Internet using VoIP at any Wi-Fi hotspot.[39] As more companies, cities, and households develop Wi-Fi networks, Wi-Fi phones are becoming more useful. For example, some wireless carriers are providing or planning to provide dual-mode hybrid mobile phones that use both Wi-Fi and mobile networks.[40] In addition, some VoIP service providers have partnered with hardware manufacturers to release cell-like mobile phones that can use their services via Wi-Fi

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Marguerite Reardon, *Wi-Fi Alliance to Begin Certifying 802.11n Gear*, News.com (May 16, 2007), *available at* http://news.zdnet.com/2100-1035_22-6184282.html. Wi-Fi networks operate on an unlicensed basis under Part 15 of the Commission's rules, in the 2.4 and 5 GHz frequency bands. With the latest 802.11n draft standard, Wi-Fi networks can provide multiple data rates over 200 mbps. *See* Eric Bangeman, *802.11n Specs Moves Closer to Completion,* Ars Technica (Jan. 19, 2007), *available at* http://arstechnica.com/news.ars/post/20070119-8662.html; *see also* Broadcom White Paper, *802.11n: Next Generation Wireless LAN Technology* (April 2006), *available at* http://www.broadcom.com/docs/WLAN/802_11n-WP100-R.pdf. A Wi-Fi network is comprised of one or more base stations or Access Points (AP) that enable communication between any Wi-Fi equipped wireless device, such as a personal computer or a mobile telephone, that comes within 300 feet (100 m) of an AP. The range of an 802.11x (a, b, or g) Wi-Fi device is approximately 300 feet (100 m), whereas an 802.11n Wi-Fi device typically can deliver more than twice the range. *See* David Naskin, *FAQ: 802.11n Wireless Networking*, Computerworld (May 16, 2007), *available at* http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=9019472. Wi-Fi networks often rely on another type of broadband connection for access to the Internet. *See Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, WT Docket No. 07-53, Declaratory Ruling, 22 FCC Rcd 5901, 5907, para. 15 (2007) (*Wireless Broadband Internet Access Services Order*).

[36] According to JiWire, Inc., there are 58,197 hotspots in the United States. *See* JiWire, Inc. Website (visited Aug. 20, 2007), *available at* http://www.jiwire.com/hot-spot-directory-browse-by-state.htm?country_id=1&provider_id=0. Further, Wi-Fi networks are demonstrating their importance in homeland security measures as well. *See* Carol Wilson, *Wi-Fi Fills Cracks*, Telephony Online (Aug. 20, 2007), *available at* http://telephonyonline.com/home/news/telecom_wifi_fills_cracks/ (noting that the Minneapolis Wi-Fi network aided rescue workers following the collapse of the I-35 bridge).

[37] A list of municipal Wi-Fi networks is available at http://www.muniwireless.com/article/articleview/13/1/24/ (visited Aug. 20, 2007); *see also Microsoft, MetroFi team,* Light Reading (Nov. 15, 2006), *available at* http://www.lightreading.com/document.asp?doc_id=110669&print=true.

[38] *See* Michael Kanellos, *Wi-Fi Memory Cards Coming to Cameras,* CNET News.com (June 10, 2007), *available at* http://news.com.com/Wi-Fi+memory+cards+coming+to+cameras/2100-1041_3-6189671.html.

[39] Several manufacturers are offering Wi-Fi mobile phones. *See* Peter Jacobson, *Wi-Fi Phones Buyer's Guide,* Information Week (Feb. 1, 2007), *available at* http://www.informationweek.com/story/showArticle.jhtml?articleID=196901394.

[40] *See, e.g.*, Amol Sharma, *How Wi-Fi Can Extend T-Mobile Range,* Wall St. J., May 3, 2007, at B3, *available at* http://online.wsj.com/article/SB117815938377190497.html; *see also infra* para. 26 (discussing these dual-mode hybrid mobile phones). These handsets allow the consumer to take advantage of Wi-Fi networks when they are available, and use the mobile networks the rest of the time.

networks.[41] According to Infonetics Research, Wi-Fi phone sales reached $535 million in 2006, a 327 percent growth from 2005.[42]

2. WiMAX

17. Worldwide Interoperability for Microwave Access (WiMAX)[43] has made large strides in part due to the adoption of the IEEE 802.16e-2005 standard.[44] Activities on WiMAX deployments in terms of products shipped have accelerated since the end of 2006. Intel Corp. released its WiMAX system-on-chip, the WiMAX Connection 2250, in late 2006, and companies such as Motorola, Alcatel, and Proxim are planning to integrate the Intel chip into their WiMAX system designs.[45] To date, carrier use of the WiMAX technology has largely come in two areas: as a backhaul service for cellular, operating as an alternative to T1 lines or point-to-point fiber links; or in conjunction with Wi-Fi meshes to provide tiered mesh services in larger metropolitan areas.[46] However, as mobile WiMAX devices become available,[47]

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[41] *See supra* note 39.

[42] *See Wi-Fi, Mobile Phone Sales Soar in 2006 - Dual-mode Wi-Fi/Cellular VoIP Phones Ramping Up,* Government Technology (Jan. 25 2007), *available at* http://www.govtech.com/dc/articles/103532.

[43] WiMAX refers to any device using the IEEE 802.16 standard for wireless metropolitan area networking and operates on the same general principles as Wi-Fi by allowing communication between WiMAX enabled devices and providing them with a gateway to the Internet. A WiMAX system consists of two parts: (1) a WiMAX tower, similar to a cell-phone tower that connects to the Internet using a high-bandwidth wired connection, such as a T3 line; and (2) WiMAX-enabled receivers in mobile devices such as laptop computers or dual mode hybrid mobile phones. A WiMAX tower can connect to another WiMAX tower using a line-of-sight, microwave link, thereby creating a backhaul connection. With its wide range coverage and tower-to-tower connection, WiMAX is capable of delivering last-mile broadband to remote rural areas. Providers tout WiMAX delivery of broadband at 75 mbps, under ideal circumstances, and reach up to 30 miles. *See Fifth Report Notice*, 22 FCC Rcd at 7823, n.30. In contrast, the Wi-Fi/802.11 wireless local area network standard is limited in most cases to only 100-300 feet. WiMAX operates on both licensed and unlicensed frequencies. The 802.16 standard specifies a range of operating frequencies from 2 to 66 GHz. Initial WiMAX products operate in the internationally available 2.3 GHz, 2.5 GHz, 3.3 GHz and 3.4-3.8 GHz licensed bands, and WiMAX computer chips for use in the 5.8 GHz unlicensed bands are becoming available. *See* WiMAX Forum, *Mobile WiMAX – Part I: A Technical Overview and Performance Evaluation* at 49 (Feb. 21 2006), *available at* http://www.wimaxforum.org/technology/downloads/Mobile_WiMAX_Part1_Overview_and_Performance.pdf. In the U.S., service providers use the 2.3 GHz (Horizon Wi-Com) and 2.5 GHz (Clearwire Corp. and Sprint Nextel) licensed bands. *See* WiMAX Forum, *Wavesat Announces Availability of World's First 5.8 GHz WiMAX Mini-PCI Design* (May 30, 2007), *available at* http://www.wimaxforum.org/news/pr/view?item_key=7e567f8255fcd06753d7129a63ef2dc3e9e4162f. To promote interoperability and compliance with the 802.16 standard among equipment from various manufacturers, trade associations such as the WiMAX Forum provide a certification program, which allows vendors to display a "WiMAX Forum Certified" designation on their products. The WiMAX Forum maintains a product registry of all WiMAX certified products at http://www.wimaxforum.org/kshowcase/view/catalog_search (visited June 24, 2007). To date, there are over two dozens of WiMAX Forum-Certified base stations and subscriber stations.

[44] IEEE 802.16-2004 standard defines the air interface for fixed WiMAX stations. Mobile WiMAX implementations follow IEEE 802.16e-2005 standard.

[45] *See* Colleen Taylor, *Intel Debuts WiMAX Chip,* Electronic News (Oct. 12, 2006), *available at* http://www.edn.com/index.asp?layout=articlePrint&articleID=CA6380414.

[46] *See* Loring Werbel, *Pushing Past Trials, WiMAX Footprint Grows*, EETimes (July 17, 2006), *available at* http://www.eetimes.com/showArticle.jhtml?articleID=190400387.

consumer services and applications as well as enterprise network solutions are accelerating WiMAX growth.[48] Commercial WiMAX deployments are expected to begin by the end of 2007.[49]

3. Wireless Personal Area Network

18. Wireless Personal Area Networks (WPANs) are growing with the advent of wireless USB,[50] a wireless type of networking using ultra-wideband (UWB) radio technology.[51] Wireless USB uses the unlicensed 3.4-10.6 GHz frequency band for UWB communication devices and aims at eliminating cables to allow computer peripherals and multi-media devices to interconnect.[52] Wireless USB offers speeds up to 480 mbps over a range of 30-45 feet. In-Stat estimates that by late 2007, computers and high-end multi-media devices will have certified wireless USB devices built into them, replacing the traditional wired USB connection port.[53]

E. Licensed Wireless Technologies

19. Wireless broadband technologies operating on licensed spectrum allow consumers to access the Internet at high speeds on a mobile, portable, or fixed basis using a mobile phone or a laptop computer with a wireless modem. Since the *Fourth Report*, wireless operators have greatly expanded and upgraded their broadband networks to allow subscribers access to the Internet while mobile via a laptop computer

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[47] *See* W. David Gardner, *WiMAX Modems Expected in Late 2007*, Information Week (June 15, 2007), *available at* http://www.informationweek.com/shared/printableArticle.jhtml?articleID=199904800; *see also* Stephen Lawson, *Mobile WiMAX Gear Lifts Off,* IDG News Service (Apr. 10, 2007), *available at* http://wireless.itworld.com/4273/070410wimax/page_1.html.

[48] *See* Stephen Lawson, *Samsung to Aim WiMAX at SMB Networking*, Wash. Post (May 23, 2007), *available at* http://www.washingtonpost.com/wp-dyn/content/article/2007/05/23/AR2007052300054.html.

[49] *See* W. David Gardner, *Mobile WiMAX Commercial Launch Planned for Northeast Region in August*, Information Week (June 29, 2007), *available at* http://www.informationweek.com/showArticle.jhtml;jsessionid=KRCV4F3J5HTSSQSNDLPCKH0CJUNN2JVN?articleID=200001684&queryText=wimax; Peter Svensson, *Sprint Sees Growth Beyond Cell Phones*, Associated Press (Aug. 31, 2007), *available at* http://biz.yahoo.com/ap/070831/market_spotlight_sprint.html?.v=1. We note that WiMAX technology can be deployed in both licensed and unlicensed spectrum bands, depending on the particular standard and network architecture employed. *See infra* para. 19.

[50] Universal Serial Bus (USB) refers to the common plug-and-play, high-speed computer bus used to connect peripheral devices to a computer. There are two versions of USB. USB 1.0, the older version, transfers data at speeds up to 12 mbps. USB 2.0 can achieve data transfer rates up to 480 mbps.

[51] *See* Cameron Wilmot, *Intel Demonstrates fast new Ultra-Wideband WPAN at IDF Fall Taiwan 2006*, Tweaktown.com (Oct. 17, 2006), *available at* http://www.tweaktown.com/articles/968/. A WPAN is a computer network used for communication among personal devices close to the same person such as between a headset and a personal audio CD or MP3 player, or between a digital camera and a laptop computer. WPAN can be used for communication between the personal devices themselves, or for connecting to a higher-level network, such as a home network between two or more computers, and to the Internet. WPAN uses point-to-point or peer-to-peer technology without the need for a wireless router, thus reducing infrastructure costs. Because the UWB part of WPAN allows for very fast maximum throughput rates of up to 480 mbps at a range of 30 feet or less (the same as Bluetooth), which matches that of wired USB 2.0 (480 mbps), Intel is promoting WPAN as USB without wires. *See id.* UWB operates on an unlicensed basis under Part 15 of the Commission's rules.

[52] *See* 47 C.F.R. § 15.517.

[53] *See Wireless USB to Soar in 2007*, Test & Measurement World (May 10, 2007), *available at* http://www.tmworld.com/article/CA6440967.html.

or Personal Digital Assistant (PDA) with a wireless modem card, or to download a range of multimedia content and advanced applications on certain mobile handset models. Some Code Division Multiple Access (CDMA) carriers have deployed 1xEV-DO (EV-DO) and EV-DO Revision A (Rev A) network technologies across their networks.[54] With EV-DO, typical users experience download speeds from 400-700 kbps and upload speeds of 50-70 kbps.[55] The EV-DO Rev A network upgrade increases these average download speeds to 600 kbps-1.4 mbps and significantly improves average upload speeds to 350-800 kbps.[56] The Commission estimates that, as of mid-2007, EV-DO/EV-DO Rev A networks had been deployed to approximately 82 percent of the U.S. population.[57] In addition to the EV-DO deployments by CDMA wireless carriers, some GSM carriers have upgraded portions of their networks with Wideband CDMA/High Speed Downlink Packet Access (WCDMA/HSDPA) technology, which enables mobile broadband access at average user download speeds of 400-700 kbps.[58] The Commission estimates that, as of mid-2007, WCDMA/HSDPA networks covered approximately 43 percent of the U.S. population.[59]

20. In addition, wireless operators in the 2.5 GHz Broadband Radio Service (BRS) and Educational Broadband Service (EBS) and 2.3 GHz WCS spectrum have begun rolling out, or have announced plans to deploy, wireless broadband services using Orthogonal Frequency Division Multiplexing (OFDM) technologies, including WiMAX and similar technologies.[60] Because OFDM

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[54] *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, WT Docket No. 04-111, Ninth Report, 19 FCC Rcd 20597, 20652-53, para. 134 (2004) (*Ninth CMRS Competition Report*); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, WT Docket No. 06-17, Eleventh Report, 21 FCC Rcd 10947, 10993, para. 112 (2006) (*Eleventh CMRS Competition Report*); News Release, Verizon Wireless, *Verizon Wireless: 100 Percent of Wireless Broadband Network Now Enhanced with Faster Speeds* (June 29, 2007), *available at* http://news.vzw.com/news/2007/06/pr2007-06-28h.html (Verizon Wireless June 29, 2007 News Release).

[55] *See* News Release, Sprint Nextel, *Sprint Powers Up Faster Mobile Broadband Network in 10 More Markets, Upgraded Coverage Reaches 60 Million People* (Dec. 12, 2006), *available at* http://www2.sprint.com/mr/news_dtl.do?id=14680; 3G Americas, *3G Technologies* (visited July 3, 2007), *available at* http://www.3gamericas.com/English/PDFs/3G_technology_comparison.pdf (3G Americas website). The maximum peak download speed for EV-DO is 2.4 mbps. *See* 3G Americas website.

[56] *See* News Release, Sprint Nextel, *America's Largest and Fastest Mobile Broadband Network Just Got Even Larger – Sprint Customers Can Do More, In More Places, And At Fast Speeds* (June 19, 2007), *available at* http://www2.sprint.com/mr/news_dtl.do?id=17121 (Sprint Nextel June 19, 2007 News Release); Verizon Wireless June 29, 2007 News Release. The maximum peak download speed for EV-DO is 3.1 mbps. *See* 3G Americas website.

[57] Commission estimate based on service area boundary maps provided by American Roamer and census block analysis of population covered.

[58] *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, WT Docket No. 05-71, Tenth Report, 20 FCC Rcd 15908, 15953 (2005) (*Tenth CMRS Competition Report*); *see also, e.g.*, News Release, Cingular Wireless, *Cingular Wireless Completes $86 Million Investment in Las Vegas During 2006 – Delivers Wireless Innovation* (Jan. 30, 2007), *available at* http://att.centralcast.net/cingularnewsarchive/Release.aspx?ID=4224.

[59] Commission estimate based on service area boundary maps provided by American Roamer and census block analysis of population covered.

[60] *See, e.g.*, *Eleventh CMRS Competition Report*, 21 FCC Rcd at 10962, para. 32 (noting that several small BRS/EBS licensees offer wireless broadband services in rural areas of the country using technologies that employ OFDM); News Release, Sprint Nextel, *Sprint Nextel Cites WiMAX Network Progress for 2007* (Jan. 8, 2007),

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allows signals to pass through buildings and trees, carriers can use the technology to offer wireless broadband services without a direct line-of-sight between the transmitter and the end user's receiver.[61] Therefore, many of the services offered using OFDM technology allow customers to access the Internet with portable "plug-and-play" modem devices connected to a personal or laptop computer, rather than a fixed antenna mounted on a rooftop, allowing customers to transport these devices to other locations within the carrier's coverage area where a network signal is available and in some cases use them while traveling at high speeds.[62]

21. As of June 2007, 35.3 million mobile wireless devices capable of accessing the Internet over high-speed lines were in use, versus almost none at the end of 2003.[63] In addition, the Commission estimates that, as of mid-2007, providers have deployed mobile broadband networks to areas of the country containing 233 million people, or 82 percent of the U.S. population.[64]

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available at http://www2.sprint.com/mr/news_dtl.do?id=15000; News Release, Horizon Wi-Com, *Horizon Wi-Com Selects Navini for Wireless Deployment* (Jan. 15, 2007), *available at* http://www.wcai.com/pdf/2007/p_naviniJan12.pdf (Horizon Wi-Com Jan. 15, 2007 News Release); News Release, Clearwire Corporation, *Richmond First in Virginia to Experience Clearwire Wireless Broadband Service* (June 5, 2007), *available at* http://www.clearwire.com/company/news/06_05_07_b.php; W. David Gardner, *WiMax Networks Go Live in Nine Northeast Cities*, InformationWeek (June 13, 2007), *available at* http://www.informationweek.com/showArticle.jhtml;jsessionid=OPFNJOZNUB2L0QSNDLOSKH0CJUNN2JVN?articleID=199903928&queryText=WiMax+Networks+Go+Live+in+Nine+Northeast+Cities (noting that Horizon Wi-Com purchased its WCS licenses from Verizon in 2006); News Release, Sprint Nextel, *Sprint Nextel and Clearwire to Partner to Accelerate and Expand the Deployment of the First Nationwide Mobile Broadband Network Using WiMAX Technology* (July 19, 2007), *available at* http://www2.sprint.com/mr/news_dtl.do?id=17520; *supra* para. 17 (discussing WiMAX technology). As one of the conditions of the August 2005 merger of Sprint and Nextel, the Commission required the merged company to fulfill its voluntary commitment to provide service in the 2.5 GHz band. The merged company is required to offer service using its BRS/EBS spectrum to at least 15 million Americans by August 2009 and to an additional 15 million Americans by August 2011. *See Applications of Nextel Communications, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations*, File Nos. 0002031766, *et al.*, WT Docket No. 05-63, Memorandum Opinion and Order, 20 FCC Rcd 13967, 14028-29, para. 165 (2005). In June 2007, the merged company reported that it expected to meet and exceed those requirements. *See* Howard Buskirk, *Sprint Says It Easily Will Exceed Buildout Requirements*, Comm. Daily at 9 (June 15, 2007). The AT&T/BellSouth merger also resulted in merger commitments by AT&T to offer mobile and fixed wireless broadband service to 25% of the population covered by its WCS licenses (excluding Alaska) by July 21, 2010. *See AT&T Inc. and BellSouth Corporation Application for Transfer of Control*, WC Docket No. 06-74, Memorandum Opinion and Order, 22 FCC Rcd 5662, 5816 (2007). AT&T also agreed to divest its 2.5 GHz BRS/EBS spectrum, and in May 2007, Clearwire completed the acquisition of this spectrum. *See* News Release, Clearwire Corporation, *Clearwire Completes Acquisition of AT&T Mobile WiMAX Spectrum* (May 31, 2007), *available at* http://www.clearwire.com/company/news/05_31_07.php.

[61] *See Eleventh CMRS Competition Report*, 21 FCC Rcd at 10995, para. 119.

[62] *See id.*

[63] *See* Appendix B, Table 1.

[64] Commission estimate based on service area boundary maps provided by American Roamer and census block analysis of population covered.

F. Broadband over Power Lines Technologies

22. Since the *Fourth Report*, the broadband over power line (BPL) industry continues to evolve.[65] There are two types of BPL. Access BPL carries broadband to the customer and acts as a last-mile technology.[66] Access BPL alleviates the need to build broadband infrastructure to every customer because power lines are installed virtually everywhere in the United States.[67] In-House BPL provides home networking within the customer's premises.[68] Since a provider can route In-House BPL to any power outlet, it enjoys certain advantages over wireless networks when it comes to penetrating through walls and buildings.

23. New BPL companies and technologies are entering the marketplace and new strategies are emerging. Utility companies have formed strategic partnerships with BPL equipment manufacturers to facilitate deployment.[69] Utilities are also focusing on using BPL to improve their own services, including

[65] *See Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems; Carrier Current Systems, Including Broadband Over Power Line Systems*, ET Docket Nos. 04-37, 03-104, Report and Order, 19 FCC Rcd 21265, 21266, paras. 1-2 (2005) (*Access BPL Order*), *appeal pending*, *ARRL v. FCC*, Docket No. 06-1343 (D.C. Cir. filed Oct. 10, 2006); *Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems; Carrier Current Systems, including Broadband over Power Line Systems*, ET Docket Nos. 04-37, 03-104, Memorandum Opinion and Order, 21 FCC Rcd 9308 (2006) (*Access BPL Reconsideration Order*), *appeal pending*, *ARRL v. FCC*, Docket No. 06-1343 (D.C. Cir. filed Oct. 10, 2006); United Power Line Council, *Status of Broadband over Power Line 2007* (visited June 26, 2007), *available at* http://uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/2007+BPL+Update.pdf. BPL is the delivery of broadband over the existing medium- and low-voltage electric power distribution network. *See Access BPL Order*, 19 FCC Rcd at 21267-68, para. 5.

[66] Although several proprietary Access BPL technologies exist, they function similarly by attaching "couplers" to medium voltage power lines, typically at intervals of less than a mile, that process and/or repeat digital signals between the end-user customer premises and the point where the utility network connects to the Internet at its backhaul connection point. *See Access BPL Order*, 19 FCC Rcd at 21267-68, para. 5.

[67] There are over a dozen Access BPL devices certified under our rules. *See* FCC, Equipment Authorization System Generic Search (visited July 26, 2007), *available at* https://gullfoss2.fcc.gov/oetcf/eas/reports/GenericSearch.cfm (searching the Commission's database for grants of Access BPL equipment). Because BPL injects radio frequency (RF) energy into unshielded medium voltage lines, the technology creates RF emissions, which raise concerns of potential harmful interference with incumbent users of the spectrum. The American Radio Relay League (ARRL) has filed for judicial review of the *Access BPL Order* and the *Access BPL Reconsideration Order*. *See ARRL v. FCC*, Docket No. 06-1343 (D.C. Cir. filed Oct. 10, 2006) (appealing the Commission's BPL rules on the contention that, among other things, they fundamentally alter the longstanding rights of radio spectrum licensees, including amateur radio operators). The Commission's BPL orders impose specific requirements to minimize this interference, and the BPL industry has responded with second-generation Access BPL equipment in compliance with the new rules. *See* 47 C.F.R. § 15.601 *et seq.*

[68] *See Access BPL Order*, 19 FCC Rcd at 21267-68, para. 5.

[69] For example, ConEdison Company of New York, Duke Energy Corporation, and San Diego Gas & Electric are working with Ambient Corporation for their BPL equipment. *See* Ambient Corporation Website (visited Aug. 6, 2007), *available at* www.ambientcorp.com. PPL Telcom, Northeast Utilities System, and Duquesne Light are working with Amperion for their BPL equipment. *See* Amperion Website (visited Aug. 6, 2007), *available at* www.amperion.com. PEPCO, Duke Energy Corporation, Texas Utilities (TXU), and Hawaiian Electric Company (HECO) are working with Current Technologies for their equipment. *See* Current Technologies Website (visited Aug. 6, 2007), *available at* www.currenttechnologies.com. Central Virginia Electric Cooperative and South Central Indiana REMC are working with International Broadband Electric Communications (IBEC) for their BPL equipment. *See* International Broadband Electric Communications, Inc. Website (visited Aug. 6, 2007), *available at* www.ibec.net.

a variety of utility and energy "smart grid" applications, such as advanced metering for time-of-use pricing, load management, and power outage warning and detection.[70] There are approximately 36 BPL deployments around the country in both rural and suburban areas, nine of which are commercial deployments and the remaining 27 of which are either pilot or trial deployments.[71] Currently, most BPL systems provide symmetrical speeds upwards of 2 mbps to the customer.

G. Satellite Technologies

24. Satellite-based Internet access services are an option for consumers that live in areas where wireline, cable, or terrestrial wireless Internet access is unavailable.[72] With a few exceptions, none of the three most widely subscribed satellite-based Internet access services satisfies, however, the Commission's definition of advanced services, which calls for a minimum transmission speed of in excess of 200 kbps downstream and upstream.[73] Satellite services account for only approximately 0.7 percent of the total high-speed lines in the United States.[74] Satellite technology continues to evolve, however. Recently launched Ka-Band satellites promise improved coverage and higher speeds for upstream and downstream

[70] *See Access BPL Order*, 19 FCC Rcd at 21267-68, para. 5.

[71] *See* United Power Line Council, *BPL Deployment Map 2007* (visited June 26, 2007), *available at* http://uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/BPL+Deployment+Map+2007.pdf; United Power Line Council, *Status of Broadband over Power Line 2007* (visited June 26, 2007), *available at* http://uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/2007+BPL+Update.pdf.

[72] With the commencement of service by WildBlue Communications in June 2005, there are now three providers of satellite-based high-speed Internet access serving the residential, small office/home office, and small business market segments, including HughesNet, the successor to the DirecWay Service, and Starband, a subsidiary of Gilat Satellite Networks. As of June 2007, all three companies offer a variety of service plans with each requiring installation of satellite equipment. *See* HughesNet Website (visited June 18, 2007), *available at* http://www.hughesnet.com; Starband Inc. Website (visited June 18, 2007), *available at* http://starband.com/services/; WildBlue Communications Website (visited June 18, 2007), *available at* http://www.wildblue.com.

[73] Most satellite services provide downstream speeds in excess of 200 kbps. Upstream speeds, with a few exceptions, are slower. *See, e.g.*, WildBlue Packages (visited Aug. 20, 2007) (describing "Value Pak" service with speeds up to 512 kbps downstream and up to 128 kbps upstream, "Select Pak" services with speeds up to 1 mbps downstream and up to 200 kbps upstream, and "Pro Pak" service with speeds up to 1.5 mbps downstream and up to 256 kbps upstream), *available at* http://www.wildblue.com/aboutWildbue/qaa.jsp.

[74] *See* Appendix B, Table 1. Approximately 79% of satellite high-speed lines are for residential use. *See id.*, Tables 1, 3.

service.[75] Satellite technology is also increasingly being developed and deployed for last-mile Internet connectivity to mobile platforms, such as airplanes, ships and automobiles.[76]

IV. NEW DEVELOPMENTS IN SERVICES, APPLICATIONS AND DEVICES

25. Advances in the delivery of broadband since the *Fourth Report* have been paralleled by advances in broadband-based services and applications, as well as the devices used to run or access such services and applications. These evolving services, applications and devices continue to revolutionize how Americans exchange information.

26. *Voice Developments*. The wireless industry has recently made available mobile devices that connect to both traditional commercial mobile radio service (CMRS) and Wi-Fi networks for voice and data access.[77] These devices can move seamlessly between the two types of networks without dropping a call. This development exemplifies the convergence of wireless and wireline networks, as home or in-building Wi-Fi hot spots typically rely on technologies such as DSL, cable, fiber, or T-1 lines for access to the Internet.

27. In addition, in light of faster broadband speeds becoming available to consumers and improvements in VoIP technology, more Americans are subscribing to interconnected VoIP services.[78]

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[75] Ka-Band refers to frequencies in the 18 to 40 GHz range. Commercial satellite use of this band is a relatively recent development, focused primarily on the 17.7-20.2 GHz (downlink) and 27.5-30.0 GHz (uplink) frequency bands. In March 2007, WildBlue launched the WildBlue-1 satellite, specifically designed for the provision of high-speed Internet access using Ka-Band frequencies. *See* Press Release, WildBlue Communications, Inc., *WildBlue High-Speed Internet via Satellite Triples Capacity with New Satellite* (Mar. 20, 2007), *available at* http://www.wildblue.com/company/doPressReleaseDetailsAction.do?pressReleaseID=41. Hughes launched the Ka-Band Spaceway 3 satellite on August 14, 2007, which promises upload speeds as high as 16 mbps and downloads as fast as 30 mbps. *See* Hughes Spaceway Website (visited Aug. 20, 2007), *available at* http://www.spaceway.com/HUGHES/Rooms/DisplayPages/LayoutInitial?Container=com.webridge.entity.Entity%5BOID%5B1F25CC9CF1479743B2C83A5CF6F811F0%5D%5D.

[76] *See, e.g.*, International Bureau Filing System File Nos. SES-LIC-20051028-01494; SES-AMD-20060314-00440; SES-AMD-20070309-00325 (proposal of Viasat to provide an aeronautical mobile service). Ships now have several options concerning high-speed Internet access, including use of C- and Ku-Band under the Commission's earth stations on vessels (ESV) rules. *See infra* para. 53.

[77] *See, e.g.*, News Release, T-Mobile USA, Inc., *T-Mobile Introduces Unlimited Calling Over Wi-Fi With the National Launch of T-Mobile HotSpot @Home* (June 27, 2007), *available at* http://www.lbszone.com/index2.php?option=com_content&do_pdf=1&id=2026; AT&T Website, *iPhone – Technical Specs for iPhone* (visited July 10, 2007), *available at* http://www.wireless.att.com/cell-phone-service/specials/iPhoneCenter.html; T-Mobile Website, *T-Mobile Wing* (visited July 10, 2007), *available at* http://www.t-mobile.com/shop/phones/Detail.aspx?device=acc8102d-4506-4eaa-bc2f-9c7b8ec1b1e0.

[78] *See Universal Service Contribution Methodology*, WC Docket No. 06-122; CC Docket Nos. 96-45, 98-171, 90-571, 92-237; NSD File No. L-00-72; CC Docket Nos. 99-200, 95-116, 98-170; WC Docket No. 04-36, Report and Order and Further Notice of Proposed Rulemaking, 21 FCC Rcd 7518, 7528-29, para. 19 (2006) (*2006 Interim Contribution Methodology Order*) (noting that the number of interconnected VoIP subscribers had grown from 150,000 in 2003 to 4.2 million by the end of 2005); *see also* Press Release, Infonetics, *VoIP Service Revenue Doubles in North America, Europe, Asia Pacific in 2005* (July 26, 2006), *available at* http://www.infonetics.com/resources/purple.shtml?ms06.vip.nr.shtml; Bear Stearns, *March Broadband Buzz: A Monthly Update on Critical Broadband Issues* at 4 (Mar. 12, 2007); *Cable Telephone Subscriptions Growth Accelerates*, IP Media Monitor (March 12, 2007), *available at* http://www.ipmediamonitor.com. The Commission has defined "interconnected VoIP services" as those that (1) enable real-time, two-way voice communications; (2) require a broadband connection from the user's location; (3) require IP-compatible customer premises

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Many cable operators are currently deploying PacketCable 1.0 and 1.5 architecture to improve support for VoIP services within their cable networks, with PacketCable 2.0 and 3.0 technology promising even greater flexibility and the potential for new services.[79]

28. *Video Developments.* Video services and devices continue to evolve as broadband speeds increase. The growth of new technology in the cable arena will soon allow IP video over cable systems.[80] CableLab's DOCSIS 3.0 specification will make available speeds of over 100 mbps by logically bonding multiple 6 MHz channels to act as if they were a single channel. Several cable providers recently have launched or soon will begin IPTV trials and pilot projects based on broadband applications.[81]

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equipment; and (4) permit users to receive calls from and terminate calls to the public switched telephone network (PSTN). *See IP-Enabled Services; E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36, 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245, 10257-58, para. 24 (2005) (*VoIP 911 Order*) (defining "interconnected VoIP service" as set forth in section 9.3 of the Commission's rules, 47 C.F.R. § 9.3).

[79] PacketCable 2.0 is an application-agnostic architecture based on a common network core of standard protocols to register clients and establish sessions for voice, video, and text. PacketCable 2.0 will supply quality-of-service (QoS) for all forms of IP-enabled applications and services and allow integration across a single network of cable's voice, video, and data silos. *See* Jeff Baumgartner, *The Slow Road to PacketCable 2.0*, Light Reading's Cable Digital News (June 7, 2007), *available at* http://www.lightreading.com/document.asp?doc_id=125943&print=true. This technology has the potential to allow the rapid introduction of new services, such as the integration of the cable network with wireless networks and cross-platform feature integration (*e.g.*, set-top box applications that integrate with a customer's voice service for certain features, including caller ID display on the TV and the ability to forward incoming calls to voicemail or other telephone numbers). *See* Kevin Johns and Eric Rosenfeld, *PacketCable 2.0-Design Goals, Strategic Drivers and Architecture,* CED Web Extra (Dec. 1, 2006), *available at* http://www.cedmagazine.com/article.aspx?id=68204. PacketCable 3.0 is described *supra* at paras. 9-10.

[80] Cisco announced the addition of Internet streaming capabilities to its Video on Demand (VOD) Content Delivery System (CDS) while also showing two HD MPEG-4 video streams over a cable modem at the Cable Show in 2007. Motorola is looking to incorporate an IPTV bypass technique for cable modems into CableLabs' specifications. At the ANGA Cable show, BigBand demonstrated HD VOD over DOCSIS 2.0 and delivery of HD Video to an IPTV set-top using DOCSIS 3.0's channel bonding techniques. *See* Todd Spangler, *Cable Firms Might Pump Video over Fast Modems*, MultiChannel News (May 28, 2007), *available at* http://www.multichannel.com/index.asp?layout=article&articleid=CA6446742&industryid=47196.

[81] In July 2005, Time Warner Cable conducted a six-month pilot project of "Broadband TV" service for roughly 9,000 subscribers. Customers could view the channels through a PC after downloading RealPlayer media player and logging into a specially designated website with their cable account numbers. *See* Kathryn Balint, *For Television via Internet, Future is Now*, Union-Tribune (July 13, 2005), *available at* http://www.signonsandiego.com/news/business/20050713-9999-1b13iptv.html. In May 2007, Comcast announced plans to conduct an IPTV trial in an undisclosed 50,000 homes when expected DOCSIS 3.0 gear becomes available later this year. The trial will include an IP-video headend and DOCSIS 3.0 set-top boxes built to the operator's Residential Network Gateway requirements. One trial will provide voice, video, and data over a single, high-bandwidth IP connection. The test bed will also include other network-connected devices, such as Sling Media's Slingbox, dual-mode Wi-Fi/cellular phones and mobile handsets capable of playing video. *See* Todd Spangler, *Comcast to Take IPTV for a Spin*, MultiChannel News (May 4, 2007), *available at* http://www.multichannel.com/index.asp?layout=articlePrint&articleID=CA6439264. Sling Media's Slingbox digitally encodes a signal source, such as the video output of a set-top box, and streams the video over the home network or over the Internet to a personal computer or mobile device, allowing users to effectively take their multichannel video service with them to wherever they can access the Internet. *See* Sling Media Website (visited June 25, 2007), *available at* http://us.slingmedia.com/page/home.

29. *Data Developments.* There have also been some significant developments in data services, applications, and devices since the *Fourth Report.* BPL technology companies have developed an In-House BPL system known as HomePlug, which allows for broadband speed communications among local devices attached to the power outlets within the premises. In 2005, the HomePlug 1.0 standard was superseded by HomePlug AV, which now offers up to 200 mbps over home electrical wiring, making it capable of streaming multiple high-definition video streams, such as HDTV signals to television sets located in different rooms in a house.[82]

V. BROADBAND IS BEING DEPLOYED TO ALL AMERICANS

30. The Commission has taken a number of actions designed to promote broadband deployment since the *Fourth Report*, and the evidence indicates that deployment continues to increase. Below we provide an overview of the data regarding deployment of broadband in the United States, and then discuss the steps taken by the Commission to foster broadband deployment.

A. Overview of Broadband Data

31. The Commission's data collection program has required every facilities-based broadband provider to report to the Commission information about its service offerings and types of customers. Since the *Fourth Report*, the Commission updated and improved its data collection program. In November 2004, the Commission released an order that modified the collection requirements and removed the reporting exemption for providers with fewer than 250 high-speed connections in service in a particular state.[83] Also in that order, the Commission required providers to report more information about the speeds of their deployed advanced services lines.[84] These modifications to the Commission's data collection program provide the Commission with further insight into broadband deployment advances.

32. Further, as discussed above, we recognize that broadband services and applications are evolving at a fast rate, and that consumers increasingly demand higher transmission speeds. Thus, with this Report, the Commission for the first time begins reporting with deployment data that are more granular. Additionally, the Commission is adopting an order that updates the Commission's Form 477 data collection to further refine its speed tiers and monitor more precisely the progress of broadband deployment.[85]

33. Since the Commission's *Fourth Report*, broadband deployment has continued to increase steadily.[86] The number of high-speed lines – those lines with speeds of over 200 kbps in at least one direction – has increased from 27.7 million in December 2003 to 100.9 million in June 2007.[87] A

[82] *See* Eric Bangeman, *HomePlug AV Networking Tech Takes Stage at CeBIT*, Ars Technica (March 16, 2007), *available at* http://arstechnica.com/news.ars/post/20070316-homeplug-av-networking-tech-takes-stage-at-cebit.html.

[83] *See 2004 Data Gathering Order*, 19 FCC Rcd 22340. Because of this reporting change, we realize that when we compare broadband deployment numbers in this Report to those same numbers from the *Fourth Report*, we are comparing different base sets. Nonetheless, we find evidence that broadband deployments are increasing.

[84] *See supra* para. 3 (discussing the reporting of various broadband speeds).

[85] *See supra* para. 6.

[86] The *Fourth Report* reported Commission data as of December 2003. *See Fourth Report*, 19 FCC Rcd at 20567-69.

[87] *Compare* FCC, *High-Speed Services for Internet Access: Status as of December 31, 2006*, Table 1 (Oct. 2007) (*December 2006 High-Speed Services Report*), *with* Appendix B, Table 1. Although the Commission currently

(continued....)

granular inspection of the June 2007 high-speed line counts reveals that, in the faster direction, 27.9 million of these lines offer service at speeds greater than 200 kbps but less than 2.5 mbps; 37.7 million of these lines offer service at speeds greater than or equal to 2.5 mbps but less than 10 mbps; 3.8 million of these lines offer speeds greater than or equal to 10 mbps but less than 25 mbps; nearly 92,000 of these lines offer speeds greater than or equal to 25 mbps but less than 100 mbps; and over 21,700 of these lines offer speeds greater than or equal to 100 mbps.[88] Further, the number of advanced services lines – those lines with speeds of over 200 kbps in each direction – has also increased from 19.9 million in December 2003 to 69.6 million in June 2007, of which 61.1 million are residential advanced service lines.[89]

34. As was true in the Commission's last report, cable modem and ADSL providers continue to provide the majority of advanced service lines. Cable represents 48.8 percent of advanced service lines and ADSL represents 33.6 percent, while SDSL and fiber-to-the-end-user premises represent 1.5 percent and 2 percent, respectively, and other technologies represent the remaining 14.1 percent.[90] The relative position of cable and ADSL advanced service lines was 77.2 percent and 15.3 percent in December 2003, respectively.[91] Notably, only 11.6 percent of cable modem advanced service lines are provided at speeds of less than 2.5 mbps based on the latest *High Speed Services Report*.[92] In addition, subscribers to ADSL appear increasingly to subscribe to higher-capacity offerings. In particular, the percentage of ADSL advanced service lines provided at speeds of less than 2.5 mbps declined from approximately 67 percent to 55.7 percent from June 2006 to June 2007.[93] Looking more broadly at high-speed lines, the Commission's data indicate that cable modem service represents 34.1 percent of the lines, with ADSL representing 27.3 percent of the lines as of June 2007.[94] Along with this growth, the number of high-speed providers has increased from 432 in December 2003, to 1,360 in June 2007.[95]

35. With regard to residential subscribers, the Commission's data indicate that the number of high-speed lines increased from 26 million in December 2003 to 65.9 million as of June 2007.[96] Further,

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collects data on mobile wireless subscribers, the *2007 Data Gathering Notice* seeks comment on whether the Commission should collect more granular information to identify separately mobile wireless customers with broadband Internet access plans. *See 2007 Data Gathering Notice*, 20 FCC Rcd at 7766-67, paras. 12-14.

[88] *See* Appendix B, Table 5.

[89] *Compare December 2006 High-Speed Services Report* at Table 2, *with* Appendix B, Table 2; Appendix B, Table 4.

[90] *See* Appendix B, Chart 4.

[91] *See December 2006 High-Speed Services Report* at Table 2.

[92] *See* Appendix B, Tables 2, 5. The 200 kbps/2.5 mbps speed tier is the lowest in the Commission's current advanced services data collection. As noted above, the Commission is adopting an order updating the Commission's Form 477 data collection to refine further its speed tiers and more precisely monitor the progress of broadband deployment. *See supra* para. 6.

[93] *Compare* FCC, *High-Speed Services for Internet Access: Status as of June 30, 2006*, Tables 2, 5 (Jan. 2007) (reporting data on advanced services lines as of June 2006), *with* Appendix B, Tables 2, 5 (providing data on advanced services lines as of June 2007).

[94] *See* Appendix B, Chart 2.

[95] *See id.*, Table 7. As a result, in part, of the Commission removing the exemption for filing Form 477 for providers with less than 250 lines per state, the number of providers of high-speed lines doubled between December 2004 and June 2005. *See id.* Nonetheless, we still find that the number of providers continues to increase over time. *See id*.

[96] *Compare Fourth Report*, 19 FCC Rcd at 20569, *with* Appendix B, Table 13. The Commission stopped including small business lines with residential lines after December 2004. *See* Appendix B, Table 3, note.

as of June 2007, only 0.1 percent of zip codes in the United States reported no high-speed lines, compared to 6.8 percent of zip codes with no reported lines in December 2003.[97] The percent of zip codes reporting four or more providers of high-speed lines also has increased, from 46.3 percent in December 2003 to 88.5 percent in June 2007.[98] While we recognize that the presence of reported lines in a zip code does not necessarily mean service is available throughout a zip code, these figures do provide evidence that broadband deployment is increasing over time. Further, the Commission is assessing how to assess geographic broadband deployment on a more granular basis in a current proceeding, and thus we anticipate being able to provide more disaggregated broadband deployment data in future reports.[99]

36. High-speed deployments in rural communities also have continued to increase since the Commission's *Fourth Report*. With respect to the lowest density zip codes – those with fewer than six persons per square mile – there has been a significant increase in subscribership. The percentage of the lowest density zip codes with at least one high-speed subscriber increased from 73.5 percent in December 2003 to 90.5 percent as of June 2007.[100] Further, based on the 2007 NTCA Broadband/Internet Availability Survey Report, 99 percent of the NTCA respondents offer broadband service to some part of their customer base.[101] In addition, an OPASTCO membership survey found that on average, respondents make broadband available to over 90 percent of their customer base.[102] Ninety percent of the respondents in that survey reported being able to deliver data speeds of at least one mbps in one direction.[103] Over 75 percent of the respondents also indicated that they compete against two or more providers in the broadband market.[104]

37. States are also taking action to monitor and promote broadband deployment, in some cases through public-private partnerships. For example, ConnectKentucky, a non-profit public-private partnership in Kentucky, developed an initiative that increased broadband penetration to rural communities through data-gathering and work with local communities.[105] ConnectKentucky created a detailed map depicting broadband penetration throughout Kentucky, and then analyzed the map against demographic information such as population density, planned development, and existing public assets to identify possible investment opportunities.[106] ConnectKentucky then established eCommunity Leadership Teams in all of Kentucky's 120 counties "to develop comprehensive technology growth plans

[97] *See* Appendix B, Table 15.

[98] *See id.*

[99] *See 2007 Data Gathering Notice*, 22 FCC Rcd 7760.

[100] *Compare December 2006 High-Speed Services Report* at Table 18, *with* Appendix B, Table 18.

[101] *See* National Telecommunications Cooperative Association, *NTCA 2007 Broadband/Internet Availability Survey Report* (Sept. 2007), *available at* http://www.ntca.org/content_documents/2007NTCABroadbandSurveyReport.pdf. NTCA members are small carriers that are rural telephone companies. *See id.* at 5. For the purposes of this survey, NTCA defines "broadband" as throughput of 200 kbps in one direction. *See id.* at 6.

[102] *See* OPASTCO Comments at 3. OPASTCO is a trade association that represents over 520 small incumbent LECs serving rural areas, serving over 3.5 million customers. *See id.* at 1. For the purposes of this survey, OPASTCO defines "broadband" to be those services of at least 200 kbps in at least one direction. *See id.* at 3 n.5.

[103] *See id.* at 3.

[104] *See id.* at 4.

[105] *See* Connected Nation Comments at 5 (describing Connect Kentucky's approach to modeling data). Connected Nation, the parent company of ConnectKentucky, is a national non-profit that deals with broadband issues in the United States. *See id.* at 2.

[106] *See id.* at 5-6.

that involve many sectors of the community, including healthcare, education and local government."[107] Based on this project, companies invested more than $650 million in private capital in Kentucky's broadband infrastructure, resulting in broadband availability in Kentucky households increasing from 60 percent to 93 percent since 2004.[108] Lawmakers in other states are also taking steps to introduce similar programs.[109]

38. As the GAO has found, however, subscribership to Internet access services (of any speed) by Native American households on tribal lands is largely unknown because no federal survey has been designed to track this information.[110] As the GAO noted, the Commission previously asked the Census Bureau to collect data on Internet subscribership on tribal lands as part of its surveys, but "Census Bureau officials told [the GAO] that the bureau's internal policy is to not include questions on its new survey unless the collection of that data by the Census Bureau is mandated by law."[111] While the Commission's Form 477 data collection does not currently collect information on broadband deployment specifically on tribal lands, our pending NPRM seeks comment on ways that the Commission might track this information.[112]

B. Commission Action Since the *Fourth Report* to Facilitate Broadband Deployment

39. We remain committed to adopting measures that encourage broadband deployment. Since the *Fourth Report*, the Commission has taken a number of steps to promote broadband deployment.

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[107] ConnectKentucky, *eCommunity Strategies* (visited Sept. 7, 2007), *available at* http://www.connectkentucky.org/projects/ecs/; *see also* Connected Nation Comments at 8-9.

[108] *See* Connected Nation Comments at 5-7.

[109] *See, e.g.*, Michael Martinez, *Ohio Governor Eyes Statewide Broadband*, National Journal (Aug. 1, 2007), *available at* http://www.njtelecomupdate.com/2007/08/ohio_governor_eyes_statewide_b.html (noting broadband deployment programs in Ohio, Rhode Island, and South Carolina); News Release, Verizon Communications Inc., *Verizon Announces Plans to Expand High-Speed Internet Availability for Rural West Virginians; Network Expansion, Partnership with 'Connected Nation' to Help Provide Broadband to More West Virginians* (Aug. 15, 2007), *available at* http://newscenter.verizon.com/press-releases/verizon/2007/verizon-announces-plans-to.html (announcing a program similar to Connected Nation's Kentucky program in West Virginia); Connected Tennessee, Inc. Website (visited Aug. 31, 2007), *available at* http://www.connectedtn.org/ (discussing an independent non-profit organization focused on broadband deployment in Tennessee); Testimony of James Winnigham before the Senate Committee on Commerce, Science, and Transportation (Aug. 28, 2008) *available at* http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=1894&Witness_ID=6714 (discussing Connect Arkansas, a "non-profit organization created to centrally manage and support an effort to help make broadband available to every home and organization in Arkansas").

[110] *See* United States Government Accountability Office, *Challenges to Assessing and Improving Telecommunications for Native Americans on Tribal Lands*, GAO-06-189 at 16 (Jan. 2006), *available at* http://www.gao.gov/new.items/d06189.pdf (*GAO Tribal Lands Report*) (noting that the Census Bureau's new American Community Survey will provide data on tribal lands but does not include a question on Internet access, and that the monthly survey of households conducted by the Census Bureau for the Bureau of Labor Statistics contains too few tribal lands households to provide reliable estimates). We note that Native Public Media (NPM) states in its comments that "broadband penetration on Indian lands is estimated at 10%." NPM Comments at 3 (citing Testimony of NCAI President Joe Garcia before the Senate Committee on Commerce, Science, and Transportation at 1-2 (March 7, 2006), *available at* http://commerce.senate.gov/pdf/garcia-030706.pdf (NCAI Senate Testimony)).

[111] *GAO Tribal Lands Report* at 4.

[112] *See 2007 Data Gathering Notice*, 22 FCC Rcd at 7771-72, 7774, 7777, paras. 25, 29, 37.

1. Promoting Deployment of Broadband Facilities & Services

40. *Eliminating Regulatory Disincentives to Broadband Deployment.* Since the *Fourth Report*, the Commission has taken multiple steps to promote broadband deployment by reevaluating its legacy regulations. In October 2004, the Commission concluded that FTTC loops should enjoy the same unbundling relief that the Commission previously extended to FTTH loops.[113] By extending this unbundling relief to FTTC loops, the Commission removed powerful regulatory disincentives for broadband deployment by carriers seeking to provide advanced services.[114] In addition, to encourage broadband deployment and promote local competition, the Commission forbore from applying the *Triennial Review Order*'s independent section 271 unbundling obligations to the broadband elements – including FTTH loops, FTTC loops, the packetized functionality of hybrid loops, and packet switching – that the Commission had previously relieved from unbundling under section 251 of the Communications Act.[115]

41. Further, the Commission determined that facilities-based wireline broadband Internet access service is an information service, removing outdated regulations in favor of a framework in parity with cable modem service, designed to allow the providers of such services to respond effectively to changing marketplace demands and to spur broadband investment and deployment.[116] Specifically, this new framework removed the requirement that facilities-based providers separate out and offer the wireline broadband transmission component as a stand-alone telecommunications service under Title II of the Communications Act, and removed the Bell Operating Company *Computer Inquiry* requirements with respect to wireline broadband Internet access service.[117] The Commission later ensured comparable regulatory treatment of BPL-enabled broadband Internet access service and wireless broadband Internet access service by classifying these services as information services under Title I of the Communications

[113] *See Review of Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 01-338, 96-98, 98-147, Order on Reconsideration, 19 FCC Rcd 20293, 20293, para. 1 (2004).

[114] *See id*. at 20297, para. 9.

[115] *See Petition for Forbearance of the Verizon Telephone Companies Pursuant to 47 U.S.C. § 160(c); SBC Communications Inc.'s Petition for Forbearance Under 47 U.S.C. § 160(c); Qwest Communications International Inc. Petition for Forbearance Under 47 U.S.C. § 160(c), BellSouth Telecommunications, Inc. Petition for Forbearance Under 47 U.S.C. § 160(c)*, WC Docket Nos. 01-338, 03-235, 03-260, 04-48, Memorandum Opinion and Order, 19 FCC Rcd 21496 (2004).

[116] *See Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. § 160(c) with Regard to Broadband Services Provided Via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided Via Fiber to the Premises; Consumer Protection in the Broadband Era*, CC Docket Nos. 02-33, 01-337, 95-20, 98-10; WC Docket Nos. 04-242, 05-271, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853, 14863, 14865, paras. 14, 17 (2005), *aff'd, Time Warner Telecom v. FCC*, No. 05-4769 (and consolidated cases) (3rd Cir. Oct. 16, 2007).

[117] *See id*. at 14899-992, paras. 86-107.

Act.[118] In reaching these determinations, the Commission provided regulatory certainty regarding the classification of these services, thereby encouraging deployment of broadband Internet access service to consumers.

42. Recognizing the link between the ability to provide a triple play of voice, Internet, and video service and providers' incentives to deploy broadband networks, in March 2007, the Commission adopted an order to facilitate and expedite entry of new competitors in the market for the delivery of video programming. The Commission's order preempted local laws, regulations, and franchise agreement requirements to the extent they imposed greater restrictions on market entry than the rules adopted by the Commission.[119] The Commission explained that the operation of the franchising process at that time placed unreasonable demands on competitive applicants that contravened the goal of encouraging broadband deployment.[120] In turn, the Commission found that its new rules would accelerate broadband deployment.[121]

43. On March 1, 2007, the Wireline Competition Bureau (WCB) granted a petition filed by Time Warner Cable requesting that the Commission clarify that wholesale telecommunications carriers are entitled to interconnect with incumbent LECs in order to provide service to the wholesale carriers' customers, including new entrants such as VoIP service providers.[122] That order helped ensure that new entrants have the ability to interconnect with incumbent LECs, consistent with the text of the Communications Act and Commission precedent. WCB concluded that a contrary decision also would impede the important development of wholesale telecommunications competition, facilities-based VoIP competition, and broadband deployment policies that the Commission had developed and implemented over the last decade by limiting the ability of wholesale carriers to offer service.[123]

44. *Promotion of New Wireline-Based Broadband Technologies.* In 2004 and 2006, the Commission adopted rules for Access BPL systems to ensure that the development of BPL systems did not pose harmful interference risks for licensed radio services.[124] Given that power lines reach virtually every residence and business in every community and geographic area in this country, BPL service potentially could be made available nearly everywhere, and compete with cable modem service, DSL, and other broadband services.[125]

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[118] *See United Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband over Power Line Internet Access Service as an Information Service*, WC Docket No. 06-10, Memorandum Opinion and Order, 21 FCC Rcd 13281 (2006); *Wireless Broadband Internet Access Services Order*, 22 FCC Rcd 5901.

[119] *See Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as Amended by the Cable Television Consumer Protection and Competition Act of 1992*, MB Docket No. 05-311, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 5101 (2007).

[120] *See id.* at 5102-03, paras. 1, 3.

[121] *See id.*

[122] *See Time Warner Cable Request for Declaratory Ruling that Competitive Local Exchange Carriers May Obtain Interconnection Under Section 251 of the Communications Act of 1934, as Amended, to Provide Wholesale Telecommunications Services to VoIP Providers*, WC Docket No. 06-55, Memorandum Opinion and Order, 22 FCC Rcd 3513 (WCB 2007).

[123] *See id.* at 3517, para. 8.

[124] *See Access BPL Order*, 19 FCC Rcd 21265; *Access BPL Reconsideration Order*, 21 FCC Rcd 9308.

[125] *See Access BPL Order*, 19 FCC Rcd at 21266, para. 1.

45. *Clearing Spectrum for Broadband Technology.* The Commission opened up new opportunities for broadband deployment by clearing spectrum for new commercial use. Since the *Fourth Report*, the Commission has: reallocated twenty megahertz of spectrum in the 1915-1920 MHz and 1995-2000 MHz, and 2020-2025 MHz and 2175-2180 MHz bands; reallocated twenty megahertz of spectrum in the 2155-2175 MHz band; and opened up the 1710-1755 MHz band for new advanced wireless services (AWS) services, including third generation (3G) wireless systems.[126] Further, the Commission has reassigned spectrum in the 2 GHz Mobile Satellite Service (MSS) band to help promote the provision of broadband services in rural areas.[127] This spectrum will make possible the introduction of hybrid satellite and terrestrial wireless systems in frequency bands with favorable radiofrequency propagation characteristics.

46. As a part of this spectrum clearing, the Commission completed the AWS auction in the 1.7 and 2.1 GHz bands, and adopted service and technical rules for the 700 MHz band in preparation for the upcoming auction in early 2008.[128] The AWS auction was the biggest and most successful in the Commission's history, and represented the largest amount of spectrum suitable for deploying wireless broadband ever made available in a single auction.[129] In total, the auction raised $13.9 billion in gross

[126] *See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, ET Docket Nos. 00-258, 95-18, RM-9498, RM-10024, Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order, 19 FCC Rcd 20720 (2004); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services (AWS), including Third Generation Wireless Systems*, ET Docket No. 00-258, WT Docket No. 02-08, Seventh Report and Order, 19 FCC Rcd 21350 (2004); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, ET Docket No. 00-258, Eighth Report and Order and Fifth Notice of Proposed Rule Making and Order, 20 FCC Rcd 15866 (2005) (*AWS Eighth R&O*). Advanced wireless systems could provide, for example, a wide range of voice, data, and broadband services over a variety of mobile and fixed networks.

[127] *See Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, IB Docket Nos. 05-220, 05-221, Order, 20 FCC Rcd 19696 (2005).

[128] The 700 MHz band includes spectrum running from 698-806 MHz and encompasses television channels 52 to 69, which television broadcasters currently use during the digital television transition. Once the transition is completed, scheduled for February 17, 2009, this 108 megahertz of spectrum will become available for other uses. A portion of the spectrum, 24 megahertz, has been set aside for use by state and local public safety agencies. Because the 700 MHz spectrum falls below 1 GHz, it has excellent propagation characteristics that will enable licensees to cover a larger area with fewer cell sites and less network infrastructure, making the spectrum particularly valuable and ideal for serving rural and other hard-to-reach areas.

[129] AWS spectrum can be used by carriers to provide a wide array of innovative wireless services and technologies, including voice, data, video, and other wireless broadband services. In addition to the 90 megahertz of AWS-1 spectrum, the Commission has taken steps toward licensing an additional 40 megahertz of spectrum available for AWS. The Commission has sought comment on the service and technical rules for 20 megahertz of AWS-2 spectrum in the 1.9 and 2 GHz bands. *See Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands; Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket Nos. 04-356, 02-353, Notice of Proposed Rulemaking, 19 FCC Rcd 19263 (2004). Further, the Commission has allocated 20 megahertz of spectrum at 2155 to 2175 MHz for AWS use. *See AWS Eighth R&O*, 20 FCC Rcd 15866. In 2006, an application for exclusive use of the spectrum in the 2155-75 MHz band was filed, which was accepted for filing in January 2007; subsequently, other applicants filed similar applications for use of this spectrum. All applications are currently pending. *See* Application of M2Z Networks, Inc. for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band (filed May 5, 2006) (M2Z Application); *see also Wireless Telecommunications Bureau Announces that M2Z Networks,*

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winning bids, and the Commission sold 1,087 licenses to 104 bidders.[130] The winning bidders included a mix of different types of companies, including major wireless carriers looking to enhance coverage or deploy new technologies, small businesses seeking to serve rural areas, and new entrants from other technology sectors, most notably cable providers.

47. In April 2007, the Commission adopted certain service and technical rules for the 700 MHz band spectrum and sought comment on additional issues.[131] Specifically, the Commission ruled that E911 and hearing aid compatibility requirements apply to all CMRS services, regardless of the spectrum band used to provide them; established three different geographic areas of varying sizes to be used for licensing the 700 MHz spectrum – Regional Economic Area Groups (REAGs), Economic Areas (EAs), and Cellular Market Areas (CMAs); and harmonized the power levels for paired spectrum between the Upper and Lower 700 MHz bands, moving toward a power spectral density approach.[132] The Commission has already licensed a small portion of the commercial spectrum in the 700 MHz band and some licensees have begun to offer service before the end of the DTV transition by coordinating with television broadcasters.

48. On July 31, 2007, the Commission adopted its second order in the 700 MHz proceeding and revised the rules governing the 700 MHz band spectrum.[133] The goal of these revisions is to foster new

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Inc.'s Application for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band is Accepted for Filing, WT Docket No. 07-16, Public Notice, 22 FCC Rcd 1955 (2007); *Wireless Telecommunications Bureau Sets Pleading Cycle for Application by M2Z Networks, Inc. to Be Licensed in the 2155-2175 MHz Band*, WT Docket No. 07-16, Public Notice, 22 FCC Rcd 4442 (2007).

[130] *See Auction of Advanced Wireless Services Closes: Winning Bidders Announced for Auction 66*, Report No. AUC-06-66-F, Public Notice, 21 FCC Rcd 10521 (2006). In Auction 66, the Commission made available 1,122 AWS licenses in the 1710-1755 MHz and 2110-2155 MHz bands. The revenue collected from this auction nearly doubled the total revenue transferred to the U.S. Treasury from all previous auctions combined. *See* News Release, FCC, *Wireless Telecommunications Bureau Completes Review of Applications for Licenses for Advanced Wireless Services* (Apr. 30, 2007).

[131] *See Service Rules for the 698-746, 747-762, and 777-792 MHz Bands; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, WT Docket Nos. 06-150, 01-309, 03-264, 06-169, 96-98, CC Docket No. 94-102, PS Docket No. 06-229, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 8064 (2007) (*700 MHz Service Rules Order*); *id.*, Appendix B (identifying the new rules).

[132] *See id.* at 8067-68, paras. 6-8.

[133] *See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Section 68.4 (a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State, and Local Public Safety Communications Requirements Through the Year 2010; Declaratory Ruling on Reporting Requirement under Commission's Part 1 Anti-Collusion Rule*, WT Docket Nos. 06-150, 01-309, 03-264, 06-169, 96-98, 07-166, CC
(continued....)

and innovative wireless broadband services, and to create a nationwide broadband network for public safety. To promote the public safety network, the Commission established a framework that will partner commercial and public spectrum licensees, with the commercial licensees funding the network build-out.[134] To promote the development of wireless broadband services, the Commission amended the rules so that the spectrum licensees will be required to permit customers, manufacturers, and third-party application developers to use the device or application of their choice on the licensed networks.[135] The auction for the 700 MHz band closed on March 18, 2006.[136]

49. *Promotion of Unlicensed Wireless-Based Broadband Technologies.* Since the *Fourth Report*, the Commission has adopted a series of orders to encourage the deployment of wireless broadband services. For example, the Commission adopted an order to facilitate the testing and development of ultra-wideband (UWB) devices, which will promote broadband wireless communication.[137] The Commission also permitted the emissions from UWB transmitters operating in the 3.1-5.03 GHz and 5.65-10.6 GHz bands that employ frequency hopping or stepped frequency modulation techniques, or that gate the transmitted signal, to be measured with the transmitter operating in its normal transmission mode. Further, the Commission issued an order to promote broadband development in the 3650 MHz frequency band.[138] That order adopted, among other things, a streamlined licensing mechanism with minimal regulatory entry requirements, which will encourage multiple entrants and stimulate the rapid expansion of wireless broadband services – especially in rural America – and will serve as a safeguard to protect incumbent satellite earth stations from harmful interference.[139]

50. In 2007, the Commission adopted an order that took a number of important first steps towards allowing the introduction of new low power devices in the broadcast television spectrum (TV bands) on channels/frequencies that are not being used for authorized services (TV band devices).[140] Specifically, the Commission made initial decisions to permit fixed low power devices to operate on any permissible TV channel, but only at times and locations where other authorized services are not already using the spectrum.[141] The adopted final rules will allow the marketing of TV band devices to commence on

(...continued from previous page)
Docket No. 94-102, PS Docket No. 06-229, Second Report and Order, 22 FCC Rcd 15289 (2007) (*700 MHz Band Plan Order*); *id.*, Appendix B (identifying the rule changes).

[134] *See id.* at 15428-32, paras. 386-402.

[135] *See id.* at 15361-73, paras. 195-228.

[136] *See* News Release, *Statement by FCC Chairman Kevin J. Martin* (rel. Mar. 18, 2008) (announcing the close of Auction 73); *see also Notice and Filing Requirements, Minimum Opening Bids, Reserve Prices, Upfront Payments, and Other Procedures for Auctions 73 and 76*, AU Docket No. 07-157, Public Notice, DA 07-4171, para. 1 (rel. Oct. 5, 2007); 47 U.S.C. § 309(j)(15)(C)(v) (requiring the Commission to conduct the auction for the recovered analog spectrum by commencing the bidding not later than January 28, 2008).

[137] *See Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group*, ET Docket No. 04-352, Order, 20 FCC Rcd 5528 (2005).

[138] *See Wireless Operations in the 3650-3700 MHz Band; Rules for Wireless Broadband Services in the 3650-3700 MHz Band,* ET Docket Nos. 04-151, 02-380, 98-237, WT Docket No. 05-96, Report and Order and Memorandum Opinion and Order, 20 FCC Rcd 6502 (2005).

[139] *See id.*

[140] *See Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186, 02-380, First Report and Order and Further Notice of Proposed Rule Making, 21 FCC Rcd 12266 (2007).

[141] *See id.* at 12272, para. 13.

February 18, 2009, after the completed transition to DTV service and all TV stations are in operation on their permanent DTV channels.[142]

51. Additionally, the Commission sought comment on amending Part 15 of the Commission's rules applicable to transmitters operating on an unlicensed basis in the 57-64 GHz frequency range.[143] The Commission found that these proposals could promote greater utility for the 60 GHz band to serve the public interest more effectively without potentially increasing interference risks to existing services in the band, while encouraging a more flexible development of products providing broadband data services, and furthering the Commission's objective of making broadband more readily available to all Americans.[144]

52. *Promotion of Licensed Wireless Broadband Technologies.* In April 2006, the Commission continued its transformation of the rules governing BRS/EBS.[145] Specifically, the Commission revised the mechanism for licensees to transition from the old to the new band plan by allowing BRS and EBS providers to act as "proponents" and propose market-based transition plans for relocating all of the licenses within the same Basic Trading Area (BTA) to the spectrum assignments of the new band plan.[146] The Commission anticipated that this action would facilitate providers' use the spectrum in the 2496-

[142] *See id.*

[143] *See Revision of the Commission's Rules Regarding Operation in the 57-64 GHz Band*, ET Docket No. 07-113; RM-11104, Notice of Proposed Rule Making, 22 FCC Rcd 10505 (2007).

[144] *See id.*

[145] *See Amendment of Parts 1, 21, 73, 74, and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational, and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands; Part 1 of the Commission's Rules – Further Competitive Bidding Procedures; Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and the Instructional Television Fixed Service Amendment of Parts 21 and 74 to Engage in Fixed Two-Way Transmissions; Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Licensing in the Multipoint Distribution Service and in the Instructional Television Fixed Service for the Gulf of Mexico; Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands; Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, WT Docket No. 03-66, RM-10586, WT Docket No. 03-67, MM Docket No. 97-217, WT Docket No. 02-68, RM-9718, WT Docket No. 00-230, IB Docket No. 02-364, ET Docket No. 00-258, Order on Reconsideration, Fifth Memorandum Opinion and Order, Third Memorandum Opinion and Order, and Second Report and Order, 21 FCC Rcd 5606, 5609, para. 1 (2006) (*BRS/EBS Transition Order*). Formerly, the BRS and EBS were known as the MDS service and the ITFS service, respectively. *See Amendment of Parts 1, 21, 73, 74, and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational, and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands; Part 1 of the Commission's Rules – Further Competitive Bidding Procedures; Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and the Instructional Television Fixed Service Amendment of Parts 21 and 74 to Engage in Fixed Two-Way Transmissions; Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Licensing in the Multipoint Distribution Service and in the Instructional Television Fixed Service for the Gulf of Mexico; Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 03-66, RM-10586, WT Docket No. 03-67, MM Docket No. 97-217, WT Docket No. 02-68, RM-9718, WT Docket No. 00-230, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165, 14169-70, para. 6 (2004) (creating a new BRS/EBS band plan for the 2496-2690 MHz band that eliminated the use of interleaved channels and created distinct band segments for high power operations, such as one-way video transmission, and low power operations, such as two-way fixed and mobile broadband applications).

[146] *See BRS/EBS Transition Order*, 21 FCC Rcd at 5639, para. 59.

2690 MHz band for new and innovative wireless technologies and services, including wireless broadband services that have the potential to compete with cable modem service and DSL broadband providers, and to extend broadband service to rural and underserved areas. As of March 14, 2008, proponents had filed transition plans for 375 of the 493 BTAs, and completed the transition in 222 BTAs.[147]

53. *Promotion of Satellite-Based Broadband Technologies.* For Earth Station on Vessels (ESV), the Commission adopted licensing and service rules for licensees to provide telecommunications services, including Internet access in the 5925-6425 MHz/3700-4200 MHz (C-band) and 14.0-14.5 GHz/11.7-12.2 GHz (Ku-band) frequencies.[148] This order also established technical requirements for ESV operators to protect fixed service operations, fixed-satellite service operations, and a limited number of government operations in the C-band and the Ku-band from harmful interference.[149] As of March 2008, the Commission has issued sixteen ESV licenses.[150] The Commission also adopted an order to facilitate the licensing of earth stations with antennas smaller than those traditionally used.[151] These smaller antennas are particularly useful for mass market consumer applications, including satellite-based broadband Internet access services.

2. Fostering Consumer Access to Broadband for All Americans

54. *Expansion of the Rural Health Care (RHC) Program.* The Commission's rural health care program provides discounts to rural health care providers so providers are better able to access modern telecommunications services. In its *Rural Health Care Second Report and Order*, the Commission revised several of the rural health care program's rules in an effort to expand the program's funding and improve efficiency.[152] To this effect, the Commission enacted rules subsidizing the use of satellite service for mobile telemedicine links that corresponds in bandwidth to urban wireline service.[153] Additionally,

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[147] *See* Initiation Plans and Post-Transition Notifications filed in WC Docket No. 06-136; *see also Wireless Telecommunications Bureau Establishes Docket for the Filing of Initiation Plans, Post-Transition Notifications, and Self Transition Notices in the Transition of the 2500-2690 MHz Band*, WT Docket No. 06-136, Public Notice, 21 FCC Rcd 7909 (2007).

[148] *See Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/ 3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, IB Docket No. 02-10, Report and Order, 20 FCC Rcd 674 (2005).

[149] *See id.* at 676, paras. 1-2.

[150] *See* IBFS File Nos. SES-MOD-20060609-00965; SES-MFS-20061117-02028; SES-LIC-20020326-00479; SES-MOD-20060828-01518; SES-LIC-20011130-02259; SES-LIC-20070330-00431; SES-MOD-20070314-00351; SES-LIC-20060815-01373; SES-MOD-20070316-00368; SES-MOD-20070314-00353; SES-MOD-20070314-00352; SES-LIC-20070618-00826; SES-LIC-20070608-00779; SES-LIC-20071012-01416; SES-LIC-20070910-01261; SES-LIC-20071008-01392.

[151] *See 2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations*, IB Docket No. 00-248, Fifth Report and Order, 20 FCC Rcd 5666, 5671, para. 11 (2005); *see also 2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations*, IB Docket No. 00-248, Sixth Report and Order and Third Further Notice of Proposed Rulemaking, 20 FCC Rcd 5593 (2005).

[152] *See Rural Health Care Support Mechanism*, WC Docket No. 02-60, Second Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, 19 FCC Rcd 24613, 24614, para. 1 (2004) (*Rural Health Care Second Report and Order*).

[153] *See id.* at 24619-20, para. 12.

the Commission updated the definitions of key terms and enacted fixed deadlines for applications in order to clarify and expedite the administrative process.[154]

55. In September 2006, the Commission released the *2006 Pilot Program Order*, which initiated a pilot funding program to facilitate the creation of a nationwide broadband network dedicated to health care, connecting public and private non-profit health care providers in rural and urban locations.[155] To accomplish this, the program will fund up to 85 percent of costs associated with deploying a dedicated broadband network connecting health care providers in rural and urban areas within a state or region. Up to 85 percent of the cost of connecting to the dedicated nationwide backbones Internet2 or National LambdaRail (NLR) may also be funded by the Pilot Program.[156] As with the existing rural health care program, the Pilot Program includes access to the public Internet if requested by the applicants.[157] The Pilot Program will provide the Commission with a more complete and practical understanding of how to ensure the best use of the available RHC support mechanism funds to support a broadband, nationwide health care network (expressly including rural areas).[158] Applications to participate in the Pilot Program were due May 7, 2007. The Pilot Program generated overwhelming interest from the health care community, resulting in 81 applications representing 43 states and three United States territories.[159]

56. On November 19, 2007, the Commission released the *Rural Health Care Pilot Program Selection Order*, selecting 69 applicants to participate in the Rural Health Care Pilot Program.[160] Each selected participant has a maximum funding support amount spread over a 3-year commitment period (total available support for the entire Pilot Program is approximately $417 million over three years (or $139 million per funding year).[161] Accordingly, as set forth in that Order, the 69 selected participants are eligible to receive funding for up to 85 percent of the costs associated with: (1) the construction of a state or regional broadband network and the advanced telecommunications and information services provided over that network; (2) connecting to Internet2 or National LambdaRail (NLR); and (3) connecting to the

[154] *See id.* at 24626, 24629, paras. 28, 34.

[155] *See Rural Health Care Support Mechanism*, WC Docket No. 02-60, Order, 21 FCC Rcd 11111 (2006) (*2006 Pilot Program Order*).

[156] *See id.* at 11115, para. 14; *Rural Health Care Support Mechanism*, WC Docket No. 02-60, Order on Reconsideration, 22 FCC Rcd 2555 (2007) (*Pilot Program Reconsideration Order*) (reconsidering the *2006 Pilot Program Order* to permit funding to connect a state or regional health care network to National LambdaRail or to the public Internet, in addition to Internet2).

[157] *Compare, e.g.*, *Rural Health Care Support Mechanism*, WC Docket No. 02-60, Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, 18 FCC Rcd 24546, 24557-62, paras. 22-29 (2003) (providing a 25% discount off the cost of monthly Internet access for eligible health care providers under section 254(h)(2)(A)), *with Pilot Program Reconsideration Order*, 22 FCC Rcd at 2555, para. 2 n.5 (explaining that because the Pilot Program will reimburse up to 85% of the costs of advanced telecommunications and information, applicants can request funding for connection to the public Internet).

[158] *See 2006 Pilot Program Order*, 21 FCC Rcd at 11113, para. 9. Upon completion of the Pilot Program, the Commission intends to issue a report detailing the results of the Pilot Program and the status of the RHC support mechanism generally, and to recommend any changes necessary to improve existing RHC program. In addition, the Commission intends to incorporate the information it gathers as part of the Pilot Program into the record of any subsequent proceeding. *See id.*

[159] *See generally Rural Health Care Support Mechanism*, WC Docket No. 02-60, Order, 22 FCC Rcd 20360 (2007) (*Rural Health Care Pilot Program Selection Order*).

[160] *See id.*

[161] *See id.* at 20361, para. 2.

public Internet.[162] The *Rural Health Care Pilot Program Selection Order* further states that the Pilot Program will operate under the rules of the existing RHC mechanism, including the competitive bidding requirements.[163] In doing so, the *Order* provides instructions to selected participants concerning Pilot Program administration, including the submission of FCC forms to the Universal Service Administrative Company.[164]

57. *Encouragement of Access to Broadband by Individuals with Disabilities.* The Commission extended the disability access requirements of sections 225 and 255 of the Communications Act to providers of interconnected VoIP services and to manufacturers of specially designed equipment used to provide those services.[165] In so doing, the Commission ensured that as more consumers migrate from traditional phone service to interconnected VoIP services, the disability access provisions mandated by Congress will apply to, and benefit users of, interconnected VoIP services and equipment.[166] In addition, the Commission clarified that IP-captioned telephone service (IP CTS) is a type of telecommunications relay service (TRS) eligible for compensation from the TRS Fund.[167] This clarification provides an incentive for multiple providers to offer this service on a nationwide basis, generating competition that will enhance consumer choice, service quality, and available features,[168] and encourages IP CTS users to secure broadband connections in order to take full advantage of the benefits of the service. The Commission also adopted rules designed to encourage the deployment and usage of video relay service (VRS), establishing, for the first time, mandatory speed of answer requirements for VRS, and requiring VRS providers to offer the service 24 hours a day, seven days a week.[169] The Commission concluded that

[162] *See id*. at 20397-98, para. 74.

[163] *See id*. at 20403-04, para. 83.

[164] *See id*. at 20403-11, paras. 83-98.

[165] *See IP-Enabled Services*; *Implementation of Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996: Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities; Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; The Use of N11 Codes and Other Abbreviated Dialing Arrangements*, WT Docket Nos. 04-36, 96-198, CG Docket No. 03-123, CC Docket No. 92-105, Report and Order, 22 FCC Rcd 11275 (2007) (*Section 255 VoIP Order*).

[166] *See id.* at 11276, para. 1.

[167] *See Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; Internet Based Telephone Service*, CG Docket No. 03-123, Declaratory Ruling, 22 FCC Rcd 379, 379-80, para. 1 (2007). IP CTS will benefit hard of hearing consumers, generally those who have the ability to speak and some residual hearing, by giving them the flexibility of using a computer, PDA, or wireless device to make a TRS call without having to purchase special telephone equipment. Like captioned telephone service, the provider sends to the consumer the text of what the other party is saying. In this manner, IP CTS accommodates persons who wish to speak to the other party, and both simultaneously listen to other party and read captions. *See id.* at 388, para. 21. The fact that the service is IP-based makes it more portable and available, but less expensive, than captioned telephone service, which requires special telephone equipment. The service is also useful to consumers who have low vision in addition to some hearing loss, because they can take advantage of the large text, variable fonts, and variable colors that are available on a computer or similar device. *See id.* at 386, 389, paras. 15, 23.

[168] *See id.* at 390, para. 25.

[169] *See Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket No. 03-123, CC Docket No. 98-67, Report and Order, 20 FCC Rcd 13165 (2005). VRS "allows people with hearing or speech disabilities who use sign language to communicate with voice telephone users through voice equipment." 47 C.F.R. § 64.601(17). The video equipment allows a communications assistant (CA) to view and interpret the party's signed conversation and relay the conversation back and forth with a voice caller in real-time over a broadband connection.

Spanish translation VRS – in which the CA translates signing into spoken Spanish, and vice versa – is a form of TRS entitled to reimbursement from the TRS Fund.[170] Furthermore, the Commission adopted rules simplifying the process for new VRS and Internet Protocol Relay (IP Relay) providers to enter the market.[171] The Commission's Consumer & Governmental Affairs Bureau (CGB) has released four notices certifying new providers to offer service under these rules.[172] Finally, in the *VRS Interoperability Order,* the Commission concluded that all VRS consumers must be able to place a VRS call through any VRS provider's service, and all VRS providers must be able to receive calls from, and make calls to, any VRS consumer.[173] Through this action, the Commission availed broadband offerings to more Americans, which in turn increased broadband deployment demand.

58. *Outreach Efforts Regarding Broadband.* In 2005, CGB established a comprehensive broadband outreach campaign to help foster broadband development by increasing consumer awareness about the benefits and availability of broadband. These outreach efforts include, but are not limited to: (1) educating the public about broadband and its benefits; (2) discussing solutions to broadband deployment challenges, with particular emphasis on rural and other underserved communities; and (3) raising awareness of funding sources for telemedicine and other programs relying on broadband deployment.[174] In addition, the Indian Telecommunications Initiatives (ITI) is a series of interactive workshops among Tribal Nations, government agencies, and industry addressing telecom issues facing Indian Country to encourage partnerships among these groups to improve telecommunications coverage, including broadband deployment, in American Indian and Alaska Native communities.[175]

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[170] *See Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities,* CC Docket No. 98-67, CG Docket No. 03-123, Order on Reconsideration, 20 FCC Rcd 13140 (2005).

[171] *See Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket No. 03-123, Report and Order and Order on Reconsideration, 20 FCC Rcd 20577 (2005). IP Relay service is a text-based form of TRS that allows persons who are deaf or hard of hearing, or who have difficulty speaking, to connect to a TRS facility via a computer (or other similar device) through the Internet, rather than through a text telephone (TTY) device. The CA then relays the call to the receiving party via voice through the public switched telephone network. The availability of computers or other web-enabled devices, including mobile devices, allows IP Relay to significantly enhance the accessibility of telecommunications to people with hearing and speech disabilities because such users are no longer reliant on the presence of TTY devices.

[172] *See, e.g.*, *Notice of Certification of Healinc Telecom, LLC as a Provider of Video Relay Service (VRS) Eligible for Compensation from the Interstate Telecommunications Relay Service (TRS) Fund*, CG Docket No. 03-123, Public Notice, 21 FCC Rcd 6486 (2006).

[173] *See Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket No. 03-123, Declaratory Ruling and Further Notice of Proposed Rulemaking, 21 FCC Rcd 5442 (2006).

[174] This campaign includes the distribution of information and consumer education materials online and at seminars and conferences. *See* FCC, *What is Broadband* (visited July 27, 2007), *available at* http://www.fcc.gov/cgb/broadband.html (containing sections on the importance of broadband, descriptions on the types of broadband, and the use of broadband in rural areas).

[175] *See* FCC Tribal Initiatives Website (visited Sept. 6, 2007), *available at* http://www.fcc.gov/indians; *see also, e.g.*, News Release, FCC, *FCC to Hold Indian Telecommunications Initiatives Regional Workshop and Roundtable In San Diego, CA, On July 27-28, 2006* (July 21, 2006), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-266525A1.pdf (announcing the agenda of an ITI workshop addressing, among other things, promoting broadband in Indian country).

VI. BROADBAND DEPLOYMENT IS REASONABLE AND TIMELY

59. Based on our analysis in this Report, we conclude that the deployment of advanced telecommunications capability to all Americans is reasonable and timely. The data reflect the industry's extensive investment in broadband deployment, including at higher speeds, as evidenced by increased subscribership for those higher-speed services. The record also reflects that providers are continuing to make significant investments in broadband facilities going forward. Further, while section 706 does not require the Commission to report on actual broadband subscribership, we believe that subscribership to broadband services continues to increase steadily as new broadband-dependent services and applications emerge in the marketplace, and that subscribership growth is important due to its relationship with deployment.[176]

A. Use of Broadband

60. *Use of Broadband at Home and Work.* A recent Pew Internet study finds that 47 percent of all adult Americans have a broadband connection at home as of early 2007.[177] Further, the study finds that in rural areas, home broadband adoption is now at 31 percent.[178] The Consumer Electronics Association (CEA) also recently conducted a study that finds that over 57.8 million U.S. households subscribe to broadband at home, which is an increase of 21 percent over the prior 12 months.[179] The CEA study also finds that 44 million adults (20 percent of non-subscribers) expect to have broadband at home within the next two years.[180] In total, the CEA study finds that 72 percent of all U.S. adults either have broadband at home or regularly access the Internet through a broadband connection outside the home.[181]

61. *Use of Broadband in the Classroom & Libraries.* Access to the Internet is virtually ubiquitous in public schools and libraries. In a study released by the National Center for Education Statistics in 2006, nearly 100 percent of public schools in the United States had Internet access, and 97 percent of these schools used broadband connections to access the Internet.[182] Comparatively, in 1997, the year that the Commission started the E-rate program, only 78 percent of public schools had any

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[176] Additionally, in January 2008, the United States Department of Commerce's National Telecommunications and Information Association (NTIA) released a report finding that that there has been "substantial growth in the broadband marketplace punctuated by demonstrable increases in capital investment, innovation, and entry, as well as superior productivity relative to other countries." NTIA, *Networked Nation: Broadband in America 2007* at 2 (rel. Jan. 2008).

[177] *See* John B. Horrigan and Aaron Smith, *Home Broadband Adoption 2007*, Pew Internet & American Life Project at 3 (June 2007) (2007 Pew Broadband Adoption Study), *available at* http://www.pewinternet.org/PPF/r/217/report_display.asp.

[178] *See* 2007 Pew Broadband Adoption Study at 6.

[179] *See* Consumer Electronics Association, *Broadband in America: Access, Use and Outlook* at 2 (July 2007), *available at* http://www.ce.org/PDF/CEA_Broadband_America.pdf (CEA Broadband Study).

[180] *See id.* at 2, 10.

[181] *See id.* at 3, 5.

[182] *See* John Wells and Laurie Lewis, *Internet Access in U.S. Public Schools and Classrooms: 1994-2005*, U.S. Department of Education at 4-5 (Nov. 2006), *available at* http://nces.ed.gov/pubs2007/2007020.pdf (NCES Study). NCES's definition of broadband connection refers to the type of connection the school uses when connecting to the Internet (*e.g.,* T3/DS3, fractional T3, T1/DS1, fractional T1, cable modem, and/or DSL), and does not have a minimum connection speed threshold. *See id.* at Appendix B.

Internet access.[183] In 2005, 94 percent of public school instructional classrooms had Internet access, compared with only 27 percent in 1997.[184] In 2000, the first year that the NCES Study tracked broadband use, 80 percent of public schools that had Internet access used broadband connections, compared to 97 percent in 2005.[185]

62. Public libraries also have high Internet access adoption rates. A 2006 study sponsored by the Bill and Melinda Gates Foundation and the American Library Association found that 99 percent of public library branches connect to the Internet and 98 percent of connected public library branches offer public Internet access.[186] Further, 33 percent of libraries now provide wireless Internet access.[187] Library Internet access is important because it provides Internet access to entire communities, including those that might not be able to afford it at home, and even can provide access to information during times of disaster when libraries are used as disaster response facilities.[188]

63. *Low-Income Population's Use of Broadband.* Since publication of the *Fourth Report*, statistics demonstrate that broadband for low-income Americans is more available and is increasingly used by that population. Our data indicate that as of June 2007, 92 percent of the lowest-income zip codes have at least one high-speed subscriber, compared with 99.4 percent of the highest-income zip codes.[189] By comparison, as of December 2003, only 81.9 percent of the lowest-income zip codes had at least one high-speed subscriber, while 98.7 percent of the highest-income zip codes had at least one high-speed subscriber.[190] The 2007 Pew Internet study reinforces these statistics, finding that broadband adoption among the lowest income group (less that $30,000 a year) increased from 15 percent in 2005 to 30 percent in 2007.[191] Additionally, in the $30,000-$50,000 annual income range, broadband adoption increased from 27 percent in 2005 to 46 percent in 2007.[192]

64. There are also non-governmental programs that are working actively to promote broadband subscription in low-income populations.[193] For example, One Economy, a national non-profit organization, has worked with 42 states to adopt policies that support broadband in new housing units.[194]

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[183] *See id.* at 14.

[184] *See id.* at 16.

[185] *See id.* at 18.

[186] *See* John Bertot *et al.*, *Public Libraries and the Internet 2006: Study Results and Findings*, College of Information, Florida State University at 1 (Sept. 2006), *available at* http://www.ii.fsu.edu/projectFiles/plinternet/2006/2006_plinternet.pdf (ALA Study); ALA Comments at 2.

[187] *See* ALA Comments at 5.

[188] *See id.* at 3-4.

[189] *See* Appendix B, Table 19.

[190] *See December 2006 High-Speed Services Report* at Table 19.

[191] *See* 2007 Pew Broadband Adoption Study at 4.

[192] *See id.*

[193] *See, e.g.*, APT Comments at 12-13.

[194] *See* One Economy Corporation, *Bring IT Home Campaign Report: 2004-2006* (visited Aug. 17, 2007), *available at* http://www.one-economy.com/pdf/bih_2006_report-low-res.pdf.

The result of this, according to the Alliance for Public Technology (APT), was that in 2005 alone, 200,000 low-income Americans enjoyed broadband Internet access in their homes.[195]

65. *Minority Broadband Adoption.* Statistical data reflects an upward trend in subscription to broadband by minorities in the United States. According to a Pew Internet study, 40 percent of African-Americans had a home broadband connection in 2007, compared to 14 percent in 2005, resulting in a 186 percent increase.[196] For the Hispanic adult population, 29 percent have a home broadband connection, compared to the 24 percent reported in 2003.[197]

66. *Disabilities Community Use of Broadband.* Broadband services have the ability to provide opportunities for people with disabilities. Both IP Relay services and VRS, two forms of TRS that allow people who are deaf or hard of hearing to communicate, have seen exponential growth over the past few years. In the *Fourth Report*, the Commission noted that in May 2004, consumers used 4,567,870 IP Relay minutes and 733,040 VRS minutes.[198] In May 2007, however, consumers used 6,725,447 IP Relay minutes and 5,298,825 VRS minutes.[199] Thus, in this last three-year period, consumers used over 45 percent more IP relay minutes, while the usage of VRS increased more than seven-fold.

B. International Broadband Comparisons

67. As in prior reports, we consider comparative data regarding broadband deployment in other countries. The most commonly cited international comparison of broadband subscribership is conducted semiannually by the Organisation for Economic Co-operation and Development (OECD). In the OECD's most recent report, the United States ranked 15th out of the 30 OECD member states in the Americas, Europe, and Asia, with 22.1 broadband subscribers per 100 people.[200] However, with regard to the total number of broadband subscribers, the United States continues to be the leader, by far, in the OECD's report. Among the 30 OECD members, the United States has the greatest number of broadband subscribers – estimated at 66,213,257, which is more than the total number of broadband subscribers of the top ranked 12 member states combined, and represents 30 percent of all broadband connections in the OECD.[201] While the OECD ranking is commonly cited, a more fully developed picture of broadband markets would provide a more accurate and useful international comparison.

68. For one, in making international comparisons, it is important to account for differences in geography and population distribution, given the economics of density in supplying broadband. Geographic factors, such as terrain, and demographic factors, such as the way population is dispersed, can

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[195] *See* APT Comments at 13.

[196] *See* 2007 Pew Broadband Adoption Study at 4-5.

[197] *See* 2007 Pew Broadband Adoption Study at 9; *Fourth Report*, 19 FCC Rcd at 20575.

[198] *See Fourth Report*, 19 FCC Rcd at 20576.

[199] *See* National Exchange Carrier Association, *TRS Fund Performance Status Report: Funding Year July 2006 – June 2007* (visited July 16, 2007), *available at* http://www.neca.org/media/0607MaydataTRSstatus.pdf.

[200] *See* Organisation for Economic Co-Operation and Development, *OECD Broadband Statistics to June 2007* (visited Nov. 6, 2007), *available at* http://www.oecd.org/document/60/0,3343,en_2825_497105_39574076_1_1_1_1,00.html (OECD June 2007 Report). The Commission had not released figures for broadband subscribership for June 2007. Accordingly, the OECD estimated the United States figure by collecting subscriber information reported by major United States broadband providers.

[201] *See* OECD June 2007 Report.

affect the cost of deployment and thus the take-up rate. For example, the cost of broadband deployment would likely differ between two countries with similar populations and geographic sizes (and thus similar population densities) if the vast majority of the population of one country lived in a city, while the population was more evenly distributed over a more rural area in the second country. It is likely to be significantly more costly to deploy broadband infrastructure in countries where a significant portion of the population is located in rural and sparsely populated areas compared with countries where the vast majority of the population is located in urban areas. For instance, sixth-ranked Iceland's capital city, Reykjavik, has a population of approximately 180,000, which is almost 60 percent of Iceland's population.[202] Such considerations also are important to comparisons of countries of similar geographic size.[203] For example, Canada, which was ranked ninth by the OECD, covers an area of 9,984,670 square kilometers, while the United States covers a similar area of 9,826,630 square kilometers.[204] However, while the United States encompasses a similar geographic area, two out of three Canadians live near Canada's southern border.[205] Thus, factors such as geography and population distribution are likely to lead to variations in broadband deployment and adoption rates in different countries.

69. Another important characteristic of the United States broadband market, relevant for comparisons with other countries, is the presence of multi-platform competition in the U.S. Importantly, the Commission has removed regulatory hurdles to promote infrastructure investment by competing broadband platforms in the United States. Most households in the United States have access to both DSL and cable modem services.[206] In addition, wireless broadband, fiber-to-the-premises, and broadband over power line are being deployed in many areas. For example, according to Commission data, the United States now has over 1.4 million fiber-based broadband subscribers.[207] In most OECD countries (27 out of 30), DSL is the predominant broadband technology, and in many of those countries (23 out of the 30), 60 percent or more of broadband subscribers use DSL.[208]

70. Finally, the OECD study overlooks other important avenues of consumer broadband access. Specifically, it does not take into consideration broadband usage outside of the home, such as Wi-Fi hot

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[202] *See* Iceland Tourist Board Website (visited Aug. 2, 2007), *available at* http://www.icelandtouristboard.com/reykjavik.html. It is also worth pointing out that Iceland has only 90,622 total broadband subscribers. *See* OECD June 2007 Report.

[203] Thirteen of the fourteen countries that the OECD ranks higher than the United States are geographically much smaller than the United States. *See* Letter from Paul Brigner, Executive Director Federal Regulatory, Verizon, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 07-45, Attach. at 4 (filed May 17, 2007) (noting that Sweden is comparable in size to California and Norway is comparable in size to New Mexico) (Verizon May 17, 2007 *Ex Parte* Letter).

[204] *See* OECD June 2007 Report; Central Intelligence Agency, World Factbook, Canada, Geography (visited Oct. 10, 2007), *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html#Geo; Central Intelligence Agency, World Factbook, United States, Geography (visited Oct. 10, 2007), *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/us.html#Geo.

[205] *See* Statistics Canada, *Portrait of the Canadian Population in 2006: National Portrait* (visited Aug. 2, 2007), *available at* http://www12.statcan.ca/english/census06/analysis/popdwell/NatlPortrait2.cfm.

[206] *See* Appendix B, Table 14 (noting that xDSL service is available in 82% of residential end-user premises with access to high-speed services where incumbent local exchange carriers offer local telephone service, and that cable modem service is available to 96% of residential end-user premises with access to high-speed services where cable systems offer cable television service).

[207] *See id.*, Table 2.

[208] *See* OECD June 2007 Report.

spots, or broadband access via 3G mobile technologies.[209] Users of mobile wireless technologies are increasingly able to connect through broadband connections to the Internet when they travel. Further, outside the home usage of broadband is a significant part of the U.S. broadband experience, with providers providing non-residential broadband access (*e.g.*, Wi-Fi hot spots, businesses, libraries, and classrooms), which are excluded from the OECD study.[210] For example, one website identifies over 58,000 Wi-Fi hotspots in the United States, more than any other country in the world, and with the next ranked country being the United Kingdom with only approximately 17,000 hotspots.[211]

71. Other reports on broadband identify additional differences and ways of comparing broadband markets in different countries. For example, a recent study by the Phoenix Center found that even if every household and business establishment had broadband among the OECD member nations, the United States would rank 20th because of the OECD study's reliance on per capita accounting.[212] As another example, the Economist Intelligence Unit considers broadband deployment in the context of a country's "e-readiness," which it defines as the "'state of play' of a country's information and communications technology (ICT) infrastructure and the ability of its consumers, businesses, and governments to use ICT to their benefit."[213] The report ranks the United States second only to Denmark in e-readiness.[214] Other international comparisons cite other metrics and comparisons.[215] Fundamentally, these various reports demonstrate the value of understanding the broader context when making comparisons regarding broadband deployment and adoption. Indeed, the priority the Commission places on continuing to promote broadband deployment will remain, as intended by section 706, regardless of the United States's ranking on any particular metric.

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[209] *See* Letter from Ambassador David A. Gross, United States Coordinator for International Communications and Information Policy, United States Department of State, to Secretary-General Angel Gurria, Organisation of Economic Co-Operation and Development at 1-2 (Apr. 24, 2007), *available at* http://www.ntia.doc.gov/ntiahome/press/2007/State_OECD_042407.pdf (noting that the OECD analysis excludes millions of student-age users that gain access to broadband services through Wi-Fi access on college campuses, as well as millions of workers that gain access to broadband services at their work desks).

[210] *See, e.g.*, AT&T Comments at 17.

[211] *See* JiWire, Inc. Website (visited Aug. 20, 2007), *available at* http://www.jiwire.com/.

[212] *See* Phoenix Center, *The Broadband Performance Index: A Policy-Relevant Method for Comparing Broadband Adoption Among Countries* at 7-8 (July 2007), *available at* http://www.phoenix-center.org/PCPP/PCPP29.final.pdf; *see also id.* at 5 (noting that, as measured by the OECD, the United States broadband subscription rates have increased 436% from 2001 through 2006).

[213] The Economist Intelligence Unit, *The 2007 E-readiness Rankings, Raising the Bar*, The Economist at 1 (visited July 23, 2007), *available at* http://www.eiu.com/site_info.asp?info_name=eiu_2007_e_readiness_rankings&rf=0. These rankings are predicated on the belief that for digital business to be effective and widely utilized in a country, a holistically supportive environment must first exist.

[214] *See id.* at 5.

[215] *See, e.g.*, AT&T Comments at 18 (citing the finding in a recent study by Analysys Consulting of broadband offers in a number of countries that "differences in actual bandwidth speeds among the offerings of broadband service providers internationally are less significant than simple advertised rates imply"); Consumers Union *et al.* Comments at 39-40 (comparing lower broadband price per mbps per month in certain other countries as compared to the United States); Verizon May 16, 2007 *Ex Parte* Letter, Attach. at 7 (citing data indicating that customers in the United States live further from central offices than customers in certain other countries).

VII. THE FUTURE OF BROADBAND

72. In the future, we anticipate ever-greater demand for services and applications requiring greater bandwidth over an ever-expanding area. The record in this proceeding demonstrates that multiple industries are aggressively investing in and deploying services to meet this demand, enhancing consumer choice in both providers and services.

73. *Increases in Broadband Demand.* Demand for broadband will increase as broadband continues to become a vital part of our economy, education, healthcare, e-government, libraries, business, agriculture, community organizations, national defense, and emergency response.[216] While the current rate of broadband services adoption is robust, some reports suggest that increased rates of broadband adoption are yet to come.[217] For example, Morgan Stanley projects that the number of households that adopt broadband will increase approximately 50 percent over the next four years, with a forecast that 72 million households will have acquired broadband services by 2010.[218] As the cost of personal computer ownership continues to fall and other IP-enabled broadband devices roll out at cheaper prices, they become less of a barrier to broadband adoption.[219] Today, broadband Internet access service continues to be a more fully integrated experience, with users hooked up to multiple devices throughout their residences, places of work, and on their person.

74. *Advances in Broadband Networks.* At the same time that broadband demand increases, network technology continues to evolve and improve. Previously distinct networks are now converging and overlapping to form competing broadband networks that perform all of the network applications once

[216] *See, e.g.*, Connected Nation Comments at 3 (stating that 70% of Kentucky counties now operate or are establishing a web presence for e-government, up from 30% two years ago); Embarq Comments at 1, 9 (arguing that it is impossible to protect against terrorism or criminal activity if there are substantial land areas isolated from communications infrastructure); NATOA *et al.* Comments at 2 (arguing that proper communications tools are necessary for effective disaster response); NCTA Comments at 23 (estimating that by 2010 that the Web will affect half of all retail sales); *see also, e.g.*, U.S. Census Bureau, *Quarterly Retail E-Commerce Sales: 1st Quarter 2007* (May 16, 2007), *available at* http://www.census.gov/mrts/www/data/html/07Q1.html (estimating that U.S. retail e-commerce sales for the first quarter of 2007 were $31.5 billion).

[217] *See* Everett Rogers, *Diffusion of Innovation* (1962) (describing the adoption of technology on an S Curve); Michele Jackson, Tom Lookabaugh, Scott Savage, Douglas C. Sicker, and Donald Waldman, *Broadband Demand Study Final Report*, Telecommunications Research Group, University of Colorado, at 14-16 (November 2002), *available at* http://newsroom.cisco.com/dlls/Broadband_Demand.pdf (stating that broadband adoption is in the middle of the S curve); Bear Stearns, *March Broadband Buzz: A Monthly Update on Critical Broadband Issues*, at 4 (Mar. 12, 2007) (projecting broadband adoption rates of 2007: 58.4%; 2008: 66%; and 2009: 72.7%); Morgan Stanley, *Cable & Telecom, VoIP Success Driving Telco On-Net and Off-Net Video*, at 16 (July 23, 2007) (projecting residential broadband adoption rates of 2007: 47.5%; 2008: 55.2%; 2009: 58.7%; and 2010: 61.4%); UBS, *Telecommunications and Cable Services, HSD/VoIP Outlook and 4Q06 Review: Cable vs Telco Competition Heats Up*, at 5 (Apr. 4, 2007) (projecting residential broadband adoption rates of 2007: 53.5%; 2008: 59.9%; 2009: 65.4%; and 2010: 70.5%); *see also* Verizon/Verizon Wireless Comments at 5 (stating that at the end of the first quarter of 2007, 44% of U.S. households subscribed to broadband, and that this figure is expected to reach 50% by 2008); Appendix B, Table 2 (recognizing an increase in the number of broadband lines over time).

[218] *See* NCTA Comments at 23.

[219] *See* Connected Nation Comments at 9 (noting that the lack of a home computer was ranked higher than the monthly broadband subscription fee as the primary barrier to residential broadband in Kentucky); *see also* Bureau of Labor Statistics, *Consumer Price Index* (June 15, 2007), *available at* http://www.bls.gov/news.release/cpi.nr0.htm (stating that the price index of personal computers declined by 2.7% from June 2006 to June 2007); Intel Corporation, *Moore's Law* (visited Aug. 31, 2007), *available at* http://www.intel.com/technology/mooreslaw/ (stating that computers are growing substantially more powerful while the cost of computers is declining).

only possible by purchasing services from multiple service providers. Competition between broadband platform providers attempting to keep up with their competitors will drive higher speed technologies and service offerings to the marketplace.[220] Coverage too will continue to become more ubiquitous as a diversity of technologies mature.[221] In fact, telecommunications companies expect to make $50 billion in capital expenditures in 2008 and 2009.[222] Further, local communities report that a key to their future is broadband. In order to attract business and residents, they must be able to provide the necessities, and this increasingly includes broadband.[223] The future of a community's economy, employment opportunities, telecommuting, and opportunities for individuals with disabilities are related directly to the future of broadband in that community.[224]

75. *Advances in Services and Applications.* The deployment of new broadband networks continues to help introduce next generation broadband services and applications into the marketplace. The separation of applications from the physical network will continue to spur competition between previously geographically distinct companies.[225] For example, satellite radio and clips of major league sports games are available over the Internet; podcasting has opened doors for new independent voices; game systems allow users to interact with each other over the Internet; and consumers can control and monitor their home security and environmental systems remotely.[226]

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[220] *See, e.g.*, FTTH Council Comments at 6 (explaining that broadband speeds are expected to increase by 42% per year); NuVox/XO Comments at 4 (discussing the emergence of Ethernet-over-Copper technologies); Verizon/Verizon Wireless Reply at 4 (stating that cable operators soon will deploy new DOCSIS 3.0 architecture that will allow speeds above 100 mbps).

[221] *See, e.g.*, NASUCA Comments at 15 (stating that by 2008, AT&T/BellSouth will offer Internet access service at speeds in excess of 200 kbps in at least one direction to 100 percent of the residents living within its territory); Covad Comments at 2, 4 (stating that Covad is developing services, using legacy copper, that were previously unavailable); *id.* at 5 (explaining that legacy copper can now be used for the provision of television services).

[222] *See* Bank of America Equity Research, *Wireline and Wireless Telecommunications Services*, at 23 (July 18, 2007); *see also, e.g.*, Andrew Bartels, *US IT Spending 2007 Update: What the 4Q 2006 IT Purchase Data Says About the 2007 Outlook*, Forrester Research Teleconference (Feb. 26, 2007), *available at* http://www.forrester.com/Events/Content/0,5180,1625,00.ppt (projecting US purchases of communications equipment in 2007: $115B; 2008: $123B; 2009: $131B; 2010: $155B); Verizon/Verizon Wireless Comments at 6 (noting that North American telecom companies expect to spend $70 billion on new infrastructure in 2007); *id.* at 8 (stating that Comcast plans to spend $5.7 billion in capital expenditures in 2007).

[223] *See, e.g.*, Connected Nation Comments at 7 (describing how the increase in broadband availability has attracted companies to Kentucky).

[224] *See, e.g.*, *id*. at 7 (describing job growth associated with the improved technology infrastructure in Kentucky); NATOA *et al.* Comments at 2 (describing how increased broadband alleviates traffic jams through the increased use of telecommuting).

[225] *See, e.g.*, CCIA Comments at 7 (describing how AT&T's VoIP package will compete against Verizon and Qwest).

[226] *See, e.g.*, XM Radio Online Website (visited July 25, 2007), *available at* http://xmro.xmradio.com/xstream/index.jsp; SIRIUS Online Website (visited July 25, 2007), *available at* http://www.sirius.com/servlet/ContentServer?pagename=Sirius/Page&c=FlexContent&cid=1174328309443; Major League Baseball TV Website (visited July 25, 2007), *available at* http://mlb.mlb.com/mlb/subscriptions/mlbtv.jsp?c_id=mlb?c_id=mlb; May Wong, *NHL, Sling Media partner on clip-sharing service*, USA Today (June 7, 2007), *available at* http://www.usatoday.com/tech/techinvestor/industry/2007-06-07-nhl-sling-partnership_N.htm.

VIII. CONCLUSION

76. Access to broadband continues to play a critical role in the economy of the United States and in American life. The availability of broadband shapes our world by allowing us to connect to others across the globe in an instant. From schoolchildren learning to use the Internet in the classroom to businesses connecting instantaneously with faraway customers using VoIP technologies to doctors simultaneously reviewing patient records over telemedicine networks, broadband-based technologies are revolutionizing our lives. While broadband in the United States is being deployed in a reasonable and timely fashion, the future of broadband holds great promise and the Commission will work to ensure that all Americans have an opportunity to enjoy its benefits. The Commission's broadband policy is to continue to promote investment in multiple broadband platforms, to promote greater speeds, and to promote related digital technologies and services that will encourage broadband demand. The end goal is to ensure the ubiquitous and affordable availability of broadband for all Americans.

IX. ORDERING CLAUSE

77. Accordingly, IT IS ORDERED that, pursuant to section 706 of the Telecommunications Act of 1996, 47 U.S.C. § 157 nt., this Report IS ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Commenters in GN Docket No. 07-45

Comments	Abbreviation
AT&T Inc.	AT&T
Alexicon Telecommunications Consulting	Alexicon
The Alliance for Public Technology	APT
The American Library Association	ALA
Clearwire Corporation	Clearwire
Computer & Communications Industry Association	CCIA
Connected Nation, Inc.	Connected Nation
Consumers Union, Consumer Federation of America, and Free Press	Consumers Union *et al.*
Covad Communications Company	Covad
CTIA – The Wireless Association®	CTIA
Roy A. Elliott	Elliot
Embarq	Embarq
The Fiber-to-the-Home Council	FTTH Council
The Metropolitan Washington Council of Governments	MWCOG
M2Z Networks, Inc.	M2Z
The National Association of Telecommunications Officers and Advisors, The National Association of Counties, The U.S. Conference of Mayors, and the National League of Cities	NATOA *et al.*
The National Association of State Utility Consumer Advocates	NASUCA
The National Cable & Telecommunications Association	NCTA
The National Telecommunications Cooperative Association	NTCA
Native Public Media	NPM
The Nebraska Rural Independent Companies	Nebraska Companies
The New Jersey Division of Rate Counsel	NJ Rate Counsel
NuVox Communications and XO Communications, LLC	NuVox/XO
The Organization for the Promotion and Advancement of Small Telecommunications Companies	OPASTCO
Pacific LightNet, Inc. and Silver Star Telecom, LLC	Joint Commenters
PCIA – The Wireless Infrastructure Association	PCIA
Puerto Rico Telephone Company, Inc.	PRTC
Qwest Corporation and Qwest Communications Corporation	Qwest
Rehabilitation Engineering Research Center for Wireless Technologies	Wireless RERC
Regional Planning Commission of Greater Birmingham	Birmingham Regional Commission
Sprint Nextel Corporation	Sprint Nextel
The Telecommunications Industry Association	TIA
Time Warner Telecom, Inc.	Time Warner Telecom

Tropos Networks	Tropos
Daniel J. Udovic, P.E.	Udovic
Verizon and Verizon Wireless	Verizon/Verizon Wireless

Reply Commenters in GN Docket No. 07-45

Reply Comments	**Abbreviation**
The American Cable Association	ACA
AT&T Inc.	AT&T
BT Americas Inc.	BT Americas
Colorado Department of Education	CO DoE
Consumers Union, Consumer Federation of America, and Free Press	Consumers Union *et al.*
Decatur Public Library	Decatur Library
Fuller Public Library	Fuller Library
Haakon County Public Library	Haakon Library
Mississippi Library Commission	Mississippi Library
The National Association of State Utility Consumer Advocates	NASUCA
The National Rural Telecommunications Cooperative	NRTC
The National Telecommunications Cooperative Association	NTCA
The New Jersey Division of Rate Counsel	NJ Rate Counsel
New York State Library	NY Library
Park County, Colorado Library	Park County, Colorado Library
Pillsbury Free Library	Pillsbury Library
San Bernardino Public Library	San Bernardino Library
The Satellite Industry Association	SIA
TeleTruth	TeleTruth
Verizon and Verizon Wireless	Verizon/Verizon Wireless
Vonage Holdings Corp.	Vonage
The Wisconsin Department of Public Instruction	Wisconsin DPI

APPENDIX B

Commission's Report on High-Speed Services for Internet Access: Status as of June 30, 2007

High-Speed Services for Internet Access: Status as of June 30, 2007

Industry Analysis and Technology Division
Wireline Competition Bureau
March 2008

This report is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, SW, Washington, DC. Copies may be purchased by contacting Best Copy and Printing, Inc., 445 12th Street, SW, Room CY-B402, Washington, DC 20554, telephone (800) 378-3160, or via their website at www.bcpiweb.com. The report can also be downloaded from the Wireline Competition Bureau Statistical Reports Internet site at www.fcc.gov/wcb/stats.

High-Speed Services for Internet Access: Status as of June 30, 2007

Congress directed the Commission and the states, in section 706 of the Telecommunications Act of 1996, to encourage deployment of advanced telecommunications capability in the United States on a reasonable and timely basis.[1] To assist in its evaluation of such deployment, the Commission instituted a formal data collection program (FCC Form 477) to gather standardized information about subscribership to high-speed services, including advanced services, from wireline telephone companies, cable system operators, terrestrial wireless service providers, satellite service providers, and any other facilities-based providers of advanced telecommunications capability.[2]

We summarize here information from the sixteenth semi-annual data collection, thereby presenting a snapshot of subscribership as of June 30, 2007.[3] High-speed lines connecting homes and businesses to the Internet increased by 22% during the first half of 2007, from 82.8 million to 100.9 million lines in service, following a 27% increase, from 65.3 million to 82.8 million lines, during the second half of 2006. For the full twelve-month period ending June 30, 2007, high-speed lines increased by 55% (or 35.7 million lines). The presence of high-speed service subscribers was reported in all 50 states, the District of Columbia, American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the Virgin Islands, and in over 99% of the Zip Codes in the United States.

Twice a year, all facilities-based providers of high-speed connections to end users are required to report to the Commission basic information about their service offerings and types of customers.[4] Prior to June 2005, providers with fewer than 250 high-speed lines (or wireless

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[1] *See* §706, Pub.L. 104-104, Title VII, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. § 157. We use the term "high-speed" to describe services that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction. "Advanced services," which provide the subscriber with transmission speeds in excess of 200 kbps in each direction, are a subset of high-speed services.

[2] *Local Competition and Broadband Reporting*, CC Docket No. 99-301, Report and Order, 15 FCC Rcd 7717 (2000); *Local Telephone Competition and Broadband Reporting*, WC Docket No. 04-141, Report and Order, 19 FCC Rcd 22340 (2004). During this data gathering program, qualifying entities file FCC Form 477 each year on March 1 (reporting data for the preceding December 31) and September 1 (reporting data for June 30 of the same year). The first data collected by Form 477 were data as of December 31, 1999. An updated Form 477, and instructions for that particular form, for each specific round of the data collection may be downloaded from the FCC Forms website at www.fcc.gov/formpage.html.

[3] Statistical summaries of the earlier Form 477 data collections appeared in *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913 (2000) (*Second 706 Report*), available at www.fcc.gov/broadband/706.html, and in previous releases of the *High-Speed Services for Internet Access* report, available at www.fcc.gov/wcb/stats.

[4] The terms "broadband connections" (which is used as a synonym for "high-speed connections" in the Form 477 program) and "facilities-based provider" are defined on the first page of the Form 477 instructions that are available at www.fcc.gov/formpage.html, and the term "end users" is defined on the third page. Facilities-based providers report information about high-speed connections they provide directly to their own end-user customers and also high-speed connections they provide to Internet Service Providers for resale to end users.

channels) in service in a particular state were not required to report data for that state.[5] Small providers of high-speed connections, many of whom serve rural areas with relatively small populations, were therefore underrepresented in the earlier data. Including these providers resulted in a substantial one-time increase in the number of holding companies and unaffiliated entities reporting information about high-speed connections from December 31, 2004 to June 30, 2005.[6]

The data reported for June 30, 2007 include detail about the information transfer rates ("speeds") of the reported connections and a breakdown of high-speed connections by type of technology.[7] The reported data also enable us to estimate, for individual states, the extent to which Digital Subscriber Line (DSL) high-speed connections provided by incumbent local exchange carriers (incumbent LECs), and cable modem high-speed service provided by cable system operators, are available to households residing in the areas these companies serve.

Readers can draw the following broad conclusions from the data summarized in this report:

- High-speed lines (or wireless channels) connecting homes and businesses to the Internet at speeds that exceed 200 kbps in *at least one* direction increased from 82.8 million lines to 100.9 million lines during the first half of 2007. For the full twelve-month period ending June 30, 2007, high-speed lines increased by 35.7 million, from 65.3 million lines to 100.9 million lines. See Table 1 and Chart 1.

- ADSL lines increased by 2.1 million lines during the first half of 2007, fiber connections increased by 0.4 million lines, and cable modem service increased by 2.4 million lines. For the full twelve-month period ending June 30, 2007, ADSL increased by 4.9 million lines, fiber connections increased by 0.7 million lines, and cable modem service increased by 5.2 million lines. See Table 1.

- Of the 100.9 million total high-speed lines, 34.1% were cable modem, 27.3% were ADSL, 1.0% were symmetric DSL (SDSL) or traditional wireline, 1.4% were fiber to the end user premises, and 36.2% used other technologies.[8] See Chart 2.

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[5] High-speed lines reported in voluntary submissions of data prior to June 2005 represented less than 0.05% of total reported high-speed lines. As of June 30, 2005, filers with fewer than 250 lines in a state (including some entities that previously made voluntary submissions) represented about 0.2% of total reported high-speed lines.

[6] The nationwide number of holding companies and unaffiliated entities reporting high-speed lines increased from 552 as of December 31, 2004 to 1,270 as of June 30, 2005. See Table 7.

[7] Some Internet-access connections that telephone companies, cable system operators, and wireless service providers offer do not meet the 200 kbps criterion for reporting high-speed connections to the Commission, but may nevertheless meet the needs of the subscribers who select them over a more expensive service option.

[8] Providers are instructed to report a high-speed connection in the (mutually exclusive) technology category that characterizes the last few feet of distribution plant to the subscriber's premises. In addition to cable modem, ADSL, SDSL, traditional wireline when used for Internet access, and optical carrier (fiber to the end user) connections, reporting entities specify satellite, terrestrial fixed wireless (licensed or unlicensed), terrestrial mobile wireless (licensed or unlicensed), electric power line, or "all other" technology. See additional notes following Chart 10.

- Lines connecting homes and businesses to the Internet at transmission speeds that exceed 200 kbps in *both* directions increased from 59.8 million lines to 69.6 million lines during the first half of 2007. For the full twelve-month period ending June 30, 2007, they increased by 18.5 million, from 51.1 million lines to 69.6 million lines. See Table 2 and Chart 3.

- Of the 69.6 million lines which were faster than 200 kbps in *both* directions, 48.8% were cable modem, 33.6% were ADSL, 1.5% were SDSL or traditional wireline, 2.0% were fiber to the end user premises, and 14.1% used other technologies. See Chart 4.

- Of the 100.9 million total high-speed lines, 65.9 million were designed to serve primarily residential end users. Cable modem represented 50.6% of these lines while 37.5% were ADSL, 0.2% were SDSL or traditional wireline connections, 1.7% were fiber to the end user premises, and 10.0% used other technologies. See Table 3 and Chart 6. For state-specific data, see Table 13.

- Of the 69.6 million lines that were faster than 200 kbps in *both* directions, 61.1 million lines were designed to serve primarily residential end users. Of these, cable modem represented 53.9% while 34.1% were ADSL, 0.2% were SDSL or traditional wireline, 1.9% were fiber to the end user premises, and 10.0% used other technologies. See Table 4 and Chart 8.

- Of the 69.6 million reported high-speed lines that were faster than 200 kbps in *both* directions as of June 30, 2007, 59.8% were at least 2.5 mbps in the faster direction and 40.2% were slower than 2.5 mbps in the faster direction. See Table 5.

- Incumbent LECs or their affiliates reported 97.0% of ADSL connections, 91.2% of fiber-to-the-premises connections, 81.5% of the mobile service subscribers whose wireless device is capable of operating on a high-speed mobile wireless network, and 49.2% of traditional wireline connections. When all technologies are considered, incumbent LECs reported 56.8% of total high-speed connections. See Table 6.

- High-speed lines were reported in all 50 states, the District of Columbia, American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the Virgin Islands. See Table 9 and, for historical data, Tables 10 - 12.

- As a nationwide average, we estimate that high-speed DSL connections were available to 82% of the households to whom incumbent LECs could provide local telephone service, and that high-speed cable modem service was available to 96% of the households to whom cable system operators could provide cable TV service. See Table 14.

- The Commission's data collection program requires providers to list the Zip Codes in which the provider has at least one high-speed connection in service to an end user, and over 99% of Zip Codes were listed by at least one provider.[9] The most widely reported technologies by this measure were high-speed mobile wireless (with at least some presence reported in 96% of Zip Codes), satellite (in 92% of Zip Codes), ADSL (in 85% of Zip Codes), and cable modem service (in 66% of Zip Codes). ADSL and/or cable modem connections were reported to be present in 90% of Zip Codes.[10] See Tables 15 and 16. For state-specific data, see Table 17.

- Our analysis indicates that more than 99% of the country's population lives in the more than 99% of Zip Codes where a provider reports having at least one high-speed service subscriber. Moreover, numerous competing providers report serving high-speed subscribers in the major population centers of the country. See the map that follows Table 16.

- High population density has a positive association with reports that high-speed subscribers are present, and low population density has an inverse association. For example, high-speed subscribers were reported to be present in more than 99% of the most densely populated Zip Codes and in 91% of Zip Codes with the lowest population densities.[11] The comparable figure for the lowest-density Zip Codes was 89% a year earlier. See Table 18.

- High median household income also has a positive association with reports that high-speed subscribers are present. In the top one-tenth of Zip Codes ranked by median household income, high-speed subscribers are reported in 99% of Zip Codes. By contrast, high-speed subscribers are reported in 92% of Zip Codes with the lowest median household income, compared to 91% a year earlier. See Table 19.

As other information from the Commission's data collection program (FCC Form 477) becomes available, it will be included in future reports on the deployment of advanced telecommunications capability and in publications such as this one.

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[9] Lists of Zip Codes with number of service providers as reported in the FCC Form 477 filings are made available at www.fcc.gov/wcb/stats in a format that honors requests for nondisclosure of information the reporting entities assert is competitively sensitive.

[10] The 90% figure (more precisely, 89.6%) includes ZIP codes with either ADSL subscribers reported, cable modem subscribers reported, or both. In 60.9% of ZIP codes, both ADSL and cable modem subscribers have been reported. In 23.7% of ZIP codes, there are ADSL subscribers reported but no cable modem subscribers, and in 5.0% of ZIP codes there are cable modem subscribers reported but no ADSL subscribers reported.

[11] For this comparison, we consider the most densely populated Zip Codes to be those with more than 3,147 persons per square mile (the top decile of Zip Codes) and the least densely populated Zip Codes to be those with fewer than 6 persons per square mile (the bottom decile).

We invite users of this information to provide suggestions for improved data collection and analysis by:

- Using the attached customer response form,
- E-mailing comments to James.Eisner@fcc.gov or Suzanne.Mendez@fcc.gov,
- Calling the Industry Analysis and Technology Division of the Wireline Competition Bureau at (202) 418-0940, or
- Participating in any formal proceedings undertaken by the Commission to solicit comments for improvement of FCC Form 477.

Table 1
High-Speed Lines [1]
(Over 200 kbps in at least one direction)

Technology [2]	2000	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
ADSL	951,583	2,693,834	5,101,493	7,675,114	11,398,199	16,316,309	19,515,483	22,584,255	25,412,883	27,516,171
SDSL and Traditional Wireline	758,594	1,088,066	1,186,680	1,215,713	1,407,121	898,468	878,973	948,134	1,030,698	1,028,654
SDSL	-	-	-	-	-	411,731	368,782	337,412	344,759	319,932
Traditional Wireline	-	-	-	-	-	486,737	510,191	610,722	685,939	708,722
Cable Modem	2,284,491	5,184,141	9,172,895	13,684,225	18,592,636	24,017,442	26,558,206	29,174,494	31,981,705	34,408,553
Fiber [3]	46,635	81,248	105,991	111,386	130,928	315,651	448,257	685,823	1,035,677	1,402,652
Satellite and Wireless	65,615	194,707	220,588	309,006	421,690	965,068	3,812,655	11,872,998	23,344,106	36,560,197
Satellite	-	-	-	-	-	376,837	426,928	495,365	571,980	668,803
Fixed Wireless	-	-	-	-	-	208,695	257,431	361,113	484,277	586,141
Mobile Wireless	-	-	-	-	-	379,536	3,128,296	11,016,520	22,287,849	35,305,253
Power Line and Other	-	-	-	-	-	4,872	4,571	5,208	4,776	5,420
Total Lines	4,106,918	9,241,996	15,787,647	22,995,444	31,950,574	42,517,810	51,218,145	65,270,912	82,809,845	100,921,647

For data through December 2004, only those providers with at least 250 lines per state were required to file.
Some historical data have been revised. See additional notes following Chart 10.

Chart 1
Total High-Speed Lines

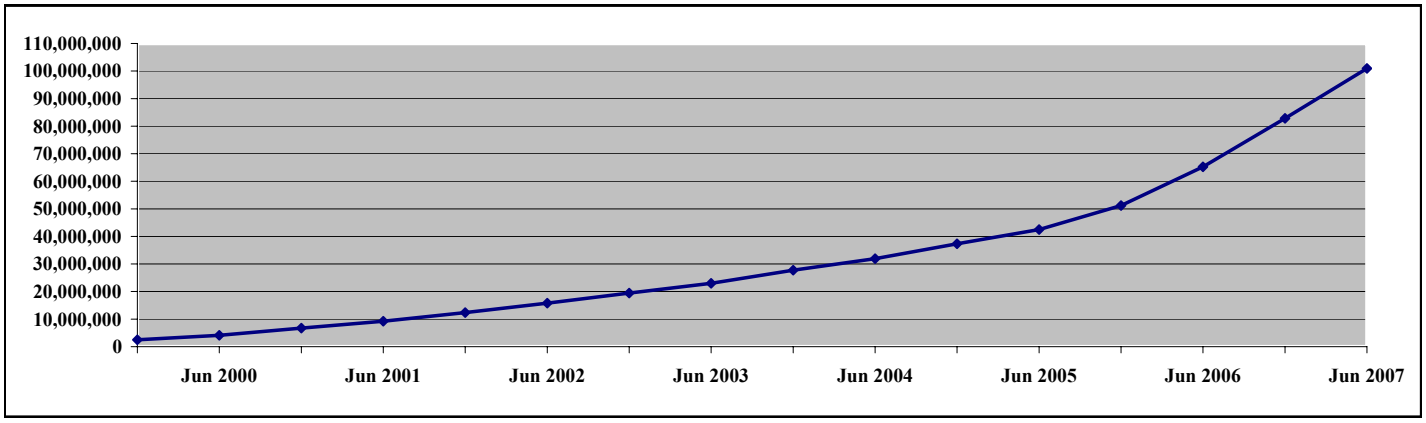


Chart 2
High-Speed Lines by Technology as of June 30, 2007

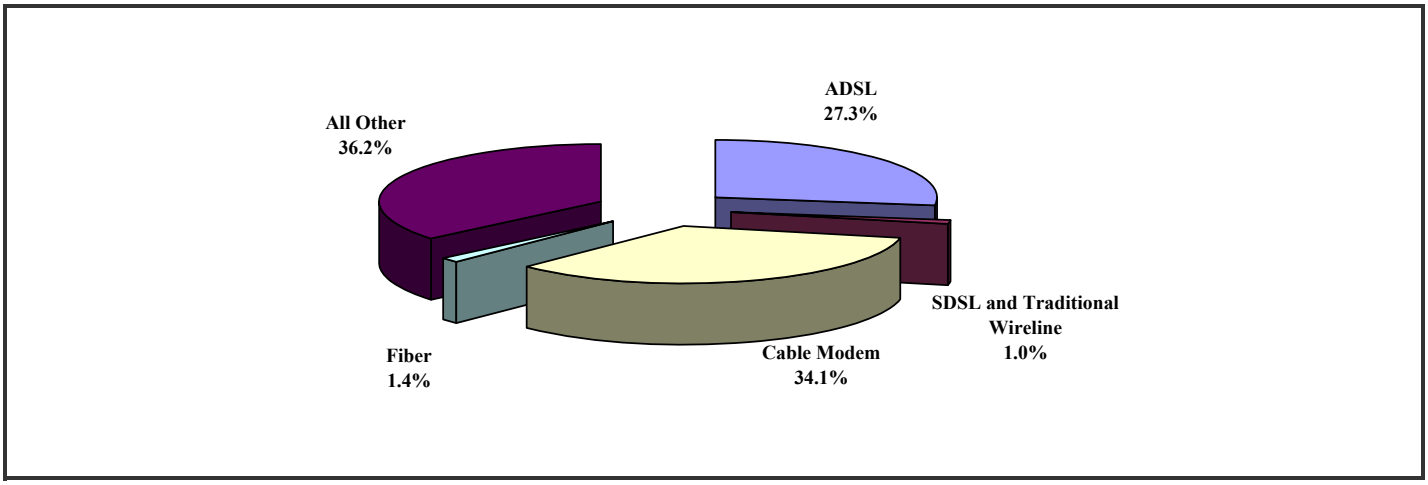


Table 2
Advanced Services Lines [1]
(Over 200 kbps in both directions)

Technology [2]	2000	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
ADSL	326,816	998,883	1,852,879	2,536,368	3,768,019	13,176,095	15,921,336	18,310,957	21,144,159	23,381,289
SDSL and Traditional Wireline	758,594	1,088,066	1,186,680	1,215,713	1,407,121	869,772	874,261	946,874	1,029,782	1,027,937
SDSL	-	-	-	-	-	387,451	368,736	336,586	344,739	319,293
Traditional Wireline	-	-	-	-	-	482,321	505,525	610,288	685,043	708,644
Cable Modem	1,469,130	3,329,976	6,819,395	11,935,866	17,567,468	22,745,012	26,293,596	28,878,587	31,594,111	33,939,919
Fiber [3]	40,627	81,204	104,015	110,829	129,636	314,229	447,235	684,729	1,034,317	1,400,565
Satellite and Wireless	3,649	73,476	66,073	64,393	93,805	223,274	338,635	2,275,154	4,982,675	9,800,951
Satellite	-	-	-	-	-	10,966	36,331	27,489	36,026	57,202
Fixed Wireless	-	-	-	-	-	191,229	220,268	333,209	455,741	553,919
Mobile Wireless	-	-	-	-	-	21,079	82,036	1,914,456	4,490,908	9,189,830
Power Line and Other	-	-	-	-	-	4,174	4,501	5,209	4,776	5,420
Total Lines	2,598,816	5,571,605	10,029,042	15,863,169	22,966,048	37,332,557	43,879,564	51,101,510	59,789,820	69,556,081

For data through December 2004, only those providers with at least 250 lines per state were required to file.
Some historical data have been revised. See additional notes following Chart 10.

Chart 3
Advanced Services Lines

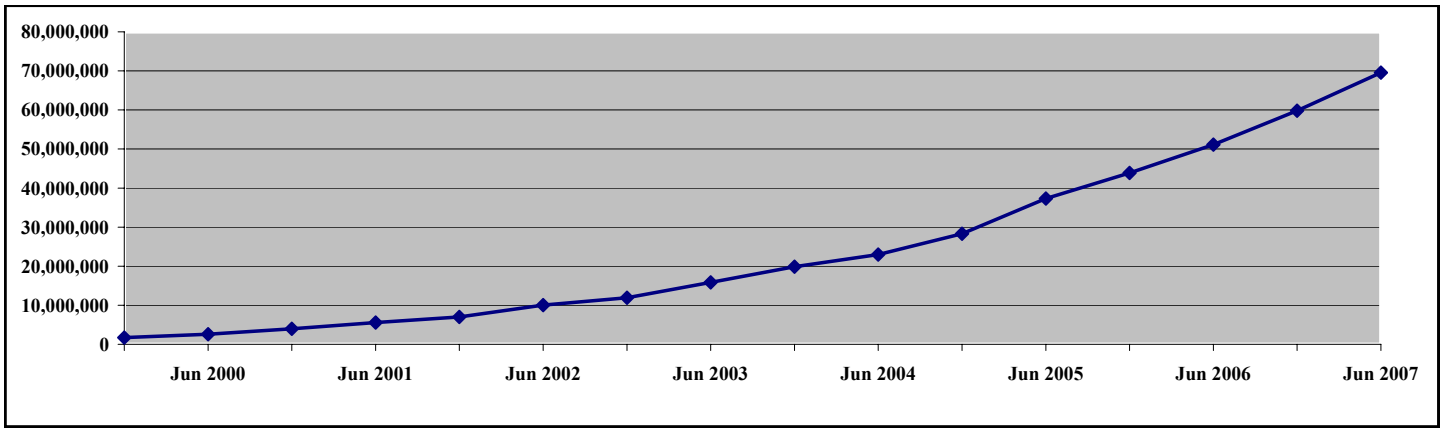


Chart 4
Advanced Services Lines by Technology as of June 30, 2007

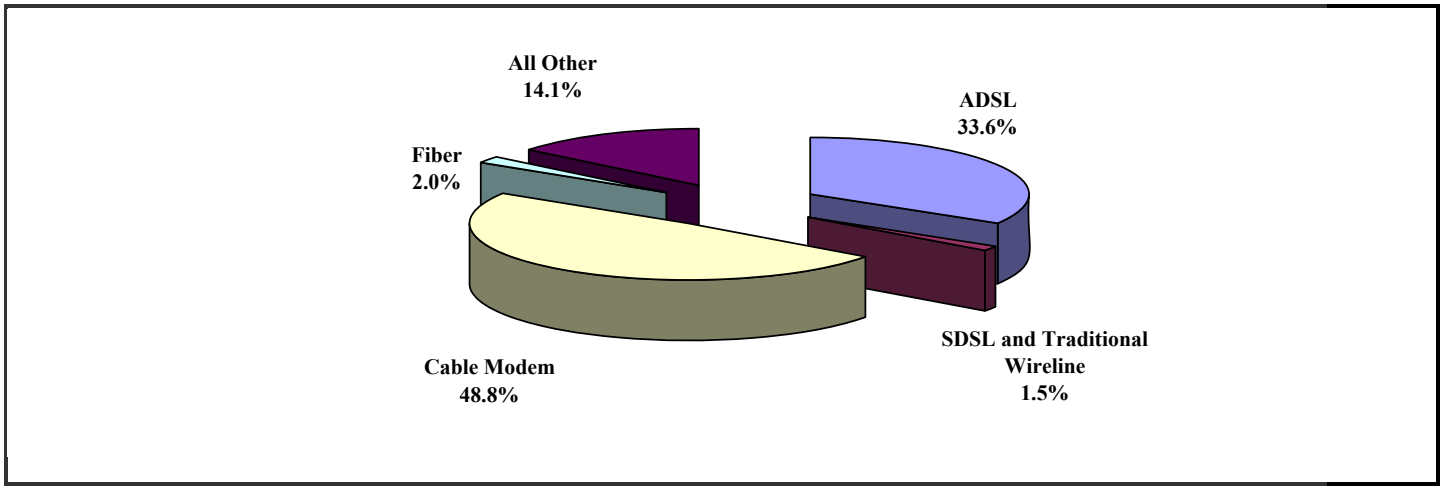


Table 3
Residential High-Speed Lines [1]
(Over 200 kbps in at least one direction)

Technology [2]	2000	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
ADSL	772,272	2,490,740	4,395,033	6,429,938	10,759,495	14,442,823	17,370,508	20,152,290	22,768,500	24,690,513
SDSL and Traditional Wireline	111,490	138,307	223,599	250,372	393,049	159,489	129,444	112,017	117,708	117,437
SDSL	-	-	-	-	-	153,978	122,220	102,605	105,012	104,944
Traditional Wireline	-	-	-	-	-	5,511	7,224	9,412	12,696	12,493
Cable Modem	2,215,259	4,998,540	9,157,285	13,660,541	18,525,265	23,578,060	25,714,461	28,365,648	31,118,079	33,340,678
Fiber [3]	325	2,623	6,120	16,132	22,719	83,293	213,479	442,027	763,394	1,152,195
Satellite and Wireless	64,320	182,165	202,251	288,786	387,563	428,367	532,704	1,840,060	3,589,607	6,598,329
Satellite	-	-	-	-	-	265,017	320,142	382,047	455,936	530,357
Fixed Wireless	-	-	-	-	-	160,775	203,179	301,293	424,284	522,752
Mobile Wireless	-	-	-	-	-	2,574	9,384	1,156,720	2,709,387	5,545,220
Power Line and Other	-	-	-	-	-	4,447	4,550	5,093	4,711	5,347
Total Lines	3,163,666	7,812,375	13,984,287	20,645,769	30,088,091	38,696,480	43,965,147	50,917,135	58,361,999	65,904,499

For data through December 2004, only those providers with at least 250 lines per state were required to file.
Small business lines were included in totals through December 2004.
Some historical data have been revised. See additional notes following Chart 10.

Chart 5
Residential High-Speed Lines

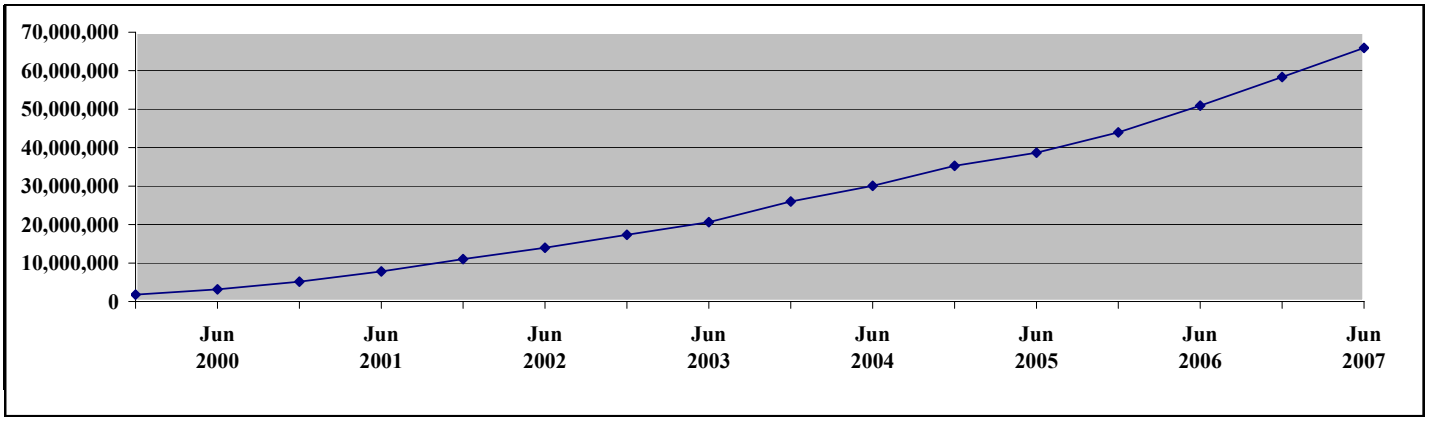


Chart 6
Residential High-Speed Lines by Technology as of June 30, 2007

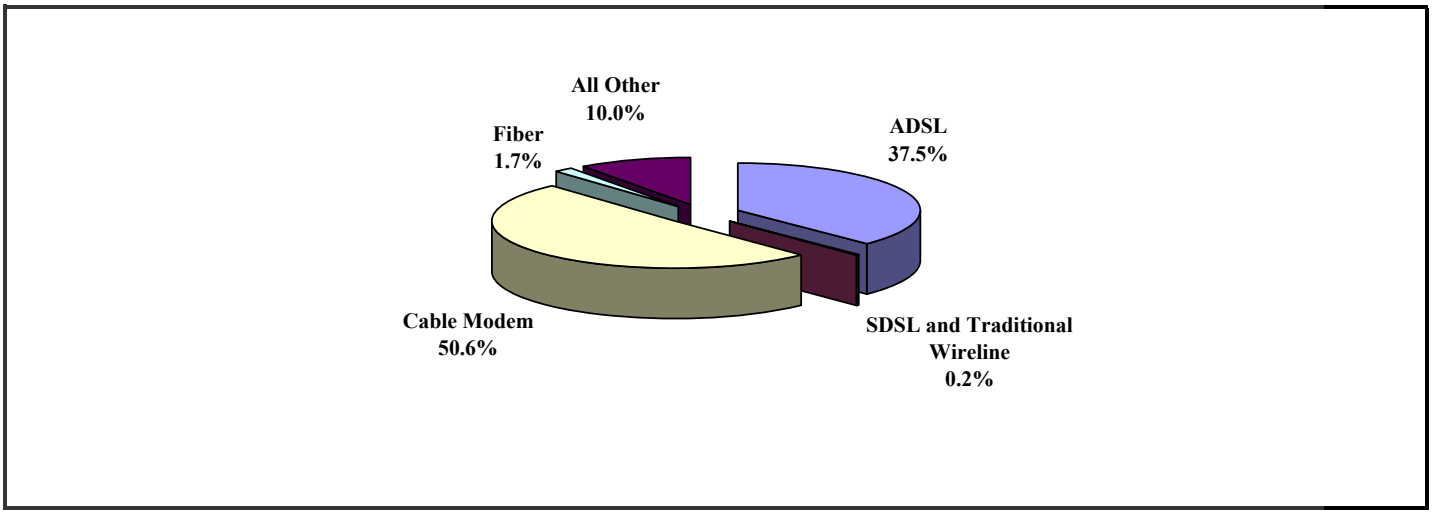


Table 4
Residential Advanced Services Lines [1]
(Over 200 kbps in both directions)

Technology [2]	2000	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
ADSL	195,324	916,364	1,580,575	2,071,779	3,174,022	11,731,303	14,242,291	16,416,522	18,878,873	20,835,274
SDSL and Traditional Wireline	111,490	138,307	223,599	250,372	393,049	151,979	125,116	111,935	117,652	116,881
SDSL	-	-	-	-	-	149,862	122,220	102,580	105,002	104,432
Traditional Wireline	-	-	-	-	-	2,118	2,895	9,355	12,650	12,449
Cable Modem	1,401,434	3,146,953	6,809,170	11,920,207	17,505,907	22,324,471	25,533,423	28,121,912	30,770,517	32,920,397
Fiber [3]	325	2,617	5,118	15,751	21,866	82,831	212,862	441,128	762,083	1,150,246
Satellite and Wireless	2,916	60,988	47,787	46,407	72,485	150,893	204,703	1,449,299	3,114,987	6,074,665
Satellite	-	-	-	-	-	2,244	25,117	15,055	23,334	35,319
Fixed Wireless	-	-	-	-	-	146,074	170,515	277,524	399,732	494,144
Mobile Wireless	-	-	-	-	-	2,574	9,071	1,156,720	2,691,921	5,545,202
Power Line and Other	-	-	-	-	-	3,916	4,481	5,093	4,711	5,347
Total Lines	1,711,488	4,265,229	8,666,249	14,304,515	21,167,329	34,445,394	40,322,876	46,545,889	53,648,823	61,102,810

For data through December 2004, only those providers with at least 250 lines per state were required to file.
Small business lines were included in totals through December 2004.
Some historical data have been revised. See additional notes following Chart 10.

Chart 7
Residential Advanced Services Lines

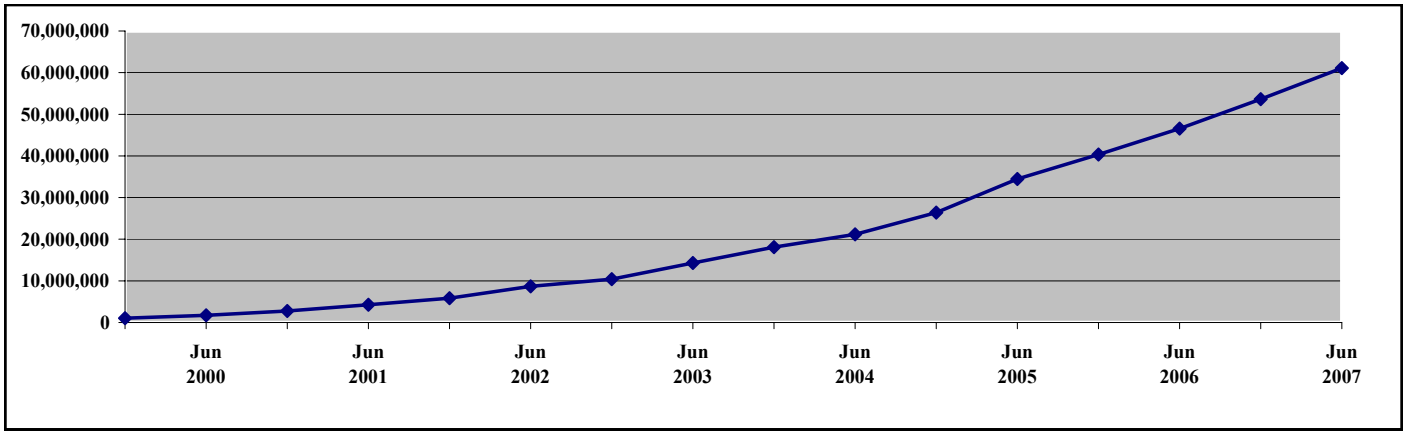


Chart 8
Residential Advanced Services Lines by Technology as of June 30, 2007

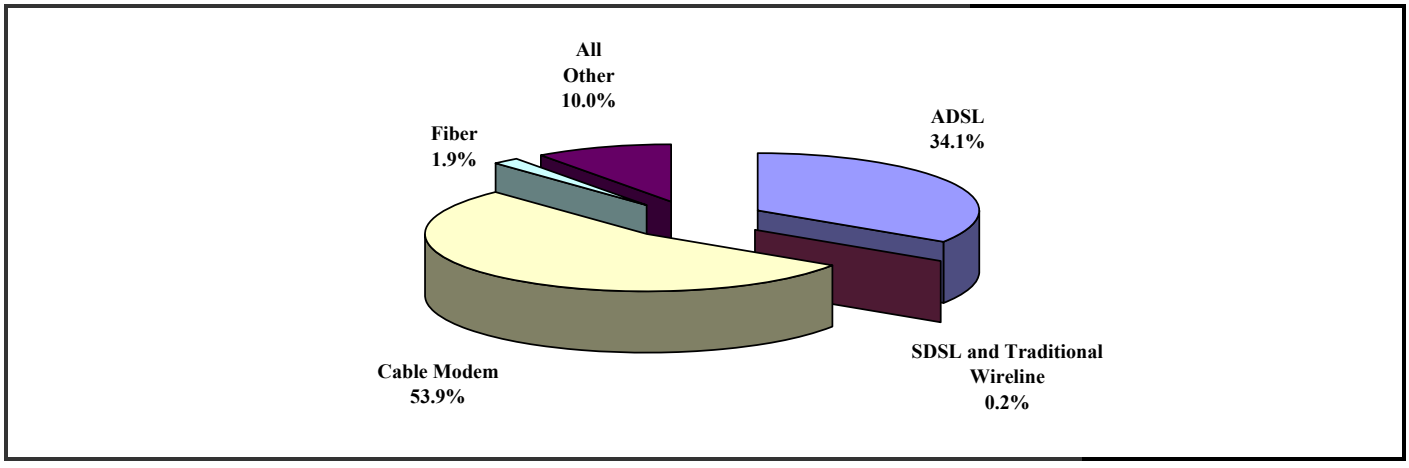


Table 5
High-Speed Lines by Information Transfer Rates [1]
As of June 30, 2007

Technology [2]	Exceeding 200 kbps in only one direction	Exceeding 200 kbps in both directions, and:				
		Greater than 200 kbps and less than 2.5 mbps in the faster direction	Greater than or equal to 2.5 mbps and less than 10 mbps in the faster direction	Greater than or equal to 10 mbps and less than 25 mbps in the faster direction	Greater than or equal to 25 mbps and less than 100 mbps in the faster direction	Greater than or equal to 100 mbps in the faster direction
ADSL	4,134,882	13,025,758	10,303,122	52,373	*	*
SDSL	639	317,401	1,805	*	*	0
Traditional Wireline	78	671,080	18,740	5,928	6,245	6,651
Cable Modem	468,634	3,941,006	26,682,038	3,246,906	*	*
Fiber	2,087	214,373	646,776	508,829	16,292	14,295
Satellite	611,601	57,202	0	0	0	0
Fixed Wireless	32,222	523,309	30,061	*	*	*
Mobile Wireless	26,115,423	*	*	0	0	0
Power Line and Other	0	*	*	0	*	0
Total Lines	31,365,566	27,944,008	37,683,911	3,814,471	91,983	21,708

* Data withheld to maintain firm confidentiality.
See notes following Chart 10.

Chart 9
Lines by Information Transfer Rates in the Faster Directions as of June 30, 2007
(Includes only lines exceeding 200 kbps in both directions)

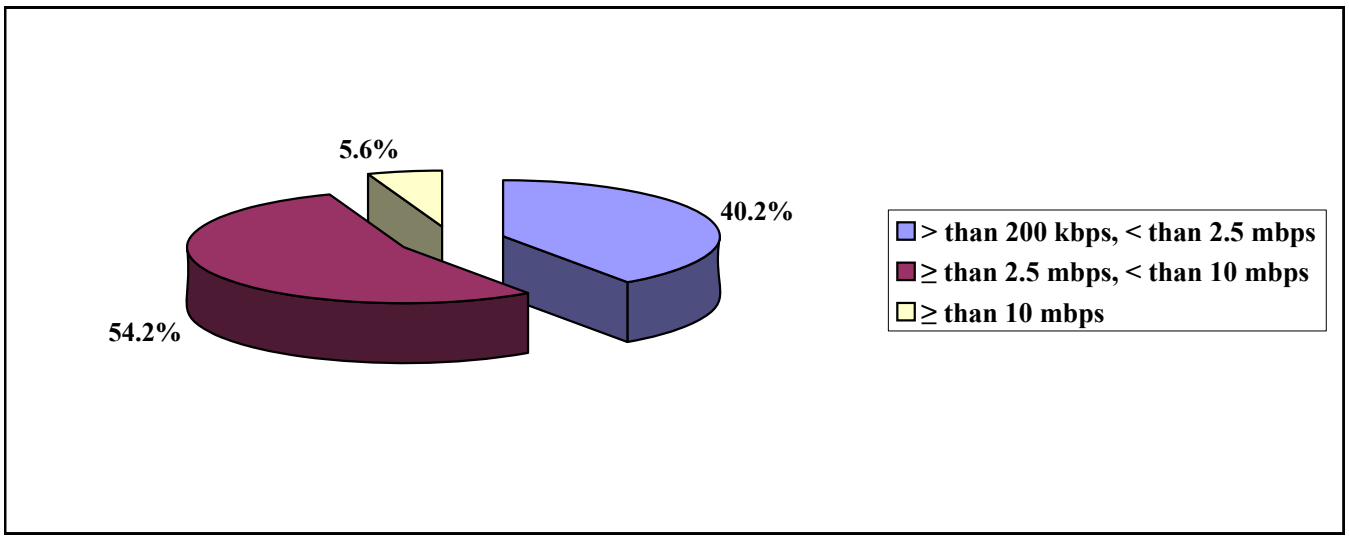


Table 6

High-Speed Lines by Type of Provider as of June 30, 2007 [1]

(Over 200 kbps in at least one direction)

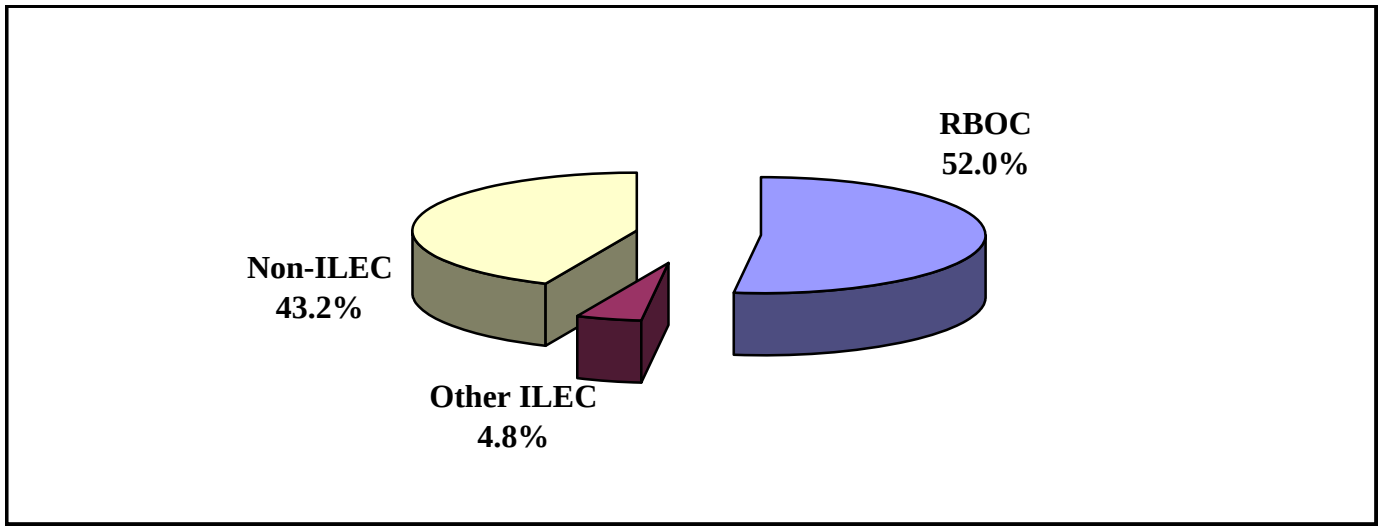
Technology [2]	Lines				Percent of Lines		
	RBOC [4]	Other ILEC	Non-ILEC [5]	Total	RBOC [4]	Other ILEC	Non-ILEC [5]
ADSL	22,121,630	4,554,463	840,078	27,514,518	80.4 %	16.6 %	3.1 %
SDSL	*	*	205,943	319,543	*	*	64.4
Traditional Wireline	334,730	13,455	360,537	707,647	47.3	1.9	50.9
Cable Modem	*	*	34,319,043	34,408,570	*	*	99.7
Fiber	1,233,079	45,249	124,324	1,402,070	87.9	3.2	8.9
Satellite	0	0	668,803	668,803	0.0	0.0	100.0
Fixed Wireless	*	*	564,588	586,141	*	*	96.3
Mobile Wireless	*	*	6,512,904	35,253,224	*	*	18.5
Power Line and Other	0	0	5,420	5,420	0.0	0.0	100.0
Total Lines	52,489,028	4,830,985	43,601,634	100,865,936	52.0 %	4.8 %	43.2 %

* Data withheld to maintain firm confidentiality.

See notes following Chart 10.

Chart 10

Share of High-Speed Lines by Type of Provider as of June 30, 2007



Notes for Tables 1 - 6 and Charts 1 - 10.

Advanced services lines, residential high-speed lines, and residential advanced services lines are estimated based on data reported on FCC Form 477. Therefore, figures may not add to totals due to rounding.

[1] High-speed lines are connections to end-user locations that deliver services at speeds exceeding 200 kbps in at least one direction. Advanced services lines, which are a subset of high-speed lines, are connections that deliver services at speeds exceeding 200 kbps in both directions. In Tables 2 and 4, we enumerate those reported high-speed lines that also qualify as advanced services lines. More detailed information about connection speeds is presented in Table 5. Line counts presented in this report are not adjusted for the number of persons at a single end-user location who have access to, or who use, the Internet-access services that are delivered over the high-speed connection to that location.

[2] The mutually exclusive types of technology are, respectively: Asymmetric digital subscriber line (ADSL) technologies, which provide speeds in one direction greater than speeds in the other direction; symmetric digital subscriber line (SDSL) technologies; traditional wireline technologies when used to provide equivalent Internet access functionality, including Ethernet service if delivered to the subscriber's location over copper (as opposed to optical fiber) plant; cable modem, including the typical hybrid fiber-coax (HFC) architecture of upgraded cable TV systems; optical fiber to the subscriber's premises (e.g., Fiber-to-the-Home, or FTTH); satellite and fixed and mobile terrestrial wireless systems, which use radio spectrum to communicate with a radio transmitter; electric power line; and other.

[3] Fiber lines included electric power line through December 2004.

[4] RBOC lines include lines owned by AT&T, Qwest and Verizon, and their affiliates.

[5] High-speed lines reported by non-ILEC affiliates of RBOCs are reported in the column for RBOC lines and are excluded from the column for non-ILEC lines. Lines reported by non-ILEC affiliates of ILECs other than the RBOCs are reported in the column for non-ILEC lines.

Table 7
Nationwide Number of Providers of High-Speed Lines by Technology
(Over 200 kbps in at least one direction)

	ADSL	Cable Modem	All Other [1]	Total
Dec 1999	28	43	65	105
Jun 2000	47	36	75	116
Dec 2000	68	39	87	136
Jun 2001	86	47	98	160
Dec 2001	117	59	122	203
Jun 2002	142	68	138	237
Dec 2002	178	87	169	299
Jun 2003	235	98	217	378
Dec 2003	274	110	246	432
Jun 2004	298	129	281	485
Dec 2004	352	147	312	552
Jun 2005	758	227	779	1,270
Dec 2005	820	242	835	1,347
Jun 2006	833	254	814	1,326
Dec 2006	857	279	880	1,394
Jun 2007	857	282	860	1,360

For data through December 2004, only those providers with at least 250 lines per state were required to file. Some historical data have been revised.

[1] All other includes SDSL, traditional wireline, fiber, satellite, fixed and mobile wireless, and power line.

Chart 11
Historical Number of Reporting Providers of High-Speed Lines by Technology

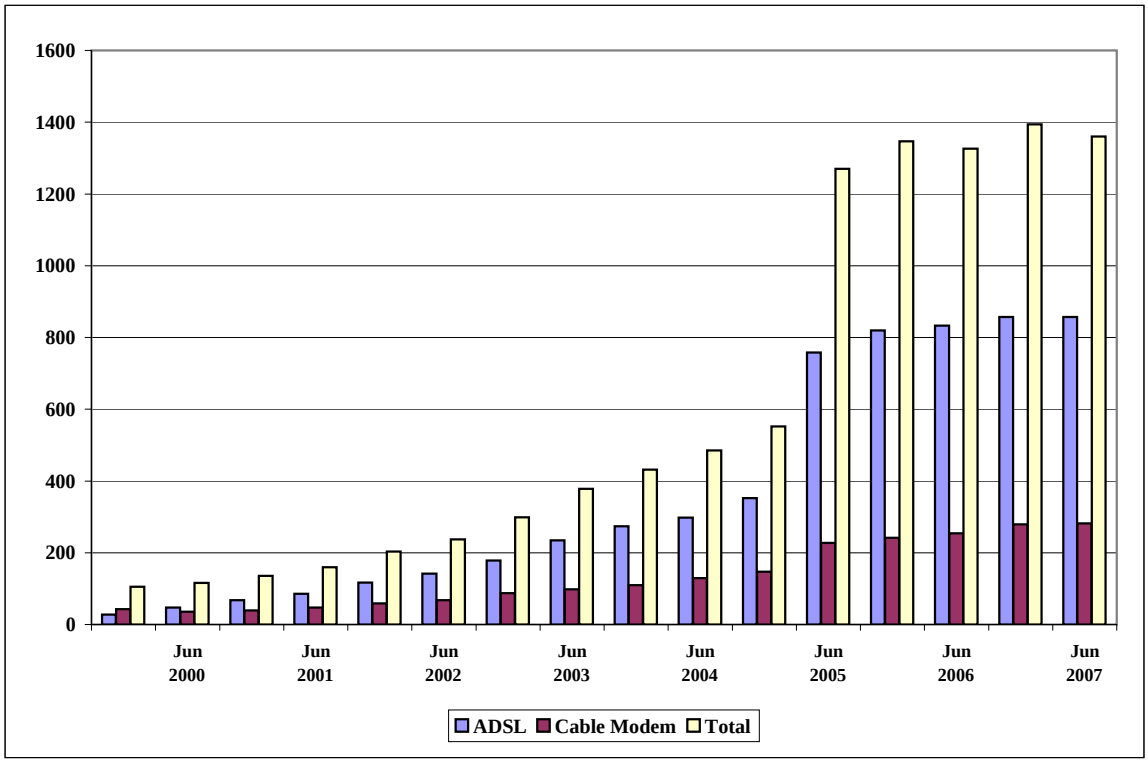


Table 8
Providers of High-Speed Lines by Technology as of June 30, 2007
(Over 200 kbps in at least one direction)

State	ADSL	SDSL	Traditional Wireline	Cable Modem	Fiber	Satellite	Fixed Wireless	Mobile Wireless	Power Line and Other	Total (Unduplicated)
Alabama	30	9	16	18	7	*	6	4	*	63
Alaska	9	4	4	*	*	*	7	*	0	18
American Samoa	*	*	0	0	0	0	0	0	0	*
Arizona	22	9	17	9	10	*	12	5	0	55
Arkansas	20	8	10	10	6	*	*	4	0	44
California	26	17	30	17	14	*	18	*	0	79
Colorado	28	12	15	11	9	*	18	5	0	62
Connecticut	6	8	10	6	6	*	0	4	0	27
Delaware	6	5	11	*	*	*	0	*	0	23
District of Columbia	9	8	14	*	5	*	*	*	0	28
Florida	26	14	28	11	12	*	8	4	0	65
Georgia	38	14	24	26	20	*	8	4	0	83
Guam	*	0	*	0	0	0	0	0	0	*
Hawaii	*	*	5	*	4	*	*	*	0	14
Idaho	23	5	13	7	11	*	12	*	0	45
Illinois	57	21	37	17	11	*	40	4	*	121
Indiana	42	13	24	12	17	*	25	*	*	84
Iowa	128	41	29	37	24	*	45	6	0	188
Kansas	38	19	12	24	13	*	24	4	0	81
Kentucky	30	9	12	18	11	*	10	4	0	67
Louisiana	22	8	13	10	10	*	6	5	*	50
Maine	14	8	9	5	6	*	*	*	0	27
Maryland	12	9	16	12	7	*	*	4	0	43
Massachusetts	14	10	17	7	6	*	*	*	0	38
Michigan	41	15	21	12	11	*	15	5	0	74
Minnesota	67	24	19	13	22	*	16	4	0	98
Mississippi	21	4	14	13	5	*	*	5	0	47
Missouri	40	20	17	17	11	4	24	4	*	88
Montana	17	7	9	4	5	*	10	*	0	36
Nebraska	34	15	11	15	4	*	21	4	0	65
Nevada	16	9	14	*	6	*	6	4	0	36
New Hampshire	15	9	12	5	5	*	*	*	0	31
New Jersey	15	11	22	7	8	*	*	4	0	41
New Mexico	22	6	7	6	4	*	6	4	0	38
New York	40	15	28	13	12	*	9	*	0	73
North Carolina	33	18	20	13	11	*	8	5	0	65
North Dakota	23	13	12	7	9	*	11	*	0	40
Northern Mariana Isl.	*	0	*	0	*	0	*	0	0	*
Ohio	40	18	24	19	17	*	16	4	*	86
Oklahoma	40	9	20	10	6	*	17	4	0	72
Oregon	38	9	15	8	12	*	11	*	0	61
Pennsylvania	44	17	30	19	16	*	8	4	0	78
Puerto Rico	4	0	7	*	*	*	*	*	0	14
Rhode Island	9	8	9	*	5	*	0	*	0	20
South Carolina	24	6	18	14	10	*	*	4	0	43
South Dakota	25	9	9	8	9	4	8	*	0	43
Tennessee	29	14	15	12	8	*	7	4	0	62
Texas	63	26	33	24	18	*	48	6	0	135
Utah	17	12	9	*	8	*	10	4	0	39
Vermont	12	6	10	*	*	*	*	*	0	24
Virgin Islands	*	*	*	0	0	*	*	*	0	7
Virginia	26	12	23	14	14	*	13	4	*	66
Washington	30	11	19	14	16	*	19	*	*	66
West Virginia	11	*	8	7	*	*	*	*	0	27
Wisconsin	54	17	16	14	11	*	18	4	0	83
Wyoming	12	6	7	*	5	*	8	*	0	30
Nationwide	857	239	244	282	247	5	479	19	6	1,360

* Indicates one to three providers.

Table 9
High-Speed Lines by Technology as of June 30, 2007
(Over 200 kbps in at least one direction)

State	ADSL	SDSL	Traditional Wireline	Cable Modem	Fiber	Satellite	Fixed Wireless	Mobile Wireless	Power Line and Other	Total
Alabama	356,732	5,483	10,528	374,029	1,050	*	662	*	*	1,117,951
Alaska	63,708	8,673	483	*	*	*	8,269	*	0	156,187
American Samoa	*	*	0	0	0	0	0	0	0	*
Arizona	405,724	1,491	12,630	850,307	1,996	*	17,122	*	0	2,192,644
Arkansas	226,842	1,406	3,018	205,349	2,254	*	*	*	0	528,653
California	4,582,000	32,731	145,031	3,410,983	194,514	*	60,899	*	0	14,446,700
Colorado	529,504	2,810	16,060	560,557	1,285	*	21,864	*	0	1,827,860
Connecticut	*	3,414	5,964	513,211	2,860	*	0	*	0	1,546,724
Delaware	*	151	1,901	*	*	*	0	*	0	353,763
District of Columbia	*	2,462	2,675	*	704	*	*	*	0	337,897
Florida	1,960,025	8,186	54,413	2,344,445	*	*	*	*	0	6,349,084
Georgia	1,218,885	6,472	33,415	802,047	2,793	*	3,797	*	0	3,091,055
Guam	*	0	*	0	0	0	0	0	0	*
Hawaii	*	*	813	*	329	*	*	*	0	486,337
Idaho	129,188	340	1,507	116,273	635	*	34,905	*	0	483,049
Illinois	1,299,358	11,815	35,976	1,465,869	21,020	*	28,822	*	*	4,305,351
Indiana	566,103	3,855	11,042	410,438	34,449	*	10,834	*	*	1,809,728
Iowa	270,101	4,244	3,151	267,712	5,633	*	14,802	*	0	826,096
Kansas	216,800	4,568	5,555	351,371	3,474	*	13,303	*	0	869,111
Kentucky	340,350	4,352	7,208	383,593	2,513	*	2,100	*	0	959,771
Louisiana	306,283	3,693	9,265	446,485	14,266	*	2,171	*	*	1,087,384
Maine	106,037	3,179	5,083	169,458	2,684	*	*	*	0	349,868
Maryland	512,156	9,180	16,776	829,473	*	*	*	*	0	2,172,295
Massachusetts	*	6,273	16,986	1,088,170	*	*	*	*	0	2,660,501
Michigan	668,725	4,408	22,575	1,197,105	9,033	*	6,655	*	0	2,966,289
Minnesota	449,452	21,562	7,114	570,448	6,961	*	27,403	*	0	1,578,290
Mississippi	180,281	184	4,645	151,539	623	*	*	*	0	399,571
Missouri	618,302	5,653	12,129	473,449	4,731	*	7,512	*	*	1,564,371
Montana	95,790	2,549	876	74,246	286	*	7,653	*	0	346,230
Nebraska	124,126	3,135	1,081	238,019	527	*	10,866	*	0	537,693
Nevada	207,051	1,565	6,422	*	1,810	*	10,997	*	0	1,059,761
New Hampshire	98,113	2,427	4,908	234,466	*	*	*	*	0	544,115
New Jersey	731,487	5,561	17,592	1,473,709	*	*	*	*	0	4,150,053
New Mexico	179,856	401	1,867	117,336	424	*	2,518	*	0	544,706
New York	1,178,637	22,270	26,764	3,164,178	*	*	507	*	0	6,797,126
North Carolina	725,396	24,100	21,531	1,134,075	5,683	*	*	*	0	2,894,042
North Dakota	51,096	3,288	382	76,353	5,508	*	4,873	*	0	144,994
Northern Mariana Isl.	*	0	*	0	*	0	*	0	0	*
Ohio	945,096	4,722	18,124	1,405,899	15,876	*	13,573	*	*	3,956,535
Oklahoma	301,523	3,109	4,637	347,813	4,241	*	3,324	*	0	780,533
Oregon	338,765	7,844	6,121	489,902	23,118	*	21,293	*	0	1,285,947
Pennsylvania	1,125,794	18,768	18,624	1,271,157	*	*	1,214	*	0	4,120,573
Puerto Rico	*	0	3,880	*	*	*	*	*	0	332,671
Rhode Island	*	1,078	1,799	*	*	*	0	*	0	416,053
South Carolina	322,858	92	12,527	459,110	7,684	*	*	*	0	1,308,281
South Dakota	45,772	3,895	252	100,903	2,724	*	4,878	*	0	164,627
Tennessee	446,551	912	24,648	662,520	9,890	*	354	*	0	2,036,625
Texas	2,180,827	13,629	37,066	2,081,963	169,821	*	72,403	*	0	6,855,680
Utah	249,683	5,454	3,947	*	1,907	*	21,252	*	0	818,665
Vermont	68,041	936	2,273	*	*	*	*	*	0	193,151
Virgin Islands	*	*	*	0	0	*	*	*	0	16,014
Virginia	547,941	5,052	18,940	906,252	100,609	*	9,507	*	*	2,689,907
Washington	569,397	7,688	10,799	862,049	19,849	*	45,664	*	*	2,481,537
West Virginia	123,645	*	2,193	155,867	*	*	*	*	0	306,449
Wisconsin	443,296	13,977	15,225	636,675	10,838	*	8,624	*	0	1,459,607
Wyoming	49,933	1,657	190	*	294	*	3,445	*	0	205,711
Nationwide	27,516,171	319,932	708,722	34,408,553	1,402,652	668,803	586,141	35,305,253	5,420	100,921,647

* Data withheld to maintain firm confidentiality.

Table 10
High-Speed Lines by State
(Over 200 kbps in at least one direction)

State	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
Alabama	86,234	172,365	283,946	350,691	455,300	531,976	615,510	898,850	1,117,951
Alaska	20,906	46,791	61,121	88,076	95,761	109,484	125,005	145,008	156,187
American Samoa	0	0	0	*	*	*	*	*	*
Arizona	154,883	305,304	441,227	618,677	809,819	1,039,445	1,392,711	1,832,564	2,192,644
Arkansas	40,803	84,061	128,100	188,185	258,270	302,881	363,933	431,530	528,653
California	1,639,921	2,527,275	3,378,373	4,608,822	5,954,876	7,337,217	9,395,265	11,894,864	14,446,700
Colorado	142,295	238,702	338,083	515,081	688,189	882,669	1,165,853	1,489,091	1,827,860
Connecticut	146,266	233,277	364,371	516,039	679,891	807,796	1,024,053	1,262,569	1,546,724
Delaware	12,158	35,941	54,272	74,732	108,554	132,399	157,648	273,734	353,763
District of Columbia	28,861	44,266	58,800	83,213	113,086	139,594	200,221	268,008	337,897
Florida	634,703	1,103,236	1,634,552	2,236,963	2,958,350	3,537,720	4,408,427	5,346,321	6,349,084
Georgia	285,637	494,263	748,016	1,039,440	1,328,956	1,610,750	2,054,171	2,547,165	3,091,055
Guam	0	0	0	*	*	*	*	*	*
Hawaii	*	*	*	*	*	*	294,612	417,674	486,337
Idaho	20,233	43,119	64,353	99,845	149,023	167,926	202,521	381,283	483,049
Illinois	325,085	525,817	840,632	1,270,907	1,817,481	2,159,932	2,666,304	3,538,857	4,305,351
Indiana	77,617	156,375	233,679	515,812	742,667	922,569	1,191,752	1,417,112	1,809,728
Iowa	72,583	102,932	162,257	229,811	325,701	394,359	446,187	657,102	826,096
Kansas	101,478	149,415	248,405	322,742	419,384	470,287	595,979	728,569	869,111
Kentucky	39,297	90,284	121,594	300,704	408,184	508,198	629,538	774,736	959,771
Louisiana	121,685	207,257	315,682	420,917	536,934	508,009	730,203	892,835	1,087,384
Maine	37,888	61,069	85,212	123,739	176,396	214,599	248,440	306,006	349,868
Maryland	171,423	306,504	458,128	655,588	899,640	1,120,826	1,492,484	1,813,960	2,172,295
Massachusetts	342,643	566,796	802,423	1,004,229	1,213,640	1,431,925	1,811,845	2,243,742	2,660,501
Michigan	389,441	531,524	729,113	946,819	1,336,312	1,557,918	1,917,892	2,430,869	2,966,289
Minnesota	143,819	269,433	394,982	561,411	716,826	855,752	1,057,576	1,312,900	1,578,290
Mississippi	21,185	57,168	95,628	139,429	191,675	219,552	262,671	332,307	399,571
Missouri	120,863	220,477	362,040	537,343	704,273	811,837	1,016,732	1,275,123	1,564,371
Montana	10,446	17,969	28,023	57,650	90,583	112,662	139,946	264,121	346,230
Nebraska	55,188	92,849	141,172	199,282	253,968	305,120	355,013	470,118	537,693
Nevada	78,076	137,407	209,028	290,518	401,932	474,019	614,151	792,950	1,059,761
New Hampshire	55,241	85,697	118,304	168,000	236,817	268,128	302,957	443,207	544,115
New Jersey	394,198	654,235	924,835	1,194,557	1,605,301	1,989,803	2,654,674	3,392,607	4,150,053
New Mexico	20,099	44,462	71,355	115,147	174,534	204,054	252,361	422,964	544,706
New York	811,386	1,364,556	1,891,457	2,349,956	3,067,983	3,660,500	4,854,803	5,669,523	6,797,126
North Carolina	205,100	461,378	680,828	965,761	1,222,648	1,482,930	1,914,822	2,366,079	2,894,042
North Dakota	6,277	14,164	25,474	39,274	86,274	96,314	108,476	131,348	144,994
Northern Mariana Isl.	0	0	0	0	0	*	*	*	*
Ohio	354,258	575,756	817,020	1,152,300	1,601,981	1,932,269	2,461,379	3,200,543	3,956,535
Oklahoma	90,147	148,006	231,106	331,605	444,777	502,984	569,398	657,940	780,533
Oregon	91,457	197,778	316,300	437,040	558,489	688,487	860,385	1,060,386	1,285,947
Pennsylvania	249,119	501,950	755,947	1,123,876	1,578,981	1,999,118	2,646,898	3,374,313	4,120,573
Puerto Rico	*	*	32,063	43,091	66,484	118,268	169,917	251,163	332,671
Rhode Island	48,258	71,463	104,444	141,981	185,415	221,901	276,141	349,994	416,053
South Carolina	96,839	175,088	262,868	354,877	464,315	549,019	646,344	1,041,762	1,308,281
South Dakota	5,448	12,555	22,016	34,026	112,506	124,243	138,621	154,738	164,627
Tennessee	151,706	293,516	413,476	534,597	682,369	847,025	1,153,432	1,574,022	2,036,625
Texas	614,704	1,015,245	1,571,250	2,203,490	2,943,487	3,467,504	4,357,437	5,554,547	6,855,680
Utah	54,005	92,623	133,467	196,590	259,150	313,854	471,137	638,618	818,665
Vermont	16,230	29,990	39,773	56,033	82,279	95,901	108,622	170,245	193,151
Virgin Islands	*	*	*	*	2,183	2,967	7,226	11,139	16,014
Virginia	202,663	348,716	553,635	817,881	1,117,591	1,367,465	1,792,817	2,197,693	2,689,907
Washington	227,066	422,348	577,378	775,027	1,000,412	1,219,631	1,575,375	2,015,564	2,481,537
West Virginia	16,697	58,209	90,173	127,283	178,323	205,984	245,669	268,746	306,449
Wisconsin	127,172	256,735	401,565	564,670	731,934	859,114	1,034,646	1,253,335	1,459,607
Wyoming	*	10,990	17,507	35,464	55,905	70,574	83,086	156,940	205,711
Nationwide	9,241,996	15,787,647	22,995,444	31,950,574	42,517,810	51,218,145	65,270,912	82,809,845	100,921,647

* Data withheld to maintain firm confidentiality.

Some historical data have been revised.

Table 11
ADSL High-Speed Lines by State
(Over 200 kbps in at least one direction)

State	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
Alabama	*	45,350	70,639	112,059	177,196	220,657	268,970	314,640	356,732
Alaska	*	11,337	14,013	20,686	38,530	43,249	53,687	60,055	63,708
American Samoa	0	0	0	0	*	*	*	*	*
Arizona	39,828	68,280	77,368	108,735	152,937	207,727	276,261	365,228	405,724
Arkansas	*	28,477	44,801	80,981	127,445	149,878	180,883	200,129	226,842
California	735,677	1,214,543	1,715,998	2,342,186	3,078,824	3,592,220	4,001,529	4,342,556	4,582,000
Colorado	52,617	100,197	126,189	201,523	268,114	333,313	404,989	473,148	529,504
Connecticut	30,142	61,093	124,742	204,034	*	*	*	*	*
Delaware	*	*	*	10,572	*	*	*	*	*
District of Columbia	16,313	28,723	39,471	44,231	*	*	*	*	*
Florida	170,702	391,188	644,621	928,402	1,284,507	1,509,104	1,722,888	1,873,271	1,960,025
Georgia	106,649	237,922	368,372	535,088	757,720	890,128	1,008,705	1,126,082	1,218,885
Guam	0	0	0	*	*	*	*	*	*
Hawaii	*	*	*	*	*	*	*	*	*
Idaho	*	16,108	19,382	35,166	62,691	81,520	97,662	113,001	129,188
Illinois	89,080	195,560	363,733	588,906	847,522	979,709	1,094,088	1,211,763	1,299,358
Indiana	2,375	36,685	85,968	179,942	304,800	379,465	443,473	515,054	566,103
Iowa	9,532	18,751	39,386	65,580	118,777	150,890	189,178	233,039	270,101
Kansas	*	28,713	50,839	88,246	136,402	159,996	179,430	202,751	216,800
Kentucky	20,256	55,454	75,316	119,709	180,324	213,131	250,715	303,296	340,350
Louisiana	37,444	73,120	100,919	136,406	190,603	207,488	235,750	270,811	306,283
Maine	6,877	*	11,052	31,577	52,032	72,709	89,964	104,780	106,037
Maryland	51,051	95,439	126,873	192,139	305,677	379,316	450,019	489,553	512,156
Massachusetts	82,699	147,139	207,344	253,576	*	*	*	*	*
Michigan	41,428	80,588	135,360	236,310	374,861	463,373	533,835	606,616	668,725
Minnesota	51,640	86,184	115,244	159,137	227,988	276,439	330,736	394,686	449,452
Mississippi	*	*	33,650	52,892	88,252	105,874	128,585	154,179	180,281
Missouri	53,250	84,642	138,046	233,916	341,618	398,671	468,334	545,679	618,302
Montana	2,842	7,108	13,119	28,238	46,786	57,300	70,471	82,876	95,790
Nebraska	9,293	11,547	18,285	35,180	66,268	81,188	95,404	112,032	124,126
Nevada	*	24,073	47,934	74,879	116,395	139,938	168,086	190,202	207,051
New Hampshire	5,651	11,781	17,823	31,843	54,233	71,689	85,247	93,589	98,113
New Jersey	102,430	172,472	211,540	301,789	443,808	540,382	638,293	703,950	731,487
New Mexico	7,578	18,224	26,948	51,375	82,062	105,210	130,998	156,620	179,856
New York	197,135	338,229	438,241	536,980	736,769	861,452	1,002,972	1,103,960	1,178,637
North Carolina	41,332	89,680	161,642	264,248	412,991	488,533	561,102	648,001	725,396
North Dakota	*	6,575	11,593	19,412	26,841	32,000	38,729	46,346	51,096
Northern Mariana Isl.					0	*	*	*	*
Ohio	87,567	151,612	243,689	369,386	555,749	663,011	752,633	858,846	945,096
Oklahoma	31,321	50,617	78,248	129,996	189,496	222,048	246,899	277,282	301,523
Oregon	25,877	68,747	95,654	142,483	197,927	244,694	280,286	311,604	338,765
Pennsylvania	89,595	162,258	230,322	346,720	541,274	692,079	871,164	1,012,845	1,125,794
Puerto Rico	*	*	*	*	*	*	*	*	*
Rhode Island	*	*	*	*	*	*	*	*	*
South Carolina	9,704	26,184	52,667	98,583	154,666	205,529	242,548	284,892	322,858
South Dakota	1,652	4,389	8,637	15,230	20,632	26,168	32,763	39,684	45,772
Tennessee	22,902	57,984	92,777	147,922	237,180	293,915	348,344	396,928	446,551
Texas	197,668	368,796	597,447	930,997	1,300,681	1,513,639	1,733,423	1,997,483	2,180,827
Utah	23,476	47,637	65,648	95,656	129,607	160,313	189,240	222,307	249,683
Vermont	*	9,409	15,072	22,519	35,281	43,934	51,382	61,441	68,041
Virgin Islands	*	*	*	*	*	*	*	*	*
Virginia	39,114	75,524	114,797	196,568	308,947	384,243	446,448	505,285	547,941
Washington	64,812	172,652	225,377	300,804	363,796	427,451	491,409	533,668	569,397
West Virginia	*	*	*	*	53,292	69,390	86,507	104,637	123,645
Wisconsin	17,800	42,052	84,100	159,167	243,370	298,111	359,530	417,510	443,296
Wyoming	*	*	5,503	13,510	23,769	33,030	38,541	44,347	49,933
Nationwide	2,693,834	5,101,493	7,675,114	11,398,199	16,316,309	19,515,483	22,584,255	25,412,883	27,516,171

* Data withheld to maintain firm confidentiality.
Some historical data have been revised.

Table 12

Coaxial Cable High-Speed Lines by State

(Over 200 kbps in at least one direction)

State	2001	2002	2003	2004	2005		2006		2007
	Jun	Jun	Jun	Jun	Jun	Dec	Jun	Dec	Jun
Alabama	47,325	104,990	181,338	206,208	257,225	285,177	310,548	342,340	374,029
Alaska	0	*	*	*	*	*	*	*	*
American Samoa	0	0	0	0	0	0	0	0	0
Arizona	*	194,431	319,272	457,869	583,897	679,284	761,419	838,455	850,307
Arkansas	*	*	*	95,528	117,953	137,105	148,940	183,503	205,349
California	609,174	1,013,503	1,395,435	1,929,080	2,467,232	2,734,659	2,956,932	3,155,718	3,410,983
Colorado	*	*	181,766	280,909	383,154	433,184	476,463	523,159	560,557
Connecticut	106,019	160,913	227,658	299,176	372,346	403,723	441,092	454,348	513,211
Delaware	*	*	*	*	*	*	*	*	*
District of Columbia	*	*	*	*	*	*	*	*	*
Florida	372,190	595,806	867,513	1,171,641	1,559,592	1,757,875	1,939,409	2,178,484	2,344,445
Georgia	109,922	183,886	289,922	407,038	522,800	583,884	649,583	742,552	802,047
Guam	0	0	0	0	0	0	0	0	0
Hawaii	*	*	*	*	*	*	*	*	*
Idaho	*	*	*	*	78,185	73,528	75,185	108,595	116,273
Illinois	144,872	242,394	383,069	589,025	841,737	955,518	1,042,272	1,332,023	1,465,869
Indiana	56,441	98,414	122,338	304,866	397,481	445,420	490,020	370,200	410,438
Iowa	59,253	77,592	111,748	151,299	186,821	219,803	225,190	234,266	267,712
Kansas	74,337	111,615	181,437	209,233	258,856	272,660	316,866	320,638	351,371
Kentucky	*	12,867	23,672	154,567	217,302	269,274	306,487	333,339	383,593
Louisiana	64,219	115,198	189,920	257,405	328,675	254,819	378,613	419,735	446,485
Maine	*	*	*	*	116,203	132,075	145,831	152,291	169,458
Maryland	97,466	181,864	306,442	433,754	546,576	592,283	637,405	781,120	829,473
Massachusetts	243,670	391,391	564,961	704,956	826,351	885,578	954,812	1,044,333	1,088,170
Michigan	301,842	402,642	543,336	656,263	891,842	953,786	1,019,338	1,103,040	1,197,105
Minnesota	80,259	166,323	255,988	358,477	440,726	493,783	518,063	541,116	570,448
Mississippi	*	27,872	50,234	72,271	95,805	104,363	114,140	135,965	151,539
Missouri	51,733	110,026	191,658	266,493	323,270	353,331	400,808	444,118	473,449
Montana	*	*	*	22,856	35,625	45,442	54,056	65,238	74,246
Nebraska	37,168	73,306	111,903	142,555	177,074	200,600	218,335	239,465	238,019
Nevada	*	*	*	*	*	*	*	*	*
New Hampshire	*	*	95,612	129,024	176,033	188,212	201,873	209,781	234,466
New Jersey	*	454,750	690,620	862,834	1,107,751	1,205,182	1,312,433	1,385,953	1,473,709
New Mexico	*	*	38,004	56,369	78,035	89,003	100,157	108,906	117,336
New York	564,423	967,949	1,401,322	1,752,189	2,216,153	2,444,565	2,765,476	2,967,028	3,164,178
North Carolina	115,949	313,884	454,272	623,414	762,203	861,990	963,651	1,040,513	1,134,075
North Dakota	*	*	10,066	14,428	50,781	54,772	57,722	70,878	76,353
Northern Mariana Isl.					0	0	0	0	0
Ohio	213,606	363,675	508,458	709,145	961,119	1,064,948	1,184,924	1,303,470	1,405,899
Oklahoma	*	*	*	*	233,993	261,585	284,184	312,500	347,813
Oregon	*	*	197,794	262,513	335,847	375,351	407,195	452,517	489,902
Pennsylvania	131,119	300,840	482,471	724,101	962,149	1,074,912	1,164,080	1,255,720	1,271,157
Puerto Rico	0	0	*	*	*	*	*	*	*
Rhode Island	*	*	*	*	*	*	*	*	*
South Carolina	68,487	126,598	185,083	228,648	290,233	326,370	368,338	417,584	459,110
South Dakota	*	*	9,156	12,114	83,667	88,812	92,860	100,155	100,903
Tennessee	96,119	199,121	277,579	340,883	422,063	460,235	506,143	601,889	662,520
Texas	328,900	577,233	888,595	1,162,797	1,467,804	1,617,513	1,692,433	1,944,069	2,081,963
Utah	*	*	*	*	*	*	*	*	*
Vermont	*	*	*	*	*	*	*	*	*
Virgin Islands	0	0	0	0	0	0	0	0	0
Virginia	131,553	238,300	404,616	579,580	748,694	817,100	892,955	877,235	906,252
Washington	*	217,644	313,915	426,487	585,125	660,159	725,832	806,126	862,049
West Virginia	*	48,858	73,263	97,463	117,538	128,133	145,450	144,569	155,867
Wisconsin	*	189,585	287,519	371,106	446,840	497,262	542,881	591,981	636,675
Wyoming	*	*	*	*	*	*	*	*	*
Nationwide	5,184,141	9,172,895	13,684,225	18,592,636	24,017,442	26,558,206	29,174,494	31,981,705	34,408,553

* Data withheld to maintain firm confidentiality.

Some historical data have been revised.

Table 13
High-Speed Lines by Type of End User as of June 30, 2007
(Over 200 kbps in at least one direction)

State	Residential	Business	Total
Alabama	718,686	399,265	1,117,951
Alaska	132,870	23,317	156,187
American Samoa	*	*	*
Arizona	1,333,095	859,549	2,192,644
Arkansas	459,257	69,396	528,653
California	8,727,780	5,718,920	14,446,700
Colorado	1,162,337	665,523	1,827,860
Connecticut	974,624	572,100	1,546,724
Delaware	200,239	153,524	353,763
District of Columbia	163,968	173,929	337,897
Florida	4,548,288	1,800,796	6,349,084
Georgia	2,022,505	1,068,550	3,091,055
Guam	*	*	*
Hawaii	306,910	179,427	486,337
Idaho	275,666	207,383	483,049
Illinois	2,943,747	1,361,604	4,305,351
Indiana	1,054,016	755,712	1,809,728
Iowa	531,037	295,059	826,096
Kansas	642,058	227,053	869,111
Kentucky	722,888	236,883	959,771
Louisiana	810,519	276,865	1,087,384
Maine	270,313	79,555	349,868
Maryland	1,516,557	655,738	2,172,295
Massachusetts	1,705,007	955,494	2,660,501
Michigan	1,954,325	1,011,964	2,966,289
Minnesota	1,052,320	525,970	1,578,290
Mississippi	325,461	74,110	399,571
Missouri	1,195,717	368,654	1,564,371
Montana	166,819	179,411	346,230
Nebraska	370,930	166,763	537,693
Nevada	736,004	323,757	1,059,761
New Hampshire	342,189	201,926	544,115
New Jersey	2,361,052	1,789,001	4,150,053
New Mexico	307,519	237,187	544,706
New York	4,590,879	2,206,247	6,797,126
North Carolina	1,877,677	1,016,365	2,894,042
North Dakota	129,193	15,801	144,994
Northern Mariana Isl.	*	*	*
Ohio	2,409,776	1,546,759	3,956,535
Oklahoma	681,017	99,516	780,533
Oregon	886,110	399,837	1,285,947
Pennsylvania	2,505,015	1,615,558	4,120,573
Puerto Rico	275,840	56,831	332,671
Rhode Island	258,772	157,281	416,053
South Carolina	761,919	546,362	1,308,281
South Dakota	145,375	19,252	164,627
Tennessee	1,121,831	914,794	2,036,625
Texas	4,995,235	1,860,445	6,855,680
Utah	454,577	364,088	818,665
Vermont	118,146	75,005	193,151
Virgin Islands	14,697	1,317	16,014
Virginia	1,616,838	1,073,069	2,689,907
Washington	1,525,681	955,856	2,481,537
West Virginia	275,845	30,604	306,449
Wisconsin	1,119,172	340,435	1,459,607
Wyoming	101,092	104,619	205,711
Nationwide	65,904,499	35,017,148	100,921,647

* Data withheld to maintain firm confidentiality.

Table 14

Percentage of Residential End-User Premises with Access to High-Speed Services as of June 30, 2007

State	xDSL Availability Where ILECs Offer Local Telephone Service	Cable Modem Availability Where Cable Systems Offer Cable TV Service
Alabama	75%	92%
Alaska	76%	*
American Samoa	*	0%
Arizona	82%	99%
Arkansas	75%	73%
California	89%	98%
Colorado	87%	96%
Connecticut	*	100%
Delaware	*	*
District of Columbia	*	*
Florida	89%	97%
Georgia	91%	90%
Guam	*	0%
Hawaii	*	*
Idaho	76%	99%
Illinois	83%	98%
Indiana	79%	94%
Iowa	85%	89%
Kansas	83%	91%
Kentucky	87%	90%
Louisiana	79%	96%
Maine	68%	93%
Maryland	75%	99%
Massachusetts	*	99%
Michigan	72%	98%
Minnesota	85%	94%
Mississippi	72%	91%
Missouri	79%	97%
Montana	78%	88%
Nebraska	88%	94%
Nevada	90%	*
New Hampshire	61%	99%
New Jersey	87%	100%
New Mexico	78%	77%
New York	77%	99%
North Carolina	85%	96%
North Dakota	88%	83%
Northern Mariana Isl.	*	0%
Ohio	84%	98%
Oklahoma	80%	90%
Oregon	83%	95%
Pennsylvania	83%	94%
Puerto Rico	*	*
Rhode Island	*	*
South Carolina	79%	93%
South Dakota	78%	73%
Tennessee	81%	96%
Texas	79%	96%
Utah	87%	*
Vermont	66%	*
Virgin Islands	*	0%
Virginia	66%	95%
Washington	82%	96%
West Virginia	73%	85%
Wisconsin	81%	96%
Wyoming	80%	*
Nationwide	82%	96%

* Data withheld to maintain firm confidentiality.

xDSL includes both asymmetric and symmetric DSL. Each state-specific estimate is a weighted average of the availability percentages that ILECs or cable system operators report for the areas they serve. Reported xDSL availability is weighted by ILEC end-user switched access lines. Reported cable modem availability is weighted by cable TV subscribers. The weighted averages include ILECs or cable system operators that report no availability.

Revised on March 20, 2008

Table 15
Percentage of Zip Codes with High-Speed Lines in Service

Number of Providers	2000		2001		2002		2003		2004		2005		2006		2007
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Zero	33.0 %	26.8 %	22.2 %	20.6 %	16.1 %	12.0 %	9.0 %	6.8 %	5.7 %	4.6 %	2.0 %	1.0 %	0.7 %	0.4 %	0.1 %
One	25.9	22.7	20.3	19.3	18.4	17.3	16.4	14.9	13.8	12.5	9.3	5.6	3.7	2.4	0.9
Two	17.8	18.4	16.7	15.7	16.2	16.8	16.9	17.1	16.8	16.3	14.1	11.9	8.2	5.7	3.5
Three	9.2	10.9	13.2	13.1	13.3	14.4	14.0	14.9	14.9	15.1	15.0	14.8	11.3	8.9	7.0
Four	4.9	6.1	8.2	9.1	9.6	10.3	10.6	11.2	11.6	12.2	12.6	13.5	12.9	11.4	11.1
Five	3.4	4.0	4.9	6.1	6.9	7.3	7.7	7.8	8.4	8.9	9.7	10.3	12.2	12.5	13.6
Six	2.5	3.0	3.6	4.2	4.6	5.0	5.3	5.8	6.1	6.3	6.8	7.8	10.4	11.7	13.0
Seven	1.7	2.3	2.8	3.2	3.2	3.9	4.0	4.2	4.4	4.6	5.3	5.7	8.7	10.0	11.6
Eight	0.8	2.0	2.2	2.5	2.8	2.7	3.1	3.3	3.6	3.6	4.0	4.6	7.1	8.3	9.1
Nine	0.4	1.6	1.9	2.0	2.4	2.2	2.5	2.6	2.8	3.1	3.8	4.0	5.8	6.7	7.4
Ten or More	0.4	2.4	3.9	4.0	6.4	8.0	10.5	11.4	11.8	12.8	17.5	20.7	19.1	22.0	22.7

For data through December 2004, only those providers with at least 250 lines per state were required to file. Figures may not add up to 100% due to rounding.

Chart 12
Percent of Zip Codes with High-Speed Providers

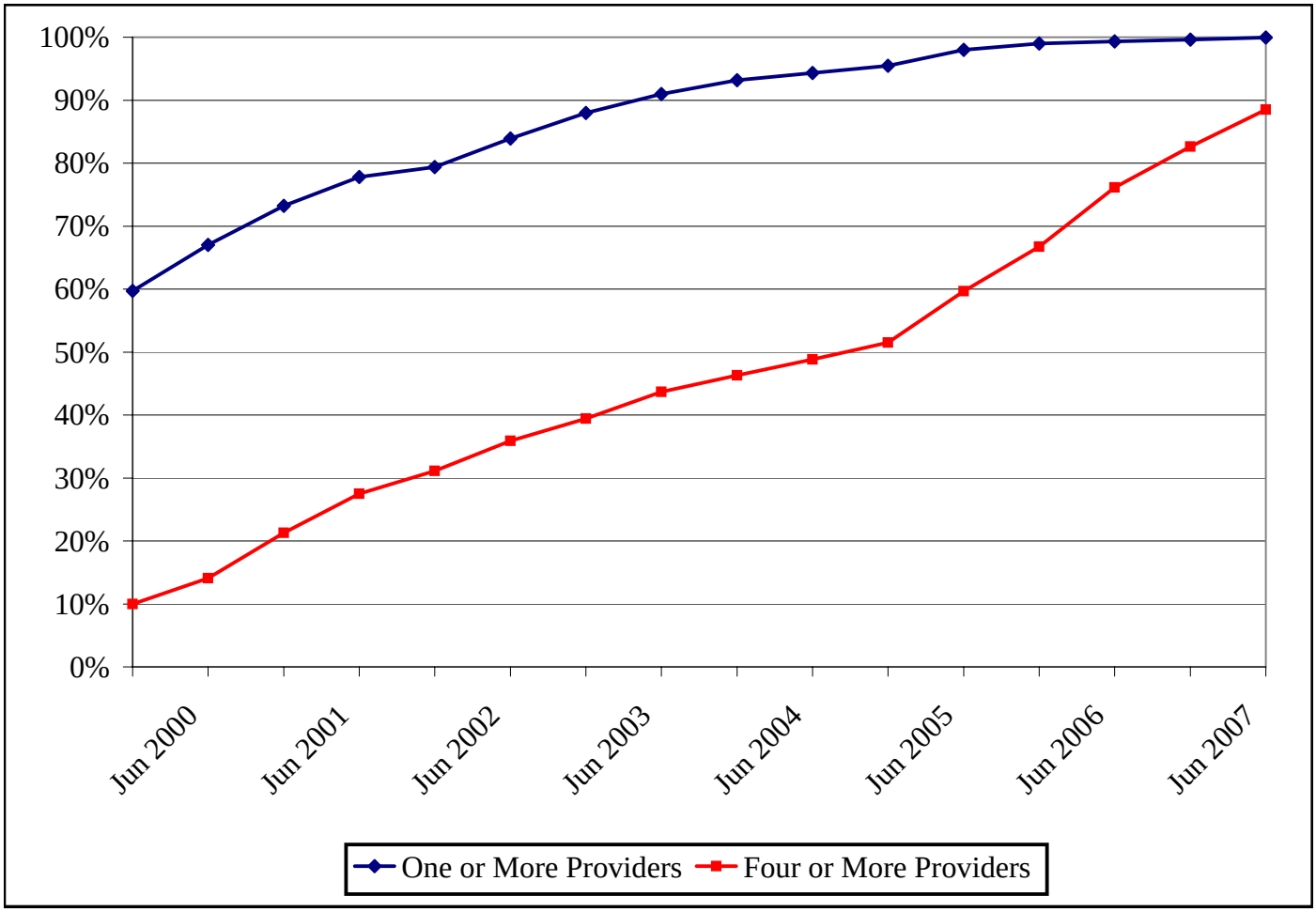


Table 16

Percentage of Zip Codes with High-Speed Lines in Service by Technology as of June 30, 2007

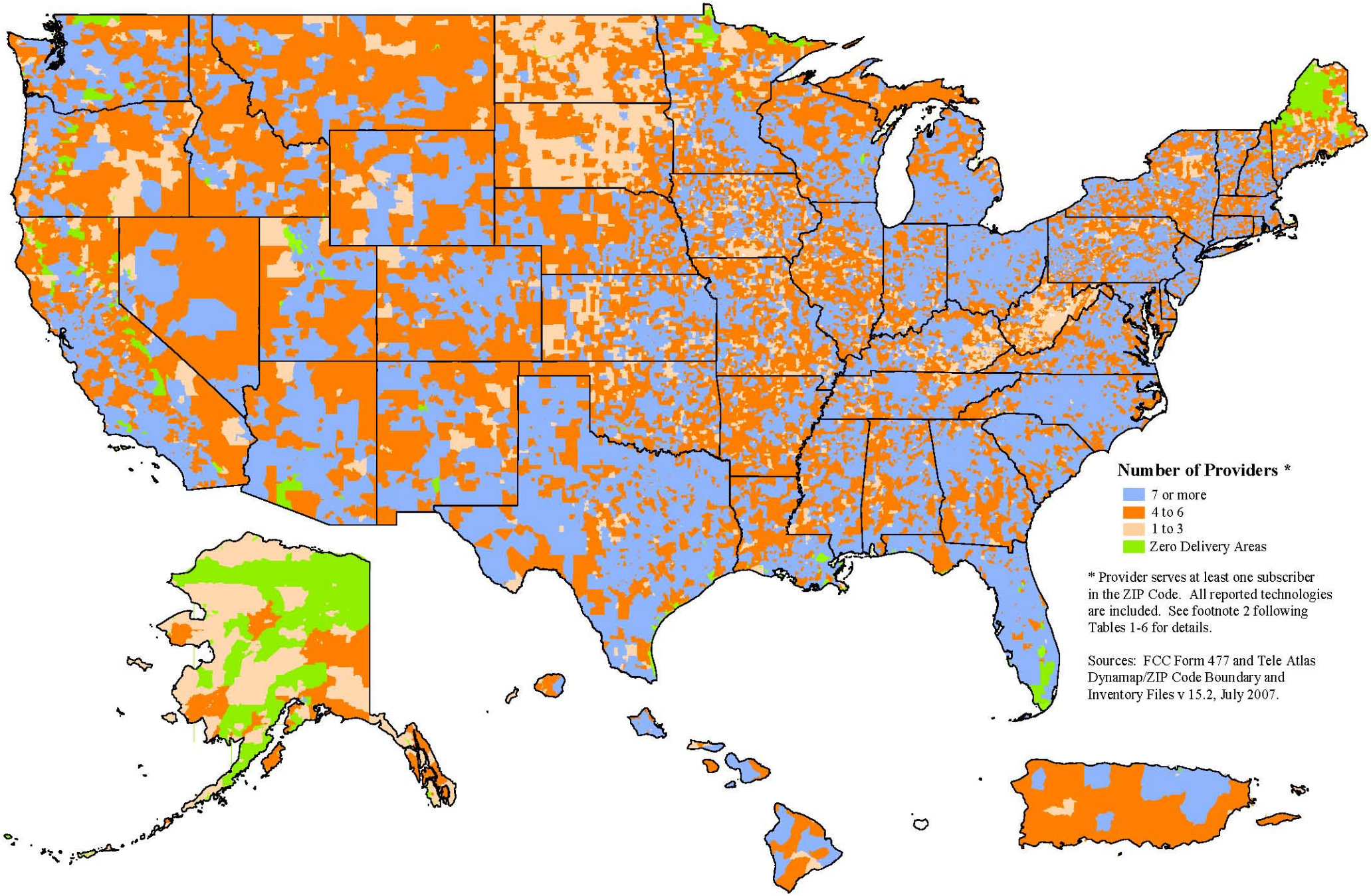
Technology	Number of Providers										
	Zero	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten or More
ADSL	15.4	37.7	19.9	10.9	7.2	4.4	2.3	1.4	0.7	0.2	0.1
SDSL	59.9	20.6	6.8	4.9	3.7	2.6	1.1	0.4	0.1	0.0	0.0
Cable Modem	34.1	56.6	8.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiber	57.4	24.2	10.5	5.3	2.0	0.5	0.1	0.0	0.0	0.0	0.0
Satellite	8.0	26.8	42.8	22.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fixed Wireless	74.7	19.3	5.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Mobile Wireless	4.1	23.7	39.0	29.3	3.8	0.0	0.0	0.0	0.0	0.0	0.0
Power Line and/or Other [1]	80.3	16.3	2.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADSL and/or Cable Modem	10.4	23.7	22.0	15.8	10.3	7.3	4.8	2.7	1.7	0.8	0.4
All Technologies	0.1	0.9	3.5	7.0	11.1	13.6	13.0	11.6	9.1	7.4	22.7

Figures may not add up to 100% due to rounding.

[1] Other includes high-speed lines provided over traditional wireline facilities such as T-carrier and also lines provided over any technology that is not specified in the table.

High-Speed Providers by 5-Digit Geographical ZIP Code

(As of June 30, 2007)



Prepared by the Federal Communications Commission,
Wireline Competition Bureau, Industry Analysis and Technology Division

Table 17
Percentage of Zip Codes with High-Speed Lines in Service as of June 30, 2007
(Over 200 kbps in at least one direction)

	Number of Providers										
	Zero	**One**	**Two**	**Three**	**Four**	**Five**	**Six**	**Seven**	**Eight**	**Nine**	**Ten or More**
Alabama	0 %	0 %	2 %	6 %	10 %	15 %	15 %	13 %	10 %	10 %	18 %
Alaska	0	15	40	20	13	6	1	2	2	0	0
Arizona	0	0	0	1	5	12	10	9	10	8	46
Arkansas	0	0	3	9	20	24	18	8	6	6	5
California	0	0	1	5	10	10	7	7	8	8	44
Colorado	0	0	1	4	7	14	15	13	8	5	33
Connecticut	0	0	0	1	7	14	17	20	13	13	15
Delaware	0	0	0	3	10	10	26	19	10	9	12
District of Columbia	0	0	0	8	4	0	0	0	0	12	76
Florida	0	0	0	0	1	2	5	9	9	10	63
Georgia	0	0	1	3	8	13	15	13	7	7	33
Hawaii	0	0	2	10	10	17	13	17	19	10	2
Idaho	0	0	1	10	14	25	16	11	7	4	10
Illinois	0	0	2	9	13	17	15	10	8	7	19
Indiana	0	0	3	6	10	16	15	15	13	8	14
Iowa	0	3	10	14	16	17	12	10	7	3	8
Kansas	0	0	5	12	14	15	11	10	7	8	17
Kentucky	0	4	16	15	13	12	11	9	6	5	8
Louisiana	0	0	1	4	9	18	18	13	8	6	24
Maine	1	5	10	18	15	19	13	11	4	3	0
Maryland	0	0	2	4	12	18	10	9	6	4	34
Massachusetts	0	0	1	1	7	18	18	14	9	7	24
Michigan	0	0	0	3	6	11	15	15	13	9	28
Minnesota	0	0	3	12	16	15	10	10	8	5	21
Mississippi	0	0	3	6	14	20	15	9	8	7	18
Missouri	0	2	5	12	15	17	13	9	8	7	11
Montana	0	0	2	7	28	28	15	8	6	3	4
Nebraska	0	0	1	6	18	22	19	13	7	7	7
Nevada	0	0	0	3	10	16	10	13	5	9	34
New Hampshire	0	0	1	1	12	18	25	22	7	5	9
New Jersey	0	0	0	0	3	5	12	12	13	12	42
New Mexico	0	0	2	5	15	17	25	10	6	5	15
New York	0	0	2	6	13	14	15	12	9	7	20
North Carolina	0	0	0	3	6	10	12	15	11	11	32
North Dakota	0	4	26	31	24	8	3	1	1	0	1
Ohio	0	0	0	1	2	7	11	20	19	14	26
Oklahoma	0	1	4	8	17	17	13	11	10	8	11
Oregon	0	1	3	9	15	14	11	9	7	9	22
Pennsylvania	0	1	3	7	11	13	14	13	10	7	20
Puerto Rico	0	0	1	3	6	13	36	12	14	5	9
Rhode Island	0	0	1	7	7	15	12	15	14	14	16
South Carolina	0	0	0	2	6	9	12	13	12	12	33
South Dakota	0	4	23	24	19	12	8	4	2	2	2
Tennessee	0	1	4	6	9	14	11	11	9	8	27
Texas	0	0	1	2	5	8	12	14	13	10	35
Utah	0	0	3	2	9	16	15	13	7	2	33
Vermont	0	0	0	9	21	15	14	16	8	9	7
Virginia	0	0	1	5	11	15	14	14	10	7	22
Washington	0	0	1	4	12	12	11	10	8	6	36
West Virginia	2	11	18	20	17	12	9	4	3	3	1
Wisconsin	0	0	1	3	10	16	20	18	11	7	16
Wyoming	0	0	1	12	18	17	25	11	7	5	4
Nationwide	0 %	1 %	4 %	7 %	11 %	14 %	13 %	12 %	9 %	7 %	23 %

Table 18
High-Speed Subscribership
Ranked by Population Density

Persons per Square Mile [1]	Percentage of Zip Codes with at Least One High-Speed Subscriber							Percentage of Population that Resides in Zip Codes with High-Speed Service						
	Jun 2001	Jun 2002	Jun 2003	Jun 2004	Jun 2005	Jun 2006	Jun 2007	Jun 2001	Jun 2002	Jun 2003	Jun 2004	Jun 2005	Jun 2006	Jun 2007
More Than 3,147	98.1 %	98.7 %	98.9 %	98.9 %	99.3 %	99.4 %	99.7	99.9 %	99.8 %	100.0 %	99.9 %	100.0 %	99.9 %	99.9
947-3,147	97.1	98.2	98.2	98.5	99.0	99.5	99.6	99.8	99.9	99.9	99.9	99.9	99.9	99.9
268-947	95.6	97.5	98.4	98.5	99.2	99.4	99.7	99.5	99.9	99.9	99.9	100.0	100.0	100.0
118-268	92.3	95.2	96.9	97.7	98.8	99.2	99.3	98.8	99.5	99.7	99.8	99.9	99.8	99.9
67-118	87.5	93.0	96.4	97.6	98.6	98.8	99.0	96.8	98.5	99.4	99.6	99.8	99.8	99.7
41-67	80.9	88.0	93.8	96.4	98.2	98.9	99.4	93.0	96.3	98.5	99.1	99.4	99.5	99.6
25-41	72.8	81.0	90.4	94.3	97.6	98.4	99.0	87.3	92.2	96.9	98.2	99.2	99.4	99.5
15-25	58.9	70.0	83.3	88.5	95.7	97.1	98.1	78.4	86.5	93.3	95.6	98.6	98.9	99.2
6-15	51.1	60.9	77.3	83.5	93.7	96.5	97.7	74.6	81.9	90.3	93.8	97.7	98.5	98.9
Fewer Than 6	36.8	49.6	68.5	73.4	84.3	89.3	90.5	60.7	72.6	85.7	91.1	95.1	96.6	96.9

Table 19
High-Speed Subscribership
Ranked by Household Income

Median Household Income [1]	Percentage of Zip Codes with at Least One High-Speed Subscriber							Percentage of Population that Resides in Zip Codes with High-Speed Service						
	Jun 2001	Jun 2002	Jun 2003	Jun 2004	Jun 2005	Jun 2006	Jun 2007	Jun 2001	Jun 2002	Jun 2003	Jun 2004	Jun 2005	Jun 2006	Jun 2007
$53,494 to $291,938	96.4 %	97.9 %	98.5 %	98.7 %	99.0 %	99.3 %	99.4	99.8 %	99.9 %	99.9 %	99.8 %	99.8 %	99.8 %	99.8
$43,617 to $53,478	90.7	93.5	96.2	97.2	98.4	98.9	99.1	99.3	99.7	99.8	99.9	99.9	99.9	99.9
$38,396 to $43,614	83.8	89.0	94.0	95.9	98.1	98.9	99.1	98.5	99.0	99.6	99.8	99.9	99.9	99.9
$34,744 to $38,395	80.0	85.0	91.5	94.2	97.4	98.6	98.7	97.9	98.7	99.3	99.7	99.8	99.8	99.9
$32,122 to $34,743	77.3	83.3	90.2	93.0	97.2	98.4	98.8	97.4	98.4	99.2	99.5	99.8	99.9	99.9
$29,893 to $32,121	73.4	80.4	89.9	92.5	97.1	98.3	98.9	96.3	97.7	99.1	99.3	99.7	99.8	99.8
$27,542 to $29,892	73.5	79.7	89.2	92.5	96.7	97.9	98.6	95.9	97.5	98.9	99.3	99.7	99.7	99.8
$24,855 to $27,541	69.6	77.2	87.1	90.9	96.3	97.8	98.6	95.2	97.0	98.5	99.0	99.6	99.6	99.8
$21,645 to $24,855	67.4	76.9	87.4	91.2	95.9	97.8	98.5	93.9	96.5	98.5	99.1	99.6	99.7	99.7
$0 to $21,644	59.1	69.2	78.3	81.3	88.3	90.6	92.0	94.1	96.3	98.1	98.8	99.3	99.5	99.5

[1] Persons per square mile and median household income are presented in decile groups. Each decile group contains 10% of the reported geographic Zip Codes for which the demographic information, as of the year 2000, is available in Demographic Power Pack, Current Year Update (2000), MapInfo Corporation.

Customer Response

Publication: *High-Speed Services for Internet Access: Status as of June 30, 2007*

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis and Technology Division of the FCC's Wireline Competition Bureau.

1. Please check the category that best describes you:
   - ____ press
   - ____ current telecommunications carrier
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   - ____ business customer evaluating vendors/service options
   - ____ consultant, law firm, lobbyist
   - ____ other business customer
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   - ____ Other (please specify)

2. Please rate the report:

	Excellent	Good	Satisfactory	Poor	No opinion
Data accuracy	(_)	(_)	(_)	(_)	(_)
Data presentation	(_)	(_)	(_)	(_)	(_)
Timeliness of data	(_)	(_)	(_)	(_)	(_)
Completeness of data	(_)	(_)	(_)	(_)	(_)
Text clarity	(_)	(_)	(_)	(_)	(_)
Completeness of text	(_)	(_)	(_)	(_)	(_)

3. Overall, how do you rate this report?

Excellent	Good	Satisfactory	Poor	No opinion
(_)	(_)	(_)	(_)	(_)

4. How can this report be improved?

5. May we contact you to discuss possible improvements?
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STATEMENT OF
CHAIRMAN KEVIN J. MARTIN

Re: Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership, WC *Docket No. 07-38*

Re: Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, GN Docket No. 07-45

Since becoming Chairman, I have made broadband deployment the Commission's top priority. Broadband technology is a key driver of economic growth. The ability to share increasing amounts of information at greater and greater speeds, increases productivity, facilitates interstate commerce, and helps drive innovation. But perhaps most important, broadband has the potential to affect almost every aspect of our lives – from where we work, to how we educate our children and increasingly to the way healthcare is delivered.

Continued broadband deployment and infrastructure investment is vital to this country's economic growth. The Commission has developed a number of policies to encourage the deployment of broadband. We have removed regulatory obstacles that discouraged infrastructure investment and slowed deployment. We have classified DSL, BPL and Wireless broadband as "information services" not subject to legacy regulations. We have streamlined the franchise process for new entrants and incumbent cable providers and banned exclusive contracts in apartment buildings to spur competition that is essential to further investment in underlying infrastructure for broadband. We initiated a nationwide pilot program for the deployment of broadband infrastructure for healthcare facilities. We have also just completed the largest auction in FCC history of spectrum that is ideally suited to broadband.

The United States is the largest broadband market in the world and our newest report finds continued growth. During the first half of 2007, high speed lines increased by 22 percent, from over 82 million to over 100 million lines. Since I joined the Commission, these lines have grown 950% from just over 9 million lines to over 100 million lines. Our analysis indicates that more than 99% of the country's population lives in the more than 99% of Zip Codes where a provider reports having at least one high-speed service subscriber. Additionally, nationwide, we estimate that high-speed DSL connections were available to 82% of the households to whom ILECs provide local phone service as of the end of June 2007. High-speed cable modem service was available to 96% of the households to whom cable operators provide cable TV service. This is good news for consumers and good news for the country. Accordingly, I support the conclusion in the Section 706 report that broadband services are currently being deployed to all Americans in a reasonable and timely fashion.

But there is certainly more work to be done. That is why I am pleased the Commission today adopts an Order to collect dramatically improved data on broadband services. This improved data will enable us to better identify and analyze the deployment of broadband throughout the nation.

As the importance of broadband continues to increase, it is important that we understand better how and where broadband is being deployed by providers and used by consumers. Today's Order will require detailed subscribership information on a local level and detailed information about the download and upload speeds of broadband services offered to consumers. Specifically, we will collect information in the following tiers of service:

- First Generation data: 200k up to 768k
- Basic Broadband : 768k to 1.5mbps
- 1.5mbps to 3.0mbps
- 3.0mbps to 6.0 mbps
- 6.0mbps and above

Additionally, we conclude that we will obtain and map additional information about broadband service availability to better direct resources toward unserved and underserved areas. Armed with this additional broadband data, the Commission will be better able to assess and promote the deployment of broadband across the nation.

I am pleased that the Commission, by its actions today, continues to take additional steps to further broadband deployment.

DISSENTING STATEMENT OF COMMISSIONER MICHAEL J. COPPS

Re: Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, GN Docket No. 07-45

It's no secret to most people here that I have not been leading the cheers for previous editions of our Section 706 reports. Based on a paucity of data – mostly primitive and generally-unhelpful – these reports claim progress that simply did not reflect reality. The data lacked a plausible definition of broadband, employed stunningly meaningless zip code measurements concerning its geographic distribution, ignored the prices people paid for broadband completely, and for years failed to look at what other countries were doing to get broadband deployed to their people. As I noted the last time we issued a section 706 Report, way back in September 2004:

> "America's competitors around the world are implementing comprehensive broadband plans. Countries like Japan, Korea, and Canada have left us far behind. This is unacceptable. Broadband is our central infrastructure challenge. High-capacity networks are to the Twenty-first century what roads, canals and railroads were to the Nineteenth and highways and basic telecommunications were to the Twentieth. Our economy and our future will be driven by how quickly and completely we deploy broadband.
>
> That is why Congress charged the FCC with promoting broadband deployment for all Americans—whether they live in rural areas, inner cities or tribal lands; whether they are affluent or of limited income; whether they live with or without disabilities. Recently, we heard an announcement from the very top of our government that our goal is universal broadband access by 2007. But we are not making acceptable progress toward that goal. Yes, there are good stories in these glossy pages. Schools and libraries enjoy broadband access like never before. New technologies offer new promise. Strides are being made in some rural communities. Companies are working hard.
>
> Still, one glaring fact stands out: the United States is ranked eleventh in the world in broadband penetration! [Note: we've fallen to 15th in the interim.] This Report somehow finds that this is acceptable, and that our efforts are resulting in timely deployment."

I could continue with the rest of my 2004 statement and it would sound as eerily applicable today as these first few paragraphs do. We can write reports that conclude that Americans are receiving broadband in a reasonable and timely fashion. But the facts are always there, glaring and staring us in the face, showing us where we really stand.

The fact is that your country and mine has never had any cognizable national broadband strategy to get the job done. So while broadband deployment is better than when I came to the FCC—I would surely hope so!—and the Commission may separately issue a report today showing improvements in broadband deployment, we've been working with one hand tied behind our backs, inhibited by the Commission's dependence on antiquated methodologies and less than rigorous analysis. I'm happy we're starting to change our benchmarks, but, my goodness, how late it is!

Just consider the fact that our international competitors deploy 25, 50 and 100 mbps broadband speeds at fractions of what it costs here in the United States. If consumers in Los Angeles or Washington

pay $40 per month for a 6 mbps connection while those in London or Tokyo pay multiples less for 50 or 100 mbps, just think of the costs and competition burdens this puts on American consumers and businesses.

Surely broadband has created many good new jobs in the United States. But, you know—and I haven't seen any statistics on this—it wouldn't surprise me that our lack of a real broadband strategy has helped out-source tens of thousands of jobs, probably more, rather than keeping them right here at home. Again, I don't know that this is true, but the fact that we can even raise such a question ought to scare us all.

So we should not be watching from the sidelines, letting the marketplace—still largely a cable-telco duopoly in most places—take its course. A national broadband strategy should include government and the private sector working together as it has always done to meet the great infrastructure challenges of the day. It means redefining the mission of Universal Service in the 21st century to mean broadband, just as Universal Service meant telephone service in the 20th century. It means incentives to build infrastructure, something we always managed to do in our nation's past but where we seem strangely reluctant to act when it comes to this perhaps most awesome-ever technology. We should be taking closer looks at and learning from the successes and failures of our global competitors. And we should be looking within our own borders to tap into the creative ideas being generated to meet the broadband needs of the Digital Age.

I think we can get there but we're going to have to do more than just issue self-satisfied reports and set high-minded goals. Until universal, affordable broadband is a top priority for the country no report will be able to mask the work still yet to be done. Hopefully the steps we take on broadband data-gathering in another item before us today will provide the basis for a better Section 706 Report next time around. But that is then, this is now, and I must respectfully dissent from this particular Report.

DISSENTING STATEMENT OF COMMISSIONER JONATHAN S. ADELSTEIN

Re: Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *GN Docket No. 07-45*.

In Section 706 of the 1996 Act, Congress wisely directed this Commission to conduct regular inquiries into the status of broadband deployment. Today, we take up the Commission's first report in four years on this important topic. Given the ever-increasing importance of broadband to our country's economy, public safety, education, and health care, I have long argued that the Commission should engage in a comprehensive analysis of broadband deployment, availability, affordability, and competitiveness. Regrettably, this report, like its predecessor in 2004, fails to set out an adequate basis for concluding that broadband is being deployed in a reasonable and timely basis to *all* Americans, which is our directive under the statute. Instead, this report repeats past shortcomings, relies on faulty data, and fails to present a clear picture of broadband in America.

Yes, more people have adopted broadband in recent years. But they have adopted broadband faster in other countries with which we compete. Just because a car speeds up doesn't mean it wins the race, especially if other cars speed up faster. This report fails to admit that while we have improved, other countries have improved at a faster rate, so we are actually falling behind.

Since our 2004 report, it has become increasingly apparent that one of America's central challenges is promoting the widespread deployment of higher-bandwidth broadband facilities to carry the vast array of innovative services that are transforming virtually every aspect of the way we communicate, and to make sure that these facilities are affordable for consumers. We stand at the forefront of a revolution in the applications that will ride over this infrastructure. They are reshaping the way we work, educate our children, provide health care to our citizens, govern, practice democracy, and interact with one another. These are tools that can play a crucial role in driving our economic growth, enhancing public safety, and revitalizing our communities.

Even as consumers are increasingly empowered to use broadband in newer, more creative ways, we are competing on a global stage. So, it is troubling that the warning signs I raised four years ago now flash only brighter. We face real challenges of availability, affordability, and competition. Similarly, while I am glad that this report begins to address broadband in an international context, it is too dismissive of the considerable evidence suggesting that we are behind the global leaders in broadband and have continued to fall.

The report unconvincingly attempts to dismiss the international broadband penetration rankings. The fact is the U.S. has dropped year-after-year. This downward trend and the lack of broadband value illustrate the sobering point that when it comes to giving our citizens affordable access to state-of the-art communications, the U.S. has fallen behind its global competitors. We do not wrestle with the question of broadband value, or price per megabit, for which our citizens pay far more than those in many other countries. According to the ITU, the digital opportunity afforded to U.S. citizens is not even near the top, it is 21st in the world. Recent OECD data show the U.S. ranked 11th in the world in price per megabit. Other reports show U.S. consumers pay nearly twice as much as Japanese customers for connections that are twenty times as slow. This is more than a public relations problem, it's a major productivity problem.

Consumers, small businesses, and even government agencies are becoming increasingly creative with broadband, as it becomes more widely available. Indeed, we have made progress since 2004. The broadband data released concurrently today highlights broadband growth, although these statistics are based on our now defunct definitions. The significant investment in the 700 MHz auction also illustrates the investment being made in broadband facilities. Many providers are deeply committed to their communities, our Schools and Libraries program continues to play a vital role bringing broadband to our nation's children, and there are positive lessons to draw on. Yet, this report fails to get at the core question of whether *all Americans* are participating in the broadband revolution and it again fails to present a meaningful analysis of broadband availability, competition, or affordability. It largely relies on the same old methodology for assessing broadband availability and competition that has been recognized almost universally as flawed and broken. Although I am genuinely pleased we also adopt a companion item to improve our data gathering efforts, the truth is that we rest our conclusions today on a far flimsier basis. Unfortunately, the failure over the past eight years to address these data shortcomings – particularly, in time for this report -- seriously undermines the credibility of its findings.

Nor does the report address meaningfully the *competitiveness* of the broadband market. In the Notice initiating this proceeding, we also launched an inquiry into the competitiveness of the broadband market that we committed to do as part of our review of the major BOC-IXC mergers in late 2005. Despite that commitment, a rigorous analysis of the state of broadband competition is absent here.

Also gone from this report are attempts to analyze case studies or to provide a compilation of best practices for providers and communities looking to keep up with the fast pace of change. Good and instructive stories abound, and I believe the Commission could have played an important role in documenting these successes. Choosing representative communities and initiatives is inherently difficult, but we lose an opportunity to grapple with the real world challenges and achievements in a way that could better inform policymakers and readers of this report.

This report also fails to provide a clearer roadmap for achieving the goal of delivering affordable, truly-high speed broadband to all Americans. The report culls a list of FCC decisions since our last report, some of which have been more effective than others. Yet, it does not probe deeply into broadband challenges for those in rural areas, those in Indian Country, those with disabilities, or those in lower income areas. Nor do we grapple with the policy debates occurring in other countries with whom we compete in the global marketplace. Past reports have included recommendations and policy guidance. Although I may not have agreed with all those recommendations, we miss a chance here to provide guidance in this critical area.

It is increasingly apparent that an issue of this importance to the economy and the success of our communities warrants a coherent, cohesive, and comprehensive national strategy. The first step in addressing this challenge is to collect better data about the state of the marketplace and to perform a realistic assessment of our success and failures. Only through such efforts can we truly assess our current strengths and weaknesses and develop responsive solutions. Our companion data gathering item provides hope for the future but, for the reasons outlined above, I must dissent from this Report, which falls short of those goals because it is based on the old, flawed data gathering methodology.

STATEMENT OF
COMMISSIONER DEBORAH TAYLOR TATE

Re: Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *GN Docket No. 07-45.*

Broadband is revolutionizing how we communicate, how, where and when we work, how we educate our children, the delivery of healthcare and public safety as well as how we entertain ourselves. Broadband is particularly critical in rural and tribal areas, where advanced communications can shrink the distances that isolate remote communities.

I believe that the continued and complete deployment of broadband across this nation should be our number one focus, indeed Congress *requires* this: to provide incentives for investment in broadband facilities and encourage broadband deployment. To that end I have worked to remove legacy regulations to increase incentives for investment in new infrastructure, allowing services, applications and business plans to develop and proliferate in a less regulatory environment.

The 706 Report we release today shows that the U.S. remains the largest broadband market in the world, and finds continued dramatic growth in broadband deployment to over 100 million lines as of June 2007. For the full twelve-month period ending June 30, 2007, high speed lines increased 55% (or 37 million lines). Wireless devices, especially the latest generation devices, are increasingly used for Internet access. Just today the *New York Times* reported on a study that found 84.8 percent of iPhone users access news and information from this handheld device, and 30.9 percent of iPhone users have tuned into a mobile TV or video clip. Given that sales of iPhones will soon reach 10 million, more and more people are utilizing these devices and with our spectrum auctions consumers will have even more choice.

High-speed deployments in rural communities also have continued to increase since the Commission's *Fourth Report*. Our data, as well as an NTCA report and OPASTCO survey, show there has been a significant increase in broadband availability in rural areas.

I am encouraged by the dozens of States and localities that are currently conducting or exploring initiatives in broadband deployment like Connect- Tennessee. They are on the ground, know the providers and needs of the communities better than us here in Washington D.C.- and we should enhance and not burden State and local efforts. To enhance cooperative federalism I join my State colleagues in suggesting reinvigorating the Federal-State Joint Conference on Advanced Services to serve as a vehicle for an ongoing dialogue between the Commission, state regulators, and local and regional entities regarding the deployment of broadband services.

In the future, I anticipate ever-greater demand for services and applications requiring greater bandwidth over an ever-expanding area. The record in this proceeding demonstrates that multiple industries are aggressively investing in and deploying services to meet this demand, expecting to make $50 billion in capital expenditures in 2008 and 2009, enhancing consumer choice in both providers and services. I will continue to support policies that encourage competition between broadband platform providers. Attempting to keep up with their competitors will drive higher speed technologies and service offerings to the U.S. broadband marketplace, not government regulation; and as a diversity of technologies mature coverage too will continue to become more ubiquitous.

STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL

Re: Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *GN Docket No. 07-45.*

Since the Commission issued the *Fourth Report* on the availability of broadband services in 2004, this nation has made great strides in deploying advanced telecommunications services across America. This report reflects many of those advances. We are seeing impressive developments in new technologies using cable, copper, fiber, wireless, and satellite, that are giving Americans more choices and greater availability of advanced telecommunications services. The truth is, America continues to enjoy the most dynamic and robust Internet economy in the world. It's important to note that we achieved this success not by regulatory fiat, but by keeping regulations minimal, thus allowing entrepreneurs to flourish. Rigid command-and-control government mandates and arbitrary definitions and terminology would have inhibited creativity and growth, not fostered it. As we move forward toward the next generations of broadband technologies, it is important to remember this important lesson from history: government cannot out-guess the genius of free markets; nor should it try.

Nonetheless, we can only measure our progress with diverse and sound data. Currently, we use the data that the Commission receives through its broadband reporting requirements. In a companion item today, we are adopting more granular and expansive reporting requirements that should allow the Commission to render more comprehensive analyses of advances in the marketplace. However, this Commission, and all future commissions, should take great care to seek accurate and complete information that is useful to assess the state of broadband deployment. We must be mindful to let the data speak for itself and analyze it with a variety of methodologies. No one methodology can reveal the complete truth. Accordingly, we should remind ourselves often that the process of data collection and analysis is iterative and that we must constantly strive to improve our performance in this regard. Politics should play no part. Anything less will not move America further ahead in this important area.