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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, as Amended by the Broadband Data)
Improvement Act)

GN Docket No. 10-159

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SEVENTH BROADBAND PROGRESS REPORT AND ORDER ON RECONSIDERATION

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By the Commission: Chairman Genachowski and Commissioners Copps and Clyburn issuing separate statements; Commissioner McDowell dissenting and issuing a separate statement; Commissioner Baker not participating.

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I. INTRODUCTION

1. This is the Commission’s Seventh Report issued under section 706 of the Telecommunications Act of 1996, as amended,¹ which requires that the Commission conduct an annual inquiry concerning the “availability of advanced telecommunications capability to all Americans.” As part of this inquiry, the Commission must determine whether advanced telecommunications capability—“broadband”²—“is being deployed to all Americans in a reasonable and timely fashion,”³ as deployment is an essential component of availability.⁴ Our analysis of the best data available—the data collected by the National Telecommunications and Information Administration (NTIA) for the National Broadband Map⁵—shows that as many as 26 million Americans live in areas unserved by broadband capable of “originat[ing] and receiv[ing] high-quality voice, data, graphics, and video telecommunications.”⁶ Many of these Americans live in areas where there is no business case to offer broadband, and where existing public efforts to extend broadband are unlikely to reach; they have no immediate prospect of being served,⁷ despite the growing costs of digital exclusion.⁸ For these and other reasons, we must conclude that broadband is not being deployed in a reasonable and timely fashion to all Americans.

2. Furthermore, notwithstanding the substantial benefits of broadband, approximately one-third of Americans do not subscribe to any form of high-speed Internet access service,⁹ citing barriers such as

¹ 47 U.S.C. § 1302(b) (2010). Section 706 of the Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat. 56, 153 (1996) (the Act), as amended in relevant part by the Broadband Data Improvement Act (BDIA), Pub. L. No. 110-385, 122 Stat. 4096 (2008), is now codified in Title 47, Chapter 12 of the United States Code. See 47 U.S.C. § 1301 et seq. We now refer to the reports required under section 706 of the Act as “broadband progress reports” and have updated our references to prior reports accordingly.

² For purposes of this report, we use the term “broadband” synonymously with “advanced telecommunications capability.” In this report, as in the last report, we define broadband as a transmission service that actually enables an end user to download content at speeds of at least 4 megabits per second (Mbps) and to upload content at speeds of at least 1 Mbps over the broadband provider’s network (4 Mbps/1 Mbps). See 47 U.S.C. § 1302(d)(1) (defining advanced telecommunications capability); *infra* paras. 14–15; *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, Amended by the Broadband Data Improvement Act*, GN Docket Nos. 09-137, 09-51, Report, 25 FCC Rcd 9556, 9559, para. 5 (2010) (*2010 Sixth Broadband Progress Report*) (establishing the 4 Mbps/1 Mbps broadband speed threshold for the first time). This definition is not a standard that the Commission is bound to employ in other reports or proceedings.

³ 47 U.S.C. § 1302(b).

⁴ The relationship between “deployment” and “availability” is discussed more fully in section IV.A, *infra*.

⁵ See *infra* para. 13.

⁶ 47 U.S.C. § 1302(d)(1).

⁷ See *infra* para. 66.

⁸ See, e.g., OMNIBUS BROADBAND INITIATIVE (OBI), FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, GN Docket No. 09-51 at 3–5, 129 (2010) (NATIONAL BROADBAND PLAN).

⁹ See NTIA, DIGITAL NATION: EXPANDING INTERNET USAGE 5 (Feb. 2011) (DIGITAL NATION 2011) (stating, based (continued....))

lack of affordability, lack of digital literacy, and a perception that the Internet is not relevant or useful to them.¹⁰ In addition, as many as 80 percent of E-rate funded schools and libraries say their broadband connections do not fully meet their needs.¹¹ And the available international broadband data, though not perfectly comparable to U.S. data, suggest that the availability and deployment of broadband in the United States may lag behind a number of other developed countries in certain respects, although we also compare favorably to some developed countries in certain respects.¹² These data provide further indication that broadband is not being reasonably and timely deployed and is not available to all Americans.

3. As we stated in our last report, our conclusions regarding broadband deployment in no way diminish the fact that the communications industry has made great strides to bring better and faster broadband to most Americans.¹³ Providers invest tens of billions of dollars annually in the networks that make broadband possible.¹⁴ Currently, a number of wireless providers are building out nationwide fourth-generation (4G) mobile broadband networks,¹⁵ and providers like CenturyLink, Inc.

(Continued from previous page)

on October 2010 U.S. Census Bureau (Census Bureau) Current Population Survey (2010 CPS) data, that 31.8 percent of U.S. households have not adopted broadband), *available at* http://www.ntia.doc.gov/reports/2011/NTIA_Internet_Use_Report_February_2011.pdf. We note that the 2010 CPS considered a household to have “broadband” if it had “at least one of the following Internet access services . . . : [digital subscriber line (DSL)], cable modem, fiber optics, mobile broadband plan for a computer or a cell phone, satellite, or ‘some other service.’” *Id.* at 5 n.1. *See also* INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, FCC, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2010, at 35 (Mar. 2011) (MARCH 2011 IAS REPORT) (showing that 64 percent of American households have a fixed “high speed” connection advertised as being capable of delivering over 200 kilobits (kbps) in at least one direction), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-305296A1.pdf. The *March 2011 IAS Report* further shows that only one-third of all American households have a fixed connection advertised as being capable of delivering of 3 Mbps download and 768 kbps upload (3 Mbps/768 kbps). *See id.* at 34. As discussed below, we believe the 3 Mbps/768 kbps tier in our Form 477 subscription data (Form 477 Data) is the best proxy for 4 Mbps/1 Mbps for purposes of this report. *See infra* para. 30.

¹⁰ *See, e.g.,* John Horrigan, *Broadband Adoption and Use in America* 3–7 (OBI Working Paper No. 1, 2010) (Horrigan, *Broadband Adoption and Use in America*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf; DIGITAL NATION 2011 at 28.

¹¹ 47 U.S.C. § 1302(b) (stating the Commission’s inquiry must include “in particular, elementary and secondary schools and classrooms”); HARRIS INTERACTIVE, INC., on behalf of the FCC, 2010 E-RATE PROGRAM AND BROADBAND USAGE SURVEY: REPORT 2, DA 10-2414 (WCB 2011) (FCC E-RATE SURVEY).

¹² *See International Comparison Requirements Pursuant to the Broadband Data Improvement Act; International Broadband Data Report*, IB Docket No. 10-171, Second Report, DA 11-732, para. 1, Apps. C–G (IB rel. May 20, 2011) (2011 *International Broadband Data Report*) (showing, based on Organization for Economic Co-operation and Development (OECD) data from 2009 or the latest available year, the U.S. ranked 12th for fixed broadband adoption on a per household basis, behind countries such as South Korea, the United Kingdom, Canada, and Germany). *See generally* 47 U.S.C. § 1303(b)(1) (“As part of the assessment . . . required by section 1302 of this title, the Federal Communications Commission shall include information comparing the extent of broadband service capability . . . in a total of 75 communities in at least 25 countries abroad . . .”).

¹³ 2010 *Sixth Broadband Progress Report*, 25 FCC Rcd at 9560, para. 6.

¹⁴ *See, e.g.,* Verizon Comments at 42; *see also id.* at 13, 44.

¹⁵ AT&T, 4G Mobile Broadband, <http://www.wireless.att.com/learn/why/technology/4g-lte.jsp>; Sprint, Experience 4G, http://shop2.sprint.com/en/solutions/mobile_broadband/mobile_broadband_4G.shtml; T-Mobile, Step up to 4G, <http://t-mobile-coverage.t-mobile.com/>; Verizon Wireless, 4G LTE, <http://network4g.verizonwireless.com/#/4g-network-verizon-wireless>.

(CenturyLink)¹⁶ and Frontier Communications Corporation (Frontier)¹⁷ are expanding wireline broadband networks—at least in part in fulfillment of conditions adopted by the Commission in approving transactions involving those providers—in many areas of the country. Cable networks are rolling out DOCSIS 3.0, capable of offering services of 50 Mbps or higher,¹⁸ and have passed 80 million homes as of the end of 2010.¹⁹ Other providers, mostly Verizon and some smaller providers, are rolling out fiber-to-the-premises, which is capable of providing some of the fastest broadband data rates offered anywhere;²⁰ FiOS alone claims to have passed 15.8 million premises as of the first quarter of 2011.²¹

4. The fact remains, however, that too many Americans remain unable to fully participate in our economy and society because they lack broadband. Although this is a nationwide concern,²² the situation is particularly bleak for Americans in rural²³ and Tribal areas.²⁴ In addition, Americans with low-income, or who are less educated, unemployed, disabled, seniors, Blacks, and Hispanics have a much lower broadband adoption rate than average.²⁵ The costs of digital exclusion are high and growing: lack of broadband limits healthcare, educational, and employment opportunities that are essential for consumer welfare and America's economic growth and global competitiveness. In contrast, the widespread deployment and availability of broadband in many areas of the nation promotes a virtuous cycle of investment, innovation, and competition.²⁶

5. In light of our determination that broadband deployment in the United States is still not reasonable and timely, the statute directs that the Commission “take immediate action to accelerate

¹⁶ *Applications Filed by Qwest Communications International Inc. and CenturyTel, Inc. d/b/a CenturyLink for Consent to Transfer Control*, WC Docket No. 10-110, Memorandum Opinion and Order, 26 FCC Rcd 4194, 4218, App. C (2011) (*CenturyLink/Qwest Merger*).

¹⁷ *Applications Filed by Frontier Communications Corporation and Verizon Communications Inc. for Assignment or Transfer of Control*, WC Docket No. 09-95, Memorandum Opinion and Order, 25 FCC Rcd 5972, 6001, App. C (2010).

¹⁸ See Posting of Paul Rodriguez to CableTechTalk (NCTA Blog), A Broadband Progress Report, <http://www.cabletechtalk.com/fcc/2011/04/26/a-broadband-progress-report/> (Apr. 26, 2011) (“At year-end 2010, next generation speeds of 50 Mbps or faster were offered to more than 80 million homes by cable operators, and robust current generation cable broadband was available to more than 123 million housing units.”).

¹⁹ *Id.*

²⁰ See, e.g., Verizon, Verizon FiOS Fact Sheet, <http://newscenter.verizon.com/kit/fios-symmetrical-internet-service/all-about-fios.html> (claiming to offer speeds up to 150 Mbps/35 Mbps).

²¹ *Id.* See also RVA, NORTH AMERICAN FTTH STATUS 1 (Mar. 31, 2011) (finding 20.9 million homes passed by fiber in North America), available at http://s.ftthcouncil.org/files/rva_ftth_status_april_2011_final_final.pdf.

²² As discussed below, every state, the District of Columbia, and all of the U.S. territories for which we have data have areas in which broadband is not deployed. See *infra* App. B (Unserved Population SBDD Census Tract Data). Indeed, of the 3,226 counties or county-equivalents for which we have data, 3,180 have some portion that is unserved. See FCC, Seventh Broadband Progress Report, <http://www.fcc.gov/reports/seventh-broadband-progress-report> (providing the county in which each unserved census block is located).

²³ See NTIA & FCC, BROADBAND STATISTICS REPORT, BROADBAND AVAILABILITY IN URBAN VS. RURAL AREAS (Feb. 2011), available at <http://www.broadbandmap.gov/download/reports/national-broadband-map-broadband-availability-in-rural-vs-urban-areas.pdf>.

²⁴ See *infra* para. 59.

²⁵ See DIGITAL NATION 2011 at 8–15, 28; ECONOMICS AND STATISTICS ADMINISTRATION & NTIA, EXPLORING THE DIGITAL NATION: HOME BROADBAND INTERNET ADOPTION THE UNITED STATES 8 (2010) (NTIA ADOPTION SURVEY), available at <http://www.esa.doc.gov/sites/default/files/reports/documents/report.pdf>.

²⁶ *Preserving the Open Internet; Broadband Industry Practices*, GN Docket No. 09-191, WC Docket No. 07-52, Report and Order, 25 FCC Rcd 17905, 17909–15, paras. 13–19 (2010) (*Open Internet Order*).

deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.”²⁷ There are several prominent barriers to infrastructure investment and obstacles to competition, including some that increase the costs of deploying and operating networks, and some that reduce potential revenues by limiting demand for broadband. These include: the costs of deploying networks and offering service in unserved areas; low broadband service quality, including performance insufficient to enable consumers to use the applications and services they wish to use, and the applications Congress has specified for particular consideration;²⁸ lack of affordable broadband Internet access services; consumers’ lack of access to computers and other broadband-capable equipment; lack of relevance of broadband for some consumers; poor digital literacy; and consumers’ lack of trust in broadband and Internet content and applications. The Commission will continue to act on the National Broadband Plan’s proposals to overcome these obstacles. We also will continue to improve our data collection to facilitate assessment of broadband deployment and availability, and obstacles to infrastructure investment and competition.

6. Since last year’s broadband progress report, the Commission has taken a number of actions to fulfill Congress’s mandate to accelerate deployment by removing barriers to investment and promoting competition.²⁹ For example, the Commission has improved and modernized the E-rate program³⁰ so that schools and libraries can now use universal service funds more efficiently to bring higher-speed broadband at lower cost to their communities.³¹ We also adopted the *Open Internet Order*, which supports the Internet’s virtuous cycle of investment and innovation by ensuring the continued freedom and openness of the Internet.³² In addition, the Commission recently launched the Broadband Acceleration Initiative, through which the Commission, with its partners in state and local governments, is finding ways to reduce obstacles to broadband deployment, such as barriers to accessing utility poles and rights of way and to collocating and siting wireless antennas and towers.³³ We have proposed reforms to modernize the federal universal service fund program (USF) and intercarrier compensation (ICC) system to make broadband more widely available and affordable in high-cost service areas.³⁴ To address the lack of communications services on Tribal lands, the Commission recently adopted a Notice

²⁷ 47 U.S.C. § 1302(b).

²⁸ Section 706 defines “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.” 47 U.S.C. § 1302(d)(1).

²⁹ See *infra* para. 11 for a more exhaustive list of actions.

³⁰ See *Schools and Libraries Universal Service Support Mechanism; A National Broadband Plan for Our Future*, CC Docket No. 02-6, GN Docket No. 09-51, Sixth Report and Order, 25 FCC Rcd 18762, 18764–65, para. 6 (2010) (*E-rate Sixth Report and Order*).

³¹ See *id.*

³² See generally *Open Internet Order*, 25 FCC Rcd 17905.

³³ *The FCC’s Broadband Acceleration Initiative Reducing Regulatory Barriers to Spur Broadband Buildout*, Public Notice (Feb. 9, 2011) (Broadband Acceleration Initiative), available at http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0209/DOC-304571A2.pdf; *Acceleration of Broadband Deployment: Expanding the Reach and Reducing the Cost of Broadband Deployment by Improving Policies Regarding Public Rights of Way and Wireless Facilities Siting*, WC Docket No. 11-59, Notice of Inquiry, FCC 11-51 (rel. Apr. 7, 2011) (*Rights-of-Way NOI*).

³⁴ See, e.g., *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing an Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up*, CC Docket Nos. 96-45, 01-92, GN Docket No. 09-51, WC Docket Nos. 03-109, 05-337, 07-135, 10-90, Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 26 FCC Rcd 4554, 4560–61, para. 10 (2011) (*Connect America Fund NPRM*).

of Proposed Rulemaking (NPRM) promoting greater utilization of spectrum over Tribal lands, and a Notice of Inquiry (NOI) addressing a range of issues related to broadband deployment challenges in Native Nations.³⁵

7. As required in light of our conclusions in this report, we will continue to work “to accelerate deployment of [broadband] by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.”³⁶ We will do so in part by continuing to address the proposals for Commission action set forth in the National Broadband Plan.³⁷ Building upon our work over the past year, we plan on accelerating broadband deployment and removing barriers to investment by completing our USF and ICC proceeding, continuing our efforts to unleash additional spectrum for broadband, and moving forward with the Broadband Acceleration Initiative.³⁸ We will also continue to improve our data collection and analysis to assess more accurately the deployment and availability of broadband in America, more effectively compare domestic broadband deployment and availability with that of foreign countries and cities, better inform our policy choices, and improve our decisionmaking.

II. BACKGROUND

8. *Previous Broadband Progress Reports.* Section 706 requires the Commission annually to “initiate a notice of inquiry concerning the availability of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms).”³⁹ In conducting this inquiry, the Commission must “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”⁴⁰ Section 706 also requires the Commission to provide “demographic information for unserved areas”⁴¹ and include an international comparison in its annual broadband progress report.⁴² If the Commission finds that broadband is not being deployed to all Americans in a reasonable and timely fashion, the Commission “shall take immediate action to accelerate deployment of such capability by removing barriers to infrastructure and investment and by promoting competition in the telecommunications market.”⁴³

9. The Commission has issued six broadband progress reports since Congress enacted section 706. The first five concluded that, even though certain groups of Americans were not receiving timely access to broadband, broadband deployment “overall” was reasonable and timely during that period.⁴⁴

³⁵ See *Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum over Tribal Lands*, WT Docket No. 11-40, Notice of Proposed Rulemaking, 26 FCC Rcd 2623 (2011) (*Native Nations Spectrum NPRM*); see also *Improving Communications Services for Native Nations*, CG Docket No. 11-41, Notice of Inquiry, 26 FCC Rcd 2672 (2011) (*Tribal Lands Broadband NOI*).

³⁶ 47 U.S.C. § 1302(b).

³⁷ See, e.g., NATIONAL BROADBAND PLAN at xi–xv.

³⁸ See *supra* note 33.

³⁹ 47 U.S.C. § 1302(b). In 2008, the BDIA required the Commission to publish its section 706 reports “annually” instead of “regularly.” BDIA § 103(a)(1), 122 Stat. at 4096; 47 U.S.C. § 1302(b).

⁴⁰ *Id.* § 1302(b).

⁴¹ *Id.* § 1302(c).

⁴² *Id.* § 1303(b)(1).

⁴³ *Id.* § 1302(b).

⁴⁴ The 2009 *Sixth Broadband Progress NOI* contains a detailed discussion of the five prior broadband progress reports. 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, as Amended by the Broadband Data Improvement Act; A National Broadband Plan for Our Future*, GN Docket Nos. 09-51, 09-137, Notice of Inquiry, 24 FCC Rcd 10505, 10513, para. 14 (2009) (*2009 Sixth Broadband Progress NOI*).

Following the passage of legislation by Congress emphasizing the importance of broadband,⁴⁵ the Commission concluded in the *2010 Sixth Broadband Progress Report*, in light of the passage of time and after analyzing both broadband subscribership data from a newly improved Form 477 Data collection and the broadband availability model developed for the National Broadband Plan, that broadband was not being deployed to all Americans in a reasonable and timely fashion.⁴⁶ We found that approximately 14 to 24 million Americans still lacked access to broadband and would not “gain such access in the near future absent changes in policy.”⁴⁷

10. In the *2010 Sixth Broadband Progress Report*, the Commission also raised the minimum broadband speed threshold relied on for purposes of the Commission’s annual progress report. The Commission raised this threshold from services in “excess of 200 kilobits per second (kbps) in both directions”—a standard adopted over a decade ago in the *1999 First Broadband Progress Report*⁴⁸ in the context of a nascent market—to services that enable consumers to download content at actual speeds of at least 4 Mbps and to upload content at speeds of at least 1 Mbps over the broadband provider’s network.⁴⁹

11. *Actions Taken Subsequent to the 2010 Finding.* As noted above, consistent with its obligation to “take immediate action to accelerate deployment of such capability by removing barriers to infrastructure and investment and by promoting competition in the telecommunications market,”⁵⁰ the Commission has pursued a number of initiatives to promote broadband, some of which arose from

⁴⁵ Congress amended section 706 of the Act in 2008, finding that broadband “has resulted in enhanced economic development and public safety for communities across the Nation, improved health care and educational opportunities, and a better quality of life for all Americans.” 47 U.S.C. § 1301(1); *see also, e.g., id.* § 1301(2) (“Continued progress in the deployment and adoption of broadband technology is vital to ensuring that our Nation remains competitive and continues to create business and job growth”); *id.* § 1305(k)(2) (directing the Commission to develop a National Broadband Plan that would “seek to ensure that all people of the United States have access to broadband capability”).

⁴⁶ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9558, para. 2. In the *2010 Sixth Broadband Progress Report*, we referenced the results of the Commission’s first annual consumer survey and incorporated by reference the inaugural *2010 International Broadband Data Report*. *See id.* at 9573, paras. 26–27; *International Comparison Requirements Pursuant to the Broadband Data Improvement Act; International Broadband Data Report*, GN Docket No. 09-47, First Report, 25 FCC Rcd 11963, 11963, para. 1 (IB 2010) (*2010 International Broadband Data Report*).

⁴⁷ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9558, para. 1; *see also id.* at 9558, para. 1 n.7 (“[B]roadband revenue potential in certain areas of the United States is likely insufficient to cover the costs of deploying and operating broadband networks, thus depriving industry of a business case to offer broadband services in these areas.”); *id.* at 9574, para. 28 (stating that market forces alone are unlikely to ensure that the unserved minority of Americans will be able to obtain the benefits of broadband anytime in the near future); *id.* at 9574, para. 28 n.120 (“Because service providers in [areas with low population density] cannot earn enough revenue to cover the costs of deploying and operating broadband networks, including expected returns on capital, there is no business case to offer broadband services in these areas. As a result, it is unlikely that private investment alone will fill the broadband availability gap.”); *id.* (“[I]t is unlikely there will be a significant change in the number of unserved Americans based on planned upgrades over the next few years, although some small companies may upgrade their networks to support broadband in currently unserved areas.”); *Connect America Fund NPRM*, 26 FCC Rcd at 4557, para. 1 (“The private sector is taking the lead in meeting this challenge, but in areas of the country where it is not economically viable to deploy and/or operate broadband networks, including many rural areas, public support is needed to spur private investment.”).

⁴⁸ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 14 FCC Rcd 2398, 2406, para. 20 (1999) (*1999 First Broadband Progress Report*).

⁴⁹ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9559, para. 5.

⁵⁰ 47 U.S.C. § 1302(b).

recommendations of the National Broadband Plan. These initiatives include but are not limited to:

- **Wireless Services.** In September 2010, the agency freed up spectrum for unlicensed use and innovation known as “Super Wi-Fi.”⁵¹ In November 2010, the Commission laid the groundwork for repurposing a portion of the UHF and VHF frequency bands currently used by broadcast television services for flexible use by fixed and mobile wireless communications services, including mobile broadband.⁵² In April 2011, we took steps to increase use of the Mobile Satellite Service (MSS) bands for terrestrial broadband services, where we anticipate making available another 90 MHz of spectrum.⁵³
- **E-rate.** In September 2010, we released an order improving and modernizing the E-rate program.⁵⁴ Schools and libraries can now use universal service funds more efficiently to bring higher-speed broadband at lower cost to their communities; schools can allow their communities to use E-rate-supported broadband services outside of school hours.⁵⁵
- **Open Internet.** In December 2010, the Commission adopted the *Open Internet Order*,⁵⁶ which supports the Internet’s virtuous cycle of investment and innovation and provides greater clarity and certainty regarding the continued freedom and openness of the Internet.⁵⁷
- **Pole Attachments.** In April 2011, as part of the Broadband Acceleration Initiative, the Commission released an order comprehensively reforming our rules regarding access, rates, and resolution of disputes regarding utility pole attachments, thereby reducing barriers to deployment and promoting competition.⁵⁸
- **Data Roaming.** In April 2011, the Commission adopted an order requiring facilities-based providers of commercial mobile data services to offer data roaming arrangements to other such providers on commercially reasonable terms and conditions, subject to certain limitations.⁵⁹

⁵¹ 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, Second Memorandum Opinion and Order, 25 FCC Rcd 18661, 18662, para. 1 (2010); see also *Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, WT Docket No. 07-293, IB Docket No. 95-91, GN Docket No. 90-357, RM-8610, Report and Order, 25 FCC Rcd 11710 (2010) (the Commission, in May 2010, removed technical impediments to mobile broadband in the Wireless Communications Service at 2.3 GHz, freeing up 25 MHz of spectrum).

⁵² See *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, ET Docket No. 10-235, Notice of Proposed Rulemaking, 25 FCC Rcd 16498 (2010) (*TV Band NPRM*).

⁵³ *Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz*, ET Docket No. 10-142, Report and Order, FCC 11-57 (rel. Apr. 6, 2011).

⁵⁴ See generally *E-rate Sixth Report and Order*, 25 FCC Rcd 18762.

⁵⁵ See *id.* at 18764, para. 6.

⁵⁶ See generally *Open Internet Order*, 25 FCC Rcd 17905.

⁵⁷ See, e.g., *id.* at 17911, para. 14.

⁵⁸ See *Implementation of Section 224 of the Act, A National Broadband Plan for Our Future*, WC Docket No. 07-245, GN Docket No. 09-51, Report and Order and Order on Reconsideration, FCC 11-50 (rel. Apr. 7, 2011) (*Poles Order*).

⁵⁹ *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, WT Docket No. 05-265, Second Report and Order, FCC 11-52 (rel. Apr. 7, 2011).

- **BAS Relocation.** In September 2010, the Commission completed the relocation of the Broadcast Auxiliary Service (BAS), freeing up 35 megahertz of spectrum to foster the development of innovative mobile broadband and nationwide communications capabilities.⁶⁰
- **Broadband Acceleration Initiative.** In February 2011, the Commission announced an agency-wide initiative to remove barriers to build-out and accelerate regulatory processes to lower the cost of broadband deployment.⁶¹ Under this Initiative, in April 2011 we opened a proceeding to identify ways to reduce the cost of broadband deployment by improving policies for access to government rights of way and wireless facility siting requirements.⁶²
- **Wireless Backhaul.** In August 2010, the Commission proposed to remove regulatory barriers to the use of microwave spectrum for wireless backhaul, to help increase deployment of 4G mobile broadband networks across America.⁶³
- **Mobility Fund.** In October 2010, the Commission proposed a Mobility Fund that would significantly improve mobile broadband coverage for consumers in areas where such coverage is currently inadequate.⁶⁴
- **Form 477.** In February 2011, the Commission adopted an NPRM to reform the Commission's data collection regarding broadband and local telephone service after more than a decade of rapid innovation in the marketplace for these services.⁶⁵ By modernizing Form 477, we seek to obtain more accurate information to better inform broadband policy.
- **International Data Collection.** Over the last year, the Commission has augmented its collection of data related to broadband service capability abroad, including more detailed and recent national-level price data, actual speed data, mobile and fixed broadband adoption data, and community-level demographic data.⁶⁶ The Commission, together with the State Department and the Department of Commerce, has also initiated through the Organization for Economic Co-operation and Development an effort to collect more reliable and granular

⁶⁰ *Improving Public Safety Communications in the 800 MHz Band; Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels 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; Amendment of Section 2.106 of The Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile Satellite Service*, WT Docket No. 02-55, ET Docket Nos. 00-258, 95-18, Fifth Report and Order, Eleventh Report and Order, Sixth Report and Order, and Declaratory Ruling, 25 FCC Rcd 13874, 13875, para. 1 (2010).

⁶¹ See Broadband Acceleration Initiative.

⁶² See *Rights-of-Way NOI*.

⁶³ *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees*, WT Docket Nos. 10-153, 09-106, 07-121, Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 11246 (2010).

⁶⁴ *Universal Service Reform; Mobility Fund*, WT Docket No. 10-208, Notice of Proposed Rulemaking, 25 FCC Rcd 14716 (2010).

⁶⁵ *Modernizing the FCC Form 477 Data Program, Development of Nationwide Broadband Data To Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriberhip, Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering, Review of Wireline Competition Bureau Data Practices*, WC Docket Nos. 11-10, 07-38, 08-190, 10-132, Notice of Proposed Rulemaking, 26 FCC Rcd 1508 (2011) (*Modernizing Form 477 NPRM*).

⁶⁶ 2011 *International Broadband Data Report* para. 5.

international data on key broadband metrics.⁶⁷

- USF and ICC. One of the most important tools to help the private sector deploy broadband in unserved areas is the USF and ICC system. In February 2011, the Commission adopted an NPRM to begin implementing the Connect America Fund, which will directly allocate universal service funds for broadband deployment.⁶⁸ We also began reforming ICC, which will reduce waste and inefficiency for many broadband providers, freeing up more funds for deployment.⁶⁹ These reforms will make affordable, high-quality broadband service available in regions where it is not economically viable to deploy and/or operate broadband networks.
- Lifeline/Link Up. In March 2011, the Commission adopted an NPRM to comprehensively reform and modernize the Lifeline/Link Up program.⁷⁰ The NPRM proposes to cut waste and improve program administration, freeing funds for pilot programs to increase broadband adoption among low-income consumers.
- Broadband in Tribal Lands. In March 2011, the Commission adopted an NPRM to promote greater utilization of spectrum over Tribal lands, and a separate NOI addressing a range of issues seeking to address broadband related deployment challenges in Native Nations.⁷¹

12. *BIP and BTOP Programs*. Efforts of the U.S. Department of Agriculture's (USDA) Rural Utilities Service (RUS) and NTIA have complemented our initiatives. Specifically, under the American Recovery and Reinvestment Act (Recovery Act), RUS and the NTIA were allocated approximately \$7 billion to expand access to and adoption of broadband services by communities across America.⁷² RUS is responsible for administering the Broadband Initiatives Program (BIP) and has awarded over \$3 billion in loans and grants to facilitate deployment in rural areas.⁷³ NTIA is responsible for administering the Broadband Technologies Opportunities Program (BTOP) under which more than \$4 billion has been allocated in the form of grants for initiatives to promote broadband adoption and spur deployment in unserved and underserved areas.⁷⁴ Together, these Recovery Act programs will improve broadband access and adoption.⁷⁵

13. *SBDD Data*. In order to comply with requirements under the BDIA and the Recovery Act, NTIA in July 2009 established the State Broadband Data and Development (SBDD) Grant Program.⁷⁶

⁶⁷ *See id.*

⁶⁸ *See Connect America Fund NPRM*, 26 FCC Rcd 4554.

⁶⁹ *Id.*

⁷⁰ *Lifeline and Link Up Reform and Modernization; Federal-State Joint Board on Universal Service, Lifeline and Link Up*, WC Docket Nos. 11-42, 03-109, CC Docket No. 96-45, Notice of Proposed Rulemaking, 26 FCC Rcd 2770 (2011) (*Lifeline/Link Up NPRM*).

⁷¹ *Native Nations Spectrum NPRM*, 26 FCC Rcd 2623; *Tribal Lands Broadband NOI*, 26 FCC Rcd 2672.

⁷² American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 128 (2009).

⁷³ *See* USDA Rural Development—UTP Broadband Initiatives Program Main, http://www.rurdev.usda.gov/utp_bip.html (last visited Jan. 20, 2011).

⁷⁴ NTIA, THE BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM, EXPANDING BROADBAND ACCESS AND ADOPTION IN COMMUNITIES ACROSS AMERICA: OVERVIEW OF GRANT AWARDS 2 (2010) (NTIA, OVERVIEW OF GRANT AWARDS), available at http://www.ntia.doc.gov/reports/2010/NTIA_Report_on_BTOP_12142010.pdf.

⁷⁵ *Id.* As discussed below, an allocation also went towards construction of the National Broadband Map. *See infra* para. 13.

⁷⁶ Department of Commerce, NTIA, State Broadband Data and Development Grant Program, Docket No. 0660-ZA29, Notice of Funds Availability, 74 Fed. Reg. 32545 (July 8, 2009) (*NTIA State Mapping NOFA*), available at http://www.ntia.doc.gov/frnotices/2009/FR_BroadbandMappingNOFA_090708.pdf.

Through this program, NTIA awarded grants through 2015 to fund the collection of data concerning where broadband is deployed across the nation.⁷⁷ The data collected as part of the SBDD Program helped populate a national broadband inventory map that was made public in February of this year.⁷⁸ In accordance with the Recovery Act, this map allows consumers to determine broadband “availability” in any region of the nation through a website that is interactive and searchable.⁷⁹ As discussed in greater detail below, this data source (SBDD Data) also is a key input into our analysis of broadband deployment and availability.

III. BENCHMARKING BROADBAND

14. Section 706 defines “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.”⁸⁰ As explained above, in the *2010 Sixth Broadband Progress Report*, the Commission updated its benchmark for determining whether broadband is available to a threshold service offering actual speeds of 4 Mbps/1 Mbps.⁸¹ The Commission explained that its “goal in selecting a benchmark to measure broadband availability is one shared with prior Commissions: to ‘giv[e] us a relatively static point at which to gauge the progress and

⁷⁷ *Id.*; see also Department of Commerce, NTIA, State Broadband Data and Development Grant Program, Docket No. 0660-ZA29, Notice of Funds Availability; Clarification, 74 Fed. Reg. 40569 (Aug. 12, 2009) (*NTIA State Mapping NOFA Clarification*); NTIA, STATE BROADBAND DATA AND DEVELOPMENT PROGRAM (BROADBAND MAPPING PROGRAM) FREQUENTLY ASKED QUESTIONS (Aug. 12, 2009) available at <http://www2.ntia.doc.gov/files/BroadbandMappingFAQs.pdf>. Consistent with the Recovery Act, these grants include funding both for broadband mapping and for broadband planning and capacity building. Press Release, Department of Commerce, NTIA, Commerce’s NTIA Announces Final Recovery Act Investments for State-Driven Broadband Activities (Sept. 27, 2010), available at http://www.ntia.doc.gov/press/2010/BTOP_SBDD_09272010.html.

⁷⁸ Press Release, Department of Commerce, NTIA, NTIA Unveils Program to Help States Map Internet Infrastructure (Jul. 1, 2009), available at http://www.ntia.doc.gov/press/2009/BTOP_mapping_090701.html; National Broadband Map, <http://broadbandmap.gov/>.

⁷⁹ Recovery Act § 6001(l), 123 Stat. at 516; see also *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557 (“For this purpose, ‘broadband service’ is ‘available’ at an address if the provider does, or could, within a typical service interval (7 to 10 business days) without an extraordinary commitment of resources, provision two-way data transmission to and from the Internet with advertised speeds of at least 768 kilobits per second (kbps) downstream and greater than 200 kbps upstream to end-users at that address.”). We note that the standard used to collect this availability data was not designed to satisfy the statutory definition of “advanced telecommunications capability,” as is the standard that we use in this report. See *infra* paras. 14–16. This is not a shortcoming of the data or the National Broadband Map but simply a result of the different statutory responsibilities under the Recovery Act and section 706. See 47 U.S.C. § 1302(b).

⁸⁰ 47 U.S.C. § 1302(d)(1). As in the last report, we treat “advanced telecommunications capability” and “broadband” as synonymous terms. See *supra* note 2; *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9562–63, para. 10; see also FTTH Council Comments at 2 (recommending that the Commission “use a single definition for advanced telecommunications capabilities and broadband performance capabilities”); Michigan Public Service Commission Comments at 2 (arguing that these terms and “advanced services” should be consistent among the Commission’s various reports); Massachusetts Department of Telecommunications and Cable Reply at 2 (agreeing that these terms should be treated synonymously).

⁸¹ See *supra* para. 10; see also *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563, para. 11. As in the *2010 Sixth Broadband Progress Report*, the benchmarks we adopt in this report refer to actual speeds, not advertised or “up to” speeds. See *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563, para. 11 n.47. When referring to the speed of a transmission “over the broadband provider’s network,” we generally mean the data throughput between the network interface unit (NIU) and the service provider’s Internet gateway that is the shortest administrative distance from that NIU. *Id.*

growth in the advanced services market from one Report to the next.”⁸² The Commission further noted that “broadband speed threshold benchmarks are not static and . . . ‘as technologies evolve, the concept of broadband will evolve with it.’”⁸³

15. We adhere to the threshold the Commission adopted last year.⁸⁴ The record does not establish that technology or consumer demand have changed sufficiently since last year’s report to warrant a revision in the threshold.⁸⁵ We continue to believe that the benefits of having a consistent yardstick to gauge progress in the broadband market outweigh any benefits that might be achieved by revising the threshold this year. The Commission may in the future modify the broadband benchmark as consumer demand and technologies evolve.⁸⁶

⁸² *Id.* at 9565, para. 13 (citing *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 17 FCC Rcd 2844, 2851, para. 10 (2002); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Report, 19 FCC Rcd 20540, 20552 (2004) (*2004 Fourth Broadband Progress Report*) (“Now that first-generation broadband is available to the vast majority of U.S. households, it will become important to monitor the migration to next-generation networks and services.”).

⁸³ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566, para. 15 (citing *1999 First Broadband Progress Report*, 14 FCC Rcd at 2407–08, para. 25).

⁸⁴ *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9562–66, paras. 9–15. We incorporate by reference the reasons the Commission gave in the *2010 Sixth Broadband Progress Report* for updating the broadband speed threshold. *Id.* Most commenters agree that the 4 Mbps/1 Mbps speed threshold continues to be appropriate and reasonable. *See, e.g.*, FTTH Council Comments at 2; Michigan Public Service Commission Comments at 2; NTCA Comments at 2; IEEE 802 Reply at 2; Massachusetts Department of Transportation and Cable Reply at 2; Frontier Comments at 5 (“Changing the broadband speed threshold at this juncture would have serious impacts on regulatory certainty surrounding broadband deployment that would threaten investment in rural areas at the very time it is needed most.”).

⁸⁵ One commenter argues that 4 Mbps/1 Mbps actual speed is inadequate because it does not allow consumers to originate and receive high-quality video, as required by statute. Free Press Comments at 3. We find this argument unpersuasive for the same reasons explained in the last broadband progress report. *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9564, para. 11; *see also* NATIONAL BROADBAND PLAN at 21, 135 (recommending the 4 Mbps/1 Mbps benchmark because it aligned broadband functionality with how consumers currently use their broadband service).

⁸⁶ *See* FTTH Council Comments at 2 (noting that our 4 Mbps/1 Mbps threshold will only be relevant for a limited time); *see also* NATIONAL BROADBAND PLAN at 135 (stating that the Commission should review this target speed every four years). As with our last report, we emphasize that we are benchmarking broadband in this report solely for purposes of complying with our obligations under section 706. *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563, para. 11 n.46. We specifically do not intend this speed threshold to have any other regulatory significance under the Commission’s rules absent subsequent Commission action. For example, today’s report has no impact on which entities are classified as interconnected VoIP providers or what facilities must be provided on an unbundled basis. *See* 47 C.F.R. § 9.3 (defining interconnected VoIP service in relevant part as a service that “[r]equires a broadband connection from the user’s location”); *id.* § 51.5 (defining “advanced services”); *id.* § 51.319(a)(2) (setting forth unbundled network element (UNE) obligations for hybrid loops). This report also does not prejudice the outcome of USF reform or other Commission proceedings. *See, e.g.*, NATIONAL BROADBAND PLAN at 140–51; *Connect America Fund NPRM; Connect America Fund, A National Broadband Plan for Our Future, High-Cost Universal Service Support*, WC Docket Nos. 10-90, 05-337, GN Docket No. 09-51, Notice of Inquiry and Notice of Proposed Rulemaking, 25 FCC Rcd 6657 (2010) (*Connect American Fund NOI*). Similarly, our decision to benchmark broadband at 4 Mbps/1 Mbps does not mean that the Commission will stop collecting and analyzing data on services provided at slower and faster speeds. *See generally* 47 C.F.R. §§ 1.7000–7002 (requiring entities to provide advanced telecommunications capability data to the Commission in accord with the FCC Form 477 instructions).

16. We decline to adopt technology-specific speed thresholds requested by certain commenters.⁸⁷ Section 706 directs us to assess deployment and availability of a “capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications *using any technology*.”⁸⁸ The record in this proceeding does not establish that setting a different speed threshold for different technologies would be consistent with that statutory standard. We do, however, find merit in providing more detailed information regarding the reported capability of different broadband technologies. Therefore, in the Technical Appendix, we analyze how broadband deployment relates to various broadband speeds and technologies, and show how the use of different assumptions would result in different estimates of how many Americans live in areas where broadband has not been deployed.⁸⁹

IV. STATUS OF BROADBAND DEPLOYMENT AND AVAILABILITY

17. This section sets forth the results of our inquiry into the deployment and availability of broadband to all Americans. In section IV.A, we address the scope of our inquiry, as mandated by Congress.⁹⁰ In section IV.B, we analyze SBDD Data and Form 477 Data to identify regions that currently are not served by broadband, and provide a demographic analysis of those unserved areas.⁹¹ Our analysis of the available data leads us to the conclusion in section IV.C that broadband is not “being deployed to all Americans in a reasonable and timely fashion.”⁹² In section IV.D we discuss availability to all Americans including data regarding broadband at elementary and secondary schools and home broadband subscriptions. In section IV.E, we discuss international broadband service capability.

A. Broadband “Deployment” and “Availability” Are Broader Than Physical Deployment

18. To encourage broadband deployment to all Americans, Congress directed the Commission to annually “initiate a notice of inquiry concerning the availability of [broadband] to all Americans (including, in particular, elementary and secondary schools and classrooms).”⁹³ Congress also required that “[i]n the inquiry, the Commission shall determine whether [broadband] is being deployed to all Americans in a reasonable and timely fashion.”⁹⁴ Although Congress did not define the terms “deployment” and “availability” as used in section 706, Congress stated that the Commission must assess

⁸⁷ See, e.g., Frontier Comments at 4–5; Michigan Public Service Commission Comments at 2; AT&T Comments at 3, 23–24; TIA Comments at 2; NCTA Reply at 4. Some commenters recommend that our 1 Mbps upload speed should be reduced to 768 kbps upstream, contending that 1 Mbps is excessive and that many DSL lines today can only provide a maximum of 768 kbps upstream. See, e.g., AT&T Comments at 3, 23–24; TIA Comments at 2. U.S. Cellular recommends that the Commission adopt either a lower threshold for mobile wireless broadband or consider the mobile market separately. See U.S. Cellular Comments at 26. We recognize that the mobile broadband industry has grown significantly and that mobility provides tremendous benefits to consumers, including benefits in rural areas. Even if we were to use a slower speed threshold to measure broadband, the data would still demonstrate that a significant number of Americans are unserved by broadband. See App. F (Technical Appendix) tbl. 10. This is consistent with our findings in the last report. *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566, para. 15.

⁸⁸ 47 U.S.C. § 1302(d)(1) (emphasis added).

⁸⁹ See, e.g., App. F (Technical Appendix) tbl. 10.

⁹⁰ 47 U.S.C. § 1302(b).

⁹¹ *Id.* § 1302(c) (directing the Commission to determine the population, the population density, and the average per capita income for unserved areas to the extent that Census Bureau data are available). We rely on NTIA’s SBDD Data used to populate the National Broadband Map to estimate broadband deployment, but also include data from the FCC Form 477 Subscribership June 2010, Part 1A broadband data collection (updated periodically with carriers refiling data). See generally *infra* App. F (Technical Appendix).

⁹² 47 U.S.C. § 1302(b).

⁹³ *Id.*

⁹⁴ *Id.*

the “availability” of broadband, and then directed that specific findings be made regarding “deployment.”⁹⁵ This language suggests that Congress did not intend to limit the Commission’s section 706 inquiries to a narrow evaluation of physical network deployment.

19. The legislative history of section 706 further supports the view that Congress expects us to examine more than physical availability. The Senate Report explains that the Commission “shall include an assessment . . . of the availability, at reasonable cost, of equipment needed to deliver advanced broadband capability.”⁹⁶ The Senate Report also states that the goal of section 706 is “to promote and encourage advanced telecommunications networks, capable of enabling users to originate and receive affordable, high-quality voice, data, image, graphics, and video telecommunications services.”⁹⁷ Broadband service that is not, for example, of a quality sufficient to enable high-quality voice, data, image, graphics, and video telecommunications services does not satisfy these goals.⁹⁸ This history closely accords with the goals of the BDIA, which recently amended section 706, and emphasizes Congress’s interest in the cost, quality and adoption of broadband.⁹⁹

20. Finally, the record supports this view. Though there was no general agreement on what factors the Commission should consider when assessing the availability of broadband to all Americans, it is clear that there is a general consensus that, as the Massachusetts Department of Telecommunications and Cable notes, “simply because a consumer has physical access to broadband service does not mean that it is actually available to him or her in a meaningful sense.”¹⁰⁰

⁹⁵ *Id.* The dissent asserts that our understanding of Section 706 is undermined by language in Section 706(c) directing that, “[a]s part of the inquiry required by subsection (b), the Commission shall compile a list of geographical areas that are not served by any provider of advanced telecommunications capability,” 47 U.S.C. § 1302(c). See McDowell Statement at 2. To the contrary, that statutory language supports our reading of the statute. The fact that consideration of “geographical areas that are not served” by any broadband provider is only “part of the inquiry” demonstrates that the proper inquiry is not limited to consideration of physical deployment.

⁹⁶ S. REP. NO. 104-23, at 50 (1995) (SENATE REPORT); accord H.R. CONF. REP. NO. 104-458, at 210 (1996) (CONFERENCE REPORT).

⁹⁷ SENATE REPORT at 50 (explaining the intent of section 304 of the Senate bill, which was adopted by the conference committee with minor unrelated changes); see also CONFERENCE REPORT at 210 (stating that section 706 reflects the Senate provision with a modification). Although the dissent understands Section 706 to have an exclusively “deregulatory bent,” McDowell Statement at 4, Section 706(a) expressly directs the FCC to promote broadband through “regulating methods” and, as the D.C. Circuit has held, the “general and generous phrasing of § 706 means that the FCC possesses significant . . . authority and discretion to settle on the best regulatory or deregulatory approach to broadband.” *Ad Hoc Telecomms. Users Comm. v. FCC*, 572 F.3d 903, 906–07 (D.C. Cir. 2009).

⁹⁸ See *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563–64, paras. 11–12 (discussing a broadband benchmark sufficient to provide consumers the ability to view high-quality video and use basic functions such as email and web browsing consistent with current demand patterns). We note that the SBDD Data reflect, and the National Broadband Map depicts, the availability of services that may not meet the definition of “advanced telecommunications capability.” See *id.*; *supra* paras. 14–16. It is, however, our duty to consider only those services that do. See 47 U.S.C. § 1302(d)(1).

⁹⁹ The BDIA is formally titled, “An Act [t]o improve the quality of Federal and State data regarding the availability and quality of broadband services to promote the deployment of affordable broadband services to all parts of the Nation.” BDIA, 122 Stat. at 4096. Congress found that “[c]ontinued progress in the deployment and adoption of broadband technology is vital to ensuring that our Nation remains competitive and continues to create business and job growth,” and that “[i]mproving Federal data on the deployment and adoption of broadband service will assist in the development of broadband technology across all regions of the Nation.” 47 U.S.C. § 1301(2), (3).

¹⁰⁰ Massachusetts Department of Telecommunications and Cable Reply at 3 (arguing that functional availability requires assessing broadband services’ affordability). Our approach to assessing the availability of broadband may consider more information than is depicted on the National Broadband Map, developed pursuant to the Recovery Act’s requirement to produce a map of “existing broadband service capability and availability.” 47 U.S.C. § 1305(l). The (continued....)

B. Broadband Deployment

21. As part of our inquiry, the Commission must determine whether broadband is being deployed to all Americans in “a reasonable and timely fashion.”¹⁰¹ Our findings regarding broadband deployment are based on more comprehensive and geographically granular data than any of the Commission’s prior reports.¹⁰² We base our analysis primarily on the first round of SBDD Data collected by NTIA for the National Broadband Map—the nation’s most current publicly available deployment data. With this data set, we have for the first time a comprehensive database of locations where broadband has been deployed. Our demographic analyses of unserved areas—including factors such as population, income, race, and education—are based upon the most recent Census Bureau data and data obtained from GeoLytics.¹⁰³

22. In prior years, the Commission based its analysis primarily on the broadband subscribership data the Commission collects on Form 477. Although that data set is an imperfect indicator of deployment, we have included an analysis of the Form 477 Data in this report to maintain consistency with past reports.¹⁰⁴

1. Unserved Areas

a. National Broadband Map Data

23. *Based on National Broadband Map Census Block Data, as Many as 26 Million Americans Are Unserved.* Based on our analysis of the national broadband map data, we estimate that 26.2 million Americans living in more than 9.2 million households are unserved by broadband today.¹⁰⁵ We further estimate that 782,267 out of the 4.5 million census blocks in the United States and its territories for which we have data are unserved by broadband.¹⁰⁶

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data elements depicted on the National Broadband Map were chosen—with input from the Commission—based on different considerations than those that inform our 706 inquiry, including considerations regarding the feasibility of voluntarily obtaining particular types of information from service providers and presenting such information in a map format.

¹⁰¹ 47 U.S.C. § 1302(b).

¹⁰² As an indication of the Commission’s continued progress, this is the second year in a row the Commission has been able to make this observation. *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566–67, para. 16.

¹⁰³ See *infra* App. F (Technical Appendix) paras. 37–44. GeoLytics is a private company that has published detailed demographic and geographic data for business, academic, non-profit, and government markets. See GeoLytics, Company Information, <http://www.geolytics.com/Company.asp>.

¹⁰⁴ We do not rely on estimates from the broadband availability model created for the National Broadband Plan and included in the last broadband progress report because the data used in that model have not been updated. To create the model, the Commission purchased a significant amount of the data from commercial entities and hired temporary staff to analyze the data, relying on a nonrecurring financial allocation from the Recovery Act. See Recovery Act, 123 Stat. at 128; see also OBI, *THE BROADBAND AVAILABILITY GAP 29* (Technical Paper No. 1, 2010) (2010 BROADBAND AVAILABILITY GAP), *attached to Connect America Fund NOI*, 25 FCC Rcd at 6721, App. C; News Release, FCC, FCC Chairman Julius Genachowski Announces Senior Staff for Development of National Broadband Plan (Aug. 4, 2009), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-292541A1.pdf.

¹⁰⁵ Our analysis of the SBDD Data estimates the unserved population of each census tract by subtracting the population of served census blocks (or components of blocks where appropriate) in each tract from the total population of each tract. See *infra* App. B (Unserved Population SBDD Census Tract Data) and App. F (Technical Appendix) paras. 4–19 (providing a complete description of underlying data, including the different broadband technologies included in our analysis and the limitations of the data).

¹⁰⁶ 47 U.S.C. § 1302(c); SBDD Data. Guam and the Northern Mariana Islands did not provide data in time to be included in the current national broadband map. We have included information concerning unserved census blocks on the Commission’s website. See FCC, *Seventh Broadband Progress Report*, <http://www.fcc.gov/reports/seventh-broadband-progress-report> (including two files that can be downloaded: (1) a comma separated value (csv) file, (continued....))

24. The SBDD Data we rely on here are collected and maintained by NTIA in collaboration with the Commission, and in partnership with each state and territory and the District of Columbia.¹⁰⁷ These data are generally collected by census block and contain information about each broadband provider's advertised ability to deliver broadband services of a particular technology and speed.¹⁰⁸ Although these data are better than that used in prior reports, it is the first time these data have been collected, and the initial round of data has some significant limitations.¹⁰⁹ Our estimates of broadband deployment are therefore imperfect, but as the data improve, so will our deployment estimates.¹¹⁰

25. We highlight two features of our analysis. First, we assess broadband deployment using a speed tier that approximates the 4 Mbps/1 Mbps broadband speed threshold. The SBDD Data, however, are collected by pre-determined speed tiers, none of which are 4 Mbps/1 Mbps. Of the 99 speed tiers collected in the SBDD Data, one tier lies just below our benchmark (3 Mbps/768 kbps), and another lies just above our benchmark (6 Mbps/1.5 Mbps).¹¹¹ Although we have analyzed broadband deployment using these and other cutoffs, in this report we base our statutory assessment of deployment on the 3 Mbps/768 kbps tier rather than the 6 Mbps/1.5 Mbps tier, because it is the closest to the 4 Mbps/1 Mbps threshold.

26. Second, our estimates based upon SBDD Data include data for fixed terrestrial technologies, including fiber to the home, xDSL, cable modem, and fixed wireless.¹¹² We do not draw conclusions based on SBDD Data about mobile wireless services due to our concern that these data do not accurately reflect where mobile wireless subscribers actually are able to obtain service that meets the broadband

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SBDDUNSERVEDJUNE2010.csv, containing data about each unserved census block; and (2) a README file). The csv file includes: the 15 character FIPS code for each unserved census block, the state and county in which the census block is located, the total population in the census block and the unserved population in the census block. The README file at this URL includes instructions on how to examine the file, the names of the variables, and the characteristics of each variable. Other demographic information (e.g., income measures) is not available at the census-block level. In addition, we have included a map of the areas unserved by broadband. *See infra* App. H (Map of Areas Unserved by (or Lacking Data On) Broadband).

¹⁰⁷ NTIA, State Broadband Data and Development Program, <http://www2.ntia.doc.gov/SBDD> (describing the SBDD program); *see also* Recovery Act, 123 Stat. at 128 (allocating up to \$350,000,000, which "may be expended pursuant to Public Law 110-385[, the BDIA,] and for the purposes of developing and maintaining a broadband inventory map . . ."). The Technical Appendix provides more detailed information on the SBDD Program. *See infra* App. F (Technical Appendix) paras. 4–19.

¹⁰⁸ *See NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557.

¹⁰⁹ *See infra* App. F (Technical Appendix) paras. 4–8.

¹¹⁰ NATIONAL BROADBAND PLAN at 40–42 (suggesting that advertised speeds may overstate actual speeds); *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9564, para. 12. The actual geographic area for which data are collected from providers depends upon the technology used to provide the service, the size of the census block and, in some instances, can be reported at the address level or street segment.

¹¹¹ This is the same threshold (3 Mbps/768 kbps) that we used in our Form 477 analysis in the last report. *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9569, para. 20. We emphasize that the cutoffs used in this report are for purposes of this report only. Were the Commission to conduct its assessment of deployment based upon a 6 Mbps download speed and a 1.5 Mbps upload speed, then 62.3 million Americans would lack access to broadband capable of meeting requirements set forth in section 706. *See infra* App. F (Technical Appendix) tbl. 10.

¹¹² *See infra* App. F (Technical Appendix) tbls. 10–11 (separating "Fixed Broadband SBDD Data" from "Fixed and Mobile Broadband SBDD Data"). We also note that, although we did not include satellite in our analysis of SBDD Data, thirteen states have collected data on satellite broadband coverage in the National Broadband Map SBDD Data, and more data will be collected in the future. Regardless, few, if any, consumers get 4 Mbps/1 Mbps satellite broadband currently. *See, e.g.,* WildBlue, Pricing, <http://get.wildblue.com/pricing.html> (offering 1.5 Mbps/256 kbps in the "Pro" package); HughesNet, Package Deals and Offers, http://www.satellitestarinternet.com/hughesnet_plans_pricing.html#available (offering 2 Mbps/300 kbps in its "Fastest" package).

performance threshold. SBDD Data reflect network status as of June 30, 2010, a time when most mobile broadband services relied on either EV-DO or HSPA technology.¹¹³ In the data, the claimed top speeds for these technologies vary widely across states and among carriers. And although mobile networks deployed as of June 30, 2010 may be capable of delivering peak speeds of 3 Mbps/768 kbps or more in some circumstances, the conditions under which these peak speeds could actually occur are relatively rare.¹¹⁴ That is, a user may be able to burst to—and under very good conditions may be able to sustain—the peak speed, but that has not been a typical experience on EV-DO or HSPA networks.¹¹⁵ Given these issues, we exclude mobile wireless data from our conclusions in this report.¹¹⁶

27. Recognizing that mobile technology is evolving rapidly, and that mobile services capable of actual speeds above the 4 Mbps/1 Mbps benchmark are becoming increasingly common,¹¹⁷ we intend to revise our approach in future reports as we receive updated and improved data. We recognize that the mobile wireless broadband data NTIA collected are useful for many purposes and were gathered for reasons other than enabling the Commission to prepare its 706 reports. We invite suggestions as to how the Commission could obtain mobile wireless broadband data that reliably shows the extent to which subscribers are able to obtain the 4 Mbps/1 Mbps speed threshold.¹¹⁸

b. Form 477 Subscribership Data

28. To provide continuity with previous broadband progress reports, and for additional confirmation of our assessment of broadband deployment, we present an analysis of broadband deployment based on the residential broadband subscribership data the Commission collects on Form 477.¹¹⁹ Every six months, the Commission collects on Form 477 basic service information from facilities-based broadband providers. Form 477 requires filers to report, by census tract, the total number of broadband subscribers, the proportion of subscribers that are residential subscribers, and the number of subscribers broken down by speed tier and technology.¹²⁰ Prior to the collection and release of the SBDD Data, the Form 477 Data were the best data available to the Commission to estimate broadband

¹¹³ These data were filed by October 1, 2010.

¹¹⁴ These conditions consist of radio frequency (RF) factors such as signal strength and interference level, which vary with the user's location relative to the site and are affected by factors such as distance, terrain, foliage, buildings, walls, and speed, as well as loading conditions (i.e., the number of users that are sharing the total bandwidth available in a sector). The peak rate to a single user will only occur when the RF conditions are excellent and the total bandwidth is not shared.

¹¹⁵ See, e.g., NOVARUM, 3G SMARTERPHONE WIRELESS: NOT ALL EQUAL—JANUARY 2010 SURVEY (Jan. 2010).

¹¹⁶ Notwithstanding our concerns regarding the accuracy of these data, the Technical Appendix shows how the inclusion of these data would affect our conclusions. If mobile wireless data from the National Broadband Map were included, an estimated 14 million Americans in at least 5 million households remain unserved at the 4 Mbps/1 Mbps standard. See *infra* App. F (Technical Appendix) tbls. 10–11 (providing number of unserved by “Fixed and Mobile Broadband SBDD Data”).

¹¹⁷ NATIONAL BROADBAND PLAN at 40–42.

¹¹⁸ *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1532, para. 61.

¹¹⁹ See Form 477 June 2010 Data; Form 477 December 2008 Data; see also, e.g., *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9568, para. 20; *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, Report, 23 FCC Rcd 9615, 9618, para. 6 (2008) (*2008 Fifth Broadband Deployment Report*); *2004 Fourth Broadband Progress Report*, 19 FCC Rcd at 20567.

¹²⁰ See *Development of Nationwide Broadband Data To Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans; Improvement of Wireless Broadband Subscribership Data; Development of Data on Interconnected Voice over Internet Protocol*, WC Docket No. 07-38, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691, 9700–01, para. 20 n.66 (2008) (*2008 Broadband Data Gathering Order*).

deployment. The Commission has long acknowledged, however, that these data are an imperfect measure of deployment and adoption.¹²¹ In particular, changes in subscribership levels can be explained by a large range of factors including changes in adoption levels, changes in deployment, changes in service offerings, or any combination of these factors. Therefore, although inferences can be drawn from data showing a change in the number of subscribers in a given area, it is not possible to be certain about those conclusions without additional evidence.

29. We highlight key aspects of our analysis before presenting estimates. First, although the Commission continues to try to help broadband providers file accurate data, we remain concerned with the accuracy of the Form 477 data submitted at the census-tract level.¹²² For example, the Form 477 Data continue to indicate that some census tracts have more subscribers than households.¹²³ In the *2010 Broadband Progress Report*, the Commission addressed this concern by aggregating providers' estimates of residential subscribers up to the county (or county equivalent) level before analyzing the data.¹²⁴ We follow the same approach here and use county-level data to estimate broadband deployment, although we also present census-tract level data for comparison. Aggregating the data up to the county level minimizes the impact of census tract reporting errors, but at the risk of introducing new errors. In particular, this method tends to "hide" unserved geographic areas significantly smaller than a county, of which the SBDD Data indicate there are many.¹²⁵ Given the pros and cons of each method, we summarize the results of our analysis using both counties and census tracts.

30. Second, for the reasons explained in last year's broadband progress report,¹²⁶ and for the same reasons noted above, we find that broadband service reported on Form 477 with an advertised speed of 3 Mbps/768 kbps is the appropriate proxy for the 4 Mbps/1 Mbps actual speed threshold for purposes

¹²¹ As we explained in the last report and in more detail in the Technical Appendix, subscriber data are an imperfect proxy for broadband availability or deployment. See *2009 Sixth Broadband Progress NOI*, 24 FCC Rcd at 10526–27, para. 45; *infra* App. F (Technical Appendix), paras. 1, 23; see also, e.g., *1999 First Broadband Progress Report*, 14 FCC Rcd at 2402, para. 7 (relying on subscribership data as a proxy for deployment and availability, and noting that such data "may not be a precise estimate of actual deployment and availability"); INDUSTRY ANALYSIS & TECH. DIV., FCC, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF DECEMBER 31, 2008, at 4–5, nn.16 & 17 (Feb. 2010) (FEBRUARY 2010 IAS REPORT) (explaining that mobile wireless connections are only reported at the state level and some business connections could be miscategorized as residential connections). SBDD Data demonstrates the value of deployment data at the census-block level.

¹²² See MARCH 2011 IAS REPORT at 82; *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9568, para. 20. With our recent *Modernizing Form 477 NPRM*, we expect to see improved collection of broadband data in the future that will help to reduce these errors. See generally *Modernizing Form 477 NPRM*, 26 FCC Rcd 1508.

¹²³ Because few areas in America have 100 percent adoption we view this as a significant error because it raises the possibility that subscribers are undercounted in some other census tracts. Absent an audit, we have no means to determine the incidence of under-reported subscribers in census tracts. See *infra* App. F (Technical Appendix), paras. 27–28. The Commission has sought comment on how to streamline the FCC Form 477 collection process to, among other things, reduce submission errors. See *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1524, paras. 38–40.

¹²⁴ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9568, para. 20. Our subscription data do not include demographic information about subscribers. See *infra* note 201. We therefore caution that the demographic information for each unserved area may not be representative of the households that do not subscribe to a broadband service. We recently opened a proceeding to improve our collection of broadband data. See generally *Modernizing Form 477 NPRM*, 26 FCC Rcd 1508.

¹²⁵ See *infra* para. 35.

¹²⁶ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9568, para. 20.

of this report.¹²⁷

31. Third, we show data using a “1 percent *de minimis* threshold,” under which we find broadband not to be deployed in a county or census tract if fewer than 1 percent of the households in that area subscribe to a broadband service meeting the 3 Mbps/768 kbps threshold.¹²⁸ We will continue to evaluate whether and how we should implement a *de minimis* threshold when analyzing Form 477 subscribership data as a measure of deployment. As explained in Appendix F (Technical Appendix), applying such a low threshold to a geographic area as large as a county can result in over-estimates of broadband deployment, particularly as adoption rates rise.¹²⁹ We therefore also show the data using a 5 percent and a 25 percent threshold in Table 1. As Table 1 demonstrates, estimates of the number of unserved vary significantly based on the geographical unit and the subscription threshold used to analyze the data. For the sake of continuity, however, this report uses the 1 percent *de minimis* threshold that we used in the *2010 Sixth Broadband Progress Report*.¹³⁰

| Area | Metric | 1% Threshold | 5% Threshold | 25% Threshold |
|--------------|---------------------------|--------------|--------------|---------------|
| Census Tract | Unserved Population (MMs) | 23.9 | 51.0 | 145.3 |
| | Unserved Households (MMs) | 8.9 | 18.9 | 53.8 |
| County | Unserved Population (MMs) | 12.2 | 31.8 | 105.2 |
| | Unserved Households (MMs) | 4.6 | 12.0 | 39.9 |

32. Fourth, we rely upon subscription data as of June 2010, the most up-to-date subscription data available. To assess the nation’s progress since the last report, we compare these data against the subscription data as of December 2008.¹³¹

33. Finally, we exclude mobile wireless data from our analysis because it is collected at the state level in Form 477. While we cannot include mobile wireless in our present methodology for counting the unserved, we note that we have proposed to improve mobile wireless data collection in our recent

¹²⁷ See *supra* para. 25. Nevertheless, in the Technical Appendix, we present estimates of unserved Americans using a 768 kbps/200 kbps broadband services and a 6 Mbps/1.5 Mbps broadband service. See *infra* App. F (Technical Appendix) tbls. 10–11.

¹²⁸ For each area we examine, we define the subscription rate as the number of residential connections that are at least 3 Mbps/768 kbps, divided by the number of households in the area. See *infra* App. F (Technical Appendix) n.58. See also FEBRUARY 2010 IAS REPORT at 5 n.17. Although one party has requested that we increase our 1 percent threshold, we find that it continues to be a reasonable approach to estimating broadband deployment using this test. IEEE 802 Reply at 3. If we were to increase the threshold test, the number of areas that we deem unserved would increase. In addition, given the inherent limitations in the use of subscribership data to estimate deployment at current adoption levels, we find the benefits of maintaining consistency with prior analysis outweigh the benefits of selecting a higher *de minimis* threshold.

¹²⁹ See *infra* App. F (Technical Appendix) paras. 29–31.

¹³⁰ See *2010 Broadband Progress Report*, 25 FCC Rcd at 9569, para. 21; see *infra* App. F (Technical Appendix) paras. 29–31.

¹³¹ See *2010 Broadband Progress Report*, 25 FCC Rcd at 9570, para. 22. We note that the December 2008 Form 477 Data have been updated by providers since the analysis conducted in the Sixth Section 706 Report. Such updates are common, and have had only a small effect on the 2008 subscription statistics. Compare, e.g., FEBRUARY 2010 IAS REPORT at 11, tbl. 3 (showing total fixed residential connections over 200 kbps in at least one direction as 70,148,000 as of December 2008) with MARCH 2011 IAS REPORT at 15, tbl. 3 (showing total fixed residential connections over 200 kbps in at least one direction as 69,047,000 as of December 2008).

broadband data improvement NPRM.¹³² In light of this, and the continuing growth of mobile wireless broadband speed and deployment, we intend to revisit possible means of including mobile wireless in the future.

34. As we have noted in previous reports, subscription data is an imperfect proxy for deployment.¹³³ One way to understand the difficulties of using subscription data to measure deployment is to look at the change between the analysis in the *2010 Sixth Broadband Progress Report*, using December 2008 data, and this report, using June 2010 data. In the 18 months between the two data collections, 458 counties with a total population of 14.0 million people (in at least 5.4 million households) moved from “unserved” to “served” using the analysis described below; yet, in those 458 counties, a total of just 369,332 residential subscriptions were added (or migrated from a lower-speed broadband service to a service that meets or exceeds the 3 Mbps/768 kbps threshold). In other words, without further scrutiny, the analysis would suggest that broadband was deployed to an additional 14 million people, based on an increase of fewer than 400,000 broadband subscriptions. Conversely, 55 counties with a population of 1.5 million moved from “served” to “unserved” in this analysis, as the number of subscribers at 3 Mbps/768 kbps or above dropped below the 1% *de minimis* threshold. We have no reason to believe that deployment actually decreased in these areas—i.e., that broadband networks were removed or turned off. Rather, this is a reminder of the fact that subscription data is best understood in light of other information about the status of broadband deployment and availability.

(i) **County-Level Data**

35. *The Methodology Used in the 2010 Sixth Broadband Progress Report Applied to County-Level FCC Subscriber Data Suggests That Over 12 Million Americans Are Unserved.* Applying the same methodology to the Form 477 Data that the Commission used in last year’s broadband progress report results in an estimate that approximately 12.2 million Americans live in counties unserved by broadband.¹³⁴ Comparing December 2008 with June 2010 Form 477 data, the methodology suggests that the number of Americans residing in unserved counties declined from 24.6 million to 12.2 million, and the number of households in unserved counties declined from 9.4 million to 4.6 million, though these results are based on an increase in broadband subscriptions of fewer than 400,000 during the relevant period. The same methodology suggests that between December 2008 and June 2010, the number of counties unserved by broadband in the United States and its territories declined from 1,021 to 618 (out of 3,232 counties in the United States and its territories).¹³⁵ The data do not allow us to determine the

¹³² *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1528, para. 52.

¹³³ See *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566–67, para 16 n.65; *1999 First Broadband Deployment Report*, 14 FCC Rcd at 2402, para. 7 (relying on subscription data as a proxy for deployment and noting that such data “may not be a precise estimate of actual deployment and availability”). Form 477 subscription data, as currently collected, are also an imperfect measure of adoption for a number of reasons. The data we collect tell us the number of subscriptions in an area, but not the number of people who have access to service. Therefore, we can only calculate a subscription rate (the number of subscriptions as a fraction of the total number of households) rather than an adoption rate (the number of subscriptions as a fraction of the number of households who have access to broadband). Since these data are collected based on a relatively large geographical unit—the census tract—the difference between those two figures can be significant. In addition, as broadband subscriptions grow to include multiple devices at a single location (e.g., a wired and a mobile wireless connection; or multiple mobile devices in a single home, if analyzing state-level data), the number and rate of subscriptions would not say much about the fraction of households which have adopted a service. One could find subscription rates above 100% in an area even if many households in that area have not adopted broadband.

¹³⁴ See *infra* Apps. C (Unserved Population Form 477 County Data), E (Unserved Counties Form 477 Data (Population, Population Density, & Average Per Capita Income), F (Technical Appendix) paras. 20–31 (describing the data).

¹³⁵ In other words, this analysis suggests that 618 counties have no broadband at all, while 2,614 counties have broadband deployed to all homes. We understand this “black and white” view of deployment is not a good representation of actual broadband deployment, but represents the limits of using subscription data. Nevertheless, it (continued....)

reasons for the expansion of reported subscribership.

(ii) **Census-Tract-Level Data**

36. *The Methodology Used in the 2010 Sixth Broadband Progress Report Applied to Census-Tract-Level FCC Subscribership Data Suggests That 24 Million Americans Are Unserved.* Applying the methodology the Commission used in last year's broadband progress report to census-tract-level Form 477 Data would result in an estimate that approximately 23.9 million Americans are unserved by broadband.¹³⁶ Comparing December 2008 with June 2010 data, the methodology suggests that the number of Americans unserved declined from 46.5 million to 23.9 million, and the number of unserved households fell from 16.9 million to 8.9 million.¹³⁷

37. The same methodology suggests that 6,096 out of 65,896 census tracts in the United States and its territories are unserved by broadband.¹³⁸ Comparing December 2008 and June 2010 data, the number of unserved census tracts in the United States and its territories declined from 10,985 to 6,096.¹³⁹ As noted above, the data do not allow us to determine the reasons for changes in reported subscribership.¹⁴⁰

2. Demographic Analysis of the Unserved Areas

38. As we did last year, we provide a demographic analysis of unserved areas, including the population, average population density (pop./sq. mi.), and average per capita income of unserved areas identified with SBDD Data and Form 477 Data. We also provide further demographic analysis.¹⁴¹ We find that residents of unserved areas tend to have lower incomes, are less educated, and are more likely to self-identify as White than residents in served areas.¹⁴² Finally, we find that unserved Americans tend to live outside of "urban core"¹⁴³ areas and tend to reside in areas with lower population density than served areas.¹⁴⁴ For our demographic analysis of the SBDD Data, we aggregate the SBDD census block data up

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is clear that there are some areas without broadband available, and we explore in the following section and in the Technical Appendix different methods of analysis. *See infra* paras. 36–37; App. F (Technical Appendix) paras. 29–31.

¹³⁶ *See infra* Apps. D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) tbl. 10.

¹³⁷ *See 2010 Broadband Progress Report*, 25 FCC Rcd at 9570, para. 22.

¹³⁸ *See infra* Apps. D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) paras. 37–43 (describing the data).

¹³⁹ *See infra* App. F (Technical Appendix) tbl. 12 (showing further comparison between December 2008 and June 2010 data).

¹⁴⁰ *See supra* para. 35.

¹⁴¹ 47 U.S.C. § 1302(c) (directing the Commission to determine the population, the population density, and the average per capita income for unserved areas to the extent that Census Bureau data are available).

¹⁴² Hypothesis testing of the areas for which we rely upon the Census Bureau's 2005–2009 American Community Survey (ACS Five-Year Estimates 2005–2009) reveals a statistically significant difference, at the 95% confidence level, between served and unserved areas for all demographic variables discussed. Census Bureau, Department of Commerce, 5-Year Release Details, http://www.census.gov/acs/www/data_documentation/2009_5yr_data/.

¹⁴³ *See infra* App. F (Technical Appendix) para. 42 (defining "urban core").

¹⁴⁴ *See infra* tbls. 2–4; *see also infra* App. F (Technical Appendix) para. 41 (defining "population density"). We do not designate a county as urban or rural; instead, we consider the portion of the county population that resides in census tracts that meet the definition of an urban census tract. *See infra* App. F (Technical Appendix) para. 42 (defining "urban core"). The Census Bureau takes this a step further: "[a]fter the initial urban area core with a population density of 1,000 [people per square mile (ppsm)] or more is identified, a census tract is included in the initial urban area core if it is adjacent to other qualifying territory and has a land area less than three square miles and a population density of at least 500 ppsm." *See Proposed Urban Area Criteria for the 2010 Census*, 75 Fed. (continued....)

to the census tract because recent demographic data are not available for census blocks.¹⁴⁵ We show below a comparison of census tracts that include unserved census blocks to census tracts that do not include any unserved census blocks.

a. Demographics Required by Statute

39. Although the National Broadband Map data measures unserved areas at the census-block level, we aggregate the National Broadband Map data to the census-tract level to analyze the demographics of the unserved areas because data are unavailable at the census-block level. We therefore report the average population, average population density, and average per capita income for census tracts rather than census blocks. Table 2 presents summary measures for the 25,968 census tracts that include at least one of the 782,267 unserved census blocks (compared to 40,144 census tracts that do not include any unserved census blocks).¹⁴⁶ Hypothesis testing reveals a statistically significant difference, at the 95 percent confidence level, for average population, average population density, and average per capita income in census tracts containing unserved census blocks, compared to census tracts with no unserved census blocks.

| | Average Population | Average Population Density (pop./sq. mi.) | Average Per Capita Income (2009) |
|--|--------------------|---|----------------------------------|
| Census Tracts with Unserved Census Blocks (n = 25,968) | 4,965 | 1,247 | \$24,587 |
| Census Tracts Without Unserved Census Blocks (n = 40,144) | 4,531 | 8,228 | \$27,411 |

40. As set forth in Table 3, we provide estimates of the average population, average population density (pop./sq. mi.), and average per capita income for unserved counties.¹⁴⁷

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Reg. 52174, 52182 (Aug. 24, 2010) (*Proposed Urban Area Criteria*), available at <http://www.census.gov/geo/www/ua/fedregv75n163.pdf>. We, however, only make the initial determination of whether a census tract is or is not part of an urban core. Hence, our method may understate the population residing in urban areas by not considering adjacent census blocks which may meet all of the criteria for an urban area.

¹⁴⁵ When determining how many Americans live in areas where broadband has not been deployed using the SBDD Data, we count the number of Americans in unserved census blocks.

¹⁴⁶ See *infra* Apps. B (Unserved Population SBDD Census Tract Data) (we note that zero-population tracts are excluded from this analysis), F (Technical Appendix) paras. 37–44 (describing the demographic data sources). We note that the average population densities shown in Tables 2, 3, and 4 are the average of the population densities of (a) every served tract or county and (b) every unserved tract or county; they are not the overall population densities (i.e., total served population divided by total served area and total unserved population divided by total unserved area).

¹⁴⁷ See *infra* Apps. C (Unserved Population Form 477 County Data), E (Unserved Counties Form 477 Data (Population, Population Density, & Average Per Capita Income)), F (Technical Appendix) paras. 37–44 (describing the data); 47 U.S.C. § 1302(c). Hypothesis testing reveals a statistically significant difference, at the 95 percent confidence level, between served and unserved areas for average population, average population density and average per capita income.

| | Average Population | Average Population Density (pop./sq. mi.) | Average Per Capita Income (2009) |
|------------------------------|--------------------|---|----------------------------------|
| Unserved Counties (n=618) | 19,752 | 316 | \$18,128 |
| Served Counties (n=2,614) | 114,184 | 303 | \$22,682 |

41. As set forth in Table 4, we provide estimates of the average population, average population density (pop./sq. mi.), and average per capita income for unserved census tracts compared to served census tracts.¹⁴⁸

| | Average Population | Average Population Density (pop./sq. mi.) | Average Per Capita Income (\$2009) |
|-------------------------------------|--------------------|---|------------------------------------|
| Unserved Census Tracts (n=6,096) | 3,925 | 1,061 | \$18,873 |
| Served Census Tracts (n=59,800) | 4,775 | 5,939 | \$27,080 |

42. The data also show that, unsurprisingly, unserved Americans tend to live outside of the “urban core” areas and tend to reside in areas with a lower level of population density than served areas.¹⁴⁹

b. Lower Income

43. Our analysis suggests that the unserved areas generally have statistically lower income levels than the served areas.¹⁵⁰ To measure economic well-being, we examine per capita income, median household income, and the poverty rate.¹⁵¹ We note that the poverty rate is higher for census tracts identified as served by the SBDD Data, whereas we find the opposite result for the Form 477 data. This result may arise because the SBDD Data are aggregated to the census-tract level before conducting the

¹⁴⁸ See *infra* Apps. D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) paras. 37–44 (describing the data); 47 U.S.C. § 1302(c). Hypothesis testing reveals a statistically significant difference, at the 95 percent confidence level, between served and unserved areas for average population, average population density and average per capita income.

¹⁴⁹ See *infra* Apps. B (Unserved Population SBDD Census Tract Data), C (Unserved Population Form 477 County Data), D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) paras. 37–44 (discussing demographic data sources). A census tract is in the “urban core” if it is an area of less than 3 square miles and it has a population density of at least 1,000 people per square mile. See *infra* App. F (Technical Appendix) para. 42.

¹⁵⁰ See *infra* Apps. B (Unserved Population SBDD Census Tract Data), C (Unserved Population Form 477 County Data), D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) para. 39 (discussing income measures). The Commission’s recent Internet Access Services Report also suggests that subscription rates tend to increase with income. See MARCH 2011 IAS REPORT at 11, chart 18; see also NTIA ADOPTION SURVEY at 8.

¹⁵¹ See *infra* Apps. B (Unserved Population SBDD Census Tract Data), C (Unserved Population Form 477 County Data), D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) para. 39 (discussing income measures). The poverty rate is the percent of the population living in poverty. We do not have income data for 3 counties in Alaska.

demographic analysis due to lack of availability of demographic information at the census-block level.¹⁵² This approach therefore identifies many census tracts as unserved for purposes of our demographic analysis even though the census tracts only have small pockets of unserved Americans.¹⁵³ This will affect the accuracy of the results to the extent the demographics of unserved census blocks are different from the demographics of the census tract that encompasses them.

| Data Source | Areas | Average of the Median Household Income | Average Per Capita Income | Average Poverty Rate |
|---|--------------|---|----------------------------------|-----------------------------|
| Census Tracts That Include Unserved Census Blocks SBDD Data | 25,968 | \$50,669 | \$24,587 | 14.2% |
| Census Tracts That Include Only Served Census Blocks SBDD Data | 40,144 | \$55,133 | \$27,411 | 16.2% |
| Unserved Census Tracts Form 477 Data | 6,096 | \$37,507 | \$18,873 | 21.9% |
| Served Census Tracts Form 477 Data | 59,800 | \$54,953 | \$27,080 | 14.7% |
| Unserved Counties Form 477 Data | 618 | \$34,722 | \$18,128 | 22.5% |
| Served Counties Form 477 Data | 2,614 | \$44,665 | \$22,682 | 14.8% |

c. Less Educated

44. Our analysis suggests that there is a significant difference in the level of educational attainment of the population residing in unserved areas as compared to served areas.¹⁵⁴ In particular, we find that the population residing in unserved areas are less educated compared to the population in served areas.¹⁵⁵ We measure education by examining the portion of the 25 year old and older population that have attained at least an Associate's Degree.

d. Proportion Self-Identifying as Non-White

45. Our analysis suggests that there is a significant difference in the proportion of the population that self-identifies as non-White in the unserved areas as compared to the served areas.¹⁵⁶ Examining

¹⁵² See *supra* para. 39.

¹⁵³ For example, while the SBDD Data indicate there are 26.2 million unserved Americans, the population of census tracts that contain these unserved Americans—and thus which we describe as unserved census tracts in our SBDD Data—have a total population of 128.9 million. The tables above show the demographics for the 128.9 million Americans in these census tracts rather than more granular demographic information for the 26.2 million unserved Americans.

¹⁵⁴ See *infra* tbl. 6; see also *infra* F (Technical Appendix) para. 40 (discussing educational attainment sources). Hypothesis testing of the areas for which we rely upon ACS Five-Year Estimates 2005–2009, reveals a statistically significant difference, at the 95% confidence level, in the mean educational attainment level between served and unserved areas. The Commission's recent Internet Access Services Report also suggests that subscription rates tend to increase with education. See MARCH 2011 IAS REPORT, chart 22.

¹⁵⁵ See *infra* tbl. 6.

¹⁵⁶ Survey respondents to the ACS can select multiple races to which they identify. Results of the ACS Five-Year Estimates 2005–2009 suggest that approximately 2.2 percent of the population identify with more than one race, and the early results from the 2010 Census indicate that approximately 2.9 percent of the population identify with more than one race. See ACS Five-Year Estimates 2005–2009; CENSUS BUREAU, DEPARTMENT OF COMMERCE, OVERVIEW OF RACE AND HISPANIC ORIGIN: 2010, 2010 CENSUS BRIEFS 4 (Mar. 2011), available at <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>. Thus, to simplify the assessment of how subscription (continued....)

SBDD and Form 477 Data at the census-tract level, we find that a smaller proportion of the population self-identifies as non-White in unserved areas. However, examining Form 477 data at the county level shows the opposite result.¹⁵⁷ We examine the portion of the population in the area that self-identify as non-White as reported in the ACS Five-Year Estimates 2005–2009.¹⁵⁸ With the Form 477 county level analysis, we see that aggregating the data to the county level simply averages out this proportion across the larger county and likely distorts the results.¹⁵⁹

| Data Source | Areas | Average Proportion of Population with At Least an Associates Degree | Average Proportion Non-White Pop. | Census Tract Within the Urban Core | Average Population Density (pop./sq. mi.) |
|---|--------|---|--|--|---|
| Census Tracts That Include Unserved Census Blocks SBDD Data | 25,968 | 29.3% | 16.9% | 4,804 | 1,247 |
| Census Tracts That Include Only Served Census Blocks SBDD Data | 40,144 | 35.7% | 32.9% | 31,484 | 8,228 |
| Unserved Census Tracts Form 477 Data | 6,096 | 23.1% | 24.6% | 968 | 1,061 |
| Served Census Tracts Form 477 Data | 59,800 | 34.2% | 26.8% | 35,297 | 5,939 |
| Unserved Counties Form 477 Data | 618 | 21.64% | 21.57% | | |
| Served Counties Form 477 Data | 2,614 | 27.0% | 15.0% | | |

C. Broadband Is Not Being Deployed to All Americans in a Reasonable and Timely Fashion

46. Section 706(b) directs the Commission to determine whether broadband “is being deployed to all Americans in a reasonable and timely fashion.”¹⁶¹ Our analysis is informed by the statute, analysis of the available data, and our understanding of trends in the industry. We begin by explaining our

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patterns may be affected by the racial demographics of the geographic area of interest, we examine the proportion of the population that do not self-identify solely as White.

¹⁵⁷ See *supra* para. 39; see *infra* Apps. B (Unserved Population SBDD Census Tract Data), C (Unserved Population Form 477 County Data), D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) para. 28 (discussing the advantages and disadvantages of aggregating the data to the county level).

¹⁵⁸ See *infra* Apps. B (Unserved Population SBDD Census Tract Data), C (Unserved Population Form 477 County Data), D (Unserved Population Form 477 Census Tract Data), F (Technical Appendix) para. 43 (discussing “non-White proportion” data).

¹⁵⁹ See *infra* App. F (Technical Appendix) para. 28 (discussing the advantages and disadvantages of aggregating the data to the county level).

¹⁶⁰ SBDD Data allow one to examine how these demographics vary as a function of what fraction of the census tract is unserved. We examined the demographic characteristics of census tracts that contain unserved blocks by splitting them into four quartiles from most served (up to 25 percent of the tracts’ population is unserved) to the least served (at least 75 percent of the tracts’ population is unserved). While one might expect tracts with the highest proportion of unserved to have a lower population density than those with a lower proportion unserved, the difference is negligible (the population density for the top and bottom quartiles differ by <1%); and tracts in the middle two quartiles have lower population densities than either the highest or lowest quartile. Per-capita income declines monotonically from the tracts with a lower percentage of unserved to the tracts with the most.

¹⁶¹ 47 U.S.C. § 1302(b).

understanding of the scope of the statutory mandate.

47. First, we view “is being deployed” in this context as referring to current activities to deploy broadband.¹⁶² Congress’s use of the present tense indicates an intent that the Commission take account of more than just broadband that already “has been deployed,”¹⁶³ as well as an intent that the Commission avoid making predictions about where broadband “may be deployed.” Under this view, it is appropriate for the Commission to consider existing deployment and current actions that will meaningfully affect broadband deployment in the near future, even if those efforts have not yet resulted in broadband deployment or subscription that would be captured in data upon which the Commission relies in making its assessments.¹⁶⁴ We do not believe, however, that the Commission should find that broadband “is being deployed” on the basis of general plans or goals to deploy broadband, particularly long-range plans or goals that are uncertain to be realized. We find this view of the statute particularly appropriate in light of the requirement to conduct the section 706 inquiry annually.

48. Second, as we did in the *2010 Sixth Broadband Progress Report*, we conclude that “all Americans” in this context has its ordinary meaning, and thus establishes a goal of universal broadband deployment.¹⁶⁵ As some commenters have noted, at some point in the future, if and when broadband has been deployed to all but a very small number of Americans, we may be required to determine more precisely the meaning of “deployed to all Americans in a reasonable and timely fashion.”¹⁶⁶ However, given that as many as 26 million Americans currently live in unserved areas, we have not yet reached that point.

49. Third, since the end of 2008, Congress has directed us to incorporate comparative international data in assessing broadband availability and in determining whether broadband deployment in the United States is reasonable and timely.¹⁶⁷ Thus, broadband deployment is more likely to be reasonable and timely if communities in the United States compare favorably to comparable foreign communities on broadband service capability metrics, and less likely to be reasonable and timely if U.S. communities compare unfavorably. The fact that the United States now appears to lag behind a number of other countries on certain key broadband metrics, such as fixed broadband penetration per household, further supports the determination that broadband is not being deployed to all Americans in a reasonable and timely fashion and is not available to all Americans.¹⁶⁸ However, as further discussed below, we are

¹⁶² We therefore agree with commenters to the extent they argue that the language “is being deployed” requires that the Commission to consider in its analysis where broadband deployment is occurring and where it is planned. *See* AT&T Comments at 27; Verizon Comments at 18; MetroPCS Reply at 6; *see also* U.S. Cellular Reply at 16 (arguing that Comcast’s arguments to the contrary are unsupported by data indicating that market forces are bringing this infrastructure to unserved rural areas).

¹⁶³ *See, e.g.*, Verizon Comments at 18 (arguing that the “is being deployed” statutory language is “a progressive tense formulation that plainly contemplates a forward-looking, ongoing effort”); NCTA Comments at 3–7.

¹⁶⁴ We have considered where broadband is today and have examined planned deployments, such as BTOP and BIP Programs, as well as taking account of the Commission’s recent policy changes that should accelerate broadband deployment. *See supra* paras. 11–12.

¹⁶⁵ *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9574, para. 28. For the reasons explained in last year’s broadband progress report, we reject the argument that universal broadband availability is simply a “laudable aspiration” rather than a statutory goal and a yardstick by which to measure our nation’s progress in making broadband available. *See* Verizon Comments at 18.

¹⁶⁶ 47 U.S.C. § 1302(b); *see* AT&T Comments at 24–26; Verizon Comments at 17–18.

¹⁶⁷ 47 U.S.C. § 1303(b)(1) (“As part of the assessment . . . required by section 1302 of this title, the Federal Communications Commission shall include information comparing the extent of broadband service capability . . . in a total of 75 communities in at least 25 countries abroad . . .”).

¹⁶⁸ *See 2011 International Broadband Data Report* para. 1, Apps. C–G (showing, based on OECD data from 2009 or the latest available year, the U.S. ranked 12th for fixed broadband adoption on a per household basis, behind (continued....))