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

SEVENTH BROADBAND PROGRESS REPORT AND ORDER ON RECONSIDERATION

Adopted: May 20, 2011 **Released: May 20, 2011**

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 Map[5]—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.

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[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).

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 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.

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[9] *See* NTIA, DIGITAL NATION: EXPANDING INTERNET USAGE 5 (Feb. 2011) (DIGITAL NATION 2011) (stating, based 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 or 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 rural[23] 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

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[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 program[30] 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]

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[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

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[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]

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[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

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[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 Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership, 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]

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[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]

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[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 prejudge 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

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[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]

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[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

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[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

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[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"); INDUST. 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]

Table 1
Number of Unserved Population & Households Based on Different Analyses of Form 477 Data
As of June 30, 2010

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 Subscribership 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 subscribership 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.

Table 2
Comparison of Census Tracts That Include Unserved Census Blocks to Census Tracts That Include Only Served Census Blocks (SBDD Data June 2010)

	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.

Table 3 Comparison of Unserved and Served Areas (Form 477 County Data June 2010)			
	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]

Table 4 Comparison of Unserved and Served Areas (Form 477 Census Tract Data June 2010)			
	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.

Table 5
Comparison of Income and Poverty Rate Between the Unserved and Served Areas

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]

Table 6
Comparison of Education Attainment, Minority Rate, and Population Density Between the Unserved and Served Areas[160]

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

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[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….)

limited in the conclusions we can draw in this area from currently available international data.[169]

50. We note that "reasonable and timely" are terms that call for context-sensitive judgment.[170] For instance, it would not be appropriate to interpret the statute to provide that deployment is reasonable and timely solely on the basis that broadband is being deployed in areas where there is a private-sector business case for deploying broadband, ignoring those areas where universal service funding or other public policies may be required to support broadband deployment. Likewise, it was reasonable for the Commission to find in its first several broadband deployment reports that broadband deployment was reasonable and timely given the nascent and rapidly growing state of broadband services.[171] We therefore agree with certain commenters that the fact that broadband has not yet been deployed to all Americans does not by itself preclude a finding that deployment is occurring in a reasonable and timely fashion.[172] Nevertheless, as many as 26 million Americans live in areas where broadband has still not been deployed. This significant and persistent deployment gap is particularly concerning in light of the substantial and growing costs of digital exclusion: Being unable to subscribe to broadband in 2011 is a much bigger obstacle to healthcare, educational, and employment opportunities that are essential for consumer welfare and America's economic growth and global competitiveness than it was even a few years ago. We thus must conclude that broadband is not being deployed to all Americans in a reasonable and timely fashion, and we underscore how much work remains before we can conclude that all Americans are served by broadband.[173]

51. The lack of access to broadband is particularly pronounced for certain groups of Americans. On average, unserved Americans live in areas that are more rural and less densely populated, and in which larger proportions of residents are lower-income, less-educated, and more likely to self-identify as being White than in areas served with broadband.[174] The private sector is unlikely to close the

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countries such as South Korea, the United Kingdom, Canada, and Germany). We reiterate that, to the extent these metrics are based on subscription data, they are an imperfect proxy for deployment—*see supra* para. 34 & note 133—but they nevertheless are the best available evidence thereof and merit consideration due to Congress's explicit requirement that international comparisons be included in the assessment. *See* 47 U.S.C. § 1303(b)(1).

[169] *See infra* para. 63.

[170] *See, e.g.*, Verizon Comments at 19 ("Particularly when coupled with the phrase 'is being deployed' that precedes it, this phrase evinces an intent for a reasoned analysis of the ongoing deployment of broadband in light of relevant circumstances.").

[171] *See 1999 First Broadband Progress Report*, 14 FCC Rcd at 2402, para. 6 (noting that "at such an early stage of deployment of many broadband services, it is difficult to reach any firm judgment about the state of deployment"); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Report, 15 FCC Rcd 20913, 20917–19, paras. 5–7 (2000) (finding, based on one subscriber of 200 kbps symmetrical service per zip code, that 59 percent of the country's zip codes were served by broadband).

[172] *See, e.g.*, NCTA Comments at 6.

[173] AT&T and others believe that we should reverse this conclusion and conclude that broadband is not being deployed in a reasonable and timely manner for only those parts of the country that are unserved. *See, e.g.*, AT&T Comments at 25; Puerto Rico Telephone Company Comments at 6 (asking the Commission to conclude that "broadband is not being deployed in Puerto Rico and other insular areas"). However, while there are pockets of unserved areas across the country, the language of the statute requires the Commission to make its determination regarding *all* Americans, and we see no benefit to bifurcating our answer under section 706 in that manner. MetroPCS and others ask the Commission to reverse its conclusion, given the prevalence of wireless technology. *See, e.g.*, MetroPCS Reply at 27. While MetroPCS and others have noted the general expansion of mobile wireless across the country, they failed to demonstrate that wireless broadband is provided at 4 Mbps/1 Mbps actual speed (or reasonable proxy) in the unserved areas.

[174] *See supra* tbls. 2–6.

deployment gap on its own due to the very challenging economics posed by many unserved areas.[175] Although the Commission currently is considering reforms to various programs to target funding to broadband in unserved areas, there currently are no programs in place sufficient to close the deployment gap.[176]

52. As the Commission held in the *2010 Sixth Broadband Progress Report*, the goal of the statute, and the standard against which the country is to measure its progress, is universal deployment of advanced telecommunications capability. We have not achieved this goal today, nor does it appear we will be able to achieve this goal without policy changes,[177] some of which have begun in the past year.[178] Too many Americans remain excluded from the significant benefits of broadband, which most other Americans can access. Therefore, we are unable to conclude that broadband is being deployed to all Americans in a reasonable and timely fashion.[179]

D. Availability to All Americans

53. Our conclusion that broadband is not being deployed to all Americans in a reasonable and timely fashion indicates that broadband is not available to all Americans. Further, despite the many benefits of broadband and its increasing centrality to daily life, approximately one-third of all Americans have not adopted Internet access at all,[180] or at least have not adopted Internet access that is faster than dial-up.[181] This large percentage of broadband non-adopters is a further practical indicator that

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[175] The National Broadband Plan estimated that $24 billion would be needed to bring broadband to all unserved Americans. *See generally* NATIONAL BROADBAND PLAN, Ch. 8 (discussing the economics of serving unserved areas).

[176] *See* NATIONAL BROADBAND PLAN at 136–38. Although the approximately $7 billion in one-time funding from the BTOP and BIP programs are helping in this regard, they will not fully address the challenges we face. *See* Recovery Act, 123 Stat. at 118, 128, 512 (creating the BIP and BTOP programs to provide one-time support for broadband deployment and adoption). These programs do not focus exclusively on last-mile projects, and even if they did, the full amount appropriated to these programs is less than one-third of the estimated amount needed to bring broadband to all unserved areas. NTIA reports that "middle-mile" rather than "last-mile" projects comprise the "vast majority" of BTOP awards directed at broadband infrastructure deployment. NTIA, OVERVIEW OF GRANT AWARDS at 4.

[177] As the Commission held last year, "[t]he evidence further indicates 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." *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9574, para. 28 (citing NATIONAL BROADBAND PLAN at 136).

[178] *See supra* paras. 11–12.

[179] 47 U.S.C. § 1302(b). As stated above, we emphasize that our conclusion in this report in no way diminishes the progress broadband providers have made to expand broadband deployment throughout America. *See supra* para. 3. Nor should our conclusion be taken as evidence that we are questioning the adequacy of Tribal, federal, state or local government efforts to increase broadband deployment.

[180] *See* DIGITAL NATION 2011 at 5 (stating, based on October 2010 CPS data, that 31.8 percent of U.S. households have not adopted broadband). We note that the 2010 CPS considered a household to have "broadband" if it had "at least one of the following Internet access services . . .: 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. We also note that the *March 2011 IAS Report* states that two-thirds of all residential subscriptions, and 48% of all fixed broadband subscriptions, fall below 3 Mbps/768 kbps speed threshold. *See* MARCH 2011 IAS REPORT at 15, tbls. 3 & 4.

[181] Horrigan, *Broadband Adoption and Use in America* at 1 (noting that 65 percent of adult Americans subscribe to broadband faster than dial-up at home as of October 2009); AARON SMITH, PEW INTERNET & AMERICAN LIFE PROJECT, HOME BROADBAND ADOPTION 2 (2010) (SMITH, HOME BROADBAND ADOPTION) (noting that 66 percent of adult Americans subscribe to broadband faster than dialup as of May 2010), *available at* http://www.pewinternet.org/~/media//Files/Reports/2010/Home%20broadband%202010.pdf; *see also* NTIA ADOPTION SURVEY at 5 (noting that 64 percent of adult Americans subscribe to broadband at undefined speeds); (continued….)

Congressional goals have not been met, and the fact that growth in fixed broadband subscriptions has slowed suggests this situation is not remedying itself.[182] While use of mobile broadband is growing, that growth to date is mainly in lower speed ranges that may not be able to support the applications and services identified by Congress, such as high-quality video.[183]

1. Elementary and Secondary Schools

54. Section 706 requires that we examine the availability of broadband to, "in particular, elementary and secondary schools and classrooms."[184] While we currently have limited data with which to assess the availability of broadband to elementary and secondary schools and classrooms, we have some insight into the issue based on the results of a one-time survey of E-rate funded schools and libraries, as well as SBDD Data on "anchor institutions."[185]

55. In January 2011, the Commission released the results of a survey of E-rate funded schools and libraries.[186] The goal of the survey was to collect data on the current state of broadband connectivity and challenges schools and libraries face now and will face in the future.[187] These results show that as many as 80 percent[188] of E-rate recipients say their broadband connections do not fully meet their needs, and that 78 percent of recipients say they need more bandwidth than they currently have.[189] While the National Broadband Plan noted that the bandwidth required for different types of schools can vary dramatically,[190] the survey results suggest that E-rate recipients can face challenges when trying to provide students higher-bandwidth applications.[191] Recent changes to the E-rate program are designed to help improve high-speed connectivity among E-rate recipients.[192]

56. The National Broadband Map also provides insight into the availability of broadband to

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DIGITAL NATION 2011 at 5 (noting that the nationwide household adoption rate for "DSL, cable modem, fiber optics, [a] mobile broadband plan for a computer or a cell phone, satellite, or 'some other service'" was 68.2 percent as of October 2010).

[182] SMITH, HOME BROADBAND ADOPTION at 6.

[183] MARCH 2011 IAS REPORT at 3; *see also* OBI, BROADBAND PERFORMANCE, App. 1 (OBI Technical Paper No.4, 2010) (2010 OBI BROADBAND PERFORMANCE), *available at* http://download.broadband.gov/plan/fcc-omnibus-broadband-initiative-(obi)-technical-paper-broadband-performance.pdf.

[184] 47 U.S.C. § 1302. USTelecom in particular notes that availability to all Americans includes more than just households and should include availability of broadband to business, schools, libraries, and health care facilities. USTelecom Comments at 14.

[185] FCC E-RATE SURVEY at 2. The E-rate program (more formally, the schools and libraries universal service support program) enables virtually all schools and libraries to provide telecommunications services and Internet access to students and communities across America. *See, e.g.*, *E-rate Sixth Report and Order* paras. 1–2.

[186] *See generally* FCC E-RATE SURVEY.

[187] *See id*. at 2.

[188] *See id.*

[189] *See id*. at 7 (showing that only 22% of respondents believe their connection speeds complete meet their needs).

[190] *See id*.; NATIONAL BROADBAND PLAN at 236.

[191] *See* FCC E-RATE SURVEY at 9 (showing that broadband is more likely to be inadequate with more data intensive applications, like video-conferencing).

[192] *E-rate Sixth Report and Order* para. 5 ("We adopt a number of the proposals put forward in the *E-rate Broadband NPRM*. The revisions we adopt today fall into three conceptual categories: (1) enabling schools and libraries to better serve students, teachers, librarians, and their communities by providing more flexibility to select and make available the most cost-effective broadband and other communications services; (2) simplifying and streamlining the E-rate application process; and (3) improving safeguards against waste, fraud, and abuse.").

"anchor institutions," which SBDD defines as "schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities."[193] More than 21 percent of the roughly 19,000 K–12 schools for which data about both upload and download speeds were collected through the SBDD have connections of less than 3 Mbps/768 kbps.[194] Since the 3 Mbps/768 kbps benchmark was calculated with household usage in mind, it is likely that such a level of connectivity is insufficient for an entire school, which may have dozens, hundreds, or even thousands of students seeking to use the school's broadband connection simultaneously. SBDD Data on broadband availability at anchor institutions is available at the National Broadband Map website.[195] We note, however, that the data collected by states varies widely. For example, the state of Illinois reports roughly 3.5 times as many schools per capita as California and almost 7 times as many anchor institutions per capita overall.

57. In light of the foregoing, while we can reach no definitive conclusions regarding the availability of broadband to "elementary and secondary schools and classrooms," our survey and SBDD Data indicate that many schools and classrooms may be unserved or underserved by broadband today.

2. Home Broadband Adoption Remains Low

58. Multiple sources show that home broadband adoption remains low. *Broadband Adoption and Use in America* noted that, "[w]hile 65% of Americans use broadband at home, the other 35% (roughly 80 million adults) do not."[196] The subscribership data the Commission collects on Form 477 supports this conclusion.[197] The most recent Form 477 Data shows that only 64 percent of American households have

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[193] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32548. Congress and the National Broadband Plan both recognized the significance of bringing broadband to anchor institutions. *See, e.g.*, Recovery Act § 6001(g)(3), 123 Stat. at 514; NATIONAL BROADBAND PLAN at 154. In particular, as the National Broadband Plan noted, "[b]ecause community anchor institutions are large—if not the largest—potential consumers of broadband in even the smallest of towns, adopting these recommendations will not only expand broadband options for the institutions themselves but also will improve availability in the community as a whole." NATIONAL BROADBAND PLAN at 154. The Commission recently sought comment on whether and how it should obtain data related specifically to broadband for anchor institutions. *See Modernizing Form 477 NPRM*, 26 FCC Rcd at 1533, para. 65.

[194] Of roughly 107,000 K–12 institutions reported, approximately 30,000 are reported to have broadband service, and 19,000 reported both an upload and download speed. Of those 19,000, 15,000 (or just under 79%) report having a speed of 3 Mbps/768 kbps or more.

[195] *See, e.g.*, National Broadband Map, Analyze >> Summarize, www.broadbandmap.gov/summarize and select a geographic area.

[196] Horrigan, *Broadband Adoption and Use in America* at 3. We note that this broadband consumer survey counted home broadband users as "those who said they used any one of the following technologies to access the internet from home: cable modem, a DSL-enabled phone line, fixed wireless, satellite, a mobile broadband wireless connection for your computer or cell phone, fiber optic, [or] T-1" without reference to the download or upload speed of their connection. *Id*. If the broadband speed benchmark used in this report had been used in the survey, it is likely that a larger number of Americans would have been reported as not having broadband. *See also* NTIA ADOPTION SURVEY.

[197] In relevant respect, the Form 477 Data are a collection of subscribers of various Internet access services reported by broadband providers. These data therefore differ from adoption data, which would indicate broadband usage, including perhaps broadband usage at work or anchor institutions such as libraries, community centers, and businesses that offer Wi-Fi. We reject USTelecom's claim that "[s]ection 706 exclusively addresses whether broadband is being deployed, not the uptake of broadband service." USTelecom Comments at 17 (claiming that "[t]he statutory charge for the Commission addresses whether broadband capability is being deployed, not whether it is being adopted," and that adoption should only "be included in the report in the context of Commission movement on key issues that would remove regulatory barriers to broadband deployment"). USTelecom itself recognizes that "broadband adoption, particularly among low-income populations, is certainly an important topic, and [USTelecom also] recognizes the importance of developing an efficient and effective program to encourage broadband adoption by low-income consumers." *Id.*

a connection advertised as being capable of delivering over 200 kbps in at least one direction, with only 33 percent having a connection advertised as being capable of delivering 3Mbps/768 kbps—the speed we believe represents the best proxy for our broadband benchmark of 4 Mbps/1 Mbps.[198] In addition, evidence indicates that Americans with lower income, minorities, and Americans that live in a rural area tend to have lower broadband subscription rates.[199]

Table 7
Overall Subscription Rate for Broadband Services
(December 2008 Form 477 Data and June 2010 Form 477 Data)

	December 2008	June 2009	December 2009	June 2010
768kbps/200 kbps or faster	53.1%	55.9%	57.8%	59.7%
3 Mbps/768 kbps or faster	25.0%	26.8%	31.7%	33.6%
6 Mbps/1.5 Mbps or faster	6.3%	13.8%	17.1%	19.2%

59. *Tribal Lands Have Much Lower Subscription Rates*. In the *2010 Sixth Broadband Progress Report*, the Commission found that subscription rates are lower in Tribal lands.[200] Because the Commission has recognized that certain categories of Americans, in particular those residing on Tribal lands, are at particular risk of being left without access to broadband, we again conduct a demographic analysis of subscription patterns that overlap Tribal lands.[201]

60. Of the 65,896 census tracts included in our analysis, 1,009 census tracts overlap with a federally recognized Tribal land such that at least 50 percent of the land area of the census tract lies in a federally recognized Tribal land. We find that these census tracts have a much lower broadband subscription rate than the U.S. as a whole.

[198] *See* MARCH 2011 IAS REPORT at 34, 35.

[199] *See supra* section IV.B.2. For example, for those households with incomes of less than $20,000 per year, 40 percent reported that they have adopted broadband at home, compared to 91 percent of those with household incomes above $75,000 per year. Horrigan, *Broadband Adoption and Use in America* at 7. Moreover, African-Americans and Hispanics continue to trail Whites in reported adoption of broadband at home by ten and twenty percentage points, respectively. *Id.* at 13, 34–36.

[200] *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9572, para. 25.

[201] As indicated in the last report, we are able to conduct this type of analysis because the Form 477 filers report broadband connections by census tract and with the release of the Census Bureau's census tract demographic information, we can conduct a demographic analysis of subscription patterns. *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9572, para. 25 & n.105. Our Form 477 subscription data are collected at the census tract level and our Form 477 subscription data do not contain information about the demographics of the particular households that subscribe to broadband services. Therefore, the analysis we provide is subject to the caveat that the subscription pattern for a census tract is representative of the subscription pattern for the portion of the census tract which overlaps Tribal lands.

Table 8 Average Subscription Rates in Census Tracts In which At least 50 Percent of the Census Tract Overlaps Tribal Lands (June 2010 Form 477 Data)				
	Areas	**Average Subscription Rate for 768 kbps/200 kbps Service**	**Average Subscription Rate for 3 Mbps/768 kbps Service**	**Average Subscription Rate for 6 Mbps/1.5 Mbps Service**
All Census Tracts	66,287	56.1%	32.1%	18.5%
Census Tracts In Which At least 50% of the Census Tract Overlaps with Federally Recognized Tribal Lands	1,009	21.5%	5.9%	2.3%
D0: Joint Use Areas. Areas that are administered jointly and/or claimed by two or more American Indian Tribes.	9	43.2%	2.7%	0.8%
D2: Federally recognized American Indian reservation that does not have associated off reservation trust lands	157	28.8%	11.5%	2.5%
D5: Federally recognized American Indian reservation that has associated off-reservation trust lands	4	17.0%	0.7%	0.0%
D6: Statistical entity identified for a federally recognized American Indian Tribe that does not have a reservation or identified off-reservation trust lands	652	43.2%	17.0%	2.7%
D8: Off-reservation trust land associated with a Federally recognized American Indian reservation that has associated off-reservation trust lands	167	28.4%	12.4%	4.5%
E1: Alaskan Native Village Statistical Area	9	44.6%	15.5%	6.4%

61. *Conclusion*. Our conclusion that broadband is not being deployed to all Americans in a reasonable and timely fashion establishes that broadband is not available to all Americans. The large adoption gap also persuades us that broadband is not available to all Americans. Were broadband truly available to all unserved Americans, we would expect to see greater adoption than we see today given how vital broadband has become to so many aspects of economic and social life. That the broadband needs of many schools and anchor institutions appear to be unmet further supports this conclusion.[202]

E. International Broadband Service Capability

62. The BDIA requires that "as part of [this report's] assessment," we compare "the extent of broadband service capability (including data transmission speeds and price for broadband service capability) in a total of 75 communities in at least 25 countries abroad for each of the data rate benchmarks for broadband service utilized by the Commission to reflect different speed tiers."[203] Americans' access to and adoption of broadband is a key element of our ability to compete in the global

[202] *See supra* paras. 54–57.

[203] 47 U.S.C. § 1303(b)(1).

economy, and to maintain our leadership in Internet-related innovation.[204]

63. The *2011 International Broadband Data Report* released today by the Commission's International Bureau explains that the data sources available to the Commission at this time provide only limited opportunities for meaningful comparisons of broadband availability, deployment, and capability.[205] The available data suggest that broadband in America lags behind other developed countries in some respects, and compares well to some developed countries in other respects.[206] We will continue working with the OECD and other partners to improve our ability to benchmark Americans' access to broadband.

V. REMOVING BARRIERS TO INFRASTRUCTURE INVESTMENT & PROMOTING COMPETITION

64. In light of our determination that broadband deployment is not reasonable and timely, the statute directs that the Commission "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[207]

65. There are many barriers to infrastructure investment.[208] Some increase the costs of deploying and operating broadband networks, while others reduce the revenue available to broadband providers by hindering adoption. Removing barriers to infrastructure investment therefore requires the Commission to identify and help reduce potential obstacles to deployment, competition, and adoption—concepts that are tightly linked. Key barriers include: (1) costs and delays in building out networks and offering service; (2) low broadband service quality, including performance insufficient to enable consumers to use the applications and service they wish to use, and the applications Congress has specified; (3) lack of affordability of broadband Internet access services; (4) consumers' lack of access to computers and other broadband-capable equipment; (5) lack of relevance of broadband for some consumers; (6) poor digital literacy; and (7) consumers' lack of trust in broadband and Internet content and services, including concerns about inadequate privacy protections. Below, we discuss each of these barriers.

66. *Challenges To Building Out Broadband.* As the National Broadband Plan indicated, there are numerous challenges to deploying broadband networks in particular areas, and to offering service over those networks once they are deployed.[209] In the absence of programs that provide additional support, the private sector will not bring broadband to Americans living in areas where there is no business case for operating a broadband network.[210] In areas with low population density, for example, deployment is often uneconomical, as the costs to build a network exceed potential revenues.[211] Other challenges include broadband providers' ability to access key inputs for broadband infrastructure, such as utility poles, conduits, rooftops, and rights-of-way.[212] In addition, cell towers capable of supporting mobile broadband

[204] NATIONAL BROADBAND PLAN at 3.

[205] *2011 International Broadband Data Report* para. 1.

[206] *See id.*

[207] *See* 47 U.S.C. § 1302(b).

[208] *See generally* NATIONAL BROADBAND PLAN at 167–99.

[209] *Id*. at 136–39.

[210] *Id.* at 136; *see also* Horrigan, *Broadband Adoption and Use in America* at 7 (noting that Americans in rural areas are less likely to have access to broadband).

[211] NATIONAL BROADBAND PLAN at 136.

[212] *Id*.

service are often not built or are significantly delayed because of permitting obstacles and other issues.[213] The limited supply of wireless spectrum is another factor that could limit the growth of wireless broadband in the United States.[214] These challenges can delay or even prevent broadband deployment, and are likely to limit competitive entry, raise costs, lower service quality and have other negative impacts on businesses and consumers.[215]

67. As noted above, although Congress allocated approximately $7 billion to deploy broadband through the BIP and BTOP programs, this allocation will not solve the problem entirely.[216] To help overcome infrastructure and other challenges to deployment of broadband networks and services, the Commission recently launched the Broadband Acceleration Initiative, focused on accelerating broadband deployment by removing barriers to build-out and speeding up processes to lower costs.[217] One of the key tools that the Commission has to promote broadband to unserved areas is the same tool the agency has used to promote universal telephone service: the USF and ICC system. We are in the process of transforming the USF and ICC into effective and efficient tools for making affordable, high-quality broadband service available in regions where it is not economically viable to deploy and/or operate broadband networks.[218] In addition, the Commission will continue to pursue means of freeing additional spectrum for wireless broadband. As noted above, the Commission also has taken several steps to release additional spectrum for high-speed wireless services, including adopting proposals and orders to repurpose a portion of spectrum from the UHF and VHF frequency bands which may be used for mobile broadband.[219]

68. *Broadband Service Quality*. Broadband can unlock new opportunities for Americans with respect to health care delivery, energy independence and efficiency, education, worker training, entrepreneurial activity, and other national purposes identified by Congress.[220] Overall network reliability—commonly described as "uptime"—has a direct impact on consumers' willingness to purchase and use broadband. In addition a variety of network performance factors—including latency and jitter—impact consumers' ability to use the full range of Internet-based applications and services.[221] While some applications, like e-mail, are generally insensitive to speed and other performance factors, interactive applications like voice and video require networks that provide sufficient performance.[222] Yet consumers generally do not know the basic performance characteristics of their broadband service, which makes it

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[213] *Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance*, WT Docket No. 08-165, Declaratory Ruling, 24 FCC Rcd 13994 (2009) (establishing a 90-day time limit for tower permitting decisions).

[214] NATIONAL BROADBAND PLAN at xii, Ch. 5.

[215] *Id.* at 136; *see also* Horrigan, *Broadband Adoption and Use in America* at 5 (finding the main reason that non-adopters do not subscribe to broadband service is cost).

[216] *See supra* note 176.

[217] Broadband Acceleration Initiative at 1.

[218] *Connect America Fund NPRM*, 26 FCC Rcd 4554.

[219] *See supra* para. 11; *TV Band NPRM*, 25 FCC Rcd 16498.

[220] 47 U.S.C. § 1305(k)(2)(D). Consumers directly benefit from the applications and services they can access via a broadband connection. NATIONAL BROADBAND PLAN at Ch. 3, exh. 3B.

[221] 2010 OBI BROADBAND PERFORMANCE at 9–10.

[222] *Id*.

more difficult for them to make informed choices regarding subscribing to and using broadband.[223]

69. For this reason the Commission has contracted with SamKnows, LTD to collect data on the actual fixed broadband Internet access service speeds delivered to consumers to attempt to understand this relationship better.[224] The Commission has also sought comment on whether we should collect data on broadband service quality, including data on network outages, installation and repair intervals, customer satisfaction, and consumer complaints regarding network performance and customer care and billing.[225] Further, as noted above, in order to meet Congress's mandate that the Commission evaluate the availability of broadband service that "enables users to originate and receive high-quality voice, data, graphics, and video," the Commission may find it necessary to modify our broadband speed threshold as consumer demand and technologies evolve.[226]

70. *Affordability of Broadband Internet Access Service*. The Commission's study on barriers to broadband adoption identified cost as a major obstacle to broadband adoption.[227] The most obvious component of the affordability barrier is the cost associated with purchasing broadband service. The Commission's survey determined that cost is a major obstacle for people adopting broadband at home, with 36 percent of people indicating it is the major reason they do not adopt.[228] Overall, 15 percent of respondents reported that the monthly bill for service was too high,[229] while 9 percent said that the one-time costs of installation or associated fees were too expensive.[230] For low-income Americans, cost appears to be a leading obstacle to adoption.[231] When the high cost of broadband Internet access service

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[223] JOHN HORRIGAN & ELLEN SATTERWHITE, FCC, AMERICANS' PERSPECTIVES ON ONLINE CONNECTION SPEEDS FOR HOME AND MOBILE DEVICES (2010) (finding that 81% of broadband users do not know their home connection speed).

[224] *See Comment Sought on Residential Fixed Broadband Services Testing and Measurement Solution, Pleading Cycle Established*, CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36, Consumer Information and Disclosure Public Notice, 25 FCC Rcd 3836 (2010).

[225] *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1538–41, paras. 89–99.

[226] *See supra* para. 15; 47 U.S.C. § 1302(d)(1). Broadband consumers are spending more time using applications, such as streaming video services that require high-performance broadband connections. For example, Sandvine, a networking equipment company, estimates that online video streaming provider Netflix, represents more than 20 percent of downstream Internet traffic during peak times. Press Release, Sandvine, Sandvine Internet Report: Average Is Not Typical, www.sandvine.com/news/pr_detail.asp?ID=288. *See also* AT&T Comments, WC Docket No. 09-51, at 4–5; Kodiak Comments, WC Docket No. 09-51, at 5; *Open Internet Order*, 25 FCC Rcd at 17905, para. 131.

[227] Horrigan, *Broadband Adoption and Use in America* at 5.

[228] *Id*. at 5.

[229] *Id*.

[230] *Id*.; *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1533–36, paras. 66–76.

[231] Horrigan, *Broadband Adoption and Use in America* at 7; *see also Lifeline/Link Up NPRM*, 26 FCC Rcd at 2784, para. 36 ("We have concluded in the past that the concept of affordability has both an absolute and a relative component. The absolute component takes into account whether an individual has enough money to pay for a service, and the relative component takes into account whether the cost of a service would require a consumer to spend a disproportionate amount of his or her income on that service."). Research also shows that those who do not use the Internet (including broadband) at all identified "don't need/ not interested" as the most important reason for not adopting broadband at home. *See* DIGITAL NATION 2011 at 25–28. In contrast, those who use the Internet only outside their homes and those who have only dial-up at home most often cited "too expensive" as the prevailing reason. *Id.*

prevents adoption in certain regions, cost also serves as an obstacle to broadband deployment.[232]

71. Competition between network operators is crucial to ensuring that broadband is affordable, but may not be sufficient in all areas.[233] Past and existing government efforts likewise may not be sufficient to ensure all Americans have access to affordable broadband. For example, BTOP and BIP allocated some funding to support a number of broadband adoption programs, but those programs will only reach a fraction of all non-adopters in the country.[234] The Commission has taken a number of steps to promote broadband affordability. For one, the Commission adopted in March 2011 an NPRM to comprehensively reform and modernize the Lifeline/Link Up program.[235] The NPRM proposes to cut waste and improve program administration, freeing funds for pilot programs to increase broadband adoption among low-income consumers. The Commission also conditioned its approval of transactions by Comcast Corporation (Comcast) and CenturyLink on their voluntary commitments to implement programs that will, among other things, ensure that broadband at discounted rates for low-income consumers is available across large areas of the country.[236] Comcast's program will cover 39 states and the District of Columbia,[237] while CenturyLink's will cover 37 states.[238]

72. *Affordability of Equipment to Access Broadband Services*. A barrier to adoption closely related to the affordability of broadband Internet access services is the cost of equipment necessary to access broadband. Ten percent of non-adopters of broadband indicate that access to broadband-capable equipment is the major reason they do not go online from home. In a large-scale study of broadband adoption in low-income communities, researchers found that hardware, software and equipment maintenance fees deter some low-income consumers from taking up broadband service, even if they have had it previously.[239] In the *Lifeline/Link Up NPRM*, we are examining how to address this concern, for

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[232] In the *1999 First Broadband Progress Report*, the Commission sought suggestions on how to measure market demand through "indicia [such] as prices [and] willingness to pay." *1999 First Broadband Progress Report*, 14 FCC Rcd at 2410, para. 31.

[233] *See* NATIONAL BROADBAND PLAN at 33–49.

[234] The BTOP program was allocated $4.7 billion by the Recovery Act, not less than $200,000,000 of which was to be available for competitive grants for expanding public computer center capacity and not less than $250,000,000 was to be available for competitive grants for innovative programs to encourage sustainable adoption of broadband service. *See* Recovery Act, 123 Stat. at 128. The BIP program was allocated $2.5 billion. *See id*. at 118. The vast majority of these funds went to broadband deployment. *See* USDA, About the Recovery Act BIP, http://www.rurdev.usda.gov/utp_bip.html. Funds dedicated to adoption projects focused on discrete geographic areas. *See*, *e.g*., NTIA, OVERVIEW OF GRANT AWARDS at 8–10 (describing awards to promote adoption among New York City transfer students, specific populations in the Lowell and Merrimack Valley region of Massachusetts, and Hispanic and English-as-a-Second-Language populations in the Greater Houston, Beaumont, and San Antonio, Texas areas).

[235] *Lifeline/Link Up NPRM*, 26 FCC Rcd 2770.

[236] *See Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc.; For Consent to Assign Licenses and Transfer Control of Licensees*, MB Docket No. 10-56, Memorandum Opinion and Order, 26 FCC Rcd 4238, 4379, App. A at Part XVI (2011) (*Comcast/NBC Merger*) (describing Comcast's Broadband Opportunity Program, which will make an Economy version of Comcast's Broadband Internet Access Service available to eligible customers for $9.95 a month, require no installation or modem charges, and provide a computer for less than $150); *CenturyLink/Qwest Merger*, 26 FCC Rcd at 4218, App. C at Part II (describing CenturyLink's commitment to offer affordable broadband service and reduced cost of computer equipment to qualifying customers).

[237] *See Comcast/NBC Merger*, 26 FCC Rcd at 4249, para. 9.

[238] *See CenturyLink/Qwest Merger*, 26 FCC Rcd at 4196–97, 4218, paras. 3–4, nn.5, 11, App. C.

[239] DHARMA DAILEY ET AL., SOCIAL SCIENCE RESEARCH COUNCIL, BROADBAND ADOPTION IN LOW INCOME COMMUNITIES 25–36 (2010) (noting that price pressures for low-income consumers include more than the monthly fee for service).

example, by requiring at least some participants in the program to either offer hardware directly or partner with other entities to provide the necessary devices as a condition of participating in the pilot program.[240] Some broadband service providers have chosen to address this issue by voluntarily committing to make discounted broadband capable equipment available to low income consumers as part of broader adoption programs.[241] The impact that those commitments have on adoption may provide useful data to guide the Commission's broader efforts to help increase broadband adoption.

73. *Relevance.* Nineteen percent of Americans cite lack of relevance as the major reason they do not subscribe to broadband service at home.[242] They note, specifically, that they believe there is little if anything that they want to see or do online, or that their current dial-up Internet access service is sufficient for their needs. The Commission has found that users of dial-up Internet service make up a disproportionate amount of consumers citing lack of relevance as a barrier to adoption, while NTIA found lack of relevance to be the leading reason for non-adoption amongst Americans who do not use the Internet anywhere.[243]

74. *Digital Literacy.* A lack of digital skills and discomfort with online content and technology in general can be a major obstacle for getting online.[244] In the Commission's survey of non-adopters, 10 percent reported "worries about bad things" on the Internet and 12 percent cited a lack of familiarity with computers as the major reason they were not online. Many of these users report they would need assistance to begin using the Internet. A lack of digital skills can keep people from subscribing to a service at home, and impacts the number of activities they do online.[245] As noted above, BTOP has allocated funds to increase digital literacy and interest in broadband.[246]

75. *Trust and Privacy*. The Internet must be a safe, trusted platform before users will make full use of broadband.[247] Non-adopters of broadband are more likely than adopters to report concerns about

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[240] *Lifeline/Link Up NPRM*, 26 FCC Rcd at 2857–58, para. 283 (discussing the proposed Lifeline/Linkup Broadband Pilot Program).

[241] *See Comcast/NBC Merger*, 26 FCC Rcd at 4333, 4378, para. 233, App. A at Part XVI; *CenturyLink/Qwest Merger*, 26 FCC Rcd at 4221, App. C at Part II.B.

[242] Horrigan, *Broadband Adoption and Use in America* at 5. In addition, the Pew Internet and American Life Project survey found that almost half of those who do not use broadband do not find online content relevant to their lives. SMITH, HOME BROADBAND ADOPTION at 3 ("Half (48%) of non-users cite issues relating to the relevance of online content as the main reason they do not go online.").

[243] *See* Horrigan, *Broadband Adoption and Use in America* at 5; NTIA ADOPTION SURVEY at 5 (finding "don't need/not interested" the leading reason among consumers who do not use Internet anywhere); *see also* SMITH, HOME BROADBAND ADOPTION at 10 (noting that 48 percent of non-Internet users identified lack of relevance as the reason they do not subscribe to broadband).

[244] Horrigan, *Broadband Adoption and Use in America* at 5 (noting 22 percent of Americans cite "digital literacy" concerns as the major reason for not adopting broadband at home); SMITH, HOME BROADBAND ADOPTION at 10 (finding 18 percent of non-Internet users cite "usability" concerns—tracking the Commission's definition of digital literacy—as the major reason they do not subscribe).

[245] Horrigan, *Broadband Adoption and Use in America* at 4 (finding that current broadband users who displayed a greater level of familiarity with various terms associated with computers and the Internet engaged in a greater number and range of activities online than those less familiar with the concepts); *see also* Eszter Hargittai, *An Update on Survey Measures of Web-Oriented Digital Literacy*, 27 SOC'L SCI. COMPUTER REV., 130, 130–137 (2009) (assessing this method for determining the levels of digital literacy).

[246] *See supra* para. 12. NTIA reports that its BTOP grants are awarded in three project categories: "(1) deploying broadband infrastructure; (2) creating and expanding public computer centers; (3) and promoting the sustainable adoption of broadband services. NTIA also invested Recovery Act funding." NTIA, OVERVIEW OF GRANT AWARDS at 2.

[247] NATIONAL BROADBAND PLAN at 123–24.

inappropriate content, concerns that it is too easy for their personal information to be stolen, and concerns about children being safe online.[248] Furthermore, while not necessarily a causal relationship, users less concerned about the pitfalls of being online are more active than those who report high levels of concern.[249] Congress, the Department of Commerce, and the Federal Trade Commission have each been actively exploring the contours and limitations of current online privacy practices. In recent months both agencies have issued preliminary reports offering policy suggestions aimed at ensuring that companies more clearly provide information to consumers about what information they collect and how they use that information. The reports also discuss consumers' control of their personal information and seek additional input from consumers, consumer advocates, the business community and other stakeholders.[250]

76. Broadband adoption is a major national challenge. We have recognized that "[c]losing the broadband adoption gap may be more difficult than closing the gap in telephone penetration because the barriers to broadband adoption are more complex."[251] Since our conclusion in the *2010 Sixth Broadband Progress Report* that broadband was not being deployed in a reasonable and timely manner,[252] we have made progress on promoting competition and removing barriers to broadband deployment and availability, including by reducing infrastructure access costs.[253] We will continue to improve the data we collect and the analyses we perform to better inform our decisionmaking.[254] We also will continue to act to accelerate broadband deployment, remove barriers to infrastructure investment and promote competition in telecommunications markets.[255]

VI. INTERNATIONAL REPORT

77. Section 1303 requires the Commission to include an international comparison in its annual broadband progress report.[256] Specifically, section 1303 requires the Commission to "include information comparing the extent of broadband service capability (including data transmission speeds and price for broadband service capability) in a total of 75 communities in at least 25 countries abroad for each of the data rate benchmarks for broadband service utilized by the Commission to reflect different speed tiers."[257] As was the case with the *2010 Sixth Broadband Progress Report*,[258] we are incorporating by reference a

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[248] Of broadband users at home, 56 percent strongly agree that too much pornography and inappropriate content are available online, compared to 65 percent of non-adopters; 39 percent of adopters strongly agree it is too easy for their personal information to be stolen online, compared to 57 percent of non-adopters; and 24 percent of adopters agree the Internet is too dangerous for children, compared to 46 percent of non-adopters. Horrigan, *Broadband Adoption and Use in America* at 4, 6.

[249] *Id*. at 4.

[250] *See* INTERNET POLICY TASK FORCE, DEP'T OF COMMERCE, COMMERCIAL DATA PRIVACY AND INNOVATION IN THE INTERNET ECONOMY: A DYNAMIC POLICY FRAMEWORK (2010), http://www.ntia.doc.gov/reports/2010/iptf_privacy_greenpaper_12162010.pdf; Federal Trade Commission Staff, *Protecting Consumer Privacy in an Era of Rapid Change: A Proposed Framework for Businesses and Policy Makers* (FTC, Preliminary FTC Staff Report, Dec. 2010), http://www.ftc.gov/os/2010/12/101201privacyreport.pdf.

[251] *Lifeline/Link Up NPRM*, 26 FCC Rcd at 2853, para. 268.

[252] *See supra* para. 9.

[253] *See supra* para. 11.

[254] *See generally Modernizing Form 477 NPRM*, 26 FCC Rcd 1508.

[255] *See, e.g.*, NATIONAL BROADBAND PLAN at xi–xv; *see also supra* para. 11.

[256] 47 U.S.C. § 1303.

[257] *Id*. § 1303(b).

[258] *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9573, para. 27; *2010 International Broadband Data Report*, 25 FCC Rcd at 11963, para. 1.

report from our International Bureau.[259] The *2011 International Broadband Data Report* presents data and an analysis of the information on international broadband service capability, which is based on information submitted to the Commission and data gathered by Commission staff. The *2011 International Broadband Data Report* also provides information on, for example, actual prices advertised to consumers for broadband services, community-level data, and information about the broadband market and broadband regulations in various countries around the world, and discusses how the Commission may seek to improve international broadband data by working closely with OECD.[260]

VII. PETITIONS FOR RECONSIDERATION

78. Based on our conclusion today, we also find no reason to reconsider the Commission's analyses or conclusions in any prior proceeding, and find the Petition for Reconsideration of the *2008 Fifth Broadband Progress Report* moot and deny the Petition for Reconsideration of the *2010 Sixth Broadband Progress* Report.[261] The Consumers Union asks the Commission to reconsider its conclusion in the *2008 Fifth Broadband Progress Report* that broadband was being deployed in a reasonable and timely manner, to recognize the highly asymmetric nature of most commercially offered broadband technologies, to address concerns that many Americans have access to just two broadband services (cable modem and DSL), and to address America's poor standing in international broadband rankings.[262] Because we found that broadband is not being deployed in a reasonable and timely manner in the *2010 Sixth Broadband Progress Report* and this report, we find that the Consumers Union Fifth Broadband Report Reconsideration Petition is now moot.

79. NCTA requests that the Commission reconsider its conclusion in the *2010 Sixth Broadband Progress Report* that broadband was not reasonable and timely claiming that we applied a new, forward-looking definition of broadband to out-of-date Form 477 data and failed to consider current information and anticipated developments in our conclusion.[263] Contrary to NCTA's arguments, we relied upon the most up to date December 2008 Form 477 data available for analysis in that proceeding. Although more recent Form 477 data had been submitted by providers, it had not yet been examined or analyzed by the Commission. We also took into account other available evidence on broadband deployment across the nation, including the broadband deployment model prepared in conjunction with the National Broadband Plan. Because we relied on appropriate evidence in reaching the conclusion set forth in the *2010 Sixth Broadband Progress Report*, we also deny the NCTA Sixth Broadband Reconsideration Petition.

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[259] *See generally 2011 International Broadband Data Report*. The *2011 International Broadband Data Report* explains that the report satisfies the Commission's obligations under the BDIA. *See id*. at para. 52.

[260] The International Bureau has gathered: (1) advertised prices from the websites of broadband providers in dozens of countries; (2) community-level broadband adoption, demographic, income, and education data from OECD collections, the European Commission's regional database, and from national government agencies; and (3) information about the extent of competition in broadband markets, government policies, and mobile broadband adoption in various countries around the world. *Id.* at para. 6.

[261] *See* Petition for Reconsideration, Consumers Union, Consumer Federation of America, and Free Press, GN Docket No. 07-45 (filed July 11, 2008) (Consumers Union Fifth Broadband Reconsideration Petition); *see also Pleading Cycle Established for Comments on Petition for Reconsideration of the Commission's Fifth 706 Report*, GN Docket No. 07-45, Public Notice, 23 FCC Rcd 14589 (2008); Petition for Reconsideration, National Cable & Telecommunications Association, GN Docket No. 09-137 (filed Aug. 19, 2010) (NCTA Sixth Broadband Reconsideration Petition).

[262] *See* Consumers Union Fifth Broadband Reconsideration Petition at 1–2, 8–12.

[263] *See* NCTA Sixth Broadband Reconsideration Petition at 3–7.

VIII. ORDERING CLAUSES

80. Accordingly, IT IS ORDERED that, pursuant to section 706 of the Telecommunications Act of 1996, as amended by the Broadband Data Improvement Act, 47 U.S.C. § 1301 et seq., this Report and Order on Reconsideration IS ADOPTED.

81. IT IS FURTHER ORDERED that the Petition for Reconsideration of the Commission's *2008 Fifth Broadband Progress Report* filed by Consumers Union, Consumer Federation of America and Free Press, in GN Docket No. 07-45 on July 11, 2008 IS DISMISSED AS MOOT.

82. IT IS FURTHER ORDERED that the Petition for Reconsideration of the Commission's *2010 Sixth Broadband Progress Report* filed by National Cable & Telecommunications Association, in GN Docket No. 09-137 on August 19, 2010 IS DENIED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Comments in GN Docket No. 10-159

Commenter	Abbreviation
ADTRAN, Inc.	ADTRAN
AT&T Inc.	AT&T
Comcast Corporation	Comcast
Connected Nation, Inc.	Connected Nation
CTIA—The Wireless Association	CTIA
Fiber-to-the-Home Council	FTTH Council
Free Press	Free Press
Frontier Communications Corporation	Frontier
Independent Telephone & Telecommunications Alliance - ITTA	ITTA
Michigan Public Service Commission	Michigan Public Service Commission
National Cable & Telecommunications Association	NCTA
National Telecommunications Cooperative Association	NTCA
Numerous	Numerous
OPASTCO	OPASTCO
Oregon Telecommunications Association	Oregon Telecommunications Association
Puerto Rico Telephone Company, Inc.	Puerto Rico Telephone Company
Telecommunications Industry Association	TIA
The Blooston Rural Carriers	The Blooston Rural Carriers
United States Cellular Corporation	U.S. Cellular
United States Telecom Association	USTelecom
Verizon and Verizon Wireless	Verizon

Replies in GN Docket No. 10-159

Commenter	Abbreviation
Computer & Communications Industry Association	CCIA
Free Press	Free Press
Massachusetts Department of Telecommunications and Cable	Massachusetts Department of Telecommunications and Cable
MetroPCS Communications, Inc.	MetroPCS
IEEE Local and Metropolitan Area Networks Standards Committee	IEEE 802
National Cable & Telecommunications Association	NCTA
The Blooston Rural Carriers	The Blooston Rural Carriers
OPASTCO	OPASTCO
United States Cellular Corporation	U.S. Cellular
Verizon	Verizon

Appendix B

Unserved Population SBDD Census Tract Data*

Area	Unserved Census Blocks	Unserved Pop.	Percent of State Pop.	Unserved HHs	Average of Median Household Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop/Sq. Mile)	Average Poverty Rate	Average Proportion Non-White Pop.
Alabama	18,817	638,771	14%	227,670	$41,956	$21,489	399.1	17.1%	26.6%
Alaska	3,518	155,309	22%	48,848	$62,221	$27,626	104.7	11.2%	35.7%
American Samoa	248	47,183	82%	20,958	NA	NA	4,647.40	NA	NA
Arizona	17,974	763,459	12%	257,878	$47,742	$22,340	847.8	17.2%	28.3%
Arkansas	16,357	414,584	15%	150,611	$38,173	$19,709	452.3	18.9%	21.9%
California	46,164	3,896,443	11%	1,251,093	$65,583	$30,005	4,977.80	12.6%	30.9%
Colorado	9,665	270,265	6%	95,920	$59,793	$29,693	402.9	10.9%	10.0%
Connecticut	641	26,063	1%	8,465	$83,528	$39,256	672.6	4.9%	8.0%
Delaware	474	12,487	1%	4,653	$56,963	$27,944	860.4	11.5%	21.7%
District of Columbia	6	445	0%	107	$48,945	$30,498	8,233.90	28.1%	84.1%
Florida	20,793	962,513	5%	375,139	$49,194	$27,070	2,042.10	13.3%	18.7%
Georgia	19,258	633,971	6%	217,732	$42,563	$20,374	428.3	18.0%	30.5%
Hawaii	749	32,402	3%	10,866	$62,369	$28,081	1,016.40	9.3%	64.7%
Idaho	9,335	231,722	15%	76,954	$46,548	$21,781	379.8	13.4%	7.8%
Illinois	26,650	388,563	3%	133,729	$50,899	$24,325	153.6	11.0%	5.2%
Indiana	56,102	1,814,495	28%	671,369	$47,915	$23,076	1,451.10	13.9%	12.1%
Iowa	26,205	341,836	11%	115,644	$50,648	$24,583	188.9	9.0%	3.4%
Kansas	16,653	230,869	8%	70,971	$48,852	$23,709	386.1	11.6%	8.7%
Kentucky	22,654	1,176,170	28%	435,564	$40,933	$20,871	860.8	19.1%	7.1%
Louisiana	10,897	352,915	8%	120,311	$41,826	$20,695	356.8	19.2%	31.1%
Maine	3,074	80,577	6%	30,397	$47,341	$24,076	145.6	12.6%	3.5%
Maryland	3,384	121,529	2%	44,385	$71,518	$32,205	953.6	8.0%	19.5%
Massachusetts	1,710	58,866	1%	19,850	$74,943	$35,055	3,274.50	8.2%	11.9%
Michigan	26,390	654,001	7%	236,559	$53,147	$25,251	538.7	12.0%	7.7%

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Minnesota	23,031	398,080	8%	136,569	$54,790	$25,968	210.6	9.2%	5.3%
Mississippi	20,466	560,637	19%	193,932	$36,716	$18,703	373.5	22.1%	39.3%
Missouri	37,137	801,407	14%	288,751	$44,400	$21,481	541.8	14.7%	7.9%
Montana	12,082	276,417	29%	97,200	$44,150	$22,055	102.8	14.8%	15.1%
Nebraska	22,372	327,588	18%	108,705	$48,640	$23,716	1,184.90	11.6%	8.6%
Nevada	2,177	63,315	2%	21,140	$60,012	$29,508	186.3	11.1%	15.8%
New Hampshire	2,252	56,163	4%	20,826	$65,799	$30,800	278.9	7.6%	3.1%
New Jersey	1,074	37,915	0%	12,783	$74,520	$33,789	1,792.20	7.0%	18.4%
New Mexico	14,310	441,798	22%	146,568	$42,506	$20,871	801.3	20.0%	33.6%
New York	21,548	558,286	3%	190,598	$54,038	$26,254	1,167.40	12.0%	9.6%
North Carolina	13,715	435,307	5%	165,819	$40,318	$21,026	253.3	16.9%	24.5%
North Dakota	8,788	131,611	21%	40,950	$46,216	$24,329	167.2	12.2%	10.3%
Ohio	15,196	284,816	3%	100,734	$51,266	$23,776	435	11.4%	5.7%
Oklahoma	29,823	762,750	21%	265,115	$43,784	$21,456	423.6	16.3%	22.8%
Oregon	9,518	275,097	7%	103,586	$47,914	$24,147	355.2	13.2%	8.3%
Pennsylvania	15,184	378,115	3%	141,269	$50,142	$24,703	1,317.30	11.0%	6.3%
Puerto Rico	11,511	2,123,848	54%	802,134	$17,977	$9,076	946.5	48.8%	23.7%
Rhode Island	201	4,385	0%	1,857	$70,382	$33,679	1,756.60	6.7%	7.5%
South Carolina	13,068	576,384	13%	205,048	$42,375	$21,716	635	17.5%	35.4%
South Dakota	12,325	214,183	27%	66,976	$42,918	$21,224	81.6	16.5%	21.9%
Tennessee	14,837	489,103	8%	175,798	$42,849	$21,642	422.7	16.1%	11.5%
Texas	42,858	1,214,025	5%	415,202	$44,013	$21,145	456.8	17.7%	18.3%
Utah	4,685	141,914	5%	44,229	$56,660	$22,651	434.5	10.7%	8.7%
Vermont	2,076	42,796	7%	15,785	$51,925	$26,660	534.7	11.0%	3.5%
Virgin Islands	2,701	108,599	100%	40,593	NA	NA	3,152.60	NA	NA

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Unserved Population SBDD Census Tract Data*

Area	Unserved Census Blocks	Unserved Pop.	Percent of State Pop.	Unserved HHs	Average of Median Household Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop/Sq. Mile)	Average Poverty Rate	Average Proportion Non-White Pop.
Virginia	14,567	516,407	7%	187,429	$55,395	$26,622	1,014.40	12.0%	22.3%
Washington	7,517	229,796	4%	77,421	$57,269	$26,574	559.6	12.1%	14.4%
West Virginia	16,739	496,538	28%	192,412	$37,601	$20,288	567.2	18.3%	5.6%
Wisconsin	25,338	664,603	12%	238,430	$55,339	$26,734	509.2	8.7%	5.3%
Wyoming	7,453	243,017	47%	86,912	$53,857	$26,747	852.3	9.4%	8.1%
All Unserved Areas	782,267	26,160,339	8%	9,210,439	$50,669	$24,587	1,247.40	14.2%	16.9%

* SBDD Data as of June 2010, 3 Mbps/768 kbps Fixed Broadband Data. *See infra* App. F (Technical Appendix) for a description of demographic variables and data sources. Census block unserved population and households are aggregated up to the census tract. 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 csv file, 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).

Appendix C

Unserved Population Form 477 County Data*

States	Counties	Unserved Pop.	Percent of State Pop.	Unserved HHs	Average of Median HH Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop./Sq. Mile)	Average Poverty Rate	Average Proportion Non-White Pop.
Alabama	10	154,300	3%	60,226	$28,752	$16,415	20.03	26.2%	50.2%
Alaska	20	171,460	24%	56,359	$55,231	$23,589	0.74	14.6%	60.7%
American Samoa	5	57,291	99%	25,404	NA	NA	15,964.47	NA	NA
Arizona	1	75,236	1%	21,945	$28,378	$11,614	6.71	36.8%	76.8%
Arkansas	21	410,621	14%	155,269	$31,199	$17,164	27.33	23.6%	31.9%
California	4	83,426	0%	33,041	$43,129	$24,842	8.61	13.4%	16.3%
Colorado	7	31,428	1%	11,269	$36,515	$23,193	3.88	17.3%	15.0%
Florida	2	22,296	0%	7,504	$34,613	$15,332	17.32	21.7%	16.1%
Georgia	39	529,191	5%	199,014	$33,561	$17,168	41.37	21.6%	35.0%
Idaho	10	68,240	4%	26,106	$40,301	$19,168	4.37	14.7%	6.8%
Illinois	20	308,045	2%	121,227	$41,910	$21,656	33.69	14.1%	5.4%
Indiana	2	27,249	0%	10,393	$36,423	$18,537	36.17	19.9%	3.6%
Kansas	28	159,613	6%	66,984	$39,286	$22,394	7.04	11.6%	3.9%
Kentucky	21	429,269	10%	170,249	$32,879	$17,312	60.03	23.5%	4.9%
Louisiana	21	365,899	8%	133,584	$33,600	$17,841	26.52	24.0%	37.9%
Michigan	5	81,329	1%	32,280	$35,016	$18,058	21.56	17.6%	8.3%
Minnesota	1	5,171	0%	1,902	$38,409	$18,787	9.3	20.5%	41.5%
Mississippi	43	856,772	29%	318,831	$31,257	$16,342	35.99	24.9%	42.3%
Missouri	23	305,033	5%	121,026	$33,639	$17,772	21.94	18.9%	5.7%
Montana	23	65,592	7%	25,879	$37,685	$21,326	1.33	15.1%	8.6%
Nebraska	14	33,814	2%	14,146	$39,466	$21,729	3.07	10.2%	2.8%
Nevada	7	90,217	3%	35,394	$48,590	$24,052	1.27	12.9%	12.2%
New Mexico	3	13,509	1%	5,457	$34,352	$19,664	1.51	15.2%	25.3%
North Carolina	11	598,082	6%	233,758	$36,576	$20,076	114.2	17.9%	18.9%
North Dakota	9	30,438	5%	12,084	$43,995	$24,562	2.52	16.5%	17.6%
Northern Mariana Islands	4	69,221	100%	14,055	NA	NA	396.22	NA	NA
Ohio	17	764,883	7%	289,077	$42,327	$20,195	95.97	14.8%	5.6%
Oklahoma	30	426,905	12%	164,421	$38,855	$20,139	16.68	16.7%	19.2%

Appendix C

Unserved Population Form 477 County Data*

States	Counties	Unserved Pop.	Percent of State Pop.	Unserved HHs	Average of Median HH Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop./Sq. Mile)	Average Poverty Rate	Average Proportion Non-White Pop.
Oregon	3	16,019	0%	6,743	$35,041	$21,396	1.09	15.7%	5.5%
Puerto Rico	75	3,875,510	98%	1,464,775	$16,761	$8,356	1,302.93	49.9%	22.8%
South Carolina	10	491,046	11%	187,117	$32,939	$17,693	75.1	22.6%	49.1%
South Dakota	18	69,215	9%	25,579	$38,081	$19,762	4.46	19.8%	23.3%
Tennessee	8	132,951	2%	50,324	$30,565	$15,706	47.24	23.8%	19.1%
Texas	81	1,086,501	4%	398,465	$39,200	$20,496	15.46	18.3%	17.8%
Utah	8	73,180	3%	24,605	$42,271	$19,315	3.31	13.3%	12.2%
Virgin Islands	3	108,599	100%	40,593	NA	NA	831.57	NA	NA
Virginia	2	9,927	0%	4,000	$48,429	$24,382	16.27	9.3%	25.1%
Washington	2	21,372	0%	8,376	$36,480	$18,893	6.63	19.1%	15.4%
West Virginia	5	52,948	3%	21,394	$31,241	$17,637	21.99	19.0%	2.6%
Wisconsin	2	34,707	1%	12,883	$36,459	$17,293	25.42	22.1%	44.3%
All Unserved Areas	618	12,206,505	4%	4,611,738	$34,722	$18,128	316.01	22.5%	21.6%

* Form 477 Data as of June 2010, 3 Mbps/768 kbps Fixed Broadband Data. *See infra* App. F (Technical Appendix) for a description of demographic variables and data sources.

Appendix D

Unserved Population Form 477 Census Tract Data*

State	Census Tracts	Unserved Pop	Percent of State Pop.	Unserved HHs	Average of Median Household Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop./Sq. Mile)	Average Poverty Rate	Average Proportion Non-White pop.
Alabama	164	568,940	12%	218,038	$32,911	$17,329	550.2	21.9%	42.2%
Alaska	55	159,900	23%	52,395	$55,606	$25,202	67.3	13.6%	50.5%
American Samoa	21	57,291	99%	25,404	NA	NA	4,213.70	NA	NA
Arizona	76	324,181	5%	101,744	$32,883	$14,130	213.4	29.9%	57.0%
Arkansas	176	660,401	23%	253,009	$33,491	$17,359	268.2	22.8%	31.4%
California	247	1,193,204	3%	376,296	$48,623	$22,421	2,371.10	17.7%	25.5%
Colorado	43	94,310	2%	33,898	$39,721	$21,424	353.3	16.1%	13.7%
Connecticut	21	101,472	3%	38,003	$58,391	$25,130	1,946.80	10.2%	17.3%
District of Columbia	2	6,040	1%	44	$119,722	$13,121	15,654.90	0.0%	22.4%
Florida	26	117,059	1%	39,859	$41,359	$18,301	2,173.70	21.2%	20.3%
Georgia	178	692,962	7%	260,380	$36,034	$18,039	63.6	19.9%	32.0%
Guam	5	13,285	8%	3,095	NA	NA	765.4	NA	NA
Idaho	35	114,801	1%	42,600	$40,754	$19,878	17.7	14.9%	10.8%
Illinois	160	499,997	4%	192,528	$42,540	$21,185	975.9	14.5%	8.3%
Indiana	92	331,156	5%	120,644	$39,302	$18,269	2,190.50	21.9%	17.7%
Iowa	103	286,823	10%	112,279	$47,661	$23,361	58.3	9.1%	2.4%
Kansas	96	266,354	10%	106,962	$42,858	$22,385	138.5	11.2%	4.4%
Kentucky	186	694,075	16%	275,876	$34,467	$18,143	234.5	22.0%	6.1%
Louisiana	153	522,720	12%	189,722	$34,050	$17,468	564.3	24.0%	38.8%
Maryland	13	39,371	1%	14,878	$35,776	$18,215	3,280.30	18.4%	23.3%
Massachusetts	1	1,512	0%	16	NA	$3,757	39,921.10	NA	11.1%
Michigan	114	369,202	4%	136,528	$41,356	$19,617	965.6	18.3%	11.6%
Minnesota	102	316,939	6%	123,176	$47,604	$23,590	82.4	10.7%	5.7%
Mississippi	223	1,016,341	35%	373,047	$30,287	$16,200	326.2	26.0%	45.4%
Missouri	176	664,764	11%	258,570	$37,873	$18,613	199.7	18.6%	7.5%
Montana	85	142,830	15%	53,729	$41,399	$20,476	36.5	18.2%	26.5%
Nebraska	37	72,369	4%	29,525	$42,405	$21,394	19.4	10.2%	5.7%
Nevada	33	136,799	5%	52,929	$46,195	$24,586	88.8	16.6%	17.8%

Appendix D

Unserved Population Form 477 Census Tract Data*

State	Census Tracts	Unserved Pop	Percent of State Pop.	Unserved HHs	Average of Median Household Income ($2009)	Average Per Capita Income ($2009)	Average Pop. Density (Pop./Sq. Mile)	Average Poverty Rate	Average Proportion Non-White pop.
New Hampshire	6	20,073	1%	7,808	$65,377	$29,763	61.5	4.1%	3.0%
New Jersey	2	1,733	0%	9	$79,167	$46,006	53,647.60	0.0%	35.7%
New Mexico	49	161,718	8%	50,675	$35,247	$16,179	57.5	25.1%	59.3%
New York	57	122,458	1%	43,465	$50,030	$25,695	5,823.00	17.7%	24.2%
North Carolina	545	2,977,849	32%	1,180,353	$41,635	$22,542	2,036.60	20.3%	39.8%
North Dakota	38	52,580	8%	21,162	$45,486	$25,340	37.4	14.8%	17.6%
Northern Mariana Islands	21	69,221	100%	14,055	NA	NA	4,472.60	NA	NA
Ohio	459	1,866,435	16%	704,152	$40,657	$19,788	1,859.30	18.9%	14.6%
Oklahoma	226	796,174	22%	301,362	$38,703	$19,496	119.4	17.3%	22.6%
Oregon	32	88,275	2%	33,620	$44,555	$21,681	11.1	15.4%	8.9%
Pennsylvania	116	358,444	3%	145,626	$34,817	$18,796	4,572.30	19.6%	7.7%
Puerto Rico	633	2,772,125	70%	1,047,836	$20,979	$10,624	867.5	43.8%	26.6%
Rhode Island	1	839	0%	401	$81,477	$43,067	86.2	7.5%	1.1%
South Carolina	265	1,292,770	29%	491,804	$36,738	$19,415	1,175.00	21.3%	46.6%
South Dakota	64	109,290	14%	40,295	$40,489	$19,184	16.3	20.4%	31.3%
Tennessee	114	408,266	7%	156,896	$35,329	$17,869	108	19.7%	13.1%
Texas	564	2,361,756	10%	822,263	$38,246	$19,059	954.1	20.5%	21.1%
Utah	28	112,353	4%	35,632	$40,653	$18,035	1,633.50	17.5%	15.1%
Virgin Islands	32	108,599	100%	40,593	NA	NA	3,152.60	NA	NA
Virginia	33	115,382	7%	44,991	$40,378	$20,464	43.8	14.4%	29.9%
Washington	39	136,065	2%	47,892	$43,887	$20,508	216	16.4%	23.4%
West Virginia	55	182,158	10%	73,472	$31,642	$17,309	199.7	20.7%	4.8%
Wisconsin	79	290,996	5%	113,447	$45,568	$22,782	56.2	12.1%	5.0%
Wyoming	15	54,980	11%	19,683	$57,847	$26,248	593.5	8.7%	12.5%
All Unserved Areas	6,096	23,925,637	8%	8,922,666	$37,507	$18,873	1,060.60	21.9%	24.6%

* Form 477 Data as of June 2010, 3 Mbps/768 kbps Fixed Broadband Data. *See infra* App. F (Technical Appendix) for a description of demographic variables and data sources.

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Alaska	Aleutians East	2,770	$ 21,788	0.396
Alaska	Aleutians West	5,235	$ 34,966	1.191
Alaska	Bethel	16,786	$ 18,169	0.413
Alaska	Bristol Bay	1,018	$ 28,662	2.016
Alaska	Dillingham	4,991	$ 23,324	0.267
Alaska	Haines	2,314	$ 28,843	0.987
Alaska	Kenai Peninsula	53,613	$ 26,940	3.348
Alaska	Kodiak Island	12,963	$ 26,862	1.976
Alaska	Lake and Peninsula	1,576	$ 16,450	0.066
Alaska	Nome	9,194	$ 20,452	0.400
Alaska	North Slope	6,276	$ 24,125	0.071
Alaska	Northwest Arctic	7,641	$ 20,001	0.213
Alaska	Prince of Wales-Outer Ketchikan	5,826	NA	0.786
Alaska	Skagway-Hoonah-Angoon	3,095	NA	0.392
Alaska	Southeast Fairbanks	8,881	$ 24,209	0.358
Alaska	Valdez-Cordova	9,840	$ 27,708	0.287
Alaska	Wade Hampton	7,555	$ 11,382	0.439
Alaska	Wrangell-Petersburg	5,857	NA	1.004
Alaska	Yakutat City and	699	$ 28,608	0.091
Alaska	Yukon-Koyukuk	5,330	$ 18,516	0.037
Alabama	Bibb	21,285	$ 18,953	34.164
Alabama	Conecuh	13,260	$ 16,960	15.585
Alabama	Crenshaw	13,624	$ 19,900	22.350
Alabama	Fayette	17,347	$ 18,228	27.638
Alabama	Greene	8,658	$ 14,564	13.405
Alabama	Marengo	21,291	$ 17,403	21.791
Alabama	Monroe	22,523	$ 17,951	21.955
Alabama	Perry	10,565	$ 14,266	14.684
Alabama	Sumter	12,914	$ 13,667	14.271

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Alabama	Wilcox	12,833	$ 12,258	14.440
Arkansas	Bradley	11,589	$ 15,654	17.812
Arkansas	Calhoun	5,479	$ 16,869	8.721
Arkansas	Cross	18,453	$ 18,060	29.964
Arkansas	Drew	17,824	$ 18,789	21.522
Arkansas	Hempstead	22,977	$ 17,207	31.528
Arkansas	Hot Spring	32,339	$ 17,922	52.589
Arkansas	Jefferson	77,316	$ 18,735	87.381
Arkansas	Lafayette	7,371	$ 17,593	14.000
Arkansas	Lee	10,743	$ 14,685	17.855
Arkansas	Lincoln	13,504	$ 16,222	24.063
Arkansas	Little River	12,670	$ 19,036	23.828
Arkansas	Mississippi	45,642	$ 18,053	50.812
Arkansas	Monroe	8,577	$ 16,445	14.138
Arkansas	Nevada	9,277	$ 21,992	14.964
Arkansas	Newton	8,155	$ 15,528	9.909
Arkansas	Phillips	21,929	$ 14,187	31.659
Arkansas	Poinsett	24,239	$ 16,436	31.989
Arkansas	Scott	11,911	$ 16,668	13.325
Arkansas	St. Francis	26,445	$ 13,273	41.722
Arkansas	Van Buren	16,743	$ 17,300	23.532
Arkansas	Woodruff	7,438	$ 19,790	12.681
American Samoa#	Eastern District	15,988	NA	617.800
American Samoa#	Manu'a District	19,866	NA	907.622
American Samoa#	Rose Island	5,614	NA	68,034.603
American Samoa#	Swains Island	5,771	NA	9,914.165
American Samoa#	Western District	10,052	NA	348.160
Arizona	Apache	75,236	$ 11,614	6.715
California	Alpine	1,230	$ 30,436	1.665

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
California	Modoc	9,874	$ 20,193	2.503
California	Trinity	15,617	$ 21,963	4.913
California	Tuolumne	56,705	$ 26,775	25.367
Colorado	Conejos	8,566	$ 16,668	6.655
Colorado	Costilla	3,206	$ 16,148	2.613
Colorado	Crowley	5,400	$ 18,299	6.844
Colorado	Kiowa	1,480	$ 23,502	0.836
Colorado	Mineral	985	$ 46,720	1.125
Colorado	Phillips	4,713	$ 21,550	6.854
Colorado	Saguache	7,078	$ 19,462	2.234
Florida	Calhoun	14,051	$ 14,506	24.768
Florida	Liberty	8,245	$ 16,157	9.864
Georgia	Appling	17,641	$ 17,647	34.692
Georgia	Bacon	10,831	$ 17,025	38.010
Georgia	Baker	3,914	$ 14,817	11.404
Georgia	Echols	4,575	$ 13,663	11.321
Georgia	Glascock	2,875	$ 15,772	19.946
Georgia	Habersham	43,967	$ 19,629	158.058
Georgia	Hancock	9,175	$ 11,250	19.386
Georgia	Jasper	14,739	$ 19,933	39.790
Georgia	Jefferson	16,273	$ 15,087	30.841
Georgia	Jenkins	8,627	$ 16,980	24.662
Georgia	Johnson	9,424	$ 14,716	30.973
Georgia	Lincoln	7,879	$ 18,938	37.325
Georgia	Lumpkin	27,495	$ 20,094	96.654
Georgia	Macon	13,395	$ 13,538	33.215
Georgia	Marion	7,401	$ 16,645	20.166
Georgia	Miller	6,175	$ 20,322	21.816
Georgia	Monroe	25,820	$ 25,882	65.263

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Georgia	Montgomery	9,268	$ 16,977	37.778
Georgia	Oglethorpe	14,614	$ 18,983	33.130
Georgia	Pierce	18,737	$ 17,781	54.587
Georgia	Rabun	16,437	$ 23,543	44.299
Georgia	Screven	14,784	$ 17,049	22.799
Georgia	Stephens	24,724	$ 17,576	137.925
Georgia	Stewart	4,398	$ 12,681	9.588
Georgia	Taliaferro	1,834	$ 13,248	9.386
Georgia	Tattnall	24,410	$ 15,900	50.466
Georgia	Taylor	8,613	$ 14,918	22.819
Georgia	Toombs	28,788	$ 17,183	78.516
Georgia	Towns	11,001	$ 23,635	66.007
Georgia	Twiggs	9,592	$ 16,920	26.623
Georgia	Union	22,000	$ 23,750	68.207
Georgia	Warren	5,565	$ 15,816	19.491
Georgia	Washington	20,593	$ 15,322	30.269
Georgia	Webster	2,227	$ 14,969	10.628
Georgia	Wheeler	7,050	$ 11,395	23.680
Georgia	White	26,139	$ 22,471	108.201
Georgia	Wilcox	8,565	$ 12,777	22.522
Georgia	Wilkes	10,133	$ 17,219	21.497
Georgia	Wilkinson	9,513	$ 17,486	21.303
Idaho	Benewah	9,757	$ 18,158	12.572
Idaho	Boundary	11,456	$ 17,853	9.029
Idaho	Butte	2,709	$ 20,949	1.213
Idaho	Camas	1,133	$ 20,389	1.054
Idaho	Clark	940	$ 14,416	0.533
Idaho	Clearwater	8,152	$ 21,703	3.312
Idaho	Custer	4,264	$ 22,681	0.866

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Idaho	Fremont	12,269	$ 18,543	6.572
Idaho	Oneida	4,108	$ 18,316	3.422
Idaho	Shoshone	13,452	$ 18,668	5.107
Illinois	Alexander	7,846	$ 16,149	33.192
Illinois	Bond	18,026	$ 22,225	47.412
Illinois	Calhoun	5,314	$ 21,849	20.936
Illinois	Cass	13,747	$ 19,440	36.571
Illinois	Edwards	6,367	$ 22,174	28.635
Illinois	Fayette	22,125	$ 20,842	30.880
Illinois	Greene	13,693	$ 21,883	25.213
Illinois	Hamilton	8,369	$ 20,669	19.232
Illinois	Jasper	9,637	$ 20,765	19.492
Illinois	Johnson	13,761	$ 17,806	39.930
Illinois	Macoupin	48,165	$ 22,993	55.774
Illinois	Menard	12,306	$ 26,846	39.160
Illinois	Montgomery	30,179	$ 21,226	42.880
Illinois	Pike	16,551	$ 20,590	19.934
Illinois	Richland	15,397	$ 22,842	42.753
Illinois	Scott	5,238	$ 27,800	20.876
Illinois	Union	18,283	$ 19,230	43.933
Illinois	Wabash	12,180	$ 23,497	54.504
Illinois	Wayne	16,043	$ 21,263	22.472
Illinois	White	14,818	$ 23,037	29.943
Indiana	Crawford	10,832	$ 18,157	35.436
Indiana	Parke	16,417	$ 18,917	36.911
Kansas	Bourbon	14,627	$ 18,663	22.959
Kansas	Chase	3,099	$ 20,828	3.994
Kansas	Chautauqua	3,669	$ 22,366	5.718
Kansas	Cheyenne	2,833	$ 19,824	2.778

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Kansas	Clark	2,017	$ 25,120	2.069
Kansas	Decatur	2,930	$ 21,232	3.279
Kansas	Dickinson	19,460	$ 21,707	22.950
Kansas	Elk	3,024	$ 21,076	4.672
Kansas	Ellis	26,453	$ 23,231	29.393
Kansas	Ellsworth	6,320	$ 23,581	8.828
Kansas	Graham	2,555	$ 25,096	2.844
Kansas	Gray	5,593	$ 20,741	6.437
Kansas	Harper	5,605	$ 21,992	6.994
Kansas	Hodgeman	1,952	$ 22,705	2.270
Kansas	Jewell	3,292	$ 22,651	3.621
Kansas	Lincoln	3,287	$ 22,136	4.572
Kansas	Marshall	10,167	$ 21,720	11.265
Kansas	Meade	4,384	$ 22,237	4.481
Kansas	Mitchell	5,934	$ 23,960	8.479
Kansas	Morris	6,111	$ 22,506	8.763
Kansas	Ness	2,764	$ 26,231	2.572
Kansas	Osborne	3,817	$ 21,668	4.277
Kansas	Rawlins	2,463	$ 22,617	2.303
Kansas	Republic	4,767	$ 23,494	6.654
Kansas	Rush	3,128	$ 22,283	4.355
Kansas	Sheridan	2,584	$ 23,023	2.883
Kansas	Smith	3,902	$ 22,984	4.358
Kansas	Trego	2,876	$ 21,353	3.238
Kentucky	Bell	28,960	$ 14,111	80.273
Kentucky	Breckinridge	19,115	$ 18,380	33.394
Kentucky	Butler	13,349	$ 16,965	31.183
Kentucky	Franklin	47,535	$ 26,590	225.862
Kentucky	Hopkins	46,806	$ 20,965	85.016

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Kentucky	Jackson	13,833	$ 14,784	39.942
Kentucky	Lee	7,328	$ 11,448	34.919
Kentucky	Logan	27,716	$ 19,379	49.877
Kentucky	Lyon	8,380	$ 18,970	38.850
Kentucky	Magoffin	13,505	$ 12,449	43.644
Kentucky	McCreary	17,537	$ 12,079	41.003
Kentucky	McLean	9,608	$ 21,871	37.783
Kentucky	Nelson	44,479	$ 21,877	105.244
Kentucky	Nicholas	6,820	$ 17,198	34.688
Kentucky	Ohio	24,032	$ 17,987	40.472
Kentucky	Owsley	4,582	$ 11,706	23.131
Kentucky	Powell	14,117	$ 15,830	78.369
Kentucky	Russell	17,578	$ 17,066	69.333
Kentucky	Washington	11,562	$ 19,889	38.464
Kentucky	Webster	14,025	$ 19,068	41.897
Kentucky	Whitley	38,402	$ 14,938	87.247
Louisiana	Avoyelles Parish	42,690	$ 16,293	51.283
Louisiana	Bienville Parish	14,574	$ 18,700	17.978
Louisiana	Caldwell Parish	10,175	$ 18,935	19.219
Louisiana	Cameron Parish	5,383	$ 25,681	4.100
Louisiana	Catahoula Parish	10,208	$ 18,465	14.507
Louisiana	Claiborne Parish	15,400	$ 17,236	20.407
Louisiana	Concordia Parish	18,726	$ 16,090	26.909
Louisiana	East Carroll Parish	8,149	$ 15,720	19.336
Louisiana	Franklin Parish	19,518	$ 17,648	31.298
Louisiana	Jackson Parish	14,680	$ 18,971	25.766
Louisiana	Madison Parish	11,393	$ 14,124	18.255
Louisiana	Morehouse Parish	28,023	$ 16,047	35.282
Louisiana	Red River Parish	8,946	$ 17,722	22.980

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Louisiana	Richland Parish	19,965	$ 17,891	35.750
Louisiana	Sabine Parish	24,005	$ 20,292	27.743
Louisiana	Tensas Parish	5,872	$ 15,991	9.746
Louisiana	Union Parish	22,304	$ 20,386	25.415
Louisiana	Washington Parish	44,423	$ 17,619	66.346
Louisiana	West Carroll Parish	11,029	$ 16,086	30.687
Louisiana	West Feliciana Parish	15,526	$ 19,179	38.241
Louisiana	Winn Parish	14,910	$ 15,589	15.687
Michigan	Lake	11,566	$ 15,971	20.383
Michigan	Luce	6,420	$ 16,462	7.109
Michigan	Montmorency	10,418	$ 18,609	19.024
Michigan	Oscoda	8,732	$ 19,844	15.455
Michigan	Sanilac	44,193	$ 19,402	45.853
Minnesota	Mahnomen	5,171	$ 18,787	9.298
Missouri	Bollinger	12,096	$ 17,625	19.486
Missouri	Caldwell	9,410	$ 18,918	21.917
Missouri	Cooper	17,759	$ 18,556	31.430
Missouri	Douglas	13,850	$ 15,283	17.004
Missouri	Dunklin	31,691	$ 16,378	58.083
Missouri	Gasconade	15,568	$ 20,788	29.900
Missouri	Grundy	10,184	$ 18,432	23.368
Missouri	Harrison	9,038	$ 18,757	12.464
Missouri	Howard	9,919	$ 19,625	21.298
Missouri	Knox	3,870	$ 18,434	7.653
Missouri	McDonald	24,060	$ 17,056	44.596
Missouri	Mercer	3,525	$ 20,032	7.761
Missouri	Oregon	10,550	$ 14,717	13.331
Missouri	Ozark	9,290	$ 16,438	12.518
Missouri	Pemiscot	18,541	$ 15,866	37.603

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Missouri	Putnam	5,213	$ 20,422	10.066
Missouri	Reynolds	6,537	$ 17,506	8.058
Missouri	Schuyler	4,284	$ 18,912	13.915
Missouri	Shannon	8,716	$ 14,548	8.683
Missouri	Shelby	6,498	$ 17,695	12.972
Missouri	Stoddard	29,491	$ 19,080	35.655
Missouri	Vernon	20,525	$ 17,602	24.612
Missouri	Washington	24,418	$ 16,081	32.146
Northern Mariana Islands	Northern Islands Municipality	6	NA	0.100
Northern Mariana Islands	Rota Municipality	3,283	NA	99.584
Northern Mariana Islands	Saipan Municipality	62,392	NA	1,400.380
Northern Mariana Islands	Tinian Municipality	3,540	NA	84.815
Mississippi	Attala	19,475	$ 17,764	26.492
Mississippi	Benton	8,052	$ 14,157	19.794
Mississippi	Carroll	10,043	$ 16,644	15.999
Mississippi	Choctaw	9,062	$ 16,921	21.623
Mississippi	Claiborne	11,408	$ 12,179	23.436
Mississippi	Clarke	17,543	$ 17,158	25.378
Mississippi	Covington	20,795	$ 16,675	50.255
Mississippi	George	23,410	$ 18,505	48.945
Mississippi	Hancock	32,145	$ 22,168	67.407
Mississippi	Holmes	20,151	$ 11,914	26.655
Mississippi	Humphreys	10,168	$ 13,490	24.320
Mississippi	Issaquena	1,557	$ 11,275	3.769
Mississippi	Itawamba	23,439	$ 19,283	44.033
Mississippi	Jasper	18,082	$ 17,015	26.748
Mississippi	Jefferson	8,649	$ 13,388	16.652
Mississippi	Kemper	9,427	$ 14,805	12.305
Mississippi	Lawrence	13,273	$ 18,606	30.822

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Mississippi	Leake	23,123	$ 14,748	39.682
Mississippi	Marion	26,593	$ 16,502	49.034
Mississippi	Monroe	36,854	$ 18,276	48.227
Mississippi	Montgomery	11,643	$ 16,707	28.618
Mississippi	Neshoba	31,399	$ 17,371	55.086
Mississippi	Newton	22,735	$ 16,484	39.332
Mississippi	Noxubee	11,737	$ 13,123	16.893
Mississippi	Perry	11,936	$ 16,863	18.443
Mississippi	Pontotoc	30,217	$ 17,482	60.756
Mississippi	Prentiss	25,514	$ 16,678	61.490
Mississippi	Scott	29,151	$ 15,625	47.860
Mississippi	Sharkey	5,551	$ 15,503	12.978
Mississippi	Simpson	28,247	$ 18,112	47.979
Mississippi	Smith	16,119	$ 17,611	25.349
Mississippi	Stone	17,237	$ 19,745	38.703
Mississippi	Tallahatchie	13,068	$ 12,664	20.294
Mississippi	Tishomingo	19,185	$ 16,892	45.234
Mississippi	Union	27,691	$ 17,765	66.656
Mississippi	Walthall	15,968	$ 15,701	39.542
Mississippi	Warren	49,745	$ 21,228	84.801
Mississippi	Washington	55,577	$ 16,018	76.765
Mississippi	Wayne	20,840	$ 16,449	25.718
Mississippi	Webster	9,880	$ 16,294	23.385
Mississippi	Winston	19,340	$ 16,669	31.863
Mississippi	Yalobusha	13,235	$ 15,918	28.333
Mississippi	Yazoo	27,508	$ 14,328	29.917
Montana	Blaine	6,501	$ 16,858	1.538
Montana	Carter	1,307	$ 22,737	0.391
Montana	Daniels	1,612	$ 24,202	1.130

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Montana	Fallon	2,755	$ 27,391	1.700
Montana	Garfield	1,276	$ 21,151	0.273
Montana	Golden Valley	1,279	$ 18,321	1.088
Montana	Judith Basin	2,084	$ 25,442	1.115
Montana	Liberty	1,663	$ 18,213	1.163
Montana	McCone	1,738	$ 21,632	0.658
Montana	Meagher	1,946	$ 18,866	0.814
Montana	Mineral	4,320	$ 18,787	3.542
Montana	Musselshell	4,764	$ 19,164	2.551
Montana	Petroleum	456	$ 22,168	0.276
Montana	Phillips	3,947	$ 22,538	0.768
Montana	Powder River	1,718	$ 20,064	0.521
Montana	Prairie	948	$ 24,813	0.546
Montana	Roosevelt	10,337	$ 16,320	4.388
Montana	Sheridan	3,234	$ 25,050	1.929
Montana	Sweet Grass	3,859	$ 20,672	2.080
Montana	Treasure	626	$ 20,446	0.640
Montana	Valley	6,585	$ 23,246	1.338
Montana	Wheatland	1,773	$ 21,912	1.246
Montana	Wibaux	864	$ 20,506	0.972
North Carolina	Cherokee	27,728	$ 19,953	60.915
North Carolina	Clay	10,653	$ 22,042	49.618
North Carolina	Cleveland	97,205	$ 18,978	209.210
North Carolina	Davie	42,433	$ 25,929	160.013
North Carolina	Mitchell	15,172	$ 18,522	68.519
North Carolina	Richmond	45,846	$ 17,635	96.726
North Carolina	Robeson	134,600	$ 15,128	141.858
North Carolina	Rockingham	92,889	$ 20,284	163.989
North Carolina	Rutherford	63,496	$ 19,030	112.558

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
North Carolina	Transylvania	29,885	$ 23,740	78.979
North Carolina	Yadkin	38,175	$ 19,597	113.767
North Dakota	Billings	794	$ 31,548	0.690
North Dakota	Burke	1,827	$ 29,507	1.656
North Dakota	Divide	2,015	$ 27,954	1.600
North Dakota	Grant	2,463	$ 25,104	1.484
North Dakota	McKenzie	5,871	$ 26,100	2.141
North Dakota	Mountrail	6,300	$ 22,928	3.454
North Dakota	Ransom	5,458	$ 22,344	6.326
North Dakota	Sheridan	1,338	$ 24,287	1.377
North Dakota	Sioux	4,372	$ 11,288	3.996
Nebraska	Boone	5,414	$ 22,360	7.884
Nebraska	Chase	3,637	$ 21,340	4.066
Nebraska	Dundy	2,003	$ 25,119	2.178
Nebraska	Garfield	1,714	$ 19,512	3.007
Nebraska	Greeley	2,299	$ 19,017	4.034
Nebraska	Hayes	968	$ 21,318	1.357
Nebraska	Hitchcock	2,772	$ 20,218	3.904
Nebraska	Keya Paha	831	$ 17,771	1.075
Nebraska	Knox	8,632	$ 19,653	7.790
Nebraska	Logan	789	$ 21,656	1.383
Nebraska	Loup	564	$ 18,787	0.990
Nebraska	McPherson	462	$ 21,747	0.538
Nebraska	Perkins	2,886	$ 22,997	3.268
Nebraska	Wheeler	843	$ 32,717	1.466
New Mexico	Catron	3,516	$ 20,978	0.508
New Mexico	Hidalgo	5,069	$ 17,581	1.471
New Mexico	Mora	4,924	$ 20,432	2.550
Nevada	Esmeralda	725	$ 30,763	0.202

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Nevada	Eureka	1,516	$ 29,080	0.363
Nevada	Humboldt	18,761	$ 24,711	1.945
Nevada	Lander	5,806	$ 23,233	1.057
Nevada	Mineral	5,110	$ 23,243	1.360
Nevada	Nye	51,813	$ 21,283	2.855
Nevada	Pershing	6,486	$ 16,052	1.074
Ohio	Allen	104,431	$ 21,781	258.220
Ohio	Crawford	43,620	$ 21,100	108.477
Ohio	Fayette	28,649	$ 21,031	70.463
Ohio	Hocking	29,060	$ 19,257	68.741
Ohio	Madison	42,488	$ 24,076	91.286
Ohio	Monroe	14,176	$ 18,248	31.119
Ohio	Muskingum	86,963	$ 20,469	130.845
Ohio	Noble	14,325	$ 18,703	35.902
Ohio	Perry	35,724	$ 18,913	87.179
Ohio	Pickaway	56,526	$ 20,906	112.622
Ohio	Pike	28,279	$ 17,370	64.054
Ohio	Putnam	34,683	$ 23,393	71.679
Ohio	Sandusky	61,246	$ 22,143	149.682
Ohio	Scioto	75,773	$ 17,547	123.758
Ohio	Seneca	56,567	$ 20,954	102.739
Ohio	Vinton	13,727	$ 16,056	33.151
Ohio	Williams	38,646	$ 21,369	91.635
Oklahoma	Alfalfa	5,467	$ 20,512	6.308
Oklahoma	Beaver	5,151	$ 24,923	2.839
Oklahoma	Blaine	13,999	$ 17,887	15.078
Oklahoma	Caddo	29,690	$ 16,917	23.226
Oklahoma	Cherokee	45,470	$ 15,850	60.543
Oklahoma	Choctaw	15,305	$ 16,486	19.776

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Oklahoma	Cimarron	2,678	$ 18,364	1.459
Oklahoma	Cotton	6,474	$ 20,410	10.169
Oklahoma	Dewey	4,329	$ 21,388	4.328
Oklahoma	Ellis	3,849	$ 22,510	3.131
Oklahoma	Grady	53,754	$ 21,359	48.825
Oklahoma	Grant	4,275	$ 23,406	4.273
Oklahoma	Harmon	3,105	$ 16,207	5.773
Oklahoma	Harper	3,374	$ 24,765	3.247
Oklahoma	Haskell	12,281	$ 18,000	21.283
Oklahoma	Hughes	13,895	$ 17,346	17.224
Oklahoma	Jefferson	6,229	$ 17,619	8.210
Oklahoma	Kingfisher	14,569	$ 23,320	16.134
Oklahoma	Latimer	10,578	$ 19,586	14.647
Oklahoma	Love	9,332	$ 20,381	18.107
Oklahoma	Major	7,238	$ 23,560	7.565
Oklahoma	Mayes	40,435	$ 19,199	61.626
Oklahoma	Noble	10,950	$ 19,984	14.961
Oklahoma	Pawnee	16,559	$ 19,639	29.079
Oklahoma	Pushmataha	11,441	$ 15,239	8.188
Oklahoma	Roger Mills	3,453	$ 27,915	3.024
Oklahoma	Seminole	24,666	$ 16,781	38.997
Oklahoma	Texas	20,293	$ 18,870	9.961
Oklahoma	Woods	8,181	$ 22,664	6.359
Oklahoma	Woodward	19,885	$ 23,095	16.007
Oregon	Grant	7,214	$ 22,082	1.593
Oregon	Lake	7,494	$ 19,817	0.921
Oregon	Wheeler	1,311	$ 22,289	0.764
Puerto Rico#	Adjuntas Municipio	50,024	$ 6,022	750.069
Puerto Rico#	Aguada Municipio	33,926	$ 6,681	1,096.984

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Puerto Rico#	Aguadilla Municipio	56,305	$ 7,705	1,538.780
Puerto Rico#	Aguas Buenas Municipio	22,750	$ 7,552	744.298
Puerto Rico#	Aibonito Municipio	23,333	$ 8,210	745.734
Puerto Rico#	Anasco Municipio	33,472	$ 7,321	852.273
Puerto Rico#	Arecibo Municipio	127,614	$ 8,601	1,012.899
Puerto Rico#	Arroyo Municipio	26,567	$ 7,574	1,766.279
Puerto Rico#	Barceloneta Municipio	23,025	$ 8,377	1,234.148
Puerto Rico#	Barranquitas Municipio	25,573	$ 6,394	747.332
Puerto Rico#	Bayamon Municipio	33,050	$ 12,010	744.666
Puerto Rico#	Cabo Rojo Municipio	132,380	$ 9,113	1,881.655
Puerto Rico#	Camuy Municipio	46,197	$ 6,722	995.065
Puerto Rico#	Canovanas Municipio	24,502	$ 9,901	745.952
Puerto Rico#	Carolina Municipio	44,895	$ 13,513	990.449
Puerto Rico#	Catano Municipio	5,166	$ 9,946	1,070.770
Puerto Rico#	Cayey Municipio	38,660	$ 9,334	744.947
Puerto Rico#	Ceiba Municipio	118,475	$ 8,812	4,079.244
Puerto Rico#	Ciales Municipio	49,712	$ 6,201	745.898
Puerto Rico#	Cidra Municipio	27,142	$ 9,285	752.000
Puerto Rico#	Coamo Municipio	58,176	$ 7,365	745.425
Puerto Rico#	Comerio Municipio	21,245	$ 6,440	748.302
Puerto Rico#	Corozal Municipio	31,740	$ 6,768	745.266
Puerto Rico#	Culebra Municipio	125,961	$ 10,096	10,841.562
Puerto Rico#	Dorado Municipio	40,035	$ 14,176	1,716.137
Puerto Rico#	Fajardo Municipio	78,505	$ 9,217	2,628.123
Puerto Rico#	Florida Municipio	11,329	$ 6,859	745.600
Puerto Rico#	Guanica Municipio	59,235	$ 6,458	1,596.264
Puerto Rico#	Guayama Municipio	79,503	$ 8,428	1,221.814
Puerto Rico#	Guayanilla Municipio	47,892	$ 6,901	1,130.548
Puerto Rico#	Guaynabo Municipio	20,281	$ 19,783	747.614

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Puerto Rico#	Gurabo Municipio	21,060	$ 11,971	756.437
Puerto Rico#	Hatillo Municipio	43,806	$ 7,695	1,048.430
Puerto Rico#	Humacao Municipio	52,980	$ 9,662	1,183.382
Puerto Rico#	Isabela Municipio	68,480	$ 7,246	1,236.899
Puerto Rico#	Jayuya Municipio	33,195	$ 6,756	744.473
Puerto Rico#	Juana Diaz Municipio	79,835	$ 7,516	1,324.167
Puerto Rico#	Juncos Municipio	19,787	$ 8,414	744.267
Puerto Rico#	Lajas Municipio	75,388	$ 6,784	1,254.324
Puerto Rico#	Lares Municipio	45,973	$ 6,731	747.976
Puerto Rico#	Las Marias Municipio	34,667	$ 6,251	748.135
Puerto Rico#	Las Piedras Municipio	25,237	$ 8,646	744.809
Puerto Rico#	Loiza Municipio	48,980	$ 7,575	2,519.075
Puerto Rico#	Luquillo Municipio	34,685	$ 10,869	1,349.729
Puerto Rico#	Manati Municipio	52,639	$ 8,544	1,165.510
Puerto Rico#	Maricao Municipio	27,316	$ 5,558	745.724
Puerto Rico#	Maunabo Municipio	28,556	$ 7,059	1,357.413
Puerto Rico#	Mayaguez Municipio	204,255	$ 9,015	2,631.037
Puerto Rico#	Moca Municipio	37,542	$ 6,158	746.546
Puerto Rico#	Morovis Municipio	28,994	$ 5,574	745.865
Puerto Rico#	Naguabo Municipio	53,872	$ 7,683	1,042.036
Puerto Rico#	Naranjito Municipio	20,682	$ 6,316	761.682
Puerto Rico#	Orocovis Municipio	47,525	$ 5,835	748.537
Puerto Rico#	Patillas Municipio	56,142	$ 6,667	1,202.287
Puerto Rico#	Penuelas Municipio	50,598	$ 6,349	1,140.746
Puerto Rico#	Ponce Municipio	144,144	$ 9,291	1,256.473
Puerto Rico#	Quebradillas Municipio	25,611	$ 6,086	1,130.700
Puerto Rico#	Rincon Municipio	40,577	$ 8,315	2,841.282
Puerto Rico#	Rio Grande Municipio	66,722	$ 9,589	1,098.725
Puerto Rico#	Sabana Grande Municipio	26,718	$ 7,671	744.519

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Puerto Rico#	Salinas Municipio	85,048	$ 6,828	1,228.791
Puerto Rico#	San German Municipio	40,695	$ 7,784	746.571
Puerto Rico#	San Juan Municipio	56,754	$ 15,597	1,186.931
Puerto Rico#	San Sebastian Municipio	53,064	$ 6,589	752.963
Puerto Rico#	Santa Isabel Municipio	57,367	$ 8,435	1,680.399
Puerto Rico#	Toa Alta Municipio	20,450	$ 10,743	747.261
Puerto Rico#	Toa Baja Municipio	31,141	$ 10,756	1,344.500
Puerto Rico#	Trujillo Alto Municipio	15,856	$ 14,074	764.244
Puerto Rico#	Utuado Municipio	85,770	$ 6,469	756.025
Puerto Rico#	Vega Alta Municipio	27,931	$ 8,699	1,006.515
Puerto Rico#	Vega Baja Municipio	50,795	$ 8,749	1,106.838
Puerto Rico#	Vieques Municipio	196,938	$ 7,564	3,874.548
Puerto Rico#	Villalba Municipio	27,601	$ 6,494	778.746
Puerto Rico#	Yabucoa Municipio	62,232	$ 7,183	1,126.306
Puerto Rico#	Yauco Municipio	51,233	$ 7,134	751.808
South Carolina	Chester	31,441	$ 17,798	54.160
South Carolina	Chesterfield	42,452	$ 17,582	53.158
South Carolina	Darlington	66,563	$ 19,794	118.620
South Carolina	Dillon	30,495	$ 14,074	75.326
South Carolina	Fairfield	23,332	$ 18,491	33.982
South Carolina	Florence	133,166	$ 21,538	166.490
South Carolina	Georgetown	61,739	$ 24,147	75.769
South Carolina	Marion	34,013	$ 15,892	69.547
South Carolina	Marlboro	30,844	$ 12,981	64.298
South Carolina	Williamsburg	37,001	$ 14,636	39.620
South Dakota	Buffalo	2,169	$ 9,820	4.609
South Dakota	Charles Mix	9,363	$ 17,155	8.531
South Dakota	Clark	3,403	$ 22,386	3.552
South Dakota	Corson	4,159	$ 12,229	1.682

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Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
South Dakota	Deuel	4,285	$ 22,243	6.872
South Dakota	Dewey	5,925	$ 15,732	2.573
South Dakota	Faulk	2,253	$ 21,613	2.253
South Dakota	Hamlin	5,653	$ 20,972	11.153
South Dakota	Hanson	3,745	$ 21,892	8.614
South Dakota	Harding	1,161	$ 25,323	0.435
South Dakota	Hyde	1,517	$ 20,482	1.762
South Dakota	Jerauld	1,987	$ 23,358	3.750
South Dakota	Marshall	4,697	$ 20,656	5.607
South Dakota	Potter	2,181	$ 23,582	2.517
South Dakota	Roberts	9,969	$ 19,263	9.052
South Dakota	Sanborn	2,496	$ 21,260	4.387
South Dakota	Sully	1,442	$ 26,241	1.432
South Dakota	Ziebach	2,810	$ 11,517	1.432
Tennessee	Cannon	13,517	$ 17,540	50.884
Tennessee	Hancock	6,711	$ 12,810	30.190
Tennessee	Haywood	19,169	$ 16,359	35.951
Tennessee	Houston	8,246	$ 16,865	41.187
Tennessee	Lake	6,881	$ 11,110	42.107
Tennessee	Lauderdale	26,429	$ 15,890	56.178
Tennessee	Marshall	30,232	$ 20,296	80.542
Tennessee	Scott	21,766	$ 14,777	40.906
Texas	Atascosa	44,488	$ 17,815	36.107
Texas	Austin	27,043	$ 25,158	41.439
Texas	Bailey	6,453	$ 16,578	7.806
Texas	Borden	658	$ 38,606	0.732
Texas	Briscoe	1,503	$ 17,389	1.670
Texas	Cherokee	48,630	$ 17,428	46.217
Texas	Childress	7,751	$ 15,422	10.912

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Texas	Clay	10,640	$ 24,725	9.692
Texas	Colorado	20,747	$ 22,135	21.545
Texas	Cottle	1,588	$ 17,088	1.762
Texas	Crane	3,875	$ 20,063	4.933
Texas	Dickens	2,473	$ 17,430	2.735
Texas	Dimmit	10,499	$ 13,077	7.889
Texas	Eastland	18,136	$ 18,299	19.585
Texas	Edwards	1,857	$ 26,845	0.876
Texas	Fisher	3,916	$ 21,143	4.346
Texas	Foard	1,478	$ 17,609	2.091
Texas	Glasscock	1,153	$ 23,093	1.280
Texas	Goliad	7,318	$ 26,392	8.574
Texas	Hardeman	4,076	$ 17,751	5.862
Texas	Hemphill	3,559	$ 30,199	3.912
Texas	Jackson	13,985	$ 23,563	16.860
Texas	Jeff Davis	2,424	$ 20,970	1.070
Texas	Jones	19,020	$ 15,847	20.430
Texas	Karnes	14,983	$ 16,388	19.969
Texas	Kenedy	420	$ 12,892	0.288
Texas	Kent	697	$ 29,389	0.772
Texas	King	258	$ 32,407	0.283
Texas	Kinney	3,329	$ 16,857	2.442
Texas	Kleberg	29,227	$ 17,941	33.557
Texas	Knox	3,520	$ 22,887	4.146
Texas	La Salle	6,000	$ 14,483	4.030
Texas	Lamb	13,626	$ 17,664	13.409
Texas	Lavaca	18,999	$ 23,249	19.589
Texas	Leon	16,833	$ 21,637	15.702
Texas	Live Oak	11,041	$ 20,644	10.654

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Texas	Loving	59	$ 40,046	0.088
Texas	Lynn	6,227	$ 20,184	6.982
Texas	Madison	13,087	$ 14,159	27.866
Texas	Martin	4,381	$ 21,806	4.789
Texas	Matagorda	36,685	$ 21,396	32.917
Texas	McMullen	989	$ 20,247	0.889
Texas	Medina	45,915	$ 19,096	34.581
Texas	Milam	24,788	$ 20,870	24.380
Texas	Mitchell	9,149	$ 15,058	10.053
Texas	Morris	12,466	$ 20,113	48.980
Texas	Motley	1,278	$ 18,893	1.292
Texas	Navarro	50,519	$ 19,292	50.135
Texas	Newton	13,123	$ 17,800	14.070
Texas	Ochiltree	10,001	$ 21,530	10.900
Texas	Panola	22,938	$ 21,944	28.640
Texas	Pecos	16,377	$ 15,939	3.438
Texas	Polk	46,496	$ 16,435	43.978
Texas	Presidio	7,671	$ 16,813	1.990
Texas	Red River	12,922	$ 19,516	12.305
Texas	Robertson	16,279	$ 21,357	19.049
Texas	San Augustine	8,742	$ 16,301	16.561
Texas	San Jacinto	24,740	$ 19,304	43.354
Texas	San Saba	5,835	$ 19,117	5.143
Texas	Schleicher	2,738	$ 23,083	2.089
Texas	Shackelford	3,053	$ 21,357	3.340
Texas	Shelby	27,008	$ 19,127	34.010
Texas	Sherman	2,730	$ 19,500	2.958
Texas	Stephens	9,775	$ 19,248	10.926
Texas	Stonewall	1,435	$ 23,143	1.562

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Texas	Terrell	998	$ 24,052	0.423
Texas	Terry	12,150	$ 20,576	13.654
Texas	Throckmorton	1,734	$ 20,075	1.901
Texas	Titus	32,052	$ 17,520	78.074
Texas	Trinity	14,179	$ 19,125	20.465
Texas	Tyler	20,251	$ 18,340	21.943
Texas	Upton	3,156	$ 18,972	2.542
Texas	Ward	10,539	$ 18,849	12.614
Texas	Washington	32,537	$ 25,164	53.407
Texas	Wharton	40,984	$ 21,033	37.595
Texas	Wheeler	4,905	$ 26,444	5.365
Texas	Wilbarger	14,373	$ 18,914	14.801
Texas	Wilson	41,837	$ 22,710	51.844
Texas	Winkler	6,442	$ 18,982	7.660
Texas	Young	18,243	$ 24,970	19.779
Texas	Zavala	12,512	$ 10,706	9.636
Utah	Carbon	19,366	$ 20,055	13.099
Utah	Daggett	1,037	$ 22,806	1.485
Utah	Emery	10,639	$ 18,752	2.390
Utah	Grand	9,399	$ 19,152	2.553
Utah	Millard	12,429	$ 18,897	1.886
Utah	Rich	2,062	$ 21,100	2.005
Utah	San Juan	15,598	$ 14,024	1.995
Utah	Wayne	2,650	$ 19,730	1.077
Virginia	Highland	2,566	$ 24,632	6.170
Virginia	Surry	7,361	$ 24,132	26.375
Virgin Islands	St. Croix Island	53,218	NA	642.117
Virgin Islands	St. John Island	4,200	NA	214.135
Virgin Islands	St. Thomas Island	51,181	NA	1,638.457

Appendix E

Unserved Counties Form 477 Data
(Population, Population Density, & Average Per Capita Income)*

State	County	Population	Per Capita Income ($2009)	Population Density
Washington	Ferry	7,690	$ 16,283	3.489
Washington	Pend Oreille	13,682	$ 21,502	9.771
Wisconsin	Menominee	4,667	$ 13,575	13.038
Wisconsin	Vernon	30,040	$ 21,011	37.792
West Virginia	Calhoun	7,420	$ 17,340	26.441
West Virginia	Doddridge	7,299	$ 15,351	22.779
West Virginia	Hampshire	23,342	$ 17,965	36.374
West Virginia	Pocahontas	8,457	$ 18,666	8.994
West Virginia	Tucker	6,430	$ 18,864	15.351

* Form 477 Data, June 2010, 3 Mbps/768 Fixed Broadband Service. *See infra* App. F (Technical Appendix) for a description of demographic variables and data sources.

As explained in the Technical Appendix, to the extent possible, we used the same population and household data for this report as was used for the National Broadband Map. However, because of shortcomings in the data from American Samoa and Puerto Rico, the population for these U.S. Territories was distributed uniformly across each of the territory's component areas. Hence the population data for these U.S. Territories used in the analysis of the SBDD Data and the Form 477 Data may not reflect actual populations for these areas. *See infra* App. F (Technical Appendix) for a description of demographic variables and data sources.

APPENDIX F

Technical Appendix

I. INTRODUCTION

1. The purpose of this Technical Appendix is to provide detailed information about the data used in this report to estimate broadband deployment and evaluate availability. We also provide an overview of the limitations of the data and discuss the sensitivity of our estimates to these limitations. As explained in the body of the report, we estimate that as many as 26 million Americans remain unserved by broadband.[1] This estimate is based on more comprehensive and granular data than any of the Commission's prior broadband reports.[2] This report relies primarily on the SBDD Data used to create the National Broadband Map to estimate broadband deployment across the nation.[3] Although Form 477 Data reports subscribership which is an imperfect proxy for deployment, to maintain consistency with past reports we have also included an analysis of Form 477 Data.[4] SBDD Data provide information about areas where broadband has been deployed and the maximum advertised speed that a broadband service provider can deliver within a typical service interval (7 to 10 business days),[5] regardless of whether there are subscribers or whether such a service is offered commercially. In contrast, Form 477 Data show the number of subscribers to a broadband provider's given advertised speed tier, but do not show the areas where broadband is deployed or whether a broadband provider's network can offer speeds higher than those subscribed to by consumers.

2. A number of limitations apply to both data sources:

- As with any large data set, both sources have errors or inconsistencies that can lead to inaccurate estimates.
- Each source reports data aggregated to some minimum geographic area (largely census blocks for SBDD, and census tracts for Form 477).[6] Because no information is reported below that level of aggregation, most of our analyses necessarily depend on the simplifying assumption that all end-user locations in a reported geographic area have access to the reported type and speed of broadband.
- Both data sources reflect advertised, or "up to" speeds, which may differ from actual speeds that consumers receive. Those differences may vary by technology, carrier, or time of day.
- Because the SBDD Data measure a provider's ability to provide service at a defined speed in a census block, while the Form 477 Data measure the number of subscribers to a particular

[1] We define broadband as "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 supra Seventh Broadband Progress Report* n.2 & para. 15.

[2] This is the second consecutive year that we have been able to make this claim, unequivocally. *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566, para. 16. These improvements result from the Commission's continuing efforts, and the efforts of other federal and state entities, to "improve the quality of Federal and State data regarding the availability and quality of broadband services." *See* BDIA § 102, 122 Stat. at 4096.

[3] *See supra Seventh Broadband Progress Report* para. 21.

[4] *See supra id*. para. 22.

[5] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557.

[6] SBDD Data are generally reported at the census block level and, in most instances, we treat the entire block as either served or unserved. Some SBDD Data are reported at the road-segment or address-point level, which provides some information at the sub-census-block level.

speed of service within a census tract, our analysis of these data sources to estimate unserved areas are substantially different and comparisons of them are of limited value.

- Neither data source includes information about some key factors, such as service quality or affordability that might affect our evaluation of broadband availability.[7]

3. The limitations of the available data require that we caveat our broadband deployment estimates as described herein. As the available data improve, so will the Commission's ability to estimate the deployment and availability of broadband in the United States.

II. DATA SOURCES AND THEIR LIMITATIONS

A. SBDD Data

1. State Broadband Data and Development Grant Program

4. On February 17, 2011, NTIA launched the National Broadband Map, "a comprehensive, interactive, and searchable nationwide inventory map of existing broadband service capability and availability" that shows the geographic extent to which customers have access to broadband in each state.[8] The Map is maintained by NTIA in collaboration with the Commission, and in partnership with each state and territory and the District of Columbia.[9]

5. In 2009, NTIA began the process of collecting broadband data through the SBDD Program,[10] a matching grant program that implements the purposes of the Recovery Act and the BDIA.[11] Under the SBDD Program, NTIA awarded grants to assist states in gathering and verifying state-specific data on broadband services.[12] Awardees collect data on the availability, speed, and location of broadband services, as defined by NTIA.[13] Although participation by broadband providers is voluntary, most of the

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[7] *See supra Seventh Broadband Progress Report* paras. 19, 24, 28.

[8] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32546. For purposes of the National Broadband Map, NTIA defined a broadband service "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." *Id.* at 32557.

[9] Posting of Anne Neville, SBDD Program Director, to BroadbandUSA (NTIA Blog), NTIA Launches National Broadband Map, http://www2.ntia.doc.gov/node/764 (Feb. 17, 2011).

[10] On July 2, 2009, NTIA released the *NTIA State Mapping NOFA* setting forth the parameters to "fund projects that gather comprehensive and accurate State-level broadband mapping data, develop State-level broadband maps, [and] aid in the development and maintenance of a national broadband map, and fund statewide initiatives for broadband planning." *NTIA State Mapping NOFA*, 47 Fed. Reg. at 32547; *see also* Press Release, NTIA, NTIA Announces First State Broadband Mapping Grants (Oct. 5, 2009), http://www.ntia.doc.gov/press/2009/BTOP_MappingAwards_091005.html.

[11] *See* U.S.C. §§ 1304(e)(10), (g), 1305(l); National Broadband Map, About >> State Broadband Programs, (State Broadband Programs) http://www.broadbandmap.gov/about/state-broadband-programs.

[12] BroadbandUSA, Connecting America's Communities, State Broadband Data & Development Program, http://www2.ntia.doc.gov/SBDD ("Since the program's inception, NTIA has awarded a total of $293 million to 56 grantees, one each from the 50 states, 5 territories, and the District of Columbia, or their designees. Grantees will use this funding to support the efficient and creative use of broadband technology to better compete in the digital economy.").

[13] *See* NTIA, OVERVIEW OF GRANT AWARDS at 2.

4,600 potential broadband providers contacted have chosen to support the effort.[14]

6. These data were used by the NTIA and the Commission to create the National Broadband Map.[15] Awardees are required to update the data twice a year, over a five-year period, which will be used by NTIA and the Commission to update the Map.[16] NTIA and the Commission have instituted a data validation process to help ensure data integrity.[17]

2. Information Collected

7. NTIA collected statewide data about the availability, speed, and location of broadband service. Awardees were required to submit this data in compliance with the *NTIA State Mapping NOFA*, in a format specified by NTIA.[18] Awardees were required to submit availability, speed, and location of broadband service at the most granular level possible, including specific addresses or census block data and shapefiles for services employing wireless technologies.[19] To assist awardees, NTIA defined "broadband service," "end-user," "facilities-based" providers, "advertised speed tiers," "typical upstream and download speed," and how to determine if a service is "available" or whether an area is unserved, as follows:

- **Broadband Service.** A "broadband service" is defined as "the provision, on either a commercial or non-commercial basis, of data transmission technology that provides two-way data transmission to and from the Internet with advertised speeds of at least 768 kbps downstream and greater than 200 kbps upstream to end users, or providing sufficient capacity in a middle mile project to support the provision of broadband service to end-users within the project area (768 kbps/200 kbps)."[20]
- **End User.** An "end user" of broadband service is a residential or business party, institution or State or local government entity that may use broadband service for its own purposes and that does not resell such service to other entities or incorporate such service into retail Internet-access services. Internet Service Providers (ISPs) are not "end users."[21]
- **Facilities-Based Provider.** An entity is a "facilities-based" provider of broadband-service connections to end-user locations if any of the following conditions are met:

  (1) it owns the portion of the physical facility that terminates at the end-user

[14] *See* National Broadband Map, About >> Technical Mapping, http://broadbandmap.gov/nbm/about/technical-overview; National Broadband Map, www.broadbandmap.gov. Potential broadband providers were entities the awardees initially identified as being likely to provide broadband in their geographic area. On further investigation, some potential broadband providers were not actually providing broadband. *See, e.g.*, Data Delivery Report 1 (Colorado Broadband Data and Development Program, White Paper, Oct. 1, 2010), *available at* http://www.broadbandmap.gov/download/white-papers/co_201010.pdf.

[15] *See* NTIA, OVERVIEW OF GRANT AWARDS at 2.

[16] *See, e.g., NTIA State Mapping NOFA*, 74 Fed. Reg. at 32552.

[17] *See* National Broadband Map, About >> Technical Mapping, http://www.broadbandmap.gov/about.

[18] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557 (Appendix A: Technical Appendix); *NTIA State Mapping NOFA Clarification*, 74 Fed. Reg. at 40569.

[19] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557. A shapefile is a popular data format used to represent geographic areas in geographic information systems software.

[20] *Id*.

[21] *Id*.

location;

(2) it obtains UNEs, special access lines, or other leased facilities that terminate at the end-user location and provisions/equips them as broadband; or

(3) it provisions/equips a broadband wireless channel to the end user location over licensed or unlicensed spectrum.[22]

- **Advertised Speed Tiers.** Awardees are required to report services provided in nine tiers of advertised download speeds and 11 tiers of advertised upload speeds, for 99 possible combinations.[23]
- **Typical Upstream and Download Speed.** Awardees report the actual upstream and downstream speeds most subscribers can achieve consistently during expected periods of heavy network usage if subscribing to the maximum advertised downstream speed.[24]
- **Broadband "Availability."** Broadband service is available at an address if the provider does, or could, within a typical service interval (7 to 10 business days) and without an extraordinary commitment of resources, provision two-way data transmission to and from the Internet with advertised speeds of at least 768 kbps downstream and greater than 200 kbps upstream to end-users at that address.[25]
- **Unserved Areas**. An "unserved area" is one composed of one or more contiguous census blocks where at least 90 percent of households lack access to facilities-based terrestrial broadband service, either fixed or mobile, at the minimum broadband transmission speed set forth in the definition of broadband above. A household has access to a broadband service if the household can readily subscribe to that service upon request.[26]

3. Limitations

8. Our initial analysis of the SBDD Data reveals some potential gaps and inaccuracies in the data that may affect the accuracy of our estimates of broadband deployment. These issues may result from a variety of factors. For instance, the Government Accountability Office (GAO) pointed out that issues may arise because data is compiled and verified by different entities in each state, territory, and the

[22] *Id*.

[23] *Id*. at 32559. The breakpoints for reporting speed are 200 kbps, 768 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 10 Mbps, 25 Mbps, 50 Mbps, 100 Mbps, and 1 gigabits per second (Gbps). *See id*.

[24] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32558.

[25] *Id*. at 32557.

[26] *Id*. at 32549. We note that grantees do not submit data on unserved areas, only on served areas, and that we treat any area without data provided as unserved. *See infra* para. 14 of this appendix. The *NTIA State Mapping NOFA Clarification* states that grantees must submit to NTIA "for each facilities-based provider of broadband service in their state, a list of all census blocks of no greater than two square miles in which broadband service is available to end users." *NTIA State Mapping NOFA Clarification*, 74 Fed. Reg. at 40570. A different format is specified for census blocks larger than two square miles. *Id*. It is unclear whether grantees (or broadband providers who submitted data to the grantees) relied on the threshold in the definition of "unserved areas" in deciding whether a block is one in which broadband service is available to end users. Thus, different grantees could report a block as served if: anyone in that block is served; only everyone in that block is served; the fraction of unserved is below 90% as specified in the definition of "unserved areas;" or something else.

District of Columbia.[27] In addition, some misinterpretation of reporting instructions can be expected whenever a new data collection is implemented. NTIA and the Commission are working to refine the SBDD collection process to reduce error rates.

a. Non-Reporting and Misreporting of Data May Affect Estimates of Which Areas Are Unserved

9. Our identification of unserved areas may be overstated to the extent that providers did not submit data or submitted incomplete data.[28] The data do not distinguish instances in which a provider affirmatively reports it does not provide service in a census block from instances in which the data collected for that census block are incomplete. Our analysis treats blocks in which no entity reports providing service as unserved, although we recognize that the data for a block may be incomplete because none of the providers of broadband service in that block were contacted by or responded to the NTIA grant awardee.

10. First, we do not have information from broadband providers that elected not to participate in the SBDD Program or that were not contacted by a grant awardee.[29] NTIA received responses from roughly 3,400 of the 4,600 providers it contacted.[30] The impact of non-reporting by these 1,200 providers on the calculation of the unserved population is uncertain.

11. Second, we do not have complete data for some broadband providers for some of the areas in which other sources indicate they provide services. For example, the SBDD Data show only very limited coverage for Verizon in Washington, D.C. and York, Pennsylvania, even though Verizon is a leading broadband provider in these areas. Similarly, SBDD Data currently do not show any provider of cable-based broadband in San Juan, Puerto Rico, even though OneLink Communications claims to offer service there.[31] We do not know the reason for these omissions nor the extent to which they occur in other areas. The missing data could cause us to report some areas as having little or no broadband when, in fact, services are deployed.

12. Third, some awardees did not submit data on the speed of broadband service for all of their service areas. For example, data for areas of southern Indiana suggest that broadband is available, but because speed data were not submitted these areas appear "unserved" when the data is queried for

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[27] *See* GAO, CURRENT BROADBAND MEASURES HAVE LIMITATIONS, AND NEW MEASURES ARE PROMISING BUT NEED IMPROVEMENT, GAO-10-49, at 36–38 (Oct. 2009) (noting limitations in the SBDD Program), *available at* http://www.gao.gov/new.items/d1049.pdf.

[28] For the purposes of this analysis, we focus only on whether an area has access to at least one broadband provider. To the extent that a particular provider does not report but has a broadband footprint that overlaps with one or more other providers that do report, our analysis should not be affected.

[29] *See* ID Insight Feb. 15, 2011 Comments, WC Docket No. 11-16, at 1 (criticizing that only 50–75 percent of providers participated, which means 25–50 percent did not). Though imperfect, the SBDD data are the best data available to the Commission for the purpose of this analysis.

[30] This number of responses represents the number of unique state/operating-unit pairs (each operating unit files data for each state in which it operates). For Form 477, the Commission receives responses from approximately 4,650 unique state/operating-unit pairs. The disparity between the number of responses received for the SBDD Data (3,400) and Form 477 Data (4,650) suggests that NTIA is not receiving responses from approximately 1,200 Form 477 filers, a group that may or may not overlap with those contacted by NTIA (at least some of whom are potential but not actual providers of broadband). Some Form 477 filers with multiple operating companies in a given state, who have multiple Form 477 filings, may also have submitted a single data set to SBDD grantees.

[31] *See* OneLink, Internet, http://www.onelinkpr.com/?Lang=EN#/men/internet/ (offering 4 Mbps and 6 Mbps broadband packages).

broadband service exceeding a given threshold.[32] Consequently, the data understate the deployment of broadband services in which the data are incomplete.

13. Finally, it is also possible that providers over-reported where they have deployed broadband. Such over-reporting would lead us to overstate the availability of broadband services. We lack data showing the impact of this issue on our identification of unserved areas though grantees are tasked with verifying the data they report.[33]

b. "Served Areas" Data May Not Accurately Represent the Number of Served Households

14. The SBDD Data do not attempt to measure broadband availability by household. Rather, grantees generally report whether broadband service is available in a census block.[34] The *NTIA State Mapping NOFA* indicates that broadband service is available if a broadband service provider does, or could, provide broadband service to an end user within a typical service interval (7 to 10 business days) without an extraordinary commitment of resources.[35] Thus, the SBDD data will indicate that broadband service is available in a census block even when broadband may be unavailable at some residences.

15. Furthermore, the SBDD Data do not differentiate between providers that offer service to residential and business customers. Therefore the SBDD Data indicate that some residential areas are served by competitive local exchange carriers (LECs) that do not actually provide services to residential customers (e.g., some residential areas in Washington, D.C. show service available from business-focused providers).[36] This feature of the data may inflate estimates of residential broadband deployment.

c. Data on Advertised Speed May Not Accurately Represent Consumers' Actual Broadband Speed

16. The SBDD Data may not accurately represent consumers' broadband speed options for three reasons. First, the SBDD Program does not collect data for the speed tier that corresponds directly to the broadband speed threshold of 4 Mbps downstream, 1 Mbps upstream (4 Mbps/1Mbps) adopted in this report. Thus, as explained in the report, we use 3 Mbps downstream, 768 kbps upstream (3 Mbps/768 kbps) as a proxy for that speed.[37]

17. Second, the SBDD Program collects data on the maximum advertised speed available in an

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[32] *See* National Broadband Map, Maximum Advertised Speed, www.broadbandmap.gov/speed.

[33] *See, e.g.*, State Broadband Programs.

[34] Wireless service providers may instead submit shapefiles that indicate their service areas; also, for census blocks that are larger than two square miles, providers may submit data by address or street segment. *See supra* para. 7 of this appendix.

[35] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557. We note that in analyzing SBDD Data to determine the number of unserved Americans, we did not simply subtract the population of the areas that SBDD Data indicate have broadband available from the total U.S. population; because SBDD Data contain address and street segment data for census blocks that are larger than two square miles, we are able to use SBDD Data to estimate the population that has broadband available within those large blocks rather than simply declaring the entire population of those blocks "served" or "unserved" for the purpose of our analysis.

[36] For example, data show that companies such as Covad, Atlantech, CBeyond, and XO will serve residential areas of Washington, D.C. The SBDD Data may also indicate that certain business locations have broadband available from providers of purely residential broadband services. This possibility would not affect any conclusions in this report.

[37] *See supra Seventh Broadband Progress Report* para. 25.

area,[38] which may exceed the maximum speed to which customers subscribe, i.e., the advertised or theoretical "up to" speeds that an end-user may receive. These subscription speeds, in turn, represent the maximum speed under optimal conditions, which may be higher than typical speeds experienced by end users.[39] For example, the actual performance speed for mobile wireless services can be affected by the end user's signal strength and the level of interference, which in turn can be affected by many factors that vary moment to moment, including proximity of the end user to the cell site, terrain, and obstructions. Similarly, the actual performance speed for a cable modem end user can be affected by the number of end users on shared last-mile networks.

18. The gap between the maximum speed a network can support and the speed a user will experience under typical conditions is particularly significant when the reporting threshold is close to the maximum speed. For example, the *NTIA State Mapping NOFA* allows a mobile network capable of delivering 7 Mbps to report providing service at 6 Mbps. However, if 7 Mbps represents the total capacity in a sector, the reality is that only one user could stream 6 Mbps of data at a given time. If there were many active users in a sector at the same time, each could burst up to the maximum of 7 Mbps (signal-to-interference and noise ratio permitting) but each could receive only hundreds of kbps of sustained throughput. In the cable modem context, a DOCSIS 3.0 provider, using four channels for downstream capacity, could provide approximately 150 Mbps of shared capacity. Under the NTIA guidelines, a DOCSIS 3.0 provider may reasonably report offering 100 Mbps service, but as with the example above only a very limited number of users could actually access 100 Mbps on a sustained basis. For the threshold of interest in this report—3 Mbps downstream and 768 kbps upstream—these effects are likely significant for mobile broadband, but less so for other technologies for which the top speed is not as close to the 3 Mbps/768 kbps threshold.

19. Third and finally, the *NTIA State Mapping NOFA* for a grantee to report an area as served requires that a provider be able to deliver service in a typical service interval,[40] with the reported speed reflecting the maximum advertised upstream and downstream speed. However, it is possible that some providers focused more on the service they could deliver within a typical service interval than their current advertised retail offerings in determining what speed they would submit to the grantee.[41] Moreover, the rules specified by NTIA allow providers to submit speed data "across each service area," and service areas generally consist of multiple census blocks.[42] Reporting entities may have taken different approaches to this issue such that the speed reported for a given service area may not represent the advertised speed of the service deployed in every census block within that service area. That is,

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[38] *See generally supra* para. 7 of this appendix.

[39] Actual speed experienced at any given moment may differ from typical speeds. "Typical speeds" often reflect a mean or median of the actual speeds experienced, over a discrete time frame.

[40] *NTIA State Mapping NOFA*, 74 Fed. Reg. at 32548 (defining "available").

[41] *See, e.g.*, National Broadband Map, About >> Technical Overview >> Data Review, http://www.broadbandmap.gov/about/technical-overview/data-review (describing the record-level check of SBDD Data displayed on the National Broadband Map, including a check of speed against third-party sources for each provider in each location, and the "Data Review" for each provider in each area after searching for information about a given location).

[42] *NTIA State Mapping NOFA Clarification*, 74 Fed. Reg. at 40570. In fact, grantees reported speed for 96% of records filed by census block at the block level for the June, 2010 data filing, with the remaining speed records supplied at a larger geography. However, even among records with speed data filed at the census block level, it is unclear from the data to which we have ready access whether speeds for each provider were determined and reported at the census-block level, or determined at a larger area and reported at the census-block level. *See id*. ("Awardees . . . may satisfy [the speed reporting] requirement by providing such speeds across each service area or local franchise area, by Metropolitan or Rural Statistical Area.").

within a provider's service area, the advertised speed of the service may be less than the speed reported to NTIA in some census blocks while exceeding the reported speed in other census blocks. This issue may cause us to under-identify unserved areas (to the extent speeds above the benchmark are over-reported) or the converse.

B. Form 477 Data

20. Consistent with prior broadband progress reports, we also estimate broadband deployment by analyzing the Commission's Form 477 residential broadband data.[43] The Commission is considering changes to improve the quality of data collected on Form 477,[44] while streamlining and minimizing burdens imposed on service providers.[45] Future broadband progress reports may therefore benefit from further improved data.

1. Information Collected on Form 477

21. Twice a year, the Commission requires all facilities-based providers of broadband connections to report how many subscribers purchase various broadband services in certain geographic areas.[46] The Commission collects speed data for eight tiers of advertised download speeds and nine tiers of advertised upload speeds, resulting in 72 possible combinations.[47] The reporting obligations vary by type of provider:

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[43] *See Seventh Broadband Progress Report* para. 28. Created in 2000, Form 477 is the Commission's primary tool for collecting data about broadband and local telephone networks and services, including interconnected VoIP services. *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1510, para. 2.

[44] *See generally Modernizing Form 477 NPRM*, 26 FCC Rcd 1508. We note that the National Broadband Plan recommends that the Commission collect and analyze detailed market-by-market information on broadband pricing and competition. NATIONAL BROADBAND PLAN at 43–44.

[45] *See, e.g.*, 47 U.S.C. § 1301(3) ("Improving Federal data on the deployment and adoption of broadband service will assist in the development of broadband technology across all regions of the Nation."); *see also Modernizing Form 477 NPRM*, 26 FCC Rcd at 1509, para. 1.

[46] *See Modernizing Form 477 NPRM*, 26 FCC Rcd at 1512–13, paras. 8–9 (providing general discussion of the current Form 477). We recognize there are some providers who do not file the Form 477. For purposes of Form 477, "an entity is a 'facilities-based' provider of broadband connections to end user locations if any of the following conditions are met: (1) it owns the portion of the physical facility that terminates at the end user location; (2) it obtains unbundled network elements (UNEs), special access lines, or other leased facilities that terminate at the end user location and provisions/equips them as broadband, or (3) it provisions/equips a broadband wireless channel to the end user location over licensed or unlicensed spectrum." *See* FCC, FCC FORM 477, INSTRUCTIONS FOR LOCAL TELEPHONE COMPETITION AND BROADBAND REPORTING, OMB 3060-0816, at 2 (2010) (FCC FORM 477), *available at* http://www.fcc.gov/Forms/Form477/477inst.pdf. Other data on Form 477 are not analyzed for the 706 report, such as the number of voice subscriptions. *See Modernizing Form 477 NPRM*, 26 FCC Rcd at 1510, para. 2 ("The form requires providers of broadband service, local telephone service, interconnected Voice over Internet Protocol (VoIP) service, and mobile telephone service to report the number of subscribers they have in their respective service areas."), citing *Local Telephone Competition and Broadband Reporting*, Report and Order, WC Docket No. 04-141, 19 FCC Rcd 22340, 22342–43, para. 3 (2004) (*2004 Broadband Data Gathering Order*).

[47] The Commission's broadband reporting tiers consist of an upload speed tier of 200 kbps or less and upload and download speeds of: (1) greater than 200 kbps but less than 768 kbps; (2) equal to or greater than 768 kbps but less than 1.5 Mbps; (3) equal to or greater than 1.5 Mbps but less than 3.0 Mbps; (4) equal to or greater than 3.0 Mbps but less than 6.0 Mbps; (5) equal to or greater than 6.0 Mbps but less than 10.0 Mbps; (6) equal to or greater than 10.0 Mbps but less than 25.0 Mbps; (7) equal to or greater than 25.0 Mbps but less than 100.0 Mbps; and (8) equal to or greater than 100 Mbps—for a total of 72 speed-tier combinations. *See* FCC FORM 477; *2008 Broadband Data Gathering Order*, 23 FCC Rcd at 9700–01, para. 20.

- Wireline and Terrestrial Fixed Wireless Broadband. Facilities-based, fixed-broadband providers must report the number of subscribers at the census-tract level, broken down by technology and speed tiers; and the percentage of subscribers that are residential.[48]
- Terrestrial Mobile Wireless Broadband Services. These providers must submit broadband subscriber totals on a state-by-state basis, rather than at the census-tract level, and must report on the census tracts that "best represent" their broadband service footprint for each speed tier in which they offer service.[49]

2. Limitations

22. Form 477 Data are subject to many of the same limitations as the SBDD Data. For example, Form 477 does not include a speed tier exactly matching our 4 Mbps/1 Mbps broadband threshold service.[50] There also are several unique challenges to using the Form 477 Data to assess broadband deployment.

a. Form 477 Data Do Not Directly Measure Deployment or Availability

23. The Form 477 Data measure subscribership and are not a direct measure of where broadband service has been deployed or is available. We therefore must make assumptions about the relationship between subscribership in an area and the extent of deployment or availability in that area. Our analysis assumes broadband deployment is uniformly distributed across a given area, notwithstanding that deployment may not be uniform. As the geographic area used in our analysis increases in size and heterogeneity, the accuracy of our analysis is likely to decrease. As a result, there may be increased reason to question the accuracy of our deployment estimates based on 477 Data for the relatively large census tracts in the less populated parts of the country, for heterogeneous census tracts, and for counties.

b. Our Use of a Subscribership Threshold May Not Accurately Represent Actual Subscribership or Deployment

24. Our analysis of subscribership data to determine deployment may lead us to over-estimate the deployment of broadband networks because we assume that broadband is deployed across an entire area if the number of subscribers exceeds a *de minimis* threshold of 1 percent subscribership (as discussed below), even if the area is very large.[51] Thus, we categorize a census tract or a county as entirely served if subscribership is at least 1 percent and as entirely unserved if subscribership is less than 1 percent. The SBDD Data indicate, however, that census tracts (and, by extension, counties) frequently have a mix of served and unserved areas.[52] It therefore is likely that many of the areas we deem to be either fully served or fully unserved based on the Form 477 Data are in fact partially served.

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[48] Form 477 specifically distinguishes residential from business customers. *See 2004 Broadband Data Gathering Order*, 19 FCC Rcd at 22349, para. 16.

[49] *See 2008 Broadband Data Gathering Order*, 23 FCC Rcd at 9698–99, para. 16.

[50] *See supra Seventh Broadband Progress Report* paras. 28–34.

[51] For the 66,275 census tracts in our analysis for which we have land area, the average size census tract is 53.44 square miles. For the 3,232 counties in our analysis, the average county land area is 1,095 square miles.

[52] The SBDD Data, which are collected by census block, indicate that 26.2 million Americans are unserved. These unserved Americans reside in 782,267 census blocks which have a total population of 31.6 million. These 26.2 million unserved Americans also reside in 25,968 census tracts, which have a total population of 128.9 million.

c. Subscribership Data May Undercount Deployment of High Speed Broadband

25. Subscribership data may underestimate the deployment of broadband networks that can operate at higher speeds because broadband networks may be capable of higher speeds than are offered commercially. For example, fiber-to-the-premises infrastructure is probably capable of delivering services at 100+ Mbps, but such speeds may not be offered by the provider. Or high-speed services may be offered, but priced such that they only attract fewer than 1 percent of potential subscribers in an area. In such cases, subscribership data may not signal that a broadband network is capable of providing high-speed service.

26. In addition, we are unable to determine which census tracts or counties have mobile service at a given speed because we collect subscribership data for mobile services only at the state level.

d. Filers Make Errors in Reporting Data

27. We continue to find reporting errors in the Form 477 broadband subscribership data.[53] Among other errors, we continue to find census tracts for which the reported number of residential subscribers for many speed combinations exceeds the total number of households in that tract.[54] It is therefore likely that subscribers are undercounted in other census tracts, on the assumption that providers are more likely to misreport where their subscribers are located than over-report their total number of subscribers.[55] We are unable to determine the extent to which this problem is due to inaccurate categorization of business customers as residential customers. Absent an audit, we have no means to determine the incidence of under-reporting subscribers in census tracts.[56] We continue to work with filers to address this issue.

28. Because of continuing questions about the accuracy of the data submitted by census tract, we report the results of broadband deployment analysis by both census tract and county.[57] We find that we must weigh the costs of over-stating the deployment of broadband by aggregating to the county level (which may be compounded by our use of the 1 percent *de minimis* threshold discussed below) against the benefits of a finer geographic analysis using census-tract data. We note that the number of unserved we

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[53] MARCH 2011 IAS REPORT at 82 (explaining that the data as filed state that some census tracts have a share of households with high-speed connections above 100 percent).

[54] As of June 2010, the number of subscribers exceeds households, for the 768 kbps/200 kbps speed tier for 6,440 of the 66,287 census tracts in our analysis. The corresponding figures for the 3 Mbps/768 kbps speed tier is 2,330 census tracts and 1,305 census tracts for 6 Mbps/1.5 Mbps, out of this same total. *See* Form 477 Data; 2009 GeoLytics data.

[55] There are some instances where the number of subscriptions could exceed the number of homes in an area, for example, college campuses.

[56] We note that for 3 Mbps/768 kbps broadband services, we find that only 7 of the 3,232 counties in our analysis have a residential subscriber count exceeding the number of households; whereas for 768 kbps/200 kbps services, 27 of the counties in our analysis have a residential subscriber count exceeding the number of households in the area.

[57] *See* MARCH 2011 IAS REPORT at 82 ("Possible explanations of ratios at or above 100% include (1) geocoding misallocations of service locations to census tracts; (2) proper allocation of connections to the county level by some filers, but improper allocation of all connections to a single tract in the county; (3) possible overestimation of residential connections in service plans for which the customer base is primarily residential; and (4) connections at seasonally or occasionally occupied housing units, such as vacation homes, while the household is counted elsewhere. The numbers of households in census tracts that were used to generate the estimated ratios are themselves estimates (for 2010, from GeoLytics, Inc.), which could have an independent effect.") We continue to find that the number of outliers is substantially reduced when estimates are made for individual counties rather than for individual census tracts.

identify in our analysis of census-tract subscription data is closer to the number of unserved derived from SBDD Data; census-tract-level Form 477 Data are likely accurate for many filers, and may provide a more meaningful analysis of subscription rates than the county-level data.

e. The One Percent *De Minimis* Threshold Presents Risks of Inaccuracies

29. Using subscribership data as an indicator of deployment necessarily involves an assumption about this relationship, which we describe as a "subscription threshold" or "*de minimis* threshold." In this report, we continue to use the 1 percent *de minimis* threshold used in last year's report. Specifically, we assume that broadband has not been deployed in an area if less than 1 percent of the households in that area subscribe to broadband.[58] Conversely, we assume that broadband has been deployed in an area if at least 1 percent of the households in that area subscribe to broadband. We acknowledge this threshold could be set at different levels and that there is no threshold that will be appropriate in all circumstances. As shown in our example below, our use of a conservative (i.e., low) subscribership threshold for determining whether a geographic area is served means that a small number of broadband subscribers in an area will cause us to find that broadband has been deployed to a much larger number of households.

30. It may be appropriate to use a higher *de minimis* threshold, particularly as adoption rates rise. For example, if broadband service providers continue to file flawed census-tract-level data and we therefore need to analyze data at the county level, the use of the 1 percent threshold is likely to understate significantly the actual number of unserved households. It may be appropriate to use a higher threshold in such a circumstance to ensure that higher levels of service in densely populated parts of a given county do not mask the fact that less dense areas do not have access to broadband. Even within a census tract, it is possible that the 1 percent threshold leads to over-estimates of broadband deployment. Ultimately these challenges are symptoms of using subscription data at a relatively coarse geography to estimate the deployment of broadband networks.

31. Table 9 below presents a sensitivity analysis showing how our estimates based on the June 2010 Form 477 Data would be affected by raising the *de minimis* threshold. Note that the interaction of the choice of geography and the *de minimis* threshold can be significant. In particular, raising the 1 percent threshold to 5 percent or 25 percent causes the estimated number of unserved Americans to rise sharply.

Table 9
Sensitivity of Estimated Number of Unserved Consumers Nationwide to Different Geographies and *De Minimis* Thresholds

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

3. Comparison of the National Broadband Map and Form 477 Estimates

32. Because of the significant differences between the SBDD and Form 477 Data, and the methodologies suitable for analyzing each type of data, any comparisons of the results should be interpreted with caution. For example, the unserved Americans identified by the Form 477 subscription

[58] For each area we examine, we define the subscription rate as the number of residential connections that have a service that is at least 3 Mbps/768 kbps divided by the number of households in the area. *See supra Seventh Broadband Progress Report* n.128.

data are distributed across 6,096 of the 65,896 census tracts for which we have complete Form 477 Data and household count data. In contrast, the unserved Americans identified by the SBDD Data are distributed across 25,968 of the 66,112 census tracts[59] for which there is complete SBDD Data and population data. This discrepancy arises because of the larger minimum geographic reporting area used by Form 477, compared to the more granular census block reporting in the SBDD Data. As a result, Form 477 Data analysis necessarily categorizes each census tract (or county) as either wholly served or unserved, while the SBDD Data can instead measure the fraction of each census tract with access to broadband using a more continuous variable. It may therefore be a coincidence that the SBDD Data and Form 477 subscribership data indicate a similar number of Americans unserved by fixed broadband services meeting the 3 Mbps/768 kbps speed threshold.[60]

33. Tables 10 and 11 below demonstrate this point by illustrating the sensitivity of our nationwide estimates of the number of unserved individuals and households, respectively, to the choices of:

- data source and geographic unit (SBDD vs. Form 477; census tract vs. county levels)
- speed threshold (768 kbps/200 kbps vs. 3 Mbps/768 kbps vs. 6 Mbps/1.5 Mbps)
- technology bundle (fixed broadband technologies using Form 477 and SBDD Data vs. fixed and mobile broadband technologies using SBDD Data).[61]

34. The data that are shown in the report are highlighted in italics. These data show that increasing the speed threshold used (moving from left to right in any row) significantly increases the number of those considered unserved using either data source. For example, using SBDD Data for fixed broadband, moving from a target speed of 768 kbps/200 kbps to 6 Mbps/1.5 Mbps increases the number of unserved from just under 16 million to more than 62 million. Including mobile technologies (comparing the last row in each table with the first) results in fewer unserved, but that effect is much larger at lower speeds. At 768 kbps/200 kbps, more than two-thirds of the unserved by fixed technology have a mobile option; at 6 Mbps/1.5 Mbps, fewer than 10 percent of the unserved have a mobile option. Regardless of which data source or speed threshold we rely upon to estimate broadband deployment, however, the data show that millions of Americans live in areas where broadband has not been deployed.

[59] More precisely, the unserved Americans identified by the SBDD Data are located in 782,267 out of 4.5 million census blocks which are located in the 25,968 census tracts identified above.

[60] The SBDD Data suggest that approximately 26.1 million people are unserved and the Form 477 census-tract subscription data suggest that 23.9 million people are unserved. The SBDD Data suggest that 9.2 million households are unserved while Form 477 Data suggest that 8.9 million households are unserved.

[61] We are unable to include mobile wireless data in our analysis of the Form 477 Data because it is only collected at the State level. From the SBDD Database, we include the following broadband services (with corresponding technology codes): Asymmetric xDSL (10), Symmetric xDSL (20), Other Wireline (all copper-wire based technologies other than xDSL) (30), Cable Modem—DOCSIS 3.0 (40), Cable Modem—Other (41), optical carrier (fiber to the home) (50), Terrestrial Fixed Wireless (provisioned/equipped over licensed spectrum (71) or over spectrum used on an unlicensed basis (70)), Electric Power Line (90), and a catch all category, All Other (0). For our analysis of Form 477 Data, we include the following fixed broadband services: Asymmetric xDSL, Symmetric xDSL, Other Wireline (all copper-wire based technologies other than xDSL, Cable Modem, optical carrier (fiber to the home), Terrestrial Fixed Wireless (provisioned/equipped over licensed spectrum or over spectrum used on an unlicensed basis), Electric Power Line, Satellite, and a catch all category, All Other.

Table 10 Unserved Population (MMs) and Percentage of Total Population As of June 30, 2010[62]			
	768 kbps/200 kbps	**3 Mbps/768 kbps**	**6 Mbps/1.5 Mbps**
Fixed Broadband **SBDD Data**	15.8 5.1%	*26.2* *8.4%*	62.3 20.1%
Fixed Broadband **Form 477 Data by Census Tracts**	1.6 0.5%	*23.9* *7.7%*	83.4 26.9%
Fixed Broadband **Form 477 Data by County**	0.6 0.2%	*12.2* *3.9%*	62.0 20.0%
Fixed and Mobile Broadband **SBDD Data**	5.2 1.7%	14.0 4.5%	58.3 18.8%

Table 11 Unserved Households (MMs) and Percentage of Total Households As of June 30, 2010			
	768 kbps/200 kbps	**3 Mbps/768 kbps**	**6 Mbps/1.5 Mbps**
Fixed Broadband **SBDD Data**	5.8 4.8%	*9.2* *8.0%*	22.6 19.7%
Fixed Broadband **Form 477 Data by Census Tracts**	0.6 0.5%	*8.9* *7.8%*	31.6 27.6%
Fixed Broadband **Form 477 Data by County**	0.2 0.2%	*4.6* *4.0%*	23.8 20.8%
Fixed and Mobile Broadband **SBDD Data**	1.9 1.7%	5.0 4.3%	21.1 18.4%

4. Modest Increase in Household Subscription Rates

35. The Form 477 Data also show an increase in household subscription rates.[63] In the report, we showed how the overall subscription rates for broadband service have increased for all measured broadband speed tiers over six-month periods between December 2008 and June 2010.[64] Because we find significant variation in subscription rates across the country, we also show in Table 12 how subscription rates have changed in areas with relatively low and relatively high subscription rates (i.e., the first and third quartiles) between December 2008 and June 2010. These data indicate that broadband subscription rates are rising modestly across most of the measured broadband speeds and subscription rate quartiles.

36. Specifically, Table 12 shows that the subscription rates in the census tract and county at the 25th percentile (i.e., the geographic area with a subscription rate higher than the subscription rates in 25

[62] As noted in paragraph 38 of this Appendix F, we tried to use the same source of population and household data for our analysis of the SBDD Data and the Form 477 Data. *See infra* para. 38. Anomalies in the U.S. Territories population data cause some questionable results, however. *See supra* App. E (Unserved Counties Form 477 Data (Population, Population Density, & Average Per Capita Income). If we had instead used the ACS Five-Year Estimates 2005–2009 census tract population data for our Form 477 Data analysis, the unserved population figures for fixed-broadband Form 477 Data by census tract would have been, respectively, 1.5 million, 25.0 million, and 84.4 million; and the results for fixed-broadband Form 477 Data by county would have been, respectively, 258,592, 12.2 million, and 62 million.

[63] The availability of Form 477 Data for multiple time periods allows us to examine how subscription rates are changing. Because the SBDD Data are new, we cannot yet conduct a similar analysis of the SBDD Data.

[64] *See supra Seventh Broadband Progress Report* tbl. 7 (Overall Subscription Rate for Broadband Services (December 2008 to June 2010) (showing data for 768 kbps/200 kbps and faster, 3 Mbps/768 Mbps and faster, and 6 Mbps/1.5 Mbps and faster).

percent of all other geographic areas) and the 75th percentile (i.e., the geographic area with a subscription rate higher than the subscription rates in 75 percent of all other geographic areas) have risen across all measured broadband speed tiers between December 2008 and June 2010. Table 12 shows, for example, that in December 2008, one-quarter of all census tracts had subscription rates below 30.25 percent. In June 2010, one-quarter of all census tracts had subscription rates below 35.63 percent.

Table 12
Subscription Rate—First and Third Quartiles
December 2008 and June 2010

	First Quartile (25th Percentile)		Third Quartile (75th Percentile)	
	December 2008	**June 2010**	**December 2008**	**June 2010**
Form 477 Census Tract				
768kbps/200 kbps	30.25%	35.63%	69.38%	76.47%
3 Mbps/768 kbps	2.93%	8.39%	38.50%	48.80%
6 Mbps/1.5 Mbps	0.00%	0.33%	4.04%	29.69%
Form 477 County				
768kbps/200 kbps	23.12%	29.46%	47.08%	55.72%
3 Mbps/768 kbps	0.46%	2.15%	13.06%	26.86%
6 Mbps/1.5 Mbps	0.00%	0.00%	0.47%	4.67%

C. DEMOGRAPHIC DATA SOURCES

37. To complete our demographic analysis of the SBDD Data and the Form 477 Broadband Data, we supplement these data with data from 2009 GeoLytics data, the ACS Five-Year Estimates 2005–2009, and the 2000 Census. The ACS Five-Year Estimates 2005–2009 are based upon surveys conducted from January 1, 2005 to December 31, 2009 and are significant because these data are the most recent demographic information to date.[65] The ACS data do not represent any one year or the midpoint of a period, but are estimates for the time period 2005–2009. The ACS surveys were conducted only for the fifty states, the District of Columbia, and Puerto Rico; they did not include American Samoa, Guam, Northern Mariana Islands, or the U.S. Virgin Islands.

38. *Population and Household Data*. To the extent possible, we used the same population and household data for this report as was used for the National Broadband Map. Thus, our primary source of population data is the 2009 GeoLytics data. Because GeoLytics population and household counts are not available at the census-block level for the U.S. Territories, population for the U.S. Territories was distributed uniformly across each U.S. Territory's component areas. Hence the population data for the U.S. Territories used in the analysis of the SBDD Data and the Form 477 Data may not reflect actual populations for those areas.[66] In addition, because of missing data for 88 census tracts for which we have Form 477 subscription data, we supplemented the population data used in our analysis of the SBDD Data with the most recent population data available. We used ACS Five-Year Estimates 2005–2009 for 17 census tracts in Colorado and one census tract in Virginia, and we use 2000 Census Data for all of the

[65] *See* Census Bureau, Department of Commerce, 5-Year Release Details, http://www.census.gov/acs/www/data_documentation/2009_5yr_data/.

[66] *See, e.g.*, App. E (Unserved Counties Form 477 Data (Population, Population Density, & Average Per Capita Income) (American Samoa, Rose Island).

census tracts in Guam and Northern Mariana Islands.[67]

39. *Income Measures*. We report three income measures: per capita income, median household income, and the poverty rate (the proportion of the population living in poverty). Per capita income and median household income are measured in 2009 Inflation-Adjusted Dollars. These income measures are available from the ACS Five-Year Estimates 2005–2009.

40. *Educational Attainment*. We measure educational attainment as the portion of the population aged 25 years old and older that has attained at least an Associates Degree. These data are available from the ACS Five-Year Estimates 2005–2009.

41. *Population Density*. Population density is the ratio of the total population residing in the area divided by the land area of the area. We use the most recent population data available for each area. Our data source for land area is the 2000 Census.

42. *Urban Core*. A census tract is defined as being in the "urban core" if it has a land area less than 3 square miles and a population density of at least 1,000 people per square mile. This definition is consistent with the Census Bureau's proposal for identifying initial urban area core areas for the 2010 Census.[68] The urban population figures we report are the total population residing in a census tract in the urban core. At the county level, the urban population is the sum of the urban population residing in each urban core census tract that lies within the county.

43. *Non-White Proportion*. We examine the portion of the population in the area that self-identifies solely as being White and the portion that does not self-identify solely as being White as reported in the ACS Five-Year Estimates 2005–2009. Survey respondents to the ACS can select multiple races to which they identify. The 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 form the 2010 Census indicate that approximately 2.9 percent of the population identify with more than one race.[69] Thus, to simplify the assessment of how subscription 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.

44. *Tribal Lands*. Our assessment of tribal lands is conducted by examining census tracts that overlap with the following Census Bureau categories: (1) Joint Use Areas; (2) Federally Recognized American Indian reservation that does not have associated off reservation trust lands; (3) Federally recognized American Indian off-reservation trust land area without any associated reservation; (4) Federally recognized American Indian reservation that has associated off-reservation trust land; (5) Statistical entity identified for a federally recognized American Indian tribe that does not have a reservation or identified off-reservation trust land; (6) Off-reservation trust land associated with Federally recognized American Indian reservation that has associated off-reservation trust land; (7) Alaskan Native village statistical area; and (8) Hawaiian Home Lands established by the Hawaiian Homes Commission

[67] *See* Census Bureau, Census 2000, Summary File 1, http://www.census.gov/census2000/sumfile1.html (providing links to access the data); ACS Five-Year Estimates 2005–2009.

[68] *See Proposed Urban Area Criteria*, 75 Fed. Reg. at 52182.

[69] *See* ACS Five-Year Estimates 2005–2009; CENSUS BUREAU, DEPARTMENT OF COMMERCE, OVERVIEW OF RACE AND HISPANIC ORIGIN: 2010, 2010 CENSUS BRIEFS 2, 4 (March 2011), *available at* http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf (stating that in the 2010 Census, "[t]here are 57 possible multiple race combinations involving the five OMB race categories and Some Other Race" while "White alone" accounts for 72 percent of all people living in the United States).

Act of 1921.[70] However, because Tribal lands generally compose a small portion of each census tract, we focus our analysis on those census tracts in which the Tribal lands comprises at least 50 percent of the land area within the census tract.

[70] *See* Census Bureau, Geographic Terms and Concepts—American Indian, Alaska Native, and Native Hawaiian Area, http://www.census.gov/geo/www/2010census/gtc/gtc_aiannha.html#anrc.

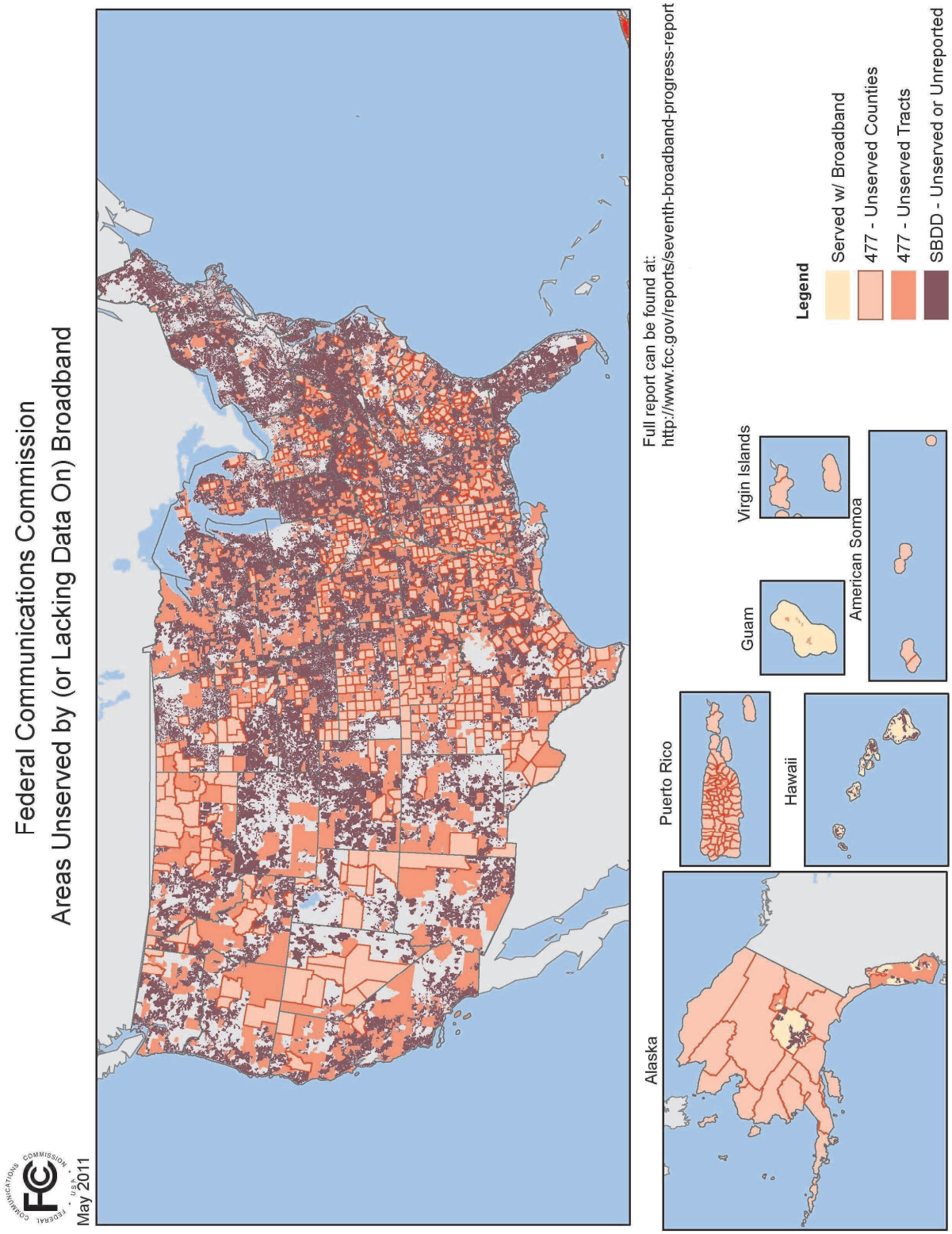
APPENDIX G

Commission's Report on Internet Access Services: Status as of June 30, 2010

This report can be found on the FCC website at
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-305296A1.pdf.

APPENDIX H

Map of Areas Unserved by (or Lacking Data On) Broadband


Federal Communications Commission
Areas Unserved by (or Lacking Data On) Broadband
May 2011
Full report can be found at:
http://www.fcc.gov/reports/seventh-broadband-progress-report
Legend
Served w/ Broadband
477 - Unserved Counties
477 - Unserved Tracts
SBDD - Unserved or Unreported
Virgin Islands
Guam
American Somoa
Puerto Rico
Hawaii
Alaska

STATEMENT OF
CHAIRMAN JULIUS GENACHOWSKI

Re: *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act,* GN Docket No. 10-159, Seventh Broadband Progress Report and Order on Reconsideration

Today the Commission issues its latest Broadband Progress Report, fulfilling our Congressionally-mandated duty to conduct an "inquiry concerning the availability of advanced telecommunications capability to all Americans," and to "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion." This year's Report shows that our country has more work to do to increase broadband availability for all Americans.

We have reached this conclusion using the best data available, including for the first time data from the National Broadband Map. Combined with other sources, it has given us the clearest picture we have ever had of the state of broadband deployment in the United States.

That picture shows that more than 20 million Americans live in areas where they still can't get basic broadband. And most of these areas face no prospect of being served in the near future. That's not reasonable or timely, and it's far short of "all" Americans.

In addition, approximately one third of Americans – more than 100 million people – don't subscribe to broadband. America's broadband adoption rate is approximately 67 percent – compared with over 90 percent in South Korea and Singapore. Mobile broadband adoption has accelerated since 2009. However, Pew's Internet and American Life Project pointed out last year that home adoption of broadband Internet access service appears to have "slowed dramatically" in recent years.

These gaps in broadband deployment and adoption are such important national challenges in part because the costs of being shut out of our broadband economy are so high, and rising. More and more every day, not having broadband is a major barrier to finding and applying for a job, getting a world-class education, or obtaining access to health care. Today, lack of access to broadband is a much bigger obstacle to the opportunities that are essential for consumer welfare and America's economic growth and global competitiveness than it was even a few years ago.

Some may believe these facts show that we're doing well enough. I don't.

Because making broadband available to all Americans matters. It matters to our economy. It matters to driving massive private investment and innovation in the U.S., it matters to growing our exports and competing globally, and it matters to addressing major national challenges like improving education, health care, energy, transportation, and public safety.

Our conclusion that broadband is not being deployed in a reasonable and timely fashion in no way shortchanges the significant progress that has been made, in both the private and public sectors, over the past several years. The private sector continues to invest tens of billions of dollars in broadband infrastructure each year – more than $60 billion in capital expenditures in 2010 alone – expanding capacity, increasing speeds on fixed networks, and rolling out next-generation mobile services like 4G.

Implementing recommendations of the National Broadband Plan, the FCC has unleashed

additional spectrum for mobile broadband; launched the Broadband Acceleration Initiative to reduce the costs and time required to deploy broadband by reforming infrastructure policies; reduced the cost of utility pole attachments; promoted greater utilization of spectrum over Tribal lands; and improved and modernized our E-rate program, which helps provide broadband for schools and libraries. And our partners at NTIA and RUS have invested billions to spur private sector broadband deployment through the BTOP and BIP programs.

Two years ago, few were talking actively about the importance of broadband for our country. Today, there is broad agreement – among business leaders throughout the economy; consumer advocates; academics and other experts; and local, state, Tribal, and federal policymakers from across the political spectrum – that increasing broadband deployment, adoption, and use is a top national priority.

But too many Americans are still being left behind. This is particularly concerning as data suggests that other developed countries like South Korea and Germany are doing better than America on some key broadband metrics. To ensure America's continued global competitiveness, our pace of improvement must quicken.

Under Section 706 of the Telecommunications Act, the Commission has a statutory mandate to "remove barriers to infrastructure investment and promote competition in the telecommunications market," which we're taking seriously. We're reforming our Universal Service Fund and the related intercarrier compensation system, transforming it from an inefficient 20th century telephone program to an accountable, effective, fiscally responsible 21st century broadband program. We're unleashing spectrum for mobile broadband. And we're focused on reducing barriers to broadband deployment, including through our Technological Advisory Council, and reducing barriers to broadband adoption. These steps will help achieve our shared goals and advance and accelerate the private sector's work to increase broadband deployment and adoption.

I thank the staff of the FCC, particularly the Wireline Competition Bureau, for their hard work on this item.

STATEMENT OF
COMMISSIONER MICHAEL J. COPPS

Re: *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act,* GN Docket No. 10-159, Seventh Broadband Progress Report and Order on Reconsideration

With release of this report, it is clear that the Commission is taking seriously its mandate under section 706 of the Telecommunications Act to determine whether advanced telecommunications capability is being made available to all Americans in a reasonable and timely fashion. Congress reaffirmed the importance of this inquiry with the more recent passage of the Broadband Data Improvement Act and the requirement that the Commission make this critical examination into broadband availability each year. Last year, with the Sixth 706 Report, the Commission finally produced a credible effort to deliver a report based on data of the quality and granularity necessary to be truly responsive to Congress.

So I applaud the work of the Bureau and the Chairman to ensure that the Commission is living up to its statutory responsibilities. The findings of the present inquiry, however, give us much less to cheer about. As many as 26 million Americans are unserved by broadband today and at least one-third of Americans do not subscribe to high-speed Internet access service. Every day, broadband becomes more central to the economic and civic life of our nation. Access denied is opportunity denied—we simply cannot afford to have millions of our fellow citizens on the wrong side of a digital divide.

In this year's report, the Commission has gone further than ever before to enhance our analysis of whether and to who broadband remains unavailable. Thanks to the National Broadband Map, for the first time we are able to utilize data on actual deployment—not just the proxy of subscribership information. And we recognize that understanding whether broadband is available, as the statute directs us to do, encompasses whether or not Americans are actually taking broadband service. With the concurrent release today of the International Broadband Data Report, we also have real indicators of how the United States is measuring up against our global competitors in terms of broadband speed, price, deployment and adoption. It is clear that our country still has a long way to go to achieve world-class broadband standing.

To remedy the findings of this Report, the Commission's charge is clear—we must take immediate action so that all Americans are able to participate in the broadband era. We have already teed up many of the issues that are part and parcel of this agenda—now is the time to see them through to swift completion. The Commission has made an unprecedented commitment to reform the Universal Service Fund and Intercarrier Compensation mechanisms in the coming months. This is not something it would be nice for us to do—it is absolutely imperative for us to do. Our current system is patently ill- equipped to assist us in meeting our 21st Century broadband goals. It is equally clear how urgently we need a rational system that is more efficiently supporting broadband in rural and high cost areas of the country.

Addressing the barriers that prevent millions of Americans from broadband adoption is just as critical as promoting broadband deployment—and we know that affordability is a big part of that challenge. The Commission has begun the process of reorienting the Lifeline and Linkup programs toward supporting broadband—reforms that cannot arrive fast enough for low-income consumers.

And while today's report is our best effort yet, there are still steps we need to take to ensure that we have even more data to keep current with our statutory obligations. The Commission has teed up

many areas where we can continue to improve our Form 477—ensuring regular and systematic reporting of high-quality broadband data that must inform so many of our Commission endeavors. As the International Broadband Data Report indicates, the Commission is also working hand-in-hand with the State and Commerce Departments and OECD to obtain more globally standardized broadband data—efforts that will promote an even better understanding and comparison of our approaches to broadband with those of our global competitors.

My thanks to the many folks at the Commission who contributed to this year's Report.

DISSENTING STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL

Re: *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 10-159; Seventh Broadband Progress Report and Order on Reconsideration

I am both optimistic and pragmatic about the state of broadband deployment. We continue to take great strides to provide faster and better broadband to more Americans every year. Capital investment in fixed and mobile broadband deployment continues to be a tremendous success story. The report's only metric that permits year-to-year comparison finds that the percentage of U.S. households served by terrestrial broadband grew from 92 percent in December 2008 to 96 percent in June 2010. In the same period, the number of unserved households dropped almost in half from 8.8 million to 4.6 million.[1]

Section 706 of the Telecommunications Act of 1996 requires the Commission to determine whether "advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."[2] In all of the reports starting with the first in 1999, the FCC has answered "yes" to that question. Last year, however, the Commission dramatically reversed course.[3]

Last year's negative conclusion was unsettling considering that America had made impressive improvements in developing and deploying broadband infrastructure and services. In just six years, broadband deployment skyrocketed from reaching only 15 percent of Americans in 2003, to 95 percent by the end of 2009. I cast a dissenting vote. This year's report continues with the same flawed analyses and conclusions, albeit with a novel rationale, which is discussed below. As a result, I respectfully dissent again.

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[1] I share the Commission's watchfulness with respect to Form 477 subscribership data and county-level measurements, but do not believe we can simply explain away the import of the significant year-over-year improvement. Subscribership data is an imperfect proxy for deployment, but it is the best comparison tool we have today. By one metric, broadband download speed increased 34 percent last year as providers continue to roll-out higher speed offerings to meet consumer demand. Press Release, *Downstream Bandwidth for US Broadband Subs Increase by 34% in 2010,* In-Stat (Feb. 16, 2011). This substantial increase would lend some credence to the Form 477 findings of a significant growth in the number of connections that meet the Commission's speed requirements. Overall, I support the report's inclusion of the State Broadband Data and Development (SBDD) data as well as the Technical Appendix's forthright discussion about the limitations of both data sets. That said, incorporating yet another new data source complicates the Commission's ability to assess any trends over time regarding timely and reasonable deployment. I am hopeful that we can make more apples-to-apples comparisons in future reports, and look forward to a more complete data set in future SBDD releases. *See* Technical Appendix, ¶ 10 (detailing that over a quarter of broadband providers elected not to participate in the NTIA process); *see also* George S. Ford, *Challenges in Using the National Broadband Map's Data*, Phoenix Center Policy Bulletin (Mar. 2011).

[2] 47 U.S.C. § 1302(b) (Section 706 of the Telecommunications Act of 1996 has since been codified in Title 47, Chapter 12 of the Untied States Code but is commonly referred to as "Section 706").

[3] *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, GN Docket No. 09-137, A National Broadband Plan for Our Future, GN Docket No. 09-51*, Sixth Broadband Deployment Report, 25 FCC Rcd 9556 (2010) ("*Sixth Report*"). In fact, the *Sixth Report* explicitly included in its caption and referenced findings from the National Broadband Plan that "95% of the U.S. population lives in housing units with access to terrestrial, fixed broadband infrastructure capable of supporting actual download speeds of at least 4 Mbps."

This year's report makes a surprising leap by arguing that Congress did not mean "physical" deployment when referring to "deployment" and "availability." It concedes that the Act does not define the terms "deployment" and "availability." Instead of looking to the plain statutory language to determine Congress' intent, however, the Commission relies on legislative report language to argue that even if broadband is physically deployed to a particular area but is not affordable, it is *not* considered available under Section 706. But, the actual statutory language says otherwise, stating that as part of the inquiry, the Commission should look at demographic information for "geographical areas that are *not served* by any provider of advanced telecommunications capability."[4]

Regrettably, through this attempted re-interpretation of Section 706(b), the Commission appears to continue a trend towards more regulation and ever increasing authority over broadband and the Internet. The report references barriers to infrastructure investment that include "poor digital literacy," "low broadband service quality," "affordability," and "lack of access to computers." It is unclear from this report if this Commission now contends it has authority under Section 706(b) to establish regulation to address each of these "barriers," many of which bear little nexus to infrastructure deployment.

With respect to the analysis itself, the exclusion of mobile broadband is particularly disappointing. It is hard to believe that a May 2011 broadband deployment report downplays the rapid rise of 3G service, as well as the historic levels of investment in our nation's 4G infrastructure. The Chairman has correctly noted that "3G wireless services can deliver speeds capable of handling a dramatically wide array of consumer applications."[5]

The Chairman has also observed that "mobile broadband is being adopted faster than any computing platform in history," highlighting that the United States "had 141 million 3G subscribers – one-fifth of the worldwide total and more than three times as many as any other nation, except Japan, making us the world's largest 3G market and a major reason why the U.S. has been the undisputed leader in mobile innovation."[6]

The data strongly support the Commission's focus on mobile broadband: The most recent Form 477 filings show that the number of mobile broadband connections at downstream speeds above 3 Mbps jumped from 133,000 in December 2008 to 5.3 million in June 2010.[7] This is incredible growth. Yet, even this statistic fails to capture the subsequent significant increase in 3G and 4G penetration since June 2010. Cisco's recent analysis suggests that there are already 2.6 million mobile-only Internet consumers in North America, and that number is estimated to be 55 million by 2015.[8] Many underserved communities have expressed a clear preference for mobile broadband options.[9] In addition, the Commission's most recent *14th Annual Wireless Competition Report* found that over three quarters of the American population has access to at least three mobile broadband providers, up from 51 percent in just

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[4] 47 U.S.C. 1302(c) (emphasis added).

[5] Remarks of Chairman Julius Genachowski, "The Clock is Ticking" (Mar. 16, 2011).

[6] Remarks of Chairman Julius Genachowski, CTIA Wireless 2011 (Mar. 22, 2011).

[7] INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, FCC, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2010, Table 2 (Mar. 2011) (MAR. 2011 IAS REPORT).

[8] *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update*, 2010–2015 (Table 6) (Feb. 1, 2011).

[9] *Among Mobile Phone Users, Hispanics, Asians are Most-Likely Smartphone Owners in the U.S,* NielsenWire (Feb. 1, 2011).

two years.[10]

This report's analysis excludes mobile broadband altogether, even while conceding that "mobile services capable of actual speeds above the 4/1 Mbps benchmark are becoming increasingly common." At a time when many operators are advancing the pace of their planned 4G network deployments, next-generation 4G is only mentioned in passing. The report does at least acknowledge that "we intend to revise our approach in future reports" to incorporate mobile broadband. That integration should have been done this year.

The exclusion of mobile broadband appears primarily to be a result of the Commission's unwillingness to revisit its arbitrary decision to define broadband as 4 Mbps downstream and 1 Mbps upstream. The Commission should never have mandated a one-size-fits-all definition of broadband. Regulators must provide a more complete picture of broadband offerings at different speed thresholds and act cautiously to avoid industry-shaping and market-distortive decisions.

If anything, the growth and popularity of mobile broadband at speeds below the Sixth Report's definition should have prompted the Commission to revisit that definition. Over half of all high-speed connections are below 3 Mbps downstream,[11] and the Commission's surveys find that consumers are happy with both their existing broadband service and speed.[12] Tellingly, Pew has found that only about one third of consumers pay for premium broadband services today.[13] While it is much more likely that the Commission's broadband definition is flawed, this report seemingly concludes that there must be something significantly lacking with today's "broadband" services. I disagree.

The report is confusing and inconsistent in other ways too. For instance, it seems to take a creative and expansive approach to interpreting the phrase "all Americans" as codified by Congress in Section 706. In a breezy fashion, the report dismisses the idea that the phrase should be viewed as a "goal." Instead, it states that the phrase should have its "ordinary meaning." In the next breath, however, the report contradicts its earlier line of reasoning by leaving the door open to interpreting the meaning of "all Americans" differently at some point in the future when only a "very small number of Americans" still lack access to broadband deployment. I am concerned that such inconsistency in the Commission's interpretation amounts to arbitrary and capricious action, not to mention that this numerical moving target undercuts the effort to reach data-driven decisions.

Given that the language of Section 706 reveals a deregulatory bent,[14] I expressed my concerns

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[10] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fourteenth Report, 25 FCC Rcd 11407 (2010).

[11] Approximately 60 percent of connections (92 million out of 152 million) are below 3 Mbps downstream. MAR. 2011 IAS REPORT, Table 5. Excluding mobile offerings, approximately one-third of fixed connections are still below 3 Mbps downstream. *Id.,* Chart 2.

[12] *Broadband satisfaction: What consumers report about their broadband Internet provider*, FCC Working Paper (Dec. 2010) (finding that "51% of broadband users are very satisfied with service overall and 42% are somewhat satisfied," and that "50% of broadband users are very satisfied with the speed of their service and 41% are somewhat satisfied.").

[13] Aaron Smith, *Home Broadband 2010*, Pew Internet and American Life Project (Aug 11, 2010).

[14] Congress stated that "[i]f the Commission's determination is negative, it shall take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market." 47 U.S.C. § 1302(b).

last year that the conclusions in the *Sixth Report* could instead be used as a pretext to impose unnecessary new regulations. Unfortunately, my fears were realized only five months later. The Commission's 3-2 vote to regulate Internet network management extensively relied on the findings in the *Sixth Report* in attempting to manufacture a legal foundation for the new regulatory regime.[15] Given this history, it is reasonable to be concerned that reiteration of year's conclusion in today's report may be used to bolster additional FCC regulatory efforts in other areas where Congress has not given the FCC legal authority to do so.

Institutionally, the continued unwillingness of this Commission to provide any positive statements about the state of telecommunications infrastructure and competition is troubling. We should have kept this inquiry focused on physical infrastructure as required by the statute and consistent with our past practice. Regardless of this report's conclusion, the Commission should redouble its effort to create incentives for private investment in networks and technologies that can drive broadband further and faster throughout the nation.

For these reasons, I respectfully dissent.

[15] *See* ¶ 6 of the instant report. *See also Preserving the Open Internet; Broadband Industry Practices,* GN Docket No. 09-191, WC Docket No. 07-52, *Report and Order*, 25 FCC Rcd 17905 (2010).

STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN

Re: *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 10-159, Seventh Broadband Progress Report and Order on Reconsideration

Section 706 of the Telecommunications Act of 1996 contemplates that broadband service should be available to *all* Americans in a reasonable and timely fashion. Today, we find that despite the efforts of both the private and public sectors to promote broadband availability for over a decade, as many as 26 million Americans do not have access to a broadband-capable network at home. We do so using a new data set available to us—the National Broadband Map—in addition to broadband subscribership data the Commission collects. While the Map is far from perfect, this is the first time the Commission has had available to it actual deployment information. I believe this is far better than relying *only* upon subscribership data and is a significant improvement from previous *Broadband Progress Reports*. Congress should be commended for recognizing the importance of such information to our nation and for its allocation of funding to ensure that the Map would be publicly available to the benefit of many, including consumers, industry, and policymakers.

It is evident that the Commission's efforts to promote broadband deployment to unserved areas continue to be a necessary and crucial endeavor. To date, we have addressed some barriers to deployment, as recommended by the National Broadband Plan, but there is much work to do. Our reform of the Universal Service Fund (USF) and the intercarrier compensation system (ICC) must be realized to ensure that those areas currently unserved do not remain that way. I was especially pleased that in February, we unanimously approved a Notice of Proposed Rulemaking, to reform and modernize the USF and ICC. In March, the Commission reiterated its commitment to that goal, stating "[w]e must eliminate waste and inefficiency and modernize USF and ICC to bring the benefits of broadband to all Americans. We can't afford to delay."[1] Indeed, every American without access to a broadband network, who wants to be connected, cannot afford *any* delay. As more services, products, and information migrate on-line, those Americans who cannot access them are at a significant disadvantage. This important fact was clearly illustrated by one consumer's personal testimony at our third workshop on USF/ICC reform in Omaha, Nebraska this week, who had moved from one suburb to another and had the unfortunate discovery that her new home was not served by high-speed Internet. She no longer could use all of the features and functions on the World Wide Web from home. This was not just a mere inconvenience for her and her family. It has completely altered her ability to conduct personal business in an efficient and effective manner. Accordingly, it is incumbent upon this Commission to address USF/ICC reform in a reasonable and timely fashion to ensure that consumers gain access to broadband no matter where they live, and I look forward to us completing our work within a few months after our record is complete in late May[2] so that we can provide for the availability of broadband throughout the nation.

I wholeheartedly agree with the *Report* that our assessment of broadband availability must include a review of our nation's adoption of broadband. Where a broadband-capable network is deployed, but cannot be accessed by some consumers due to, say, the cost of service or equipment—then

[1] FCC Chairman Julius Genachowski and FCC Commissioners Michael Copps, Robert McDowell, Mignon Clyburn, and Meredith Baker, "Making Universal Service and Intercarrier Compensation Reform Happen," (March 15, 2011), *available at* http://blog.broadband.gov/?entryId=1335554 (last visited May 19, 2011).

[2] *See id.*

it is not truly *available* to those consumers. The significant investments made by both the public and private sectors to provide universal availability of broadband networks will be futile, if we do not address the barriers to broadband adoption. Too many Americans are being left behind—caught in a digital divide, and the statistics are sobering. Nearly 80 million American adults have not subscribed to broadband at home. Moreover, adoption of broadband is lower than the national average for minorities, low-income consumers, and residents of rural areas. In fact, cost is the most cited reason for those Americans who have not subscribed. I am concerned that these Americans cannot fully participate in our society and economy, and that they will have limited access to health care, educational, and employment opportunities that are essential for improving their lives and their children's futures. It is absolutely critical that the Commission address these issues in a reasonable and timely fashion.

I am hopeful that the efforts undertaken by industry, such as the Comcast Broadband Opportunity Program and CenturyLink's Broadband Adoption Program, will help address the cost and digital literacy barriers for some consumers. But we cannot rely solely on industry efforts. It is crucial for us to do our part and complete our review of the Lifeline program, provide the flexibility for consumers to use their subsidy to purchase bundled voice and broadband service, and implement a pilot project that offers discounted broadband service to low-income consumers.

I have not wavered from my commitment to do my part in addressing the issues before us as expeditiously as possible, so we can have an America where every citizen has access to and has capacity to adopt broadband.