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. 11-121

EIGHTH BROADBAND PROGRESS REPORT

Adopted: August 14, 2012 **Released: August 21, 2012**

By the Commission: Chairman Genachowski and Commissioners Clyburn and Rosenworcel issuing separate statements; Commissioners McDowell and Pai dissenting and issuing separate statements.

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I. INTRODUCTION

1. This is the Commission's Eighth Broadband Progress Report issued under section 706 of the Telecommunications Act of 1996.[1] Section 706 requires the Commission to determine and report annually on "whether advanced telecommunications capability [(ATC)] is being deployed to all Americans in a reasonable and timely fashion."[2] Over the past year, the private and public sectors have taken significant and substantial steps to accelerate the deployment and availability of broadband; all the while, the utility of and demand for broadband continue to grow as Americans find benefits in devices, applications, and services that use broadband in their homes, schools, businesses, and on the road. The Commission adopted transformative changes to the high-cost universal service program to propel deployment of broadband networks and initiated a Lifeline pilot to promote broadband adoption by low-income Americans. Implementation of these changes is underway. But as of now, our analysis of the best data available—the data collected by the National Telecommunications and Information Administration (NTIA) for the National Broadband Map—shows that approximately 19 million Americans live in areas still unserved by terrestrial-fixed broadband.[3] For these and other reasons, we must conclude that broadband is not yet being deployed "to all Americans" in a reasonable and timely fashion.

2. The efforts to bring broadband to all Americans are significant, and wireless and wireline broadband providers have made great progress. These providers invest tens of billions of dollars annually in the networks that make broadband possible, and since the 1996 Act, they are reported to have invested more than $1 trillion dollars combined.[4] In addition to various wireline broadband providers offering faster speeds with new technologies, mobile wireless providers have made substantial progress in upgrading their networks with higher-speed technologies and expanding coverage by these technologies so they reach a greater number of Americans and cover more of our country.[5]

3. These industry efforts are complemented by the efforts of the Commission, and other federal, state, and local actors, to expand broadband access. Of particular note, in October 2011, the Commission adopted transformative changes to the high-cost universal service program in the *USF/ICC Transformation Order*.[6] This comprehensive overhaul established a framework to bring broadband to

[1] 47 U.S.C. § 1302. Section 706 of the Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat. 56, 153 (1996) (1996 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.

[2] *Id*. § 1302. For purposes of this report, we use the term ATC synonymously with the term "broadband."

[3] *See infra* Section IV.C.1.

[4] *See* AT&T Comments at 1–2 (adding that broadband deployment and investment—in both wireline and wireless technologies—continue to be robust, even as the economy overall languishes); MetroPCS Comments at 9; USTelecom Comments at iii, 5; *see also Announcement of Members on Open Internet Advisory Committee*, GN Docket No. 09-191, WC Docket No. 07-52, Public Notice, 27 FCC Rcd 5779 (2012) (stating that in 2011, investment in wireline and wireless network infrastructure rose 24 percent and citing to TELECOMMUNICATIONS INDUSTRY ASSOCIATION, TIA'S 2012 ICT MARKET REVIEW AND FORECAST 1–3 (2012)); *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,*, WT Docket No. 10-133, Fifteenth Report, 26 FCC Rcd 9664, 9791, para. 207 (2011) (*Fifteenth Mobile Wireless Competition Report*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-103A1_Rcd.pdf.

[5] *Fifteenth Mobile Wireless Competition Report*, 26 FCC Rcd 9664, 9735–40, paras. 108–15.

[6] *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; Universal Service Reform—* (continued….)

millions of Americans over the coming years, and set the country on a path to universal availability of fixed and mobile communication networks capable of providing voice and broadband services where people live, work, and travel within a decade. The Commission also revised the universal service Lifeline program to advance the affordability of broadband for Americans.[7] Among other things, the Commission adopted a goal of ensuring broadband availability for low-income Americans, clarified that consumers may apply their Lifeline discount to bundled offerings that include broadband, and established a "Broadband Pilot Program."[8]

4. The Commission has taken numerous steps to implement the reforms in both the *USF/ICC Transformation Order* and *Lifeline Reform and Modernization Order*. For example, the Wireline Competition Bureau (Bureau) announced support amounts for the first phase of the Connect America Fund to spur immediate new broadband buildout on April 25, 2012 and on July 24, 2012, and a number of carriers committed to use over $110 million to deploy broadband to unserved areas in 37 states.[9] The Bureau is also moving forward with the Broadband Pilot Program and issued a Public Notice on April 30, 2012 soliciting applications from eligible telecommunications carriers (ETCs) to participate in the pilot and by the July 2, 2012 deadline received twenty four applications.[10] In addition, the Wireless Telecommunications Bureau is preparing for the auction—to take place on September 27—that will award one-time support to carriers that commit to provide 3G or better mobile voice and broadband services to unserved road miles across the country where Americans live, work, and travel.[11] We are

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Mobility Fund, WC Docket Nos. 10-90, 07-135, 05-337, 03-109, GN Docket No. 09-51, CC Docket Nos. 01-92, 96-45, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (2011) (*USF/ICC Transformation Order*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-161A1_Rcd.pdf, *pets. for review pending sub nom. In re* FCC 11-161*,* No. 11-9900 (10th Cir. filed Dec. 8, 2011); Order on Reconsideration, 26 FCC Rcd 17633 (2011); Second Order on Reconsideration, 27 FCC Rcd 4648 (2012); Third Order on Reconsideration, 27 FCC Rcd 5622 (2012).

[7] *Lifeline and Link Up Reform and Modernization; Lifeline and Link Up; Federal-State Joint Board on Universal Service; Advancing Broadband Availability Through Digital Literacy Training*, WC Docket Nos. 11-42, 03-109, 12-23, CC Docket No. 96-45, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 6656 (2012) (*Lifeline Reform and Modernization Order*); *see also infra* Section II.

[8] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6660, para. 3.

[9] *See* Press Release, FCC, FCC Kicks-Off "Connect America Fund" with Major Announcement: Nearly 400,000 Unserved Americans in Rural Communities in 37 States Will Gain Access to High-Speed Internet Within Three Years: Marks Beginning of Most Significant Public-Private Effort in History to Connect 19 Million Unserved Homes and Businesses by 2020 (WCB rel. July 25, 2012) (*FCC Public-Private Effort Press Release*) (noting the public-private effort to expand broadband to unserved Americans), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-315413A1.pdf; *Wireline Competition Bureau Announces Support Amounts for Connect America Fund Phase One Incremental Support*, WC Docket Nos. 10-90, 05-337, Public Notice, 27 FCC Rcd 4203 (2012), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-639A1.pdf.

[10] *See Wireline Competition Bureau Announces Application Procedures and Deadline for Applications to Participate in the Broadband Adoption Lifeline Pilot Program*, WC Docket No. 11-42, Public Notice, 27 FCC Rcd 4840 (2012) (*Lifeline Pilot Program Public Notice*), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0430/DA-12-683A1.pdf; *see also Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6802–03, para. 341. By the July 2, 2012 deadline—and with one company receiving an extension deadline of July 9, 2012—the Bureau received 24 applications.

[11] *See Mobility Fund Phase I Auction Scheduled for September 27, 2012, Comment Sought on Competitive Bidding Procedures for Auction 901 and Certain Program Requirements*, AU Docket No. 12-25, Public Notice, 27 FCC Rcd 530 (2012) (*Mobility Fund Phase I Auction Public Notice*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-121A1.pdf; *Mobility Fund Phase I Auction Scheduled for September 27, 2012*, AU Docket No. 12-25, Public Notice, 27 FCC Rcd 4725 (2012) (*Mobility Fund Phase I Procedures Public Notice*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-641A1_Rcd.pdf.

optimistic that as this implementation proceeds, broadband will increasingly be available to all Americans.

5. Nevertheless, this implementation work is far from complete, and new broadband deployments resulting from the *USF/ICC Transformation Order* have only just begun.[12] Nineteen million Americans live where fixed broadband networks do not reach; 14.5 million of those live in rural America. Nearly a third of residents of Tribal lands lack access to fixed broadband networks. Only 40 percent of Americans that have the option to do so adopt fixed broadband meeting the speed benchmark,[13] citing barriers such as lack of affordability, lack of digital literacy, and a perception that the Internet is not relevant or useful to them.[14] In addition, as many as 80 percent of E-rate-funded schools and libraries say their broadband connections do not fully meet their needs.[15] And the available international broadband data, though not fully comparable to U.S. data, suggest that the United States may lag behind a number of other developed countries with regard to some broadband metrics, including universal availability, although the United States leads the world in other respects.[16] Many of the unserved Americans live in areas where there is no business case to offer broadband, and where, until the reforms in the *USF/ICC Transformation Order* are more fully implemented, public efforts to extend broadband are unlikely to reach.[17]

6. As we implement these initiatives and contemplate others, we are mindful that technology

[12] *See* Mississippi Business Journal Staff, *FCC Reforms Prompt $53M Investment in State by AT&T*, MISS. BUS. J., Mar. 13, 2012 (reporting that AT&T is investing $53 million, the vast majority of which will be used to enable broadband expansion throughout Mississippi, as a result of the Commission's universal service fund reforms), *available at* http://msbusiness.com/2012/03/fcc-reforms-prompt-53m-investment-in-state-by-att/.

[13] *See infra* tbl. 17.

[14] *See infra* Section V.

[15] 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, 26 FCC Rcd 1 at 2 (2011) (FCC E-RATE SURVEY). As explained below, we lack comprehensive data regarding the actual level of broadband service in our nation's elementary and secondary schools, nor is there record evidence showing what bandwidth or speeds are required by schools today. *See infra* Section IV.F.3.

[16] *See International Comparison Requirements Pursuant to the Broadband Data Improvement Act*; *International Broadband Data Report*, IB Docket No. 10-171, GN Docket 11-121, Third Report, DA 12-1334 at para. 7 (IB rel. Aug. 21, 2012) (*2012 International Broadband Data Report*). Based on Organization for Economic Co-operation and Development (OECD) data, the International Bureau found that United States ranks 7th (compared to 9th at the time of the previous report) for wireless (mobile) broadband penetration on a per capita basis, and ranks 15th (similar to Japan, Finland, and Canada) for wired (e.g., [digital subscriber line (DSL)] or cable) broadband penetration on a per capita basis. *Id*. para. 7. U.S. wired broadband adoption continues to lag behind such countries as South Korea, the United Kingdom, and Germany, but exceeds adoption rates in Israel, Australia, and the European Union average. *Id*. With respect to speeds, our review of data on average actual download speeds reported by a sample of consumers from 38 countries (including the United States and Hong Kong Special Administrative Region of the People's Republic of China), finds that the United States ranks 24th in average actual speeds purchased and experienced by consumers. *Id*. para. 8. The United States ranks 17th when based on a stratified sampling technique using weighted average actual download speed. *Id*. For the first time, the International Bureau took a close look at the broadband prices for both fixed and mobile service plans around the world, including detailed price information for mobile broadband plans, broken down by technology (e.g., smartphones, stick modems, and tablets) and found that U.S. prices for standalone fixed broadband are in the mid-level range in our 38 country survey, but are higher in higher speed tiers. *Id*. para. 9. The International Bureau also found that the prices per gigabytes (GB) of data for fixed broadband plans with usage limits and for smartphone data plans with usage limits are on the lower end of the countries we surveyed. *Id*.

[17] *See infra* Section II.

does not stand still. Just as it was proved false that "[n]o one will need more than 637 kb of memory for a personal computer—640K ought to be enough for anybody,"[18] we anticipate that what may be adequate today likely will not meet our needs in the future. From 1999 to 2010, the Commission considered service of 200 kilobits per second (kbps) in both directions adequate.[19] In the *2010 Sixth Broadband Progress Report*, the Commission took what it described as "the overdue step" of increasing the speed benchmark to 4 megabits per second (Mbps) download and 1 Mbps upload (4 Mbps/1 Mbps, or "speed benchmark") to reflect that "network capabilities, consumer applications and expectations . . . have evolved in ways that demand increasing amounts of bandwidth."[20] The 2010 National Broadband Plan recommended that the Commission periodically reconsider the benchmark and, in addition, set a goal of 100 million U.S. homes having affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps by 2020, to create the world's most attractive market for broadband applications, devices, and infrastructure.[21] Broadband is a transformative infrastructure,[22] and Americans increasingly are using broadband at home and on their smartphones and tablet computers everywhere they go—at home, school, work, and travel. The market, in turn, has responded to these needs. Recent trends show providers offering much higher speeds: Verizon is offering up to 300 Mbps/65 Mbps for FiOS,[23] while CenturyLink is offering up to 40 Mbps/5 Mbps.[24] In May 2012, Comcast raised the monthly data limit for its subscribers to 300 GB, up from 250 GB.[25] According to industry reports, DOCSIS 3.0, which is capable of 100 Mbps speeds and even higher speeds, has been deployed to 82% of U.S. households.[26] On the mobile front, change is accelerating. Providers have continued to expand their

[18] L. Gordon Crovitz, Editorial, *Technology Predictions Are Mostly Bunk*, WALL ST. J., Dec. 27, 2009 (quoting prediction of Bill Gates in 1981), *available at* http://online.wsj.com/article/SB10001424052748704039704574616401913653862.html.

[19] *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, Amended by the Broadband Data Improvement Act*, GN Docket Nos. 09-137, 09-51, Report, 25 FCC Rcd 9556, 9558, para. 4 (2010) (*2010 Sixth Broadband Progress Report*).

[20] *Id.*

[21] OMNIBUS BROADBAND INITIATIVE (OBI), FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, GN Docket No. 09-51 at 9 (2010) (2010 NATIONAL BROADBAND PLAN).

[22] Reed Hundt, Commentary, *Abundanomics: The Politics of Plentitude*, DETROIT NEWS, June 28, 2012, *available at* http://www.detroitnews.com/article/20120628/OPINION01/206280328.

[23] *See, e.g.*, VERIZON, INTERNET OFFERS, http://www.buyverizon.com/fios-internet.aspx (offering up to 300 Mbps/65 Mbps).

[24] CENTURYLINK, HIGH-SPEED INTERNET/DSL SERVICE OFFERS, http://www.centurylink.com/home/internet/ (offering up to 40 Mbps/5 Mbps). Comcast may double the speed of its $39.95 monthly Economy high-speed Internet tier from 1.5 Mbps to 3 Mbps, following plans to increase the speed of the broadband package. *See* Steve Donahue, *Comcast May Double Speed of Economy High-Speed Internet Tier*, FIERCECABLE, Feb. 1, 2012, *available at* http://www.fiercecable.com/story/comcast-may-double-speed-economy-high-speed-internet-tier/2012-02-01.

[25] Since 2008, Comcast has had a 250 GB monthly data usage threshold on residential accounts and has temporarily suspended its caps in nontest markets. *See* Comcast Announcement Regarding An Amendment to Our Acceptable Use Policy, http://xfinity.comcast.net/terms/network/amendment/; Cathy Avgiris, *Comcast to Replace Usage Cap With Improved Data Usage Management Approaches*, COMCASTVOICES (BLOG) (May 17, 2012), http://blog.comcast.com/2012/05/comcast-to-replace-usage-cap-with-improved-data-usage-management-approaches.html.

[26] NCTA, INDUSTRY DATA (NCTA DOCSIS DEPLOYMENT), http://www.ncta.com/Statistics.aspx; *see also* Press Release, Comcast, Comcast Doubles Speeds of Two Xfinity Internet Speed Tiers at No Additional Cost to Customers (July 24, 2012) (announcing plans to offer a 305 Mbps/65 Mbps service) (*Comcast Press Release*), *available at* http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=1205&SCRedirect=true.

coverage,[27] but are also deploying new, faster, and more spectrally-efficient mobile network technologies, most notably Long Term Evolution (LTE), which offers advertised download speeds as high as 5–12 Mbps.[28] In the summer of 2010, there was no LTE deployment in the United States.[29] Just 18 months later, in January 2012, three mobile wireless providers had launched LTE networks,[30] and best available estimates are that these LTE networks (combined) covered 211 million people.[31]

7. The evolution of the market must inform the Commission's ongoing assessment of broadband deployment just as it informs the industry's own efforts. In this report, we assess our nation's progress to date using the existing speed benchmark of 4 Mbps/1 Mbps. At the same time, we also provide extensive new data on the deployment of mobile services and on the availability of next-generation, very high speed networks.[32] We will explore in the next Inquiry whether to update our speed benchmark. The Inquiry will also consider whether and how to incorporate mobility as an essential element of "advanced telecommunications capability"[33] in light of the Commission's decision in the

[27] Best available estimates of mobile broadband coverage by 3G or better technologies (including CDMA EV-DO, EV-DO Rev. A, WCDMA/HSPA, HSPA+, mobile WiMAX, and LTE) indicate growth from 98.1% of the U.S. population in November 2009 to 99.4% in January 2012. *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*, WT Docket No. 09-66, Fourteenth Report, 25 FCC Rcd 11407, 11487–88, para. 122 (2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-81A1_Rcd.pdf (Nov. 2009 figure); Commission estimates based on census block analysis of Mosaik CoverageRight coverage maps, January 2012, with population data are from the 2010 Census (Jan. 2012 figure). In addition, the percentage of the population covered by at least four mobile broadband providers increased from 58 percent to 79 percent during that period. *Id*. at 11449, tbl. 7 (Nov. 2009 figure); Commission estimates based on census block analysis of Mosaik CoverageRight coverage maps, January 2012, with population data are from the 2010 Census (Jan. 2012 figure).

[28] *Fifteenth Mobile Wireless Competition Report*, 26 FCC Rcd at 9736–37, para. 109; VERIZON WIRELESS, NETWORK FACTS, http://aboutus.vzw.com/bestnetwork/network_facts.html.

[29] *Fifteenth Mobile Wireless Competition Report*, 26 FCC Rcd at 9736, 9743, tbls. 11, 13.

[30] *See id*. at 9736–37, 9740, paras. 109, 115 (Verizon Wireless and MetroPCS); Press Release, AT&T, 4G LTE from AT&T Available in Chicago (Sept. 19, 2011), *available at* http://www.att.com/gen/press-room?pid=21165&cdvn=news&newsarticleid=32813.

[31] The Commission estimates based on census block analysis of Mosaik CoverageRight coverage maps, January 2012. Population data are from the 2010 Census.

[32] The benchmark we adhere to in this report refers to actual speeds, not advertised or "up to" speeds. We rely on SBI Data to estimate fixed broadband deployment. *See infra* Section IV.B. The SBI 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). *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. 10-159, Seventh Broadband Progress Report and Order on Reconsideration, 26 FCC Rcd 8008, 8078, para. 1, App. F (2011) (*2011 Seventh Broadband Progress Report*). As we explained in the last report, the SBI Data on advertised speed may not accurately represent consumers' actual broadband speed. *See id*. at 8083–85, paras. 16–19, App. F. As explained below, in the *First Measuring Broadband America Report*, among other things, the report established for the first time that the majority of residential wireline broadband consumers are receiving performance close to the level advertised by their providers. *See infra* Section IV.F.2; OFFICE OF ENGINEERING AND TECHNOLOGY & CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU, FCC, MEASURING BROADBAND AMERICA: A REPORT ON CONSUMER WIRELINE BROADBAND PERFORMANCE IN THE U.S. 4 (2011) (FIRST MEASURING BROADBAND AMERICA REPORT), *available at* http://www.fcc.gov/cgb/measuringbroadbandreport/Measuring_U.S._-_Main_Report_Full.pdf.

[33] 47 U.S.C. § 1302(d)(1) (defining advanced telecommunications capability).

USF/ICC Transformation Order to set universal access to mobile broadband as a distinct universal service goal, and whether to incorporate an evaluation of next-generation high speed services in the Commission's evaluation of broadband deployment.[34] The Commission recently identified hundreds of thousands of unserved road miles in census blocks lacking 3G or better wireless service for purposes of Mobility Fund Phase I.[35] In the next Inquiry, we will also consider how best to assess mobile broadband coverage and whether the Commission should similarly analyze mobile deployment by examining road miles as it is doing for Phase I of the Mobility Fund.[36] In addition, we expect to consider whether our broadband benchmark or benchmarks should incorporate standards regarding latency and capacity,[37] which the *USF/ICC Transformation Order* recognized as critical components for evaluating broadband service quality.[38] Each year, we must examine whether Americans have access to "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."[39] Market offerings, and consumer demand, continue to expand and change, and our evaluation under section 706 necessarily should reflect those developments.

II. BACKGROUND

8. Section 706(b) 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)."[40] In conducting this inquiry, the Commission must "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."[41] The Commission must also provide "[d]emographic information for unserved areas,"[42] and an international comparison in its annual broadband report.[43] 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 investment and by promoting competition in the telecommunications

[34] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17667, 17696–702, paras. 1, 90–104. Our last inquiry was released in August 2011 and the *USF/ICC Transformation Order* was released in November 2011. *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 No. 11-121, Notice of Inquiry, 26 FCC Rcd 11800 (2011) (*Eighth Broadband Notice of Inquiry*).

[35] *See Mobility Fund Phase I Procedures Public Notice* (identifying road miles in unserved census blocks eligible for Mobility Fund Phase I support). This Public Notice and related information are available on the Auction 901 web page at http://wireless.fcc.gov/auctions/901/.

[36] *USF/ICC Transformation Order*, 26 FCC Rcd at 17783, para. 330; *see also Mobility Fund Phase I Procedures Public Notice*.

[37] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17696–702, paras. 90–104.

[38] *See id*. at 17667–70, 17672, 17674, 17696–705, 17771–825, paras. 1, 3–5, 8, 10, 17, 28, 90–108, 295–497.

[39] 47 U.S.C. § 1302(d)(1).

[40] 47 U.S.C. § 1302(b). In 2008, the BDIA required the Commission to publish its reports "annually" instead of "regularly." BDIA § 103(a)(1), 122 Stat. at 4096; 47 U.S.C. § 1302(b).

[41] 47 U.S.C. § 1302(b).

[42] *Id*. § 1302(c).

[43] *Id*. § 1303(b).

market."[44]

9. *Previous Broadband Progress Reports*. This is the Eighth Broadband Progress Report since Congress enacted section 706.[45] Following legislation emphasizing the importance of broadband,[46] the Commission found, in the last two broadband reports, that broadband was not being deployed to all Americans in a reasonable and timely fashion.[47] In the *2011 Seventh Broadband Progress Report*, based on data reported as of June 30, 2010, the Commission found that as many as 26 million Americans live in areas unserved by broadband.[48] The Commission further observed that "[m]any 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, despite the growing costs of digital exclusion."[49] The Commission also determined that availability encompasses more than physical deployment of broadband networks, and thus the assessment should include factors such as broadband cost, quality, and adoption by consumers.[50] The Commission concluded that the evidence regarding such factors "provide[s] further indication that broadband is not being reasonably and timely deployed and is not available to all Americans."[51]

10. *Actions Taken Subsequent to the 2011 Seventh Broadband Progress Report*. As explained above, the Commission has taken significant steps since the last report to promote broadband through the Commission's recent *USF/ICC Transformation Order*.[52]

11. *USF/ICC Transformation Order*. On October 27, 2011, the Commission adopted the *USF/ICC Transformation Order* that comprehensively reforms and modernizes the universal service system to ensure the universal availability of fixed and mobile communication networks capable of providing voice and broadband services where people live, work, and travel.[53] Relevant to this report, the *USF/ICC Transformation Order* represents a significant policy step to connect all Americans to

[44] *Id*. § 1302(b).

[45] As required by section 706(b), on August 5, 2011, we initiated an inquiry to fulfill our annual responsibility of examining broadband deployment and availability. *See Eighth Broadband Notice of Inquiry*; 47 U.S.C. § 1302(b).

[46] Congress amended section 706 of the 1996 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").

[47] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8009, para. 1; *Sixth Broadband Progress Report*, 25 FCC Rcd at 9558, para. 2. The first five reports 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. *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, 10508–10, paras. 5–9 (2009) (summarizing the five prior broadband reports).

[48] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8009, para. 1.

[49] *See id.* (citing 2010 NATIONAL BROADBAND PLAN).

[50] *Id.* at 8020–21, paras. 18–20.

[51] *Id.* at 8010, para. 2.

[52] *See supra* at paras. 3–4; *see also USF/ICC Transformation Order*, 26 FCC Rcd at 17709, para. 115.

[53] *USF/ICC Transformation Order*, 26 FCC Rcd at 17667, para. 1.

broadband by accelerating deployment of modern communications networks.[54] The *USF/ICC Transformation Order* is expected to help connect millions of unserved Americans to high-speed Internet and voice service over the next six years.[55] The order establishes the Connect America Fund, which relies on incentive-based, market-driven policies, including competitive bidding, to distribute universal service funds as efficiently and effectively as possible to make broadband available to homes, businesses, and community anchor institutions in areas that do not, or would not otherwise, have broadband.[56] The Bureau announced support amounts for the first phase of the Connect America Fund to spur immediate new broadband buildout on April 25, 2012 and on July 24, 2012, and a number of carriers committed to use over $110 million to deploy broadband to unserved areas in 37 states.[57] The *USF/ICC Transformation Order* also explains that the next phase of the reforms will use a combination of a forward-looking broadband cost model and competitive bidding to efficiently disburse ongoing support for the deployment of networks providing both voice and broadband service. The Bureau is actively engaged in developing this phase of the reform and, most recently on June 8, 2012, sought comment on model design and data inputs.[58] We expect that these reforms will expand broadband availability to millions more unserved Americans.

12. The *USF/ICC Transformation Order* also established a universal service support mechanism dedicated exclusively to mobile services—the Mobility Fund.[59] The Commission has allocated financial support to expand mobile broadband nationwide.[60] Phase I of the Mobility Fund will provide up to $300 million in one-time support to address gaps in mobile services by supporting the build-out of current- and next-generation mobile networks in areas where these networks are unavailable.[61] This support will be awarded by reverse auction with the objective of maximizing the coverage of road miles in eligible unserved areas within the established budget.[62] The Phase I auction is scheduled to take place on September 27, 2012.[63] In addition, the Commission has designated $50 million for Mobility Fund Phase I support exclusively for Tribal lands (Tribal Mobility Fund), which will

[54] Press Release, FCC, FCC Releases 'Connect America Fund' Order to Help Expand Broadband, Create Jobs, Benefit Consumers (Nov. 18, 2011), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-311095A1.pdf.

[55] *Id*.

[56] *See* FCC, CONNECT AMERICA FUND & INTERCARRIER COMPENSATION REFORM ORDER, EXECUTIVE SUMMARY (2011) (USF/ICC EXECUTIVE SUMMARY), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-310692A1.pdf.

[57] *See FCC Public-Private Effort Press Release*.

[58] *See Wireline Competition Bureau Seeks Comment on Model Design and Data Inputs for Phase II of the Connect America Fund*, WC Docket Nos. 10-90, 05-337, Public Notice, 27 FCC Rcd 6147 (2012), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0608/DA-12-911A1.pdf.

[59] *USF/ICC Transformation Order*, 26 FCC Rcd at 17771–825, paras. 295–497.

[60] *Id*.

[61] *Id*. *See Mobility Fund Phase I Auction Public Notice*; *Mobility Fund Phase I Procedures Public Notice*. This auction will be the first to award high-cost universal service support through reverse competitive bidding envisioned by the *USF/ICC Transformation Order*, awarding one-time support to carriers that commit to provide 3G or better mobile voice and broadband services in areas where such services are unavailable, without exceeding the budget of $300 million.

[62] *USF/ICC Transformation Order*, 26 FCC Rcd at 17781–83, paras. 322–28.

[63] *Mobility Fund Phase I Auction Public Notice*.

be awarded by auction in 2013.[64] Phase II of the Mobility Fund will provide $500 million annually for ongoing support of mobile services.[65] The Commission sought comment on the details for Mobility Fund Phase II in a further notice adopted in the *USF/ICC Transformation Order*.[66]

13. The *USF/ICC Transformation Order* also phases down certain regulated charges for the exchange of traffic among carriers—known as intercarrier compensation—and transitions specified rates previously set, via one of several complex methodologies, to a simplified, uniform bill-and-keep methodology, which over time will reduce hidden subsidies on consumers' bills. This reduction will increase efficiency and eliminate impediments to the deployment of broadband networks.[67] Intercarrier compensation reform will provide benefits to all Americans through improved service and lower costs as consumers increasingly shift from traditional telephone service[68] to alternatives, including Voice over Internet Protocol (VoIP), mobile calling and texting, and email.[69]

14. *Additional Commission Initiatives*. In addition to the *USF/ICC Transformation Order*, we briefly summarize initiatives since the last report designed to accelerate broadband availability that include, but are not limited to:[70]

- Measuring Broadband Performance. On August 2, 2011, the Commission released the *First*

[64] *USF/ICC Transformation Order*, 26 FCC Rcd at 17819, para. 481; *Mobility Fund Phase I Procedures Public Notice*.

[65] *Id.* at 17824, para. 494. Up to $100 million of this amount annually is designated for support to Tribal lands. *Id*.

[66] *Id.* at 18069–85, paras. 1121–88.

[67] *Id.* at 17904–14, paras. 736–59. These reforms will apply the bill-and-keep framework to terminating access and some transport traffic. The Commission seeks comment in portions of the further notice in the *USF/ICC Transformation Order* on the transition and recovery for originating switched access and for certain common and dedicated transport rate elements. *Id*. at 17873, 18109–20, paras. 653, 1297–1325.

[68] On December 6, 2011 and December 14, 2011, the Commission held public workshops to examine the transition from the public switched telephone network (PSTN) to new technologies including, among other things, how to continue reliability, accessibility, and ubiquity in the PSTN even as the market shifts away from PSTN services to other technologies. Through these workshops, the Commission sought input on the technical, economic, and policy issues that must be addressed to minimize disruption during this transition. *See FCC Workshops on the Telephone Network in Transition*, Public Notice, 26 FCC Rcd 16354 (2011), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-1958A1_Rcd.pdf.

[69] *USF/ICC Transformation Order*, 26 FCC Rcd at 17872–956, paras. 648–846. The *USF/ICC Transformation Order* adopts rules for a measured, gradual transition to a bill-and-keep methodology for terminating switched access rates and adopts a recovery mechanism to provide carriers with certain and predictable revenue streams. *Id.* at 17873, para. 651.

[70] In addition to the initiatives listed herein, the Commission has been active in reexamining its rules applicable to various technologies focusing on the availability of ATC to all Americans. For example, on December 15, 2011, the Commission continued its reexamination of the fundamentals of its video relay services rules, including setting forth proposals to improve the structure and efficiency of the program and promoting residential broadband adoption by low-income Americans with disabilities. *See Structure and Practices of the Video Relay Service Program; Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket Nos. 10-51, 03-123, Further Notice of Proposed Rulemaking, 26 FCC Rcd 17367, 17369, 17375, 17385, paras. 1, 11, 29–30 (2011). On October 24, 2011, the Commission fundamentally affirmed its rules for Access Broadband over Power Line (Access BPL) systems and also modified certain rules designed to balance between the dual objectives of providing for Access BPL technology that has potential applications for broadband and Smart Grid while protecting incumbent radio services against harmful interference. *See Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband Over Power Line Systems Carrier Current Systems, Including Broadband Over Power Line Systems*, ET Docket Nos. 04-37, 03-104, Second Report and Order, 26 FCC Rcd 15712, 15713, para. 1 (2011).

Measuring Broadband America Report,[71] which presented the results of the first nationwide study of broadband performance to the home, using measurement technology deployed in the consumer's home.[72] Among other things, the report established for the first time that the majority of residential wireline broadband consumers are receiving performance close to the level advertised by their providers.[73] On July 19, 2012, the Commission released the *Second Measuring Broadband America Report.*[74] The Commission found "striking across-the-board improvements on key metrics underlying user performance."[75] In particular, the Commission found that ISP promises of performance are more accurate, ISPs are more consistent in their ability to deliver advertised speeds, and consumers are subscribing to faster speed tiers and receiving faster speeds.[76]

- Wireless Backhaul Reform. On August 9, 2011, the Commission made available new spectrum, covering almost two-thirds of the U.S. landmass, for microwave wireless backhaul facilities.[77] These facilities are an essential component of many broadband networks, particularly mobile wireless networks.[78] Continuing its reform of rules governing use of microwave frequencies for wireless backhaul as part of the FCC's Broadband Acceleration Initiative, on August 3, 2012, the Commission released an order that permits fixed microwave operators to use smaller antennas in certain microwave bands, which can result in significant cost savings to operators.[79]

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[71] *See generally* FIRST MEASURING BROADBAND AMERICA REPORT.

[72] The *First Measuring Broadband America Report* was the culmination of a year-long effort involving the cooperation of Internet Service Providers (ISPs) representing 86 percent of all residential wireline broadband consumers in the United States to measure broadband performance to the homes of a representative sampling of thousands of volunteers. *Id*. at 3. Individual tests were performed on each volunteer's broadband service. *Id*. The report found that "[f]or most participating broadband providers, actual download speeds are substantially closer to advertised speeds than was found in data from early 2009 and discussed in a subsequent FCC white paper, though performance can vary significantly by technology and specific provider." *Id.* at 4; *see also* OBI, BROADBAND PERFORMANCE (OBI Technical Paper No. 4, 2010) (2010 OBI BROADBAND PERFORMANCE) (providing a prior effort to determine advertised versus actual broadband speeds delivered to the home), *available at* http://download.broadband.gov/plan/fcc-omnibus-broadband-initiative-(obi)-technical-paper-broadband-performance.pdf.

[73] The *First Measuring Broadband America Report* also identified ISPs that fell short of advertised speeds. FIRST MEASURING BROADBAND AMERICA REPORT at 4. A few months after the report was released, the FCC noticed a significant improvement by a major ISP and announced the results in a blog post. *FCC Announces Commencement of 2012 Measuring Broadband America Performance Study of Residential Broadband Service in the United States*, Public Notice, 27 FCC Rcd 1680 (2012) (*2012 Measuring Broadband Public Notice*).

[74] OFFICE OF ENGINEERING AND TECHNOLOGY & CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU, FCC, 2012 MEASURING BROADBAND AMERICA JULY REPORT: A REPORT ON CONSUMER WIRELINE BROADBAND PERFORMANCE IN THE U.S. 4 (2011) (SECOND MEASURING BROADBAND AMERICA REPORT), *available at* http://transition.fcc.gov/cgb/measuringbroadbandreport/2012/Measuring-Broadband-America.pdf.

[75] *Id*. at 4.

[76] *Id*. at 4–5.

[77] *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; Petition for Rulemaking filed by Fixed Wireless Communications Coalition to Amend Part 101 of the Commission's Rules to Authorize 60 and 80 MHz Channels in Certain Bands for Broadband Communications*, WT Docket No. 10-153, RM-11602, Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order, 26 FCC Rcd 11614 (2011) (*2011 Wireless Backhaul Report and Order*).

[78] *Id*. at 11615, para. 1.

[79] *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and* (continued….)

- Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA) Implementation.[80] Congress enacted the CVAA to ensure that the 54 million Americans with disabilities have access to the modern and innovative communications technologies of the 21st century, including Internet and digital technologies that use broadband.[81] The Commission has completed the following broadband-related CVAA rulemakings and actions, among others:
    - *Accessibility Clearinghouse and Accessibility and Innovation Initiative (A&I Initiative)*. The A&I Initiative, launched on July 26, 2010, promotes collaborative problem-solving among stakeholders on accessibility solutions, such as accessible applications for mobile phones and websites, to enable people with disabilities to reap the full benefit of broadband communication technologies.[82] In October 2011, the Commission also launched the Accessibility Clearinghouse, a web-based repository of information about accessibility solutions for telecommunications and advanced communications services and equipment, and for Internet browsers on mobile phones.[83]
    - *Advanced Communications Services (ACS)*. On October 7, 2011, the Commission adopted rules requiring ACS providers and equipment manufacturers to ensure that their services and equipment are accessible to and usable by individuals with disabilities, if achievable.[84] Under the rules, ACS includes electronic messaging, non-interconnected VoIP, and other broadband-related communication services.
    - *Closed Captioning over Internet Protocol*. On January 12, 2012, the Commission adopted rules requiring the provision of closed captioning on video programming delivered using Internet protocol when such programming was first published or

(Continued from previous page)
Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Petition for Rulemaking filed by Fixed Wireless Communications Coalition to Amend Part 101 of the Commission's Rules to Authorize 60 and 80 MHz Channels in Certain Bands for Broadband Communications, WT Docket No. 10-153, RM-11602, Second Report and Order, Second Further Notice of Proposed Rulemaking, Second Notice of Inquiry, Order on Reconsideration, and Memorandum Opinion and Order, FCC 12-37 (rel. Aug. 3, 2012) (*2012 Wireless Backhaul Second Report and Order*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-87A1.pdf.

[80] CVAA, Pub. L. No. 111-260, 124 Stat. 2751 (2010) (as codified in various sections of 47 U.S.C.); Pub. L. No. 11-265, 124 Stat. 2795 (2010) (technical amendments to the CVAA).

[81] *Id.* A study from Pew Internet found that only 41 percent of Americans with disabilities, however, have broadband access at home compared to the national average of 69 percent. SUSANNAH FOX, PEW INTERNET, AMERICANS LIVING WITH DISABILITY AND THEIR TECHNOLOGY PROFILE 3 (2011), *available at* http://pewinternet.org/~/media//Files/Reports/2011/PIP_Disability.pdf, *cited in Implementation of Sections 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010; Amendments to the Commission's Rules Implementing Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996; Accessible Mobile Phone Options for People Who Are Blind, Deaf-Blind, or Have Low Vision*, CG Docket Nos. 10-213, 10-145, WT Docket No. 96-198, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 14557, 14560, para. 3 (2011) (*ACS Order*). Both Congress and the Commission have recognized that this gap must be closed in order to afford persons with disabilities to share fully in the economic, social, and civic benefits of broadband. *See ACS Order.* 26 FCC Rcd at 14561, para. 5.

[82] *See* BROADBAND.GOV, ACCESSIBILITY AND INNOVATION INITIATIVE, http://www.broadband.gov/accessibilityandinnovation/.

[83] *See* FCC, ACCESSIBILITY CLEARINGHOUSE, http://apps.fcc.gov/accessibilityclearinghouse/.

[84] *See generally ACS Order*, 26 FCC Rcd 14557.

exhibited on television with captions.[85] These rules will ensure that programs delivered over broadband networks are accessible to individuals who are deaf or hard of hearing.

- *National Deaf-Blind Equipment Distribution Program*. On July 1, 2012, the Commission launched a pilot program to provide up to $10 million of support to entities that distribute equipment designed to make telecommunications, Internet access, and advanced communications services accessible to low-income individuals who are deaf-blind.[86]

- Open Internet. On December 21, 2010, the Commission adopted the *Open Internet Order*, which supports the Internet's virtuous cycle of investment and innovation by providing greater clarity and certainty regarding the continued freedom and openness of the Internet.[87] The rules adopted in this order, which became effective on November 20, 2011,[88] create a framework that aims to ensure the Internet remains an open platform in the coming years—one characterized by free markets and free speech—and one that continues to enable consumer choice, end-user control, competition through low barriers to entry, and the freedom to innovate without permission.[89] Edge providers[90]—many of which are small businesses and individual entrepreneurs—have relied on this openness to innovate new services such as those used with Internet-based smartphones and other wireless devices.[91] The "app economy" has experienced tremendous growth since 2010 and now accounts for nearly half a million jobs.[92] The increase in new uses of the network

[85] *Closed Captioning of Internet Protocol-Delivered Video Programming: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010*, MB Docket No. 11-154, Report and Order, 27 FCC Rcd 787 (2012).

[86] *Commission Announces Entities Certified to Participate in the National Deaf-Blind Equipment Distribution Program*, DA 12-1050 (rel. July 2, 2012); *Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010, Section 105, Relay Services for Deaf-Blind Individuals*, CG Docket No. 10-210, Report and Order, 26 FCC Rcd 5640 (2011).

[87] *See generally 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) (*Open Internet Order*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf.

[88] Preserving the Open Internet, 76 Fed. Reg. 59192 (Sept. 23, 2011), *available at* http://www.gpo.gov/fdsys/pkg/FR-2011-09-23/pdf/2011-24259.pdf.

[89] *See Open Internet Order*, 25 FCC Rcd at 17908, para. 10.

[90] *Id*. at 17907, para. 4 n.2 (explaining the term "edge provider" is used to refer to content, application, service, and device providers, because they generally operate at the edge rather than the core of the network).

[91] MICHAEL MANDEL, TECHNET, WHERE THE JOBS ARE: THE APP ECONOMY 1 (Feb. 7, 2012) (MICHAEL MANDEL APP ECONOMY), *available at* http://www.technet.org/wp-content/uploads/2012/02/TechNet-App-Economy-Jobs-Study.pdf; *see Open Internet Order*, 25 FCC Rcd at 17910–11, para. 13. Streaming video and cloud computing are other examples of edge providers creating new services that contribute to the Internet's virtuous cycle of innovation and investment.

[92] MICHAEL MANDEL APP ECONOMY at 1; *see also* DELOITTE, TRENDS IN VENTURE CAPITAL: STATE OF THE IPO MARKET 19 (June 22, 2011) (noting that nearly 65 percent of venture capitalists predict that investment in new media and social networking will rise over the next five years), *available at* http://www.nvca.org/index.php?option=com_docman&task=doc_download&gid=753&Itemid=93; Press Release, PricewaterhouseCoopers LLP and National Venture Capital Association, Annual Venture Investment Dollars Increase 22% Over Prior Year, According to the MoneyTree Report (Jan. 20, 2012) (noting that, in 2011, Internet-specific companies attracted nearly $7 billion in venture capital funding, a 68 percent increase in dollars and 24 percent increase in deals from 2010), *available at* https://www.pwcmoneytree.com/MTPublic/ns/moneytree/filesource/exhibits/11Q4MTPressrelease.pdf.

corresponds with an increase in home broadband adoption and smartphone ownership,[93] which leads to further network improvements and infrastructure investment, and that spurs yet further innovative uses.[94]

- Modernizing Lifeline. On January 31, 2012, the Commission modernized the USF's Lifeline Program, which ensures the availability of communications to low-income Americans. Among other things, the Commission adopted a goal of ensuring the availability of broadband service for low-income Americans, clarified that consumers may apply their Lifeline discount to bundled offerings that include broadband, and established a "Broadband Pilot Program."[95] The pilot will be an 18-month program and will allocate up to $25 million to test and determine how Lifeline can best be used to increase broadband adoption among Lifeline-eligible consumers.[96] The Bureau issued a Public Notice on April 30, 2012 soliciting applications from ETCs to participate in the pilot and received a number of applications by the July 2, 2012 deadline.[97]
- VoIP Outage Reporting Requirements. On February 21, 2012, the Commission extended the outage reporting requirements contained in Part 4 of the Commission's Rules—previously only applicable to legacy telecommunications services—to interconnected VoIP services (typically provided over broadband networks).[98] The Commission reported that, as of December 31, 2010, 31 percent of the more than 87 million residential telephone subscriptions in the United States were provided by interconnected VoIP providers—an increase of 21 percent (from 22.4 million to 27.1 million residential lines) in the last year.[99] The Commission continues to evaluate whether to extend outage reporting requirements to broadband Internet service providers.[100]
- Advanced Wireless. On March 21, 2012, the Commission took steps to free up 40 megahertz of spectrum in the 2 GHz band spectrum for mobile broadband by proposing to remove rules that

[93] *See infra* tbl. 17 (showing an increase in fixed home broadband adoption across three analyzed speed tiers from June 2010 to June 2011); *Open Internet Order*, 25 FCC Rcd at 17910–11, para. 14; AARON SMITH, PEW INTERNET, 46% OF AMERICAN ADULTS ARE SMARTPHONE OWNERS: SMARTPHONE USERS NOW OUTNUMBER USERS OF MORE BASIC MOBILE PHONES WITHIN THE NATIONAL ADULT POPULATION 2 (2012) (2012 PEW SMARTPHONE SURVEY), *available at* http://pewinternet.org/~/media//Files/Reports/2012/Smartphone%20ownership%202012.pdf; *America's New Mobile Majority: A Look at Smartphone Owners in the U.S.*, NIELSENWIRE (BLOG), May 7, 2012 (NIELSENWIRE SMARTPHONE OWNERS), http://blog.nielsen.com/nielsenwire/?p=31688 (finding that over 50% of mobile subscribers have a smartphone); *see also* US REMAINS AT FOREFRONT OF LTE SERVICE ADOPTION, TELEGEOGRAPHY (Mar. 15, 2012) (finding that the United States leads the world in 4G adoption), *available at* http://www.telegeography.com/products/commsupdate/articles/2012/03/15/us-remains-at-forefront-of-lte-service-adoption/.

[94] *See Open Internet Order*, 25 FCC Rcd at 17910, para. 14.

[95] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6660, para. 3.

[96] *Id*. at 6802–03, para. 341.

[97] *See Lifeline Pilot Program Public Notice*, 27 FCC Rcd 4840; *see also Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6802–03, para. 341.

[98] *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers*, PS Docket No. 11-82, Report and Order, 27 FCC Rcd 2650 (2012), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-22A1_Rcd.pdf. Collecting these data will help the Commission help ensure the Nation's 9-1-1 systems are as reliable and resilient as possible and also allow us to monitor compliance with the statutory 9-1-1 obligations of interconnected VoIP service providers. *Id*. at 2651, para. 1.

[99] *Id.* at 2700–01, App. B para. 3.

[100] *Id.* at 2656, para. 9 (determining that this issue "deserves further study").

have limited this spectrum to satellite use.[101] This effort is consistent with the National Broadband Plan's recommendation and reflects the Commission's commitment to allow flexible use of spectrum, to allocate large blocks of contiguous spectrum, and to make spectrum available in bands that are internationally harmonized.[102]

- Incentive Auctions. On April 27, 2012, in response to the recently enacted Spectrum Act,[103] the Commission took preliminary steps toward making a portion of the UHF and VHF frequency bands (U/V bands) currently used by the broadcast television service available for new uses, while also preserving the integrity of the television broadcast service.[104] The spectrum to be repurposed will serve to further address this nation's growing demand for wireless broadband services, promote ongoing innovation and investment in mobile communications, and help to ensure that the United States keeps pace with the global wireless revolution.[105]

- International Data Collection. Today, in the *2012 International Broadband Data Report*, the International Bureau provided an update on steps the Commission is taking to obtain better, more globally standardized broadband data in order to help the Commission better meet its statutory obligations under section 706.[106] The International Bureau recognized the need for better international data but also noted the Commission's recent efforts to improve the available data, both domestically and internationally.[107] To further this goal, in October 2011, for example, the Commission hosted a two-day OECD broadband metrics workshop in Washington, D.C. focusing on the need to standardize terms, benchmarks and indicators, and data collection and reporting tools/methods employed by the OECD and member countries.[108] Ofcom, the U.K. regulator for communication services, hosted an OECD follow-up workshop in London in June 2012.[109]

15. *Broadband Technology Opportunities Program (BTOP) and Broadband Initiatives Program (BIP).* Recognizing the unique difficulties in deploying broadband to rural areas and Tribal lands, in 2009, Congress allocated approximately $7 billion in grants and loans to expand broadband deployment and adoption in unserved and underserved areas through NTIA's Broadband Technology Opportunities Program (BTOP) and Rural Utilities Service's (RUS's) Broadband Initiatives Program

[101] *See Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, 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, Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*, ET Docket No. 10-142, WT Docket Nos. 04-356, 12-70, Notice of Proposed Rulemaking and Notice of Inquiry, 27 FCC Rcd 3561 (2012) (*Wireless Services in 2000-2020 MHz NPRM and NOI*), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-12-32A1.pdf.

[102] *Id.* at 3567, para. 11.

[103] *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6102, 126 Stat. 156, 205 (2012) (Middle Class Tax Relief Act), *available at* http://www.gpo.gov/fdsys/pkg/PLAW-112publ96/pdf/PLAW-112publ96.pdf.

[104] *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, ET Docket No. 10-235, Report and Order, 27 FCC Rcd 4616 (2012) (*Incentive Auctions Order*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-45A1.pdf.

[105] *Id*. at 4617, para. 1.

[106] *See 2012 International Broadband Data Report* para. 11.

[107] *Id*. paras. 22, 39.

[108] *Id*. para. 40.

[109] *Id*. para. 42.

(BIP).[110] Now that all the funds have been dedicated to projects that will bring robust broadband to unserved and underserved areas of the country, we are beginning to see the impact of the investment.[111] NTIA invested approximately $4 billion in BTOP projects resulting in deployment of 45,196 new or upgraded network miles across the country,[112] connection and/or improved service for more than 2,211 community anchor institutions,[113] and indications that the projects led 259,446 households to subscribe to broadband services.[114] While their projects are ongoing, BTOP recipients have already entered into nearly 400 interconnection agreements with third-party providers to leverage or interconnect with their networks.[115] RUS has funded $3.5 billion in BIP projects that will bring broadband service to an additional 2.8 million households, reaching nearly 7 million people, 360,000 businesses, and 30,000

[110] The *BIP and BTOP Programs* are authorized by the American Recovery and Reinvestment Act of 2009. *See* American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 128 (Recovery Act); *see also* RUS, ABOUT THE RECOVERY ACT BIP, http://www.rurdev.usda.gov/utp_bip.html (ABOUT THE RECOVERY ACT BIP) (explaining RUS's BIP Program); NTIA, BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM (BTOP) QUARTERLY PROGRAM STATUS REPORT at 1 (March 2012) (2012 NTIA'S BTOP QUARTERLY REPORT) (explaining NTIA's BTOP Program), *available at* http://www.ntia.doc.gov/files/ntia/publications/12th-btop-quarterly-congressional-report-march-2012.pdf. In 2009, the Recovery Act allocated $2.5 billion for RUS's BIP program and $4.7 billion in grants for NTIA's BTOP program, for a total of $7.2 billion in budget authority. *See* Recovery Act, 123 Stat. at 118, 128. RUS used its $2.5 billion allocation for both grants and loans. On August 10, 2010, Congress rescinded $302 million from NTIA's BTOP Program, reducing NTIA's funding to approximately $4.4 billion equaling in total, approximately $6.9 billion. *See* Pub. L. No. 111-226, § 302, 124 Stat. 2389, 2404 (2010); *see also* 2012 NTIA'S BTOP QUARTERLY REPORT at 1. According to RUS, it may award and obligate funds in excess of its budget authority when it makes loans. Therefore, RUS notes, the total investment under the BIP and BTOP exceeds $7 billion. *See* GAO, GAO-11-371T, Recovery Act: BROADBAND PROGRAMS AWARDS AND RISKS TO OVERSIGHT 2–3 (Feb. 10, 2011) ("RUS awarded funds to 320 projects, including more than $2.3 billion for grants and about $87 million for loans. According to RUS, the budget authority of $87 million for loans supports almost $1.2 billion in total loans, and a combined loan and grant award amount of more than $3.5 billion.").

[111] Under RUS's BIP Program, by September 30, 2010, there were 320 awards obligated that totaled $3.529 billion. *See* ABOUT THE RECOVERY ACT BIP. The total awards were 285 last-mile projects that total over $3 billion, the 12 middle-mile awards total $172.6 million, four satellite awards for $100 million, and 19 technical assistance awards for over $3.4 million in 45 states and one territory. *Id*. In March 2012, NTIA reported that it had invested approximately $4 billion in 233 BTOP projects benefitting every state, five territories, and the District of Columbia. 2012 NTIA'S BTOP QUARTERLY REPORT at 1. NTIA's BTOP Program reports considerable progress during the last quarter regarding deployment. *See id*. at 2–3. NTIA indicates that it has reached 90 percent of its fiscal year 2012 goal to deploy 50,000 new or upgraded network miles across the country. *Id*. at 3. NTIA adds that recipients deployed more than 16,000 network miles during the past quarter, bringing the total number of miles to 45,196. *Id*. According to NTIA, through December 31, 2011, network deployment was underway in 47 states and territories. *Id*. NTIA has also invested in sustainable adoption programs. *See* NTIA, GRANTS AWARDED: SUSTAINABLE BROADBAND ADOPTION, http://www2.ntia.doc.gov/sustainableadoption.

[112] 2012 NTIA'S BTOP QUARTERLY REPORT at 3. For example, Northwest Open Access Network's (NoaNet) expansion in the state of Washington is expected to promote affordable broadband access for approximately 380,000 households, 18,000 businesses, and 1,300 anchor institutions including government offices, public safety and medical centers, and schools. *Id*. Additionally, ComNet's GigE PLUS Availability Coalition project in western Ohio is expected to provide more affordable broadband access in to 737,000 households, 165,000 businesses, and 2,900 institutions. *Id*.

[113] *Id*. at 4.

[114] *Id*. at 6.

[115] Lawrence E. Strickling, Testimony Before the Committee on Energy and Commerce and Subcommittee on Communications Technology (May 16, 2012), *available at* http://www.ntia.doc.gov/speechtestimony/2012/testimony-assistant-secretary-strickling-broadband-loans-and-grants.

anchor institutions across more than 300,000 square miles.[116] The BIP projects are expected to create more than 25,000 immediate and direct jobs.[117]

16. *Additional USDA & RUS Programs*. Additionally, RUS administers the substantially underserved trust area (SUTA) provisions of the 2008 Farm Bill.[118] SUTA provides a pathway for Tribal communities to access the RUS telecommunications loan and grant programs more easily as a means for increasing the rate of deployment and adoption across all Tribal communities. RUS has proposed new rules under SUTA,[119] and SUTA provisions authorize RUS to waive matching requirements, give projects on trust lands the highest funding priority, and authorize loans with interest rates as low as 2 percent.[120] The USDA also continues to administer a variety of non-BIP loan and grant programs targeted specifically to communities and regions that have inadequate access to telecommunications and broadband service or investment capital.[121] Projects financed under RUS's Telecommunications Infrastructure Loan Program and Broadband Loan Program have provided broadband access to more than 3.6 million rural households, businesses, and community organizations.[122]

17. *SBI Data*. Since July 2009, NTIA, in coordination with the Commission, has been collecting data concerning where broadband is deployed across the nation as part of the State Broadband Initiative (SBI) Grant Program.[123] The data collected as part of the SBI Grant Program helped populate a

[116] Jonathan Adelstein, Testimony Before the Senate Committee on Indian Affairs at 5 (Jun. 7, 2012), *available at* http://www.rurdev.usda.gov/SupportDocuments/rdCongTestimonyAdelsteinJune7-2012.pdf; *see also* USDA, BROADBAND INITIATIVES PROGRAM (BIP) AWARDS REPORT: ADVANCING BROADBAND: A FOUNDATION FOR STRONG RURAL COMMUNITIES at 3–4 (Jan. 2011) (2011 BIP AWARDS REPORT), *available at* http://www.rurdev.usda.gov/supportdocuments/RBBreport_V5ForWeb.pdf. More than 1 million K–12 students attend school within areas served by BIP awards (more than 3,300 schools in 44 states), and 600 rural healthcare facilities are served by BIP awards (facilities are located in 123 BIP served areas in 40 states). 2011 BIP AWARDS REPORT at 4.

[117] *Id*. at 3.

[118] Food, Conservation, and Energy Act of 2008, Pub. L. No. 110-246, § 6105, 122 Stat. 923, 1196 (2008) (2008 Farm Bill); *see also* USDA RURAL DEVELOPMENT—PROGRAMS OVERVIEW, RURAL UTILITIES SERVICE, IMPLEMENTATION OF THE SUTA INITIATIVE (SUTA OVERVIEW), http://www.rurdev.usda.gov/suta.html.

[119] Department of Agriculture, Rural Utilities Service, Substantially Underserved Trust Areas, 76 Fed. Reg. 63846 (Oct. 14, 2011) (to be codified at 7 C.F.R Pt. 1700).

[120] *See* SUTA OVERVIEW.

[121] *See, e.g.*, Press Release, USDA, Agriculture Secretary Vilsack Announces Funding to Expand and Improve Broadband Services in Rural Areas (Nov. 14, 2011), *available at* http://www.usda.gov/wps/portal/usda/usdahome?contentid=2011/11/0485.xml&navid=NEWS_RELEASE&navtype=RT&parentnav=LATEST_RELEASES&edeployment_action=retrievecontent; *see also* CHMN. JULIUS GENACHOWSKI, FCC, BRINGING BROADBAND TO RURAL AMERICA: UPDATE TO REPORT ON A RURAL BROADBAND STRATEGY, GN Docket No. 11-16, 26 FCC Rcd 8681, 8692–93, paras. 15–16 (2011) (2011 RURAL BROADBAND UPDATE), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-307877A1.pdf, *attached to Chairman Genachowski Releases Update to 2009 Rural Broadband Report*, GN Docket No. 11-16, Public Notice, 26 FCC Rcd 8680 (2011).

[122] *See* Letter from R. Matthew Warner, Attorney Advisor, FCC, on behalf of the Rural Utilities Service, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 11-121, App. (Jul. 17, 2012), *available at* http://apps.fcc.gov/ecfs/document/view?id=7021989631.

[123] To comply with requirements under the BDIA and the Recovery Act, NTIA in July 2009 established the SBI Grant Program. *See* 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/files/ntia/publications/fr_broadbandmappingnofa_090708.pdf; Department of Commerce, NTIA, State Broadband Data and Development Grant Program, Docket No. 0660-ZA29, (continued….)

national broadband inventory map that was first made public in February 2011 and most recently updated March 2012.[124] In accordance with the Recovery Act, this map allows consumers to determine broadband deployment in any region of the nation through a website that is interactive and searchable. As we did in last year's *2011 Seventh Broadband Progress Report*, we rely on these data as key inputs into our analysis of broadband deployment and availability.[125]

III. BENCHMARKING BROADBAND

18. Section 706(d)(1) 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."[126] In each of the reports the Commission has conducted under section 706, it has relied on a speed benchmark for determining whether a service satisfies this statutory definition.[127] In the *2010 Sixth Broadband Progress Report*, the Commission updated this speed benchmark from 200 kbps in both directions[128] to services that offer actual download (i.e., to the customer) speeds of at least 4 Mbps and actual upload (i.e., from the customer) speeds of at least 1 Mbps (4 Mbps/1 Mbps, or "speed benchmark").[129]

19. In this report, we continue to rely upon this speed benchmark, which the Commission has used in the two most recent broadband reports.[130] We find that this speed benchmark still reflects the

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Notice of Funds Availability; Clarification, 74 Fed. Reg. 40569 (Aug. 12, 2009); *see also* NTIA, STATE BROADBAND INITIATIVE, http://www2.ntia.doc.gov/SBDD.

[124] NATIONAL BROADBAND MAP, http://broadbandmap.gov/; Press Release, Moira Vahey, NTIA Unveils National Broadband Map and New Broadband Adoption Survey Results (Feb. 17, 2011) (*NTIA National Broadband Plan Press Release*), *available at* http://www.ntia.doc.gov/press-releases/2011/commerce%C3%A2%E2%82%AC%E2%84%A2s-ntia-unveils-national-broadband-map-and-new-broadband-adoption-survey; Anne Neville, *New Data for the National Broadband Map* (NATIONAL BROADBAND MAP) BLOG (Mar. 2, 2012), http://www.broadbandmap.gov/blog/2712/new-data-for-nbm/.

[125] *See infra* Section IV.B; *see also 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8017–18, 8078, para. 13, App. F.

[126] 47 U.S.C. § 1302(d)(1).

[127] *See 1999 First Broadband Progress Report*, 14 FCC Rcd 2398, 2406, para. 20 (defining "broadband" as a service capable of supporting upstream and downstream speeds in excess of 200 kbps in the last mile); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913, 20919–21, para. 10 (2000); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Report, 17 FCC Rcd 2844, 2850, para. 9 (2002); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540, 20551-52 (2004); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 07-45, Fifth Report, 23 FCC Rcd 9615, 9616, para. 2 (2008); *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563, para. 11; *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8019, para. 15.

[128] *See 2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9559–64, paras. 5–10 (discussing the 200 kbps symmetrical standard).

[129] *Id.* at 9563, para. 11. As discussed below, we believe the 3 Mbps/768 kbps tier in our SBI Data is the best proxy for 4 Mbps/1 Mbps for purposes of this report. *See infra* para. 29.

[130] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8019, para. 15; *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9563, para. 11. The benchmark we adhere to in this report refers to actual speeds, not advertised or "up to" speeds. We rely on SBI Data to estimate fixed broadband deployment. The SBI Data provides 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). *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8078, App. F para. 1. As we explained in the last report, the SBI Data on advertised (continued….)

requirements in section 706(d)(1) and generally "enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."[131] For instance, broadband service offering 4 Mbps/1 Mbps enables users to stream high-definition video and engage in basic video conferencing.[132] Maintaining the speed benchmark from prior years also simplifies the measurement of progress from the prior two years.[133]

20. We are cognizant that demand changes over time. Usage trends are driving up demand for bandwidth and services, and users are attaching multiple Internet-enabled devices to a single, shared household broadband connection.[134] The 2010 National Broadband Plan recommended the 4 Mbps/1 Mbps speed benchmark we are using for this report,[135] but also recommended that the Commission should "review and reset" this benchmark every four years.[136] We will seek comment on the broadband speed benchmark in the next Inquiry to ensure that our analysis keeps pace with evolving consumer demand and technologies.[137]

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speed may not accurately represent consumers' actual broadband speed. *Id*. at 8083–85, App. F paras. 16–19. As explained above, *First Measuring Broadband America Report*, among other things, established for the first time that the majority of residential wireline broadband consumers are receiving performance close to the level advertised by their providers. *See infra* Section IV.F.2; FIRST MEASURING BROADBAND AMERICA REPORT at 4.

[131] 47 U.S.C. § 1302(d)(1).

[132] *See* 2010 OBI BROADBAND PERFORMANCE at 9 (listing types of online content and services and the broadband data rates required by that content or service); OFFICE OF ENGINEERING AND TECH. & CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU, FCC, BROADBAND SPEED GUIDE (2011), *available at* http://www.fcc.gov/guides/broadband-speed-guide; *see also* FIRST MEASURING BROADBAND IN AMERICA REPORT at 6–7.

[133] *See infra* Section IV.B; *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8019, para. 15 (stating that "[w]e 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"); *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9565, para. 13 (adding that "[o]ur present 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 growth in the advanced services market from one Report to the next'"). For the reasons above, we decline to adopt any of the recommendations in the record to modify the broadband benchmark at this time. *See, e.g.*, AT&T Comments at 24 (benchmark should be decreased from 4 Mbps/1 Mbps to 3 Mbps/768 kbps to reflect the fact that consumers are able to access the services they currently demand with less bandwidth); CTIA Comments at 18 (recommending that the Commission revise its definition of broadband to account for mobility); FTTH Council Comments at 5–6, 7–9 (suggesting that the Commission should adopt a "tiered-approach," Minimum: 384 kbps/1.5 kbps, Average: 12 Mbps/2.5 Mbps, Maximum: 101 Mbps/20 Mbps, with 100 Mbps/50 Mbps to 100 Million Homes by 2020; measure peak hours as an appropriate measure of consumer demand; and consider the increase in cloud computing); NATOA Comments at 3 (urging the Commission to adopt a symmetric 10 Mbps at peak times).

[134] OFFICE OF ENGINEERING AND TECH. & CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU, FCC, HOUSEHOLD BROADBAND GUIDE (2011), *available at* http://www.fcc.gov/guides/household-broadband-guide; *see also* FTTH Council Comments at 8 (stating that the majority of families that have home wireless networks are now using them for multiple uses with multiple devices and more than 70 percent are doing so five to seven days a week).

[135] *See* 2010 NATIONAL BROADBAND PLAN at 135; *see also 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8019, para. 15 n.86 (citing 2010 NATIONAL BROADBAND PLAN at 135); *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9566, para. 15 n.64 (same).

[136] *See* 2010 NATIONAL BROADBAND PLAN at 135.

[137] For instance, consumers are also beginning to want broadband to be "[a]lways on, always available—just like your electricity or water supplies—broadband is ready, steady, communication power." *See* EBS, WHITEPAPER: THE BUSINESS BENEFITS OF BROADBAND 2, *available at* www.e-b-s.co.uk/_EBS2/File/TheBusinessBenefitsOfBroadband.pdf. There is evidence that consumers want to both access the Internet at home, as well as on the go. *See* John Horrigan, *Broadband Adoption and Use in America* 24 (OBI (continued….)

21. As discussed, the 2010 National Broadband Plan also recommended that the Commission set a goal of 100 million U.S. homes having affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps by 2020, to create the world's most attractive market for broadband applications, devices, and infrastructure.[138] In this report, we provide additional data about the availability of broadband at high speeds. In the Inquiry, we propose that the Commission identify multiple speed tiers in future reports to assess the country's progress for our universalization goal, as well as additional goals—such as affordable access to 100 Mbps/50 Mbps to 100 million homes by 2020—to ensure that we remain forward thinking and are prepared to satisfy future needs as well as immediate demands.

22. In the *USF/ICC Transformation Order*, the Commission also considered latency and capacity as core characteristics that affect what consumers can do with their broadband service.[139] Based on these characteristics, the Commission adopted minimum service standards for broadband networks on speed, latency, and capacity because they "reflect technical capabilities and user needs that are expected at this time to be suitable for today and the next few years."[140] The Commission required, as a condition of receiving federal high-cost universal service support, that all ETCs must provide "actual download and upload speeds, latency, and usage limits (if any) [that are] reasonably comparable to the typical speeds, latency, and usage limits (if any) of comparable broadband services in urban areas."[141]

23. Latency is a measure of the time it takes for a packet of data to travel from one point to another in a network and often is measured by round-trip time in milliseconds. For example, real-time VoIP services can be supported with speeds as low as 100 kbps, but require low latency for users to converse normally.[142] High-quality video, by contrast, can be delivered satisfactorily with somewhat higher latencies, but requires higher bandwidth. In the *USF/ICC Transformation Order*, the Commission found that "latency affects a consumer's ability to use real-time applications, including interactive voice or video communication, over the network."[143] Based on this finding, the Commission required ETCs "to offer sufficiently low latency to enable use of real-time applications, such as VoIP" indicating that latency of less than 100 milliseconds would likely be sufficient.[144]

24. Capacity is the total volume of data sent and/or received by the end user over a period of time. It is often measured in gigabytes (GB) per month. The Commission also adopted specific minimum standards with respect to capacity. In the *USF/ICC Transformation Order*, the Commission noted that "a usage limit significantly below" many of the highest monthly data tiers currently offered by broadband providers (e.g., a 10 GB monthly data limit) would not be reasonably comparable to residential terrestrial fixed broadband in urban areas.[145]

25. As discussed in more detail below, the Commission's decision to identify latency and

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Working Paper No. 1, 2010) (Horrigan, *Broadband Adoption and Use in America*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf.

[138] *See supra* Section I; 2010 NATIONAL BROADBAND PLAN at 9.

[139] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17696–702, paras. 90–104.

[140] *Id*. at 17703, para. 106.

[141] *Id*. at 17696, para. 91.

[142] *Id*. at 17698, para. 96.

[143] *Id*.

[144] *Id*.

[145] *Id*. at 17703, paras. 99–100. The Commission also noted that "250 GB appears to be reasonably comparable to major current urban broadband offerings." *Id.* at 17698, para. 96.

capacity as core components of broadband service and to propose adopting specific minimum service standards for fixed-terrestrial broadband informs our treatment of mobile and satellite broadband services in this report. Because we did not seek comment on these issues in our last Broadband Progress Notice of Inquiry, however, we do not set specific latency or capacity minimums as part of our broadband benchmark at this time. In the next Inquiry, we will ask whether we should set such standards, and if so, how these benchmarks relate to our treatment of mobile and satellite service.[146]

IV. STATUS OF BROADBAND DEPLOYMENT AND AVAILABILITY

26. 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. In section IV.B, we discuss the data used in this report to assess deployment and adoption. In section IV.C, we analyze SBI Data to identify regions that currently are not served by broadband and provide a demographic analysis of those unserved areas.[147] In section IV.D, we discuss broadband adoption. In section IV.E, we discuss international broadband service capability. In section IV.F, we discuss availability to all Americans including home adoption rates and data regarding broadband at elementary and secondary schools. In section IV.G, we analyze the data and conclude that broadband is not yet "being deployed to all Americans in a reasonable and timely fashion."[148]

A. Broadband "Deployment" and "Availability" Are Broader Than Physical Deployment

27. As the Commission concluded in the *2011 Seventh Broadband Progress Report*, Congress intended the annual section 706(b) inquiries to be broader than a narrow examination of physical network deployment.[149] We find no reason to depart from this conclusion and continue to interpret section 706 in the same manner for purposes of this report. Congress did not define the terms "deployment" and "availability" as used in section 706(b), but required the Commission to assess the availability of broadband, and then directed that specific findings be made regarding deployment.[150] As explained in the last report, the legislative history further supports the view that Congress expects us to examine more than physical availability.[151] Accordingly, our inquiry includes an assessment of a variety of factors indicative of broadband availability, such as broadband cost, quality, and adoption by consumers.[152]

B. Technologies and Data Sources Included

28. We base our assessment of broadband deployment upon the most comprehensive and geographically granular deployment data publicly available—the SBI Data—using the data collected as of

[146] *See generally* 47 U.S.C. § 1302; *see also infra* Section IV.B.

[147] 47 U.S.C. § 1302(c).

[148] *Id*. § 1302(b).

[149] *Id*.; *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8020–21, paras. 18–20.

[150] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8020–21, para. 18.

[151] *See id*. at 8021, para. 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.' 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.' 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. 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.") (citations omitted).

[152] *Id*. at 8020–21, paras. 18–19.

June 30, 2011.[153] The SBI Data are collected semi-annually through state-led efforts and maintained by NTIA for the National Broadband Map, in collaboration with the Commission. The Commission relied on the June 30, 2010 collection of these data in making its finding regarding broadband deployment in the previous broadband report.[154] 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 type and speed.[155] Below, we highlight key aspects of our analysis of SBI Data for purposes of this report.

29. First, as in the previous two reports, we continue to assess broadband deployment using a speed tier that approximates the 4 Mbps/1 Mbps speed benchmark.[156] The SBI Data are collected by pre-determined speed tiers, none of which are 4 Mbps/1 Mbps. The SBI established nine tiers of advertised download speeds and 11 tiers of advertised upload speeds, for 99 possible combinations.[157] Of the 99 speed tier combinations collected in the SBI Data, the closest tier to our speed benchmark lies at 3 Mbps download and 768 kbps upload speeds (3 Mbps/768 kbps). Consistent with the last report, we use the 3 Mbps/768 kbps tier as a proxy for the 4 Mbps/1 Mbps speed benchmark in making our statutory assessment of deployment.[158]

30. Second, in this report, we now rely solely on the SBI Data to determine fixed broadband deployment.[159] Prior to the collection of the SBI Data, the Commission estimated broadband deployment by drawing inferences from the residential broadband subscribership data the Commission collects on Form 477. In the *2011 Seventh Broadband Progress Report*, the Commission relied on SBI Data to determine broadband deployment levels for the report's finding, but also presented an estimate of broadband deployment based on Form 477 Data "to provide continuity with previous broadband reports, and for additional confirmation of our assessment of broadband deployment."[160] Using Form 477 Data to estimate broadband deployment was necessary in the absence of better data. However, the Commission has always recognized that Form 477 subscribership data are a problematic indicator of physical network deployment.[161] For example, the presence of some broadband subscribers in a census tract or county does not necessarily imply that a broadband network has been deployed extensively throughout that area.[162]

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[153] *See infra* Sections IV.D, IV.F.

[154] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8022, para. 21.

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

[156] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 25.

[157] *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, 1532, para. 60 (2011) (*Modernizing Form 477 NPRM*).

[158] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 25.

[159] We also rely on SBI Data in combination with Form 477 Data to estimate broadband adoption. *See infra* Section IV.D.

[160] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8024, para. 28.

[161] *Id*.; *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1522, para. 33; *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9569–70, para. 21.

[162] The estimates of the number of unserved relying on Form 477 Data vary significantly based on two assumptions used in the analysis: the size of the geographical unit, and the threshold the Commission relies upon to estimate whether broadband has been deployed in that geographic area. *See, e.g.*, *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8026, para. 31 tbl. 1 (showing that Form 477 analysis based on counties and a 1 percent "*de minimis*

(continued….)

Because improved SBI broadband deployment data are available, we no longer find it necessary to use the Form 477 subscribership data to estimate broadband deployment. NTIA has now collected several rounds of SBI Data,[163] and we have growing confidence in the fixed deployment estimates based on these data.[164] In this report, we therefore limit our use of the Form 477 subscribership data to analyze broadband adoption.

31. Third, we again base our deployment finding on SBI Data for all fixed terrestrial broadband technologies, including fiber to the home, xDSL, cable modem, and fixed wireless.[165]

32. Fourth, we include in this report significantly more data on mobile services in light of the recent growth in the coverage of higher-speed mobile networks and given the Commission's finding in the *USF/Transformation Order* that mobile should be an independent universal service goal.[166]

33. The growth of mobile deployment and demand for these services in recent years is significant. Today, Americans increasingly are using their smartphones and other mobile devices everywhere they go—at home, work, and travel—in addition to their home broadband connection. Americans are also able to purchase mobile plans that offer much higher speeds than in the past, and many forecast that the demand for mobile broadband services will only continue to increase. According to one commenter, consumers are choosing mobile broadband at a much faster rate than any other technology, and it is outpacing fixed broadband adoption.[167] Another commenter indicates that "[i]ndustry analysts anticipate the U.S. wireless industry as a whole will invest between $23 billion to $53 billion in 4G network deployment between 2012 and 2016."[168] Other evidence suggests that many consumers who subscribe to fixed services concurrently subscribe to mobile data services, reflecting mobile's additional utility to Americans today.[169] Moreover, one report estimates that approximately 46% of American adults owned a smartphone as of February 2012,[170] and a prior survey showed that 87% of smartphone owners used the Internet or e-mail on their smartphone as of May 2011.[171]

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threshold" result in an estimate of 12.2 million unserved Americans but an analysis based on census tracts and a 5 percent *de minimis* threshold result in an estimate of 51.0 million unserved Americans). Additionally, it is possible that one or more broadband networks could be deployed throughout a geographic area even if no one subscribes to broadband. In those instances, our Form 477 analysis would not capture this deployment in its estimate.

[163] Since 2009, when NTIA began the collection of broadband data, NTIA has required the carriers to update the data twice a year, over a five-year period, which NTIA and the Commission will use to update the National Broadband Map. In this report, we base our estimate on SBI Data as of June 30, 2011 data, which is the third collection to date. *See NTIA State Mapping NOFA*, 74 Fed. Reg. at 32545.

[164] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 24 (stating that "it is the first time [SBI Data] have been collected, and the initial round of data has some significant limitations" but explaining "as the [SBI Data] improve, so will our deployment estimates.").

[165] *See infra* App. B.

[166] *USF/ICC Transformation Order*, 26 FCC Rcd at 17667, para. 1.

[167] CTIA Comments at 9–10 (citing INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, FEDERAL COMMUNICATIONS COMMISSION, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2010 at 1 (Mar. 2011)).

[168] TIA Comments at 5.

[169] *See* Horrigan, *Broadband Adoption and Use in America* at 24 (finding that mobile broadband is a supplementary service for broadband users).

[170] 2012 PEW SMARTPHONE SURVEY at 2; NIELSENWIRE SMARTPHONE OWNERS (finding that over 50% of mobile subscribers have a smartphone).

[171] *See* AARON SMITH, PEW INTERNET, 35% OF AMERICAN ADULTS OWN A SMARTPHONE at 3 (2011), *available at* http://pewinternet.org/~/media//Files/Reports/2011/PIP_Smartphones.pdf.

34. Our increased discussion of mobile deployment in this report also reflects the Commission's recent finding in the *USF/Transformation Order* that mobile should be an independent universal service goal.[172] Recognizing the growing impact of and demand for mobile services, the Commission's policy goal in the *USF/ICC Transformation Order* was to ensure Americans have access to *both* fixed and mobile broadband services. The Commission stated that it sought to "ensure that robust, affordable voice and broadband service, both fixed and mobile, are available to Americans throughout the nation."[173]

35. Despite our increased reporting on mobile broadband deployment and availability, we do not include the mobile data in our statutory finding in this report for two reasons. First, as detailed below, we have concerns that the available data sources for measuring mobile broadband may overstate deployment to a significant degree. Second, as noted above, in the *USF/ICC Transformation Order*, the Commission considered latency and capacity as core characteristics that affect what consumers can do with their broadband service.[174] The Commission identified potential standards on latency and usage capacity with respect to fixed broadband services, but did not do so for mobile services, and the latency and capacity of many mobile broadband services may not be comparable to those of fixed broadband services.[175] In any event, even if we included all LTE, WiMax, and HSPA+ service reported by Mosaik as meeting our broadband speed threshold, the number of unserved Americans would remain high (more than 14 million people), and we would likely reach the same 706 finding.[176]

36. *Concerns about the Available Data Regarding Mobile Broadband Deployment.* Our report includes two sources of mobile data—SBI Data and Mosaik Solutions (Mosaik Data).[177] Although these data provide a useful tool for measuring developments in mobile broadband deployment, we have concerns that they overstate the extent of mobile broadband coverage meeting our speed benchmark.

37. With respect to the SBI Data on mobile deployment, we have concerns that providers are reporting services as meeting the broadband speed benchmark when they likely do not. We identified in our previous broadband report concerns that SBI Data overstate deployment.[178] That report was based on SBI Data reflecting network status as of June 30, 2010, a time when most mobile broadband services relied on CDMA EV-DO/EV-DO Rev A or WCDMA/HSPA technologies. We noted that SBI Data indicated relatively widespread deployment of technologies meeting the 3 Mbps/768 kbps speed benchmark, but emphasized that "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

[172] *USF/ICC Transformation Order*, 26 FCC Rcd at 17667, para. 1.

[173] *Id.*

[174] *See supra* Section III.

[175] We thus do not "ignore" or "neglect" the true progress that is being made in deploying wireless services, as our dissenting colleague suggests. *See infra* Dissenting Statement of Commissioner Ajit Pai (Pai Statement). To the contrary, this report includes more data on mobile broadband deployment than any prior report. Rather, we note that the nature of the available data, and concerns about data caps and latency characteristics of these services limits our ability to make concrete findings about mobile deployment at this time or, as the dissent suggests, to simply treat mobile services as substitutes for fixed services in all areas where they may be deployed, contrary to our *USF/ICC Transformation Order*.

[176] *See infra* tbl. 15. For this purpose, we rely on SBI and Mosaik Data as our best estimate given the limitations of both datasets.

[177] Mosaik was formerly known as "American Roamer." *See* MOSAIK SOLUTIONS (FORMERLY AMERICAN ROAMER), http://www.mosaik.com/.

[178] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 26.

these peak speeds could actually occur are relatively rare."[179] In other words, these technologies do not reliably deliver speeds that meet our proxy for the speed benchmark, despite how they were reported in some portions of the SBI Data, raising concerns that including these data would overstate the deployment of broadband meeting the speed benchmark. We therefore excluded SBI mobile wireless data from our deployment estimate in the prior report.[180]

38. This report relies on SBI Data reflecting network status as of June 30, 2011. This data set includes the older CDMA EV-DO/EV-DO Rev A and WCDMA/HSPA technologies as before, and the more recently-deployed, higher-speed LTE, mobile WiMAX, and HSPA+ technologies. While these newer technologies are more likely to deliver speeds that meet our speed benchmark, the SBI Data do not allow us to distinguish the areas covered by the older technologies within the coverage by mobile wireless data networks reported at 3 Mbps/768 kbps or more, again raising concerns that including the SBI Data on mobile wireless would overstate the deployment of broadband meeting the speed benchmark. In this report, therefore, we continue to exclude SBI mobile wireless data from our deployment finding.

39. This report for the first time examines an additional data source on mobile broadband deployment, the Mosaik Data. The Mosaik Data provide the Commission with a set of maps of the boundaries of the network coverage areas, by technology, of every operational, facilities-based, terrestrial mobile wireless provider in the United States and its territories.[181] Using these maps and population data from the Census Bureau, we can estimate the percentage of the U.S. population covered by (1) a certain number of providers, (2) different types of network technologies, and (3) the mobile broadband networks of individual service providers.[182]

40. We have questions, however, on how we should interpret the Mosaik Data to estimate mobile broadband deployment. While the Mosaik Data distinguish coverage by particular mobile wireless network technologies, including LTE, WiMAX, and HSPA+, these technologies may not meet the benchmark depending on the version of the technology deployed, the configuration of the network, the amount of spectrum used, and the type of backhaul connection to the cell site. This is particularly true of certain HSPA+ deployments.[183] Additionally, in the *2012 State of Mobile Public Notice*, the Commission noted that the Mosaik Data likely overstates the coverage actually experienced by consumers.[184] While many mobile wireless service providers report coverage to Mosaik, each uses a

[179] *Id*.

[180] *Id*.

[181] *Wireless Telecommunications Bureau Seeks Comment on the State of Mobile Wireless Competition*, WT Docket No. 11-186, Public Notice, 26 FCC Rcd 15595, 15597 (2012) (*2012 State of Mobile Public Notice*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-1856A1_Rcd.pdf.

[182] *Id*.

[183] There are different versions of HSPA+ with varying peak data speeds—including HSPA+ (14.4 Mbps), HSPA+ (21 Mbps), and HSPA+ (42 Mbps)—which are not distinguishable in the Mosaik HSPA+ coverage maps. *See Fifteenth Mobile Wireless Competition Report*, 26 FCC Rcd at 9737, 9739, paras. 110, 114; Sascha Segan, *AT&T Defines 4G as HSPA 14.4*, PCMAG.COM, May 5, 2011 (*PCMagazine HSPA 14.4*), *available at* http://www.pcmag.com/article2/0,2817,2384959,00.asp; Press Release, T-Mobile, T-Mobile Expands America's Largest 4G Network and Showcases 4G Experiences at 2012 CES (Jan. 10, 2012), *available at* http://newsroom.t-mobile.com/articles/t-mobile-expands-network-showcases-4g-at-ces. In addition, at least one major wireless provider reports that its HSPA+ speeds can vary depending on the type of backhaul connection to the cell site. *See* AT&T, COVERAGE LEGEND TERMS, http://www.wireless.att.com/coverageviewer/popUp_legend.jsp ("AT&T's 4G HSPA+ network is capable of delivering 4G speeds when combined with enhanced backhaul"); *PCMagazine HSPA 14.4*. We also note that LTE speeds can vary depending on the amount of spectrum used in each channel. Sascha Segan, *Why Is AT&T LTE Fast in Houston, Slow in Chicago?*, PCMAG.COM, Sept. 21, 2011, *available at* http://www.pcmag.com/article2/0,2817,2393286,00.asp.

[184] *2012 State of Mobile Public Notice*, 26 FCC Rcd at 15597.

different definition of coverage.[185] The Commission also found that the data were not consistent across geographic areas and service providers.[186] Thus, as with the SBI Data, relying on Mosaik Data would likely overestimate mobile broadband deployment capable of meeting the speed benchmark.

41. Finally, as in the Commission's last report, we also exclude satellite from our deployment finding.[187] Although the uniformity of satellite reporting has improved in the SBI Data over the past year, as of June 30, 2011, there was not a commercially available satellite offering that could provide 4 Mbps/1 Mbps broadband service to consumers.[188]

42. We note that, on January 16, 2012, ViaSat—formerly WildBlue—began offering broadband service of 12 Mbps/3 Mbps through its ViaSat-1 satellite.[189] HughesNet has announced that it launched its high throughput satellite—ECHOSTAR XVII—on July 6, 2012.[190] These developments raise the issue of how satellite services should be included in future Commission reports. As noted above, in the *USF/ICC Transformation Order*, the Commission focused on latency as one of the core characteristics that affects what consumers can do with their broadband service.[191] Satellite service generally has latency over 100 milliseconds[192] and latency may affect a user's ability to "to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology," as required by section 706.[193] Thus, in the next Inquiry, we will also explore how we can best estimate satellite deployment based upon the Commission's findings in the *USF/ICC Transformation Order*.

43. In light of these decisions, in the sections that follow and solely for purposes of this report, we use the term "broadband" to reflect fixed broadband service that meets the speed benchmark, unless otherwise specified.

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[185] *Id*. We note that both SBI Data and Mosaik collect advertised speeds from providers. Unlike Mosaik, with the SBI Data collection, broadband providers must provide broadband coverage in the provider's service area as required by NTIA in the *NTIA State Mapping NOFA*. *See NTIA State Mapping NOFA*, 74 Fed. Reg. at 32557.

[186] *2012 State of Mobile Public Notice*, 26 FCC Rcd at 15597.

[187] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 26 n.112 (excluding satellite due to incomplete SBI Data and evidence that these services were offered below 4 Mbps/1 Mbps).

[188] *See* INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, FCC, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2011 at 26 (June 2012) (JUNE 2012 IAS REPORT) (finding that there were zero reported residential subscriptions at 3 Mbps/768 kbps as of June 2011), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0614/DOC-314630A1.pdf. *See, e.g.*, HUGHESNET, PACKAGE DEALS AND OFFERS, http://www.satellitestarinternet.com/hughesnet_plans_pricing.html#available (offering 2 Mbps/300 kbps in its "Fastest" package).

[189] *See* VIASAT, EXEDE, http://www.exede.com/internet-packages-pricing. The 2010 National Broadband Plan also noted that while there is enough capacity for many people to use satellite service, there may not be enough capacity for everyone to do so. Consequently, unlike fixed broadband service, this satellite service will be a first come, first served service. *See* 2010 NATIONAL BROADBAND PLAN at 137. As noted above, in the next Inquiry, we will explore whether we should consider latency and capacity under section 706 in the next report. *See supra* Section III.

[190] Press Release, Hughes, Hughes Echostar XVII Satellite with Jupiter High Throughput Technology Successfully Launched (July 6, 2012) (reporting the launch of HughesNet's new high speed satellite), *available at* http://www.hughes.com/HNS%20Library%20Press%20Release/07-06-12_EchoStar_XVII_Launch.pdf.

[191] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17698, para. 96.

[192] Greg Berlocher, *Minimizing Latency in Satellite Networks*, SATELLITE TODAY, at 1–2, Sept. 1, 2009, *available at* http://www.satellitetoday.com/via/features/Minimizing-Latency-in-Satellite-Networks_31811.html.

[193] 47 U.S.C. § 1302(d)(1) (defining "advanced telecommunications capability" as a service that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology).

C. Broadband Deployment Estimates

44. This section presents our broadband deployment estimates, provides a demographic analysis of the areas without access to broadband, and reports the progress made in deploying broadband since the last report. The Commission has made several improvements to our data analysis since the last report. Here, we identify whether the Americans who lack access to fixed broadband meeting the speed benchmark live in rural areas, on federally recognized Tribal lands, or in U.S. Territories.[194] We include additional charts and printed maps compared to prior reports and we also make the analysis publicly available in an interactive online map.[195] This interactive map shows the census block areas with and without access to fixed broadband meeting the speed benchmark, indicates rural and non-rural areas, and identifies Tribal land boundaries and U.S. Territories. This map also includes the demographic analysis indicated in section 706(c) (i.e., the population, average population density, and average per capita income) in pop-up screens for each county. The mouse-over also shows the type and percentage of fixed broadband technology available in each county. Based on our analysis, we find that the broadband deployment gap remains significant as approximately 19 million Americans lack access to fixed broadband meeting the speed benchmark and approximately 76 percent of these Americans reside in rural areas. Americans residing on Tribal lands and in U.S. Territories generally have even less access to fixed broadband meeting the speed benchmark. We present these results below.

1. Americans Without Access to Fixed Broadband Meeting the Speed Benchmark

45. Table 1 estimates the number of Americans and households without access to fixed broadband meeting the speed benchmark based upon SBI census block data as of June 30, 2011.[196]

[194] This analysis of rural areas is similar to and builds upon the analysis conducted in the *Rural Broadband Update*. *See* 2011 RURAL BROADBAND UPDATE.

[195] *See* ONLINE SECTION 706 FIXED BROADBAND DEPLOYMENT MAP, *available at* http://www.fcc.gov/maps/section-706-fixed-broadband-deployment-map; *see also infra* App. I.

[196] As explained above, our estimate is based upon fixed broadband services. *See supra* Section IV.B. Our analysis of the SBI Data estimates the unserved population of each census block by subtracting the population of each served census block from the total population of each census block. *See infra* Apps. B (providing a complete description of underlying data), C (providing a listing by state of the proportion of the state population without access to fixed broadband); *see also infra* Apps. D, G. In addition, we have included an interactive online map of the areas without access to the fixed broadband benchmark. *See* ONLINE SECTION 706 FIXED BROADBAND DEPLOYMENT MAP, *available at* http://www.fcc.gov/maps/section-706-fixed-broadband-deployment-map; *see also infra* App. I. We have also included information concerning unserved census blocks on the Commission's website. *See* FCC, EIGHTH BROADBAND PROGRESS REPORT, http://www.fcc.gov/reports/eighth-broadband-progress-report. We provide two files that can be downloaded: (1) a zip file, SBI_noaccess_3_768June2011.zip (containing a csv file with data about each census block without access to the fixed broadband benchmark) and (2) a README file. For each census block without access, the csv file includes: (1) the fips code identifying the census block; (2) the American Indian Area Alaska Native Area Hawaiian Home Land Class Code identifying whether the census block is a Tribal land; (3) the Tribe categorization used in this report; (4) a rural dummy variable designating whether the census block is in a rural area; and (5) the population within the census block without access to fixed broadband benchmark. The README file includes instructions on how to examine the file, the names of the variables, and the characteristics of each variable.

Table 1 Americans and Households Without Access to Fixed Broadband Meeting the Speed Benchmark			
All Americans (Millions)	**Americans Without Access (Millions / %)**	**All American Households (Millions)**	**Households Without Access (Millions / %)**
315.9	19.0 / 6.0%	119.2	7.0 / 5.9%

46. As Table 1 indicates, we find that approximately 19 million Americans living in 7 million households lack access to fixed broadband meeting our speed benchmark. This means roughly one out of seventeen Americans—6 percent—still lack access to fixed broadband meeting the speed benchmark.[197]

2. Rural Areas Without Access to Fixed Broadband Meeting the Speed Benchmark

47. Table 2 identifies the number of Americans residing in rural and non-rural areas that lack access to fixed broadband meeting the speed benchmark. We rely on the 2010 Census block rural designations to identify rural and non-rural.[198]

Table 2 Americans Residing in Rural and Non-Rural Areas Without Access to Fixed Broadband Meeting the Speed Benchmark			
	All Americans (Millions / %)	**Americans Without Access (Millions / %)**	**Percentage of Americans Without Access**
All Americans	315.9	19.0	6.0%
Americans in Rural Areas	61.0 / 19.3%	14.5 / 76.2%	23.7%
Americans in Non-Rural Areas	254.9 / 80.7%	4.5 / 23.8%	1.8%

48. Approximately 14.5 million of the 19 million (or 76 percent) Americans without access to fixed broadband meeting the speed benchmark reside in rural areas. In comparison, 4.5 million of the 19 million (or 24 percent) of Americans living in non-rural areas are without access to these services.[199] The percentage of Americans without access in rural areas is 23.7 percent as compared to 1.8 percent in non-rural areas. These figures indicate that nearly one in four rural Americans lack access to fixed broadband meeting our speed benchmark. These data reflect that rural Americans are more than thirteen times more likely to lack access to fixed broadband than Americans in non-rural areas.[200]

3. Tribal Lands Without Access to Broadband Meeting the Speed Benchmark

49. Table 3 identifies the number of Americans residing on Tribal lands that lack access to fixed broadband meeting the speed benchmark. Our assessment of Tribal lands is conducted by examining the census blocks that have been identified by the U.S. Census Bureau (Census Bureau) as

[197] We note that it is possible that the Americans unserved by fixed broadband may have access to mobile and/or satellite broadband. But given our concerns with the mobile and satellite data as discussed above, we are unable to conduct this assessment. *See supra* Section IV.B.

[198] *See infra* App. B.

[199] In this report, the designation of a census block as rural is based upon the 2010 Census. *See id*.

[200] *See infra* App. C (providing the population residing in rural areas of each state and the proportion of the rural population without access to fixed broadband meeting the benchmark).

federally recognized Tribal lands for the 2010 Census.[201]

Table 3 Americans Residing on Tribal Lands Without Access to Fixed Broadband Meeting the Speed Benchmark			
	All Americans (Millions / %)	**Americans Without Access (Millions / %)**	**Percentage of Americans Without Access**
All Americans	315.9	19.0	6.0%
Americans Residing on Tribal Lands	3.9 / 1.2%	1.1 / 5.9%	29.0%

50. Approximately 29 percent of Americans residing on Tribal lands are without access to fixed broadband meeting the speed benchmark compared to only 6 percent of Americans overall.[202] The percentage of unserved Americans living on Tribal lands is approximately five times the national average.

51. Table 4 identifies the number of Americans residing on Tribal lands in rural and non-rural areas that lack access to fixed broadband meeting the speed benchmark.[203]

Table 4 Americans Residing on Tribal Lands Without Access to Fixed Broadband Meeting the Speed Benchmark			
	All Tribal Lands (Millions / %)	**Americans Residing on Tribal Lands Without Access (Millions / %)**	**Percentage of Americans Residing on Tribal Lands Without Access**
All Tribal Lands	3.9	1.1	29.0%
Tribal Lands in Rural Areas	2.0 / 50.7%	1.0 / 86.5%	49.5%
Tribal Lands in Non-Rural Areas	1.9 / 49.3%	0.2 / 13.5%	7.9%

52. Nearly 50 percent of Americans residing on Tribal lands in rural areas lack access to fixed broadband meeting the speed benchmark, compared to only 6 percent of Americans overall.[204] The percentage of unserved Americans living on Tribal lands in rural areas is more than eight times the national average.

53. In Table 5 we disaggregate these data for all federally recognized Tribal lands into four groups and identify for each group the number of Americans without access to fixed broadband meeting the speed benchmark. For purposes of this report, we disaggregate all federally recognized Tribal groups into the four groupings: (1) Tribal Lands in the Lower 48 States, (2) Alaskan Village Areas, (3) Tribal

[201] *See infra* App. B.

[202] *Id*. (defining Tribal lands), App. E (reporting, by state, the number of Americans residing on Tribal lands without access to the fixed broadband meeting the benchmark). *See also* ONLINE SECTION 706 FIXED BROADBAND DEPLOYMENT MAP, http://www.fcc.gov/maps/section-706-fixed-broadband-deployment-map.

[203] The subcategories for the column "Americans residing on Tribal Lands Without Access" do not sum to 1.1 due to rounding.

[204] *See infra* App. F (reporting the number of Americans residing on Tribal lands by American Indian Area, Alaska Native Area, and Hawaiian Home Land Class Code and disaggregating the Tribal land data between rural and non rural areas).

Statistical Areas, and (4) Hawaiian Home Lands.[205]

Table 5
Americans Residing on Tribal Lands Without Access to Fixed Broadband Meeting the Speed Benchmark

	(Millions)	Americans Residing on Tribal Lands Without Access (Millions)	Percentage of Americans Residing on Tribal Lands Without Access
All Tribal Lands	3.9	1.1	29.0%
Tribal Lands in the Lower 48 States	1.1	0.5	48.2%
Alaskan Village Areas	0.2	0.1	39.5%
Tribal Statistical Areas	2.5	0.5	20.4%
Hawaiian Home Lands	0.0308	0.0001	0.4%

54. Access to fixed broadband can vary significantly among the different groups on Tribal lands.[206] More than 48 percent of Americans residing on Tribal Lands in the Lower 48 States lack access to fixed broadband meeting our speed benchmark compared to less than 1 percent of Americans residing on Hawaiian Home Lands.

4. U.S. Territories Without Access to Broadband Meeting the Speed Benchmark

55. Table 6 identifies the number of Americans residing in U.S. Territories that lack access to fixed broadband meeting the speed benchmark.[207]

Table 6
Americans Residing in the U.S. Territories Without Access to Fixed Broadband Meeting the Speed Benchmark

	All Americans (Millions / %)	Americans Without Access (Millions / %)	Percentage of Americans Without Access
All Americans	315.9	19.0	6.0%
Americans Residing in the U.S. Territories	4.1 / 1.3%	2.2 / 11.6%	54.0%

56. Approximately 54 percent of Americans residing in U.S. Territories are without access to

[205] *See infra* App. B (defining the Tribal lands categories). The categories we use for purposes of this report fall into one of the categories of the American Indian Area Alaska Native Area Hawaiian Home Land Class Code (AIANHHCC). We aggregate these Tribal lands categories into 4 groups: Tribal Lands in the Lower 48 States (AIANHHCC Areas 1 through 4); Tribal Statistical Areas (AIANHHCC Area 5); Alaskan Village Areas (AIANHHCC Area 6) and Hawaiian Home Lands (AIANHHCC Area 7). We note that the Tribal Statistical Areas are largely in Oklahoma, but they also include areas in California, New York, and Washington.

[206] The overarching goal of the Hawaiian Homes Commission Act is to establish Hawaiian Home Lands and to provide homesteading opportunities for Native Hawaiians, and to advance related economic development purposes. *See* Hawaiian Homes Commission Act, ch. 42, 42 Stat. 108 (1921), as amended.

[207] The U.S. Territories are American Samoa, Commonwealth of the Northern Mariana Islands, Guam, Puerto Rico, and United States Virgin Islands. *See infra* Apps. C, D.

fixed broadband meeting the speed benchmark compared to only 6 percent of Americans overall. The percentage of unserved Americans living in U.S. Territories is approximately nine times the national average.

5. Americans Without Access Between June 2010 to June 2011

57. This year's report relies on SBI Data as of June 30, 2011 and last year's report relied on SBI Data as of June 30, 2010. Thus, we are able to report the change in unserved Americans from June 2010 to June 30, 2011. Table 7 compares the change in one year for the following three speed categories: 768 kbps/200 kbps; 3 Mbps/768 kbps; and 6 Mbps/1.5 Mbps.

Table 7
Americans Without Access to Fixed Broadband
From June 30, 2010 to June 30, 2011

	Amended June 2010[208] (Millions)	June 2011 (Millions)
768 kbps/200 kbps	16.0	9.6
3 Mbps/768 kbps	26.4	19.0
6 Mbps/1.5 Mbps	62.6	48.3

58. The number of Americans without access to fixed broadband meeting the speed benchmark has declined from 26 million in June 30, 2010 to 19 million in June 30, 2011. As we explained in the last report,[209] the SBI Data as of June 30, 2010 was the first collection and with any new collection "some misinterpretation of reporting instructions can be expected whenever a new data collection is implemented."[210] While a variety of factors contributed to the decrease in the number of unserved Americans, significant factors likely include: (1) an increase in the number of providers submitting or correcting data about the services they offer;[211] (2) providers reporting expanded broadband deployment; and (3) providers reporting higher-speed broadband services (i.e., services above the speed benchmark in areas where they had offered only lower-speed services previously).[212]

6. Broadband Deployment By Technology

59. Chart 1 reports the percentage of Americans with access to fixed broadband meeting the speed benchmark by technology.

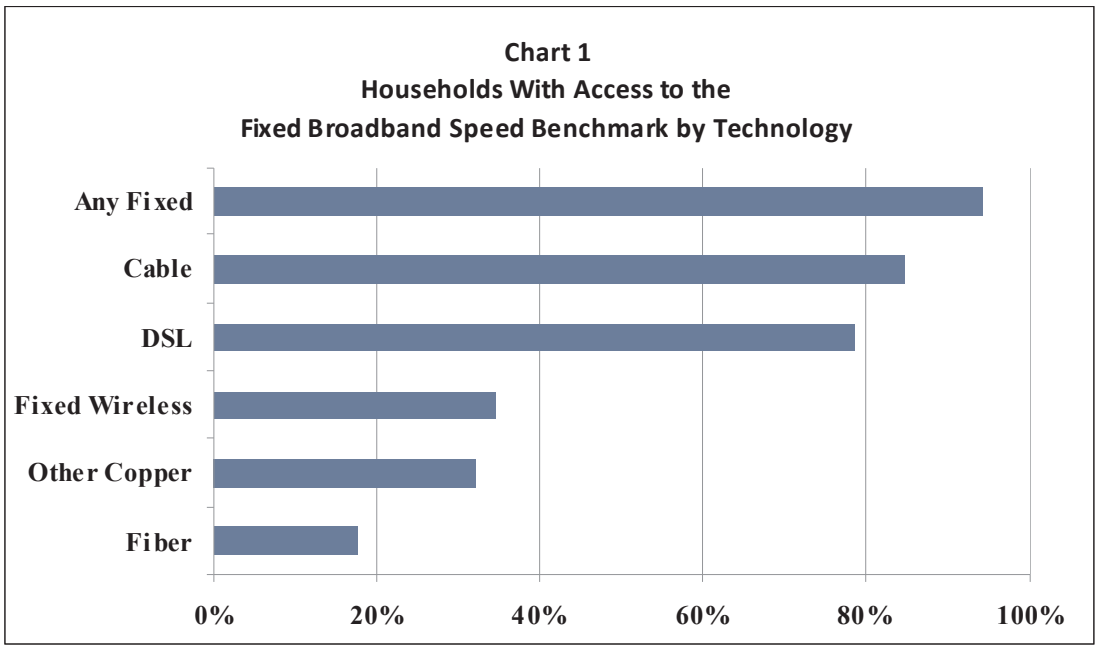
[208] While the Commission, in the last report, estimated the number of unserved for SBI Data as of June 30, 2010 was 26,160,339, due to an internal calculation error, the estimate should have been 26,393,806 unserved Americans. *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8051. We underestimated the number of unserved Americans in the last report by 231,422 or 0.2 million. The SBI Data as of June 30, 2010 was amended to correct for this error.

[209] *Id*. at 8078, App. F.

[210] *Id*. at 8078, 8082, para. 8, App. F.

[211] The total number of new providers submitting data in June 2011 was 540.

[212] Determining the precise contribution of each of the three factors would require making assumptions about where in a census block homes are located because the SBI Data as of June 30, 2011 were reported using a different set of geographies (2010 Census) than the SBI Data as of June 30, 2010 (which used 2000 census areas). In addition, there are a number of areas where providers reported smaller footprints that meet the benchmark—areas that moved from "served" to "unserved" between the June 2010 and June 2011 data sets. These reductions presumably corrected prior overstatements of either speed or the footprint.



60. Overall, more than 94 percent of Americans have access to fixed broadband meeting the speed benchmark. Cable providers continue to report the largest coverage area (85 percent) followed by DSL providers (79 percent).

7. Section 706 Fixed Broadband Deployment Map

61. In conjunction with this report, for the first time, we have created an interactive online map that shows the census block areas of the United States with and without access to fixed broadband meeting the speed benchmark.[213] The map also indicates rural and non-rural areas, and identifies the Tribal land boundaries. The map allows visitors to view the demographic analysis indicated in section 706(c) (i.e., population, population density, and per capita income) in "mouse over" pop-up windows for each county. The mouse-over also shows the type and percentage of fixed broadband technology available in each county. We have also attached a printed version of this map in Appendix I.[214]

8. Demographic Analysis of the Areas Without Access to Broadband Meeting the Speed Benchmark

62. We provide a demographic analysis of the areas without access to fixed broadband meeting the speed benchmark and report, as required by section 706(c), the average population, average population density (pop./sq. mi.) and average per capita income.[215] We also provide further analysis by examining these demographics in served and unserved Non-Urban areas and Tribal land areas. We also conduct other demographic analysis of the areas by considering whether there are significant statistical

[213] *See* ONLINE SECTION 706 FIXED BROADBAND DEPLOYMENT MAP, http://www.fcc.gov/maps/section-706-fixed-broadband-deployment-map; *see also infra* App. I. The SBI Data used to create this map are the same data used to create and update the National Broadband Map. NATIONAL BROADBAND MAP, http://broadbandmap.gov/. We also note that the SBI Data used for the online map is the same data relied upon in the report except the online map is based on population and housing units and the report estimates are based on population and households. *See infra* App. B.

[214] *See infra* App. I.

[215] 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).

differences in the median household income, proportion of population living in poverty, education level, and racial composition of these areas compared to areas with access to these services.

63. To complete the demographic analysis in this section, we aggregate the SBI Data up to the census tract level. As noted above, the SBI Data is collected by census block, the smallest geographic unit reported by the Census Bureau.[216] Household income data as well as other demographic information, however, are not reported at the census block level. Therefore, we conduct our analysis based upon census tract level data. Because areas that lack access to broadband generally are smaller than a census tract, many census tracts are partially served and partially unserved. For purposes of this analysis, a census tract is categorized as "Census Tracts Without Full Access" if any of the census blocks within the census tract are without full access.[217] We compare demographic data for census tracts in which some of the residents lack access to fixed broadband meeting the speed benchmark to census tracts in which all residents have access to fixed broadband meeting the speed benchmark. This approach is conservative because some of the census tracts classified as without access to fixed broadband meeting the speed benchmark have only a small area that lacks access to fixed broadband meeting the speed benchmark.

64. Instead of reporting demographic results for rural and non-rural as we did above, we report results for Urban and Non-Urban areas.[218] The Census Bureau defines Urban and Non-Urban at the census tract level and we must therefore rely on these definitions rather than the rural definition to conduct our demographic analysis. The 2010 Census classifies a census tract as part of the "Urban core" if it is smaller than 3 square miles and has a population density of at least 1,000 people per square mile.[219] All other census tracts are "Non-Urban."

65. We report results for three groups of federally recognized Tribal lands: (1) Tribal Lands in the Lower 48 States, (2) Alaskan Village Areas, and (3) Tribal Statistical Areas.[220] We do not separately report information for Hawaiian Home Lands, as we did above, because there are too few observations for the statistical analysis.[221] We use the same approach we used last year and designate a census tract as Tribal land if at least 50 percent of the land area within the census tract is Tribal land.[222]

66. Finally, we conduct hypothesis testing at the 95 percent confidence level to determine if there is a significant difference in the demographics between areas without access to fixed broadband meeting the speed benchmark and areas with access to these services. A star (*) indicates that there is a statistically significant difference in the mean for the demographic being examined.

a. Demographics Required by Statute of the Unserved Areas (Population, Population Density, and Per Capita Income)

67. Table 8 reports the average population, average population density (pop./sq. mi.), and average per capita income for served and unserved areas.[223]

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[216] *See infra* App. B.

[217] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8082, para. 9 (using this same analysis).

[218] *See supra* tbl. 2.

[219] Department of Commerce, Urban Area Criteria for the 2010 Census, Part II, Docket Number 1107143893-1393-01, Notice of Final Program Criteria, 76 Fed. Reg. 53030, 53040 (Aug. 24, 2011).

[220] *See infra* App. B.

[221] *Id*.

[222] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8038, para. 60.

[223] *See* 47 U.S.C. § 1302(c); *see also infra* App. B. As part of our section 706(c) inquiry, we must compile a list of geographical areas that are not served by broadband and determine for each unserved area, the average population, average population density (pop./sq. mi.), and average per capita income. Appendix D provides demographic (continued….)

Table 8 Comparison of Census Tracts Without Full Access to Fixed Broadband Meeting the Speed Benchmark to Census Tracts With Full Access to Fixed Broadband Meeting the Speed Benchmark			
Areas (Census Tracts)	**Average Population**	**Average Population Density (pop./sq. mi.)**	**Average Per Capita Income ($2010)**
Census Tracts Without Access (25,268)	4,427.6*	925.0*	$24,519*
Census Tracts With Access (47,953)	4,173.9	7,557.3	$28,324

68. Census tracts without access to fixed broadband meeting the speed benchmark tend to have statistically significantly higher average population, lower population densities, and lower average per capita incomes than areas with access to these services.[224]

b. Demographics of Non-Urban Areas

69. Table 9 compares the demographic data for Non-Urban areas with and without access to fixed broadband meeting the speed benchmark.[225]

Table 9 Comparison of Non-Urban Areas With Full Access to Fixed Broadband Meeting the Speed Benchmark to Non-Urban Areas Without Full Access to Fixed Broadband Meeting the Speed Benchmark			
Non-Urban Areas (Census Tracts)	**Average Population**	**Average Population Density (pop./sq. mi.)**	**Average Per Capita Income ($2010)**
Census Tracts Without Access (21,068)	4,479.8*	269.6*	$24,517*
Census Tracts With Access (10,252)	4,854.8	800.2	$30,583

70. Non-Urban census tracts without access to fixed broadband meeting the speed benchmark have a lower average population, population density, and per capita income than Non-Urban areas with access to fixed broadband meeting the speed benchmark, and the differences are all statistically significant.[226] These results are consistent with our prior findings in the last two reports.[227]

(Continued from previous page)
information for counties with unserved Americans. *See infra* App. D. The number of observations reported in these tables is determined by the statistical test with the least observations. For example, while population is available for all 74,134 census tracts included in this analysis, per capita income is available only for 73,221 of the 74,134 census tracts. Specifically, per capita income is available only for 47,953 census tracts with full access and 25,268 census tracts without full access.

[224] We note that the average population densities shown are the average of the population densities of the census tracts for the category. They are not the "overall population densities" (i.e., the total served population in the category divided by total land area for the category). The overall population density for areas without access is 33.8 people per square mile compared to 995.1 people per square mile for areas with access to fixed broadband meeting the benchmark. We note that our findings with respect to average population may be a result that most of the census tracts without access are in rural areas and tend to be very large.

[225] *See infra* App. B.

[226] We find that the "overall population density" is 28.4 people per square mile in non-Urban areas without access to fixed broadband meeting the benchmark compared to 300.5 people per square mile in non-Urban areas with access to these services. *See supra* note 224 (explaining "overall population density").

[227] *See, e.g.*, *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 38.

c. Demographics of Tribal Lands

71. Table 10 compares the demographic data for Tribal land with and without access to fixed broadband meeting the speed benchmark.[228]

Table 10
Comparison of Tribal Lands Without Full Access to Fixed Broadband Meeting the Speed Benchmark to Tribal Lands With Full Access to Fixed Broadband Meeting the Speed Benchmark

Federally Recognized Tribal Lands (Census Tracts)	Average Population	Average Population Density (pop./sq. mi.)	Average Per Capita Income ($2010)
Tribal Lands in the Lower 48 States Without Access (216)	3,514.9	118.7*	$17,004*
Tribal Lands in the Lower 48 States With Access (45)	3,408.6	1,589.9	$26,700
Alaskan Village Areas Without Access (24)	4,584.2	128.8*	$27,707
Alaskan Village Areas With Access (10)	3,652.1	708.1	$27,853
Tribal Statistical Areas Without Access (370)	3,830	235.9*	$20,653*
Tribal Statistical Areas With Access (310)	3,634	2,200.0	$24,175

72. Generally, the three Tribal land categories without access to fixed broadband meeting the speed benchmark have lower population density and lower average per capita income than areas with access to these services. We note that some of these findings may not be statistically significant because of a small sample size or because many of the census tracts designated as Tribal lands include non-Tribal land areas.

d. Other Demographic Measures (Median Household Income, Poverty Rate, Education, and Race)

73. We consider whether areas with and without access to fixed broadband meeting the speed benchmark have statistically significant differences with respect to median household income, poverty rate, the proportion of the population with a college degree, and the proportion of the population that identifies as "White Only."[229] We report this demographic information for: (1) all Americans; (2) Americans residing in Non-Urban areas; and (3) Americans residing on federally recognized Tribal lands. We discuss each category below. The results of this analysis suggests that census tracts without access to fixed broadband meeting the speed benchmark are generally Non-Urban and thus tend to be poorer, less educated, and predominantly "White."

(i) All Americans

74. Table 11 compares the demographic data for all Americans with and without access to fixed broadband meeting the speed benchmark.

[228] *See infra* App. B.

[229] *Id*.

Table 11 Comparison of Census Tracts Without Full Access to Fixed Broadband Meeting the Speed Benchmark to Census Tracts With Full Access to Fixed Broadband Meeting the Speed Benchmark				
All Areas (Census Tracts)	**Median Household Income ($2010)**	**Percentage of Population Living in Poverty**	**Percentage of College Educated**	**Percentage of Population That Identifies as Non-White**
Census Tracts Without Access (25,206)	$50,382*	14.8*	29.1%*	17.4%*
Census Tracts With Access (47,821)	$57,633	15.4	37.1%	31.2%

75. Americans without access to fixed broadband meeting the speed benchmark tend to have lower median household income, a smaller percentage of the population that live in poverty, a smaller percentage of college-educated population, and a smaller percentage of the population that self identifies as non-White than areas with access to these services.[230] These differences are statistically significant.

(ii) Americans Residing in Non-Urban Areas

76. Table 12 compares the demographic data for served and unserved Non-Urban areas.[231]

Table 12 Comparison of Non-Urban Census Tracts Without Full Access to Fixed Broadband Meeting the Speed Benchmark to Non-Urban Census Tracts With Access to Fixed Broadband Meeting the Speed Benchmark				
Non-Urban Areas (Census Tracts)	**Median Household Income ($2010)**	**Percentage of Population Living in Poverty**	**Percentage of College Educated**	**Percentage of Population That Identifies as Non-White**
Census Tracts Without Access (20,998)	$50,909*	14.0%*	28.3%*	14.9%*
Census Tracts With Access (10,088)	$65,700	11.0%	38.2%	18.0%

77. Comparing the results of Tables 11 and 12 reveals that census tracts without access tend to be Non-Urban (i.e., most of the tracts without access to fixed broadband are in non-urban areas). In addition, census tracts without access to fixed broadband meeting the speed benchmark have a statistically significant smaller median household income, higher proportion of the population living in poverty, less education, and a smaller proportion of the population that self identifies as non-White than tracts with access to these services. These trends remain even when accounting for urban and non-urban population (i.e., when comparing only non-urban areas without access to non-urban areas with access).

(iii) Americans Residing on Federally Recognized Tribal Lands

78. Table 13 compares the demographic data for served and unserved Tribal land areas.[232]

[230] *Id*. (defining variables).

[231] *Id*. (defining Non-Urban areas).

[232] *Id*. (describing the Tribal land categories).

Table 13 Comparison of Census Tracts on Tribal Lands That Include Unserved Areas to Census Tracts on Tribal Lands That Include Only Served Areas				
Federally Recognized Tribal Lands (Census Tracts)	**Median Household Income ($2010)**	**Percentage of Population Living in Poverty**	**College Educated Percentage**	**Percentage of Population That Identifies as Non-White**
Tribal Lands in the Lower 48 States Without Access (226)	$37,561*	27.4%*	22.1%*	64.4%*
Tribal Lands in the Lower 48 States With Access (45)	$45,717	19.9%	32.4%	31.8%
Alaskan Village Areas Without Access (24)	$60,239	10.5%	29.7%	12.2%*
Alaskan Village Areas With Access (10)	$64,185	9.4%	29.8%	28.0%
Tribal Statistical Areas Without Access (369)	$42,254*	17.4%	23.6%*	24.9%
Tribal Statistical Areas With Access (310)	$46,740	16.7%	30.4%	27.0%

79. We find mixed results with respect to the three Tribal land categories. Tribal lands without access to fixed broadband meeting the speed benchmark generally have lower Median Household Income and less education then areas with access to these services. For Tribal lands in the Lower 48 States, we find a statistically larger proportion of the population residing in poverty and self-identifying as Non-White in areas without access as compared to the areas with access. We note that some differences are not statistically significant. As noted above, this may be the result of the aggregation process that results in many census tracts including non-Tribal land areas or, in the case of the Alaskan Village Areas, due to a small number of observations.

e. Graphical Representation of the Relationship Between Broadband Deployment and Demographic Characteristics

80. To provide a graphical representation of the relationship between fixed broadband deployment and the demographic characteristics that are likely related to deployment, we examine how the deployment rate[233] for fixed broadband meeting the speed benchmark varies with median household income and population density. We present the results at the county level because summarizing these data at this level is likely to be more understandable and informative then presenting the results at the census tract level.

(i) Broadband Deployment Increases with Median Household Incomes

81. As shown in Chart 2, fixed broadband deployment in a county increases significantly with increases in median household income. Chart 2 uses the format of a boxplot (also known as a box-and-whiskers plot). We analyze the deployment rate against the quintile ranking for county level median household income. This chart provides information about how deployment varies by this income

[233] The deployment rate is the ratio of population with access to fixed broadband meeting the benchmark to the population in the area examined. *See infra* App. G (Overall Fixed Broadband Deployment Rates by State) (reporting deployment rates for fixed broadband services of at least 768 kbps/200 kbps, 3 Mbps/768 kbps, and 6 Mbps/1.5 Mbps).

measure. Each column represents 20% (one fifth) of the counties in the country (i.e., 643 to 644 counties) with the left-most column representing those counties with the lowest median household income, and the right-most column representing counties with the highest median household income. The deployment rate for each group of counties is represented by the box and whiskers. For each quintile:

- the shaded box depicts the range from the 25th to 75th percentiles of deployment rates for that group of counties;
- the horizontal bar inside each shaded box (that separates each box into two segments) represents the median deployment rate for that group of counties;
- the plus sign inside each box represents the average deployment rate for that group of counties; and
- the small un-shaded boxes represent individual observations that are unusually small or large.[234]

82. Summary statistics for the deployment rates associated with each median household quintile are reported in the chart above the boxplot. By way of illustration, we consider the lowest median household quintile in the left-most column and the highest median household quintile in the right-most column. The counties with the lowest median household income (i.e., counties in the lowest quintile or first quintile) have an average deployment rate of 65.3 percent and a group standard deviation of 28.8. The 25th percentile deployment rate for these counties is 51.8 percent and the 75th percentile deployment rate is 88.4 percent. In contrast, the counties with the highest median household income have an average deployment rate of 88.4 percent and a group standard deviation of 19.1. The 25th percentile deployment rate for these counties is 86.0 percent and the 75th percentile deployment rate is 99.3 percent. We find a statistically meaningful difference between the average deployment rates between the lowest and the highest median household income county groups.

[234] The interquartile range is the difference between 75th percentile and the 25th percentile. The notch at the end of the top "whisker" is located at 1.5 times the interquartile range above the 75th percentile. The notch at the end of the bottom "whisker" is located at 1.5 times the interquartile range below the 25th percentile.

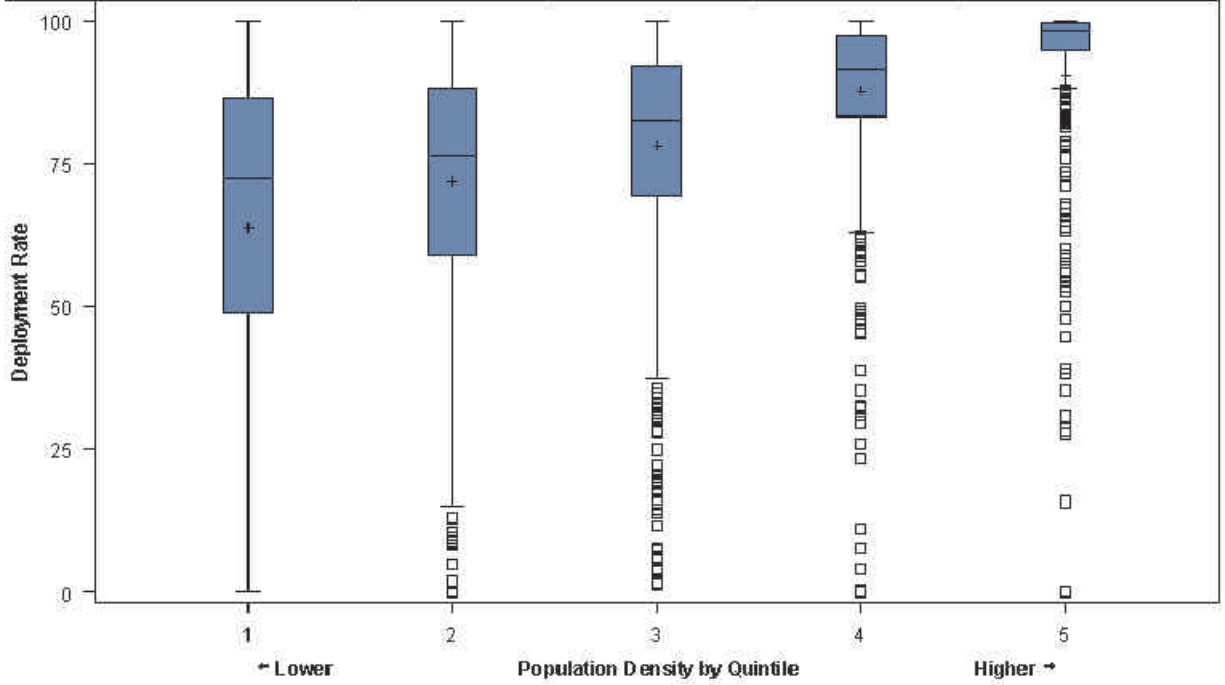
(ii) Broadband Deployment Increases with Population Density

83. Our analysis also shows that fixed broadband deployment in a county increases significantly with increases in population density. Chart 3 is a boxplot of deployment rate against the quintile ranking for county level population density. Among other things, this chart illustrates that, the counties with the lowest population density have an average deployment rate of 63.7 percent and a group standard deviation of 29.4. The 25th percentile deployment rate for these counties is 49.0 percent and the 75th percentile deployment rate is 86.3 percent. In contrast, the counties with the highest population density have an average deployment rate of 90.5 percent and group standard deviation of 22.9. The 25th percentile deployment rate for these counties is 95 percent and the 75th percentile deployment rate is 99.7 percent. We find a statistically meaningful difference between the average deployment rates between the lowest and the highest population density county groups.

84. The results of Charts 2 and 3 suggest that, at the county level, there is wide variability in deployment rates across measures of income and population density. These charts also show that variability in deployment rates is greater for lower values of median household income and population density than for higher values of these demographics. This can be seen by the steady increase in the summary statistics (i.e., average, median, percentile), and the steady reduction in the interquartile range (the difference between the 25th and 75th percentile figures) and the group standard deviation, as one compares columns from the left to the right).

Chart 3
Deployment Rate For Fixed Broadband Meeting the Speed Benchmark By Population Density Quintiles

Deployment Rate					
25th Percentile	49.0	58.8	69.7	83.3	95.0
75th Percentile	86.3	88.1	92.3	97.1	99.7
Average	63.7	71.8	78.1	87.6	90.5
Group Standard Deviation	29.4	21.3	19.7	14.4	22.9



9. Mobile Deployment and Trends

85. The deployment estimates above do not include mobile wireless services. In this section, we provide estimates of mobile wireless broadband deployment between June 30, 2010 and June 30, 2011, and rely on SBI Data and/or Mosaik Data to gain insight into the effect of these different data sources on the estimate of Americans without access.[235] We believe it is important to report these estimates given the growth of mobile deployment in recent years and the ability of providers to offer consumers much higher speeds.[236] The growing impact and demand for mobile services is significant, and we report estimates of mobile deployment to help ensure a comprehensive picture of what services are available to Americans.

86. *SBI Mobile Broadband Trends*. Table 14 reports the number of Americans without access to mobile broadband services between June 30, 2010 and June 30, 2011. We compare the change for the three speed categories, at least 768 kbps/200 kbps, at least 3 Mbps/768 kbps and at least 6 Mbps/ 1.5 Mbps.

[235] For purposes of the analysis in this section, we refer to the services as mobile broadband. *See supra* Section IV.B.

[236] *Id*.

Table 14 Americans Without Access to Mobile Services SBI Data From June 30, 2010 to June 30, 2011		
	Amended June 2010 (Millions / %)	**June 2011 (Millions / %)**
At Least 768 kbps/200 kbps	15.4 / 5.0%	5.1 / 1.6%
At Least 3 Mbps/768 kbps	66.4 / 21.4%	19.7 / 6.2%
At Least 6 Mbps/1.5 Mbps	232.3 / 74.8%	104.5 / 33.1%

87. Based upon SBI Data, the number of Americans without access to mobile broadband at the 3 Mbps/768 kbps speed declined significantly between June 2010 and June 2011.[237] As we explained above, we have concerns that the SBI Data estimates of mobile deployment are likely overstated.[238] In the SBI Data, providers do not distinguish between coverage by the previously deployed, slower mobile technologies (CDMA EV-DO/EV-DO Rev A or WCDMA/HSPA) that likely do not meet the speed benchmark and coverage by the more recently deployed, higher-speed technologies (LTE, mobile WiMax, and HSPA+) that are more likely to meet the speed benchmark.[239]

88. *SBI Data and Mosaik Fixed and Mobile Deployment Estimates*. We report the deployment estimates for mobile broadband services drawn from SBI and Mosaik Data individually and together. In this report, for the first time, we present results combining both fixed and mobile. In the recent *USF/ICC Transformation Order*, the Commission indicated that it is working to ensure that Americans have access to both fixed and mobile broadband. The Commission stated that it sought to "ensure that robust, affordable voice and broadband service, both fixed and mobile, are available to Americans throughout the nation."[240] Using both SBI Data and Mosaik Data, we consider whether Americans have access to: (1) a fixed broadband service; (2) a mobile broadband service; (3) a fixed *or* a mobile service; and (4) a fixed *and* a mobile broadband service, each meeting the 3 Mbps/768 kbps speed benchmark.

89. The top portion of Table 15 reports estimates of the number of Americans without access, based only upon SBI Data. The remainder of Table 15 reports estimates of the number of Americans without access based upon SBI Data for fixed and Mosaik Data for mobile services.[241] We noted above that we have concerns with the SBI Data to estimate mobile deployment.[242] We also have concerns that the Mosaik Data estimates may overstate deployment.[243] While the Mosaik Data provide an estimate of deployment by technology, including LTE, mobile WiMax, and HSPA+, the speeds delivered by these technologies can vary depending on the version of the technology deployed, the configuration of the network, the amount of spectrum used, and the type of backhaul connection to the cell site.[244] Because HSPA+ speeds are particularly dependent on these variables and may or may not meet the speed

[237] We use 3 Mbps/768 kbps as our proxy for 4 Mbps/1 Mbps. *Id*.

[238] *Id*.

[239] *Id*; *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8023, para. 26.

[240] *USF/ICC Transformation Order*, 26 FCC Rcd at 17667, para. 1.

[241] *See supra* Section IV.B. We note that because these Mosaik Data provide an estimate of deployment based on the type of technology, we must infer speed by technology. As explained above, various technologies may or may not meet the broadband benchmark. *Id*. We recognize that this is an imperfect approximation of deployment.

[242] *Id*.

[243] *Id*.

[244] *Id*.

benchmark, as discussed above,[245] our results below first exclude and then include HSPA+.

Table 15
Americans Without Access to Broadband Meeting the Speed Benchmark

Technology and Data Source	Americans Without Access (Millions)	Percentage Without Access
Number of Americans Without Access (SBI Data)		
Fixed Broadband (SBI)	19.0	6.0%
Mobile Broadband (SBI)	19.7	6.2%
Either Fixed or Mobile Broadband (SBI)	5.5	1.7%
Both Fixed and Mobile Broadband (SBI)	33.1	10.5%
Number of Americans Without Access (SBI Fixed Data and Mosaik Mobile Data)		
WiMAX and LTE Technologies		
Mobile Broadband (Mosaik)	150.0	47.6%
Either Fixed (SBI) or Mobile (Mosaik) Broadband	17.5	5.5%
Both Fixed (SBI) and Mobile (Mosaik) Broadband	151.5	48.0%
WiMAX, LTE, and HSPA+ Technologies		
Mobile Broadband (Mosaik)	94.1	29.8%
Either Fixed (SBI) or Mobile (Mosaik) Broadband	14.2	4.5%
Both Fixed (SBI) and Mobile (Mosaik) Broadband	98.8	31.3%

90. The number of Americans without access varies depending on the data source and methodology used. For example, based upon the SBI Data, we estimate that 19.7 million Americans are unserved by mobile wireless data services at the 3 Mbps/768 kbps speed benchmark. In contrast, the Mosaik Data suggest that the number of Americans unserved by such mobile services at the 3 Mbps/768 kbps speed benchmark ranges from 94 million to over 150 million, depending upon whether the HSPA+ technology is excluded or included in the analysis. In general, because many carriers report that the previously-deployed mobile technologies—including CDMA EV-DO/EV-DO Rev A or WCDMA/HSPA—are capable of meeting the speed benchmark in the SBI Data, our estimates of Americans without access to broadband are greater with the Mosaik Data than with the SBI Data.[246] The Mosaik Data excluding HSPA+ may also overstate the number of unserved as compared to the Mosaik Data including HSPA+.[247] Finally, the number of unserved Americans increases regardless of the data source when estimating the population without access to *both* fixed and mobile broadband service. For example, the number of Americans without access to both fixed and mobile broadband service would range from 33.1 million to 151.5 million depending upon the data source used for mobile deployment.

10. Section 706 Mobile Deployment Map

91. We have created an interactive online map, that shows, based on SBI Data, the census block areas of the United States with and without access to mobile services at 768 kbps/200 kbps services

[245] *Id*.

[246] *Id*.

[247] *Id*.

and services meeting the speed benchmark.[248] We have also attached a printed version of this map in Appendix J.

11. Next Generation Broadband Services

92. Higher-speed broadband (10 Mbps and above) is increasingly available in many areas of the country. We must keep in mind these developments as we assess the current market and project consumer demand and expectations in the future. For example, cable providers have made much progress on rolling out DOCSIS 3.0, which is capable of 100 Mbps speeds and even higher speeds.[249] And, Americans continue to demand and subscribe to higher services.[250] We will examine in the next Inquiry whether we should identify multiple speed tiers in these reports to assess the country's progress toward our universalization goal, as well as additional goals—such as affordable access to 100 Mbps/50 Mbps to 100 million homes by 2020.[251] These higher speeds are important as we have seen that greater bandwidth allows for greater utilization of higher data speeds by innovators at the edge of the networks, which in turn drives greater demand and utility of broadband.[252] For these reasons, we present the SBI Data as of June 2011 showing how many Americans are served with fixed broadband for downloads speeds of 10 Mbps, 25 Mbps, 50 Mbps, and 100 Mbps.[253]

Table 16
Americans With Access to High Speed Broadband Services

	All Areas in the U.S. (Millions / %)
10 Mbps Download	282.1 / 89.3%
25 Mbps Download	201.6 / 63.8%
50 Mbps Download	172.8 / 54.7%
100 Mbps Download	85.0 / 26.9%

93. While the industry is reporting even greater DOCSIS 3.0 deployment capable of 100 Mbps and higher speeds today (approximately 82% of U.S. households), our analysis here is based on June 2011 SBI Data.[254] Cable providers may not offer such high-speed services to consumers for technical or other reasons yet and deployment of these networks may not be reflected in the June 2011 SBI Data collection. Nevertheless, we anticipate that as consumers demand these higher speeds, we expect more providers who have deployed DOCSIS 3.0 to offer these next generation services and our

[248] *See* ONLINE SECTION 706 MOBILE DEPLOYMENT MAP, http://www.fcc.gov/maps/section-706-mobile-deployment-map; *see also infra* App. J. For purposes of the analysis in this section, we refer to the services as mobile broadband. This does not affect our concerns that the older mobile technologies do not meet our benchmark and our decision to exclude mobile wireless services from our deployment estimate. *See supra* Section IV.B. As explained above, we exclude mobile services in our deployment estimate due to data consistency and because we are unable to validate which mobile services meet the benchmark. *Id.*

[249] NCTA DOCSIS DEPLOYMENT; *Comcast Press Release* (announcing plans to offer a 305 Mbps/65 Mbps service).

[250] SECOND MEASURING BROADBAND AMERICA REPORT at 5.

[251] *See supra* Section III.

[252] *Id*. at Section II (discussing *Open Internet Order*).

[253] While we do not report upload speeds here, in the next Inquiry, we will ask parties to identify what multiple speed tiers in future reports we could adopt to ensure that we remain forward thinking and are prepared to satisfy future needs as well as immediate demands.

[254] *See supra* Section I; NCTA DOCSIS DEPLOYMENT.

deployment estimates of these services to similarly increase in future reports.

D. Broadband Adoption

94. *New Fixed Adoption Rate Methodology*. In this report, for the first time, we calculate fixed broadband adoption rates using both Form 477 data and SBI Data. In the *2011 Seventh Broadband Progress Report*, we relied solely upon the Form 477 subscription data to estimate fixed adoption,[255] but recognized the limitations of this approach.[256] Form 477 Data indicate the number of subscriptions in an area, but not the number of people who have access to service.[257] Accordingly, as the Commission stated, "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)."[258] A simple example may be instructive. Imagine an area with 20 homes, in which 10 of the homes have access to broadband, and all 10 subscribe to broadband. The adoption rate in this area would be 100 percent (10 subscriptions in 10 homes that have access). On the other hand, the subscription rate would be 50 percent (10 subscriptions in 20 homes).

95. In this report, we combine the Form 477 Data reported at the census tract level with SBI Data aggregated up to the census tract level, and calculate an adoption rate: the ratio of residential connections to fixed broadband at a specified level of service quality (i.e., speed) (Form 477 Data) divided by the total number of households in the area with access to advertised broadband services of that service quality (SBI Data). We use Form 477 subscription data as a proxy for adoption.[259] Our adoption rate should include all household that subscribe to a residential broadband service. However, this does not account for households that use services for free at their local library, community center, or a retail establishment that offers free access to WiFi.

96. We have insufficient information to calculate an adoption rate for mobile services. Our adoption rate is a measure of connections to the service divided by the number of households with access to the service. We believe it is reasonable to assume that households that choose to subscribe to a fixed service are more than likely to have a single fixed broadband connection. In contrast, we cannot assume that households that choose to subscribe to a mobile data service have a single mobile connection. Thus, calculating a mobile adoption rate based upon the Form 477 mobile data would be misleading because the numerator would be a count of mobile handsets to which a data service is subscribed. This would overstate adoption of the service because it would include households with multiple mobile handsets connections.

1. Broadband Adoption Rates Between June 2010 and June 2011

97. Table 17 reports adoption rates for fixed broadband services, including services that meet the speed benchmark, that is, at least 3 Mbps/768 kbps, as well as services with speeds of at least 768

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[255] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8038, para. 58 (stating that 33 percent of American households have a connection advertised as being capable of delivering at least 3 Mbps/768 kbps).

[256] *See id*. at 8027, para. 34 n.133 ("Form 477 subscription data, as currently collected, are also an imperfect measure of adoption."); *see also id.* (adding that "[s]ince 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 that have adopted a service. One could find subscription rates above 100 percent in an area even if many households in that area have not adopted broadband.").

[257] *Id*.

[258] *Id*.

[259] Our adoption rates measure adoption of services at or above the benchmark. *See infra* App B.

kbps/200 kbps and at least 6 Mbps/1.5 Mbps.[260]

Table 17 Overall Fixed Broadband Adoption Rates for the United States as a Whole		
	Adoption Rate (June 2010)	**Adoption Rate (June 2011)**
At Least 768 kbps/200 kbps	62.6%	64.0%
At Least 3 Mbps/768 kbps	36.6%	40.4%
At Least 6 Mbps/1.5 Mbps	24.0%	27.6%

98. These data suggest increases in the adoption of fixed broadband services at all speed levels between June 2010 and June 2011. The increase is small at the 768 kbps/200 kbps level, but higher at the higher speeds, including a 10%, year over year increase in speeds of at least 3 Mbps/768 kbps.[261]

2. Broadband Adoption Rates in the U.S. Compared to Adoption Rates in Non-Urban Areas

99. We examine adoption rates for Urban and Non-Urban areas by comparing the adoption rate for Americans in these areas to the adoption rate for the United States as a whole (i.e., total residential subscribers for the group to total served households for the group). Table 18 reports the *overall* fixed broadband adoption rates in Urban and Non-Urban areas.

[260] The figures in Table 17 are for the United States as a whole. We recognize that the adoption rate as of June 2010 overstates the adoption rate because it is based upon 2009 Geolytics household data to estimate served households. The June 2011 adoption rate is based upon 2011 Geolytics household data. We report overall adoption rates for each state. *See infra* App. H (Overall Fixed Broadband Adoption Rates by State). The adoption rates in Appendix H are calculated for the state as a whole and include services at or above the particular threshold. "At least 768 kbps/200 kbps" captures the number of Americans that subscribe to a fixed service at that speed *or* higher.

[261] We note the Horrigan, *Broadband Adoption and Use in America* adoption report and NTIA's *Exploring the Digital Nation* adoption report provide different adoption estimates of 33 percent and 32 percent, respectively. The Horrigan study estimated that 67 percent of U.S. households contain a broadband user who accesses the service at home. Horrigan, *Broadband Adoption and Use in America* at 3. NTIA reported that, in 2010, more than two-thirds (68 percent) of all American households utilized broadband Internet access services, up four percentage points (64 percent) from the previous year. ECONOMICS AND STATISTICS ADMINISTRATION & NTIA, EXPLORING THE DIGITAL NATION: COMPUTER AND INTERNET USE AT HOME 1 (2011) (DIGITAL NATION NOV. 2011), *available at* http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_computer_and_internet_use_at_home_11092011.pdf. We note that these data are from surveys of consumers as compared to our adoption rate, which relies on the Commission's Form 477 data or carrier-reported subscription data of their broadband services at particular speeds. We note that consumer surveys might be capturing much slower speeds than the Form 477 data because the Form 477 data reports that approximately 67 percent of households subscribe to speeds of 200 kbps or greater. *See* JUNE 2012 IAS REPORT. This speed benchmark is similar to, for example the Horrigan study (67%) and similar to the NTIA report (68%).

Table 18 Overall Fixed Broadband Adoption Rates in All Urban and Non-Urban Areas			
	Overall Adoption Rate for Fixed 768 kbps/200 kbps	**Overall Adoption Rate for Fixed 3 Mbps/768 kbps**	**Overall Adoption Rate for Fixed 6 Mbps/1.5 Mbps**
All Americans	64.0%	40.4%	27.6%
Americans in All Urban Areas	65.0%	43.0%	30.0%
Americans in All Non-Urban Areas	62.7%	36.8%	24.0%

100. Our data indicate that the overall adoption rates in Non-Urban areas are lower than the overall adoption rates in Urban areas.

101. Table 19 reports the average adoption rate for fixed broadband services in Urban and Non-Urban areas and reports whether there is a statistically significant difference in the average adoption rates between these areas.

Table 19 Average Fixed Broadband Adoption Rates in Urban and Non-Urban Census Tracts			
(Census Tracts)	**Average Adoption Rate for Fixed 768 kbps/200 kbps**	**Average Adoption Rate for Fixed 3 Mbps/768 kbps**	**Average Adoption Rate for Fixed 6 Mbps/1.5 Mbps**
Urban Census Tracts (41,442)	62.4%*	41.2%*	28.4%*
Non-Urban Census Tracts (29,575)	59.1%	34.2%	21.4%

102. The data indicate that, on average, the adoption rate for fixed broadband services is significantly greater in Urban areas than Non-Urban areas for fixed broadband meeting the speed benchmark.

3. Broadband Adoption Rates in the U.S. Compared to Adoption Rates on Tribal Lands

103. We also compare adoption rates for the United States as a whole to adoption rates on Tribal lands. We examine the following two categories of federally recognized Tribal lands: (1) the Tribal Lands in the Lower 48 States and (2) Tribal Statistical Areas.[262]

[262] *See infra* App. B. We do not separately report Alaskan Village Areas and Hawaiian Home Lands to maintain firm confidentiality.

Table 20 Overall Fixed Broadband Adoption Rates on Tribal Lands			
	Overall Adoption Rate for Fixed 768 kbps/200 kbps	**Overall Adoption Rate for Fixed 3 Mbps/768 kbps**	**Overall Adoption Rate for Fixed 6 Mbps/1.5 Mbps**
All Areas in the United States	64.0%	40.4%	27.6%
All Tribal Land Areas	51.2%	25.9%	19.9%
Tribal Lands in the Lower 48 States	47.1%	32.5%	15.2%
Tribal Statistical Areas	52.0%	23.6%	20.1%

104. The overall adoption rate for fixed broadband meeting the speed benchmark is lower for all Tribal land areas than the adoption rate for the United States as a whole.[263]

105. Table 21 reports the average adoption rates for fixed broadband services on Tribal lands to non-Tribal lands and reports whether there is a statistically significant difference in the average adoption rates between these areas.

Table 21 Average Fixed Broadband Adoption Rates on Tribal and Non-Tribal Lands			
(Census Tracts)	**Average Adoption Rate for Fixed 768 kbps/200 kbps**	**Average Adoption Rate for Fixed 3 Mbps/768 kbps**	**Average Adoption Rate for Fixed 6 Mbps/1.5 Mbps**
Non-Tribal Lands (60,460)	61.2%*	38.4%*	25.9%*
Tribal Lands (503)	48.0%	24.8%	16.6%

106. The analysis indicates that, on average, the adoption rates for fixed broadband meeting the speed benchmark, as well as other lower speed tiers, are significantly lower on Tribal lands than on non-Tribal lands.

4. Broadband Adoption Rates in the U.S. Compared to Adoption Rates in the U.S. Territories

107. We also compare adoption rates for the United States as a whole to adoption rates in the U.S. Territories.[264]

[263] The figures in this table are only those Tribal lands in which at least 50 percent of the land area of the census tract lies within a Tribal land. We note that our process resulted in only two census tracts being designated as Hawaiian Home Lands, and we cannot determine if the adoption rate is representative of all the other Hawaiian Home Land areas. *Id*.

[264] For the U.S. Territories, we do not report adoption rates for 6 Mbps/1.5 Mbps to maintain firm confidentiality. We do not indicate here whether there is a statistically significant difference in the average adoption rates because there are too few observations in the U.S. Territories.

Table 22 Overall Fixed Broadband Adoption Rates in the U.S. Territories		
	Overall Adoption Rate for Fixed 768 kbps/200 kbps	**Overall Adoption Rate for Fixed 3 Mbps/768 kbps**
All Areas in the United States	64.0%	40.4%
All U.S. Territories	32.2%	3.1%

108. The overall adoption rate for fixed broadband meeting the speed benchmark is lower in the U.S. Territories than the adoption rate for the United States as a whole.

109. Table 23 reports the average adoption rates for fixed broadband services in the U.S. Territories and the U.S. as a whole.

Table 23 Average Fixed Broadband Adoption Rates in the U.S. Territories and the U.S. as a Whole		
(States)	**Average Adoption Rate for Fixed 768 kbps/200 kbps**	**Average Adoption Rate for Fixed 3 Mbps/768 kbps**
All Areas in the United States (56)	60.7%	39.5%
All U.S. Territories (5)	35.1%	10.7%

110. The analysis indicates that, on average, the adoption rate for fixed broadband meeting the speed benchmark is lower in the U.S. Territories than the U.S. as a whole.

5. Distribution of County Level Broadband Adoption Rates

111. Table 24 summarizes the distribution of the county level adoption rates for fixed broadband meeting the speed benchmark. Adoption rates for each county are ordered from lowest to highest and divided into five groups (or quintiles). For example, the first quintile row reports the range of adoption rates for those counties with the lowest adoption rate. For the first quintile, the counties with the lowest adoption rates ranges from 0.0 percent to 5.2 percent.

Table 24 Overall Fixed Broadband Adoption Rates		
Counties	**Range of Adoption Rates**	
First Quintile—(Counties with the Lowest Adoption Rates or Bottom 20 Percent)	0.0	5.2
Second Quintile	5.2	14.8
Third Quintile	14.8	27.5
Fourth Quintile	27.5	42.9
Fifth Quintile—(Counties with the Highest Adoption Rates or Top 20 Percent)	43.0	100.0

112. The data show that, in general, the county level adoption rate is fairly low for the bottom 60 percent of counties (the first three quintiles) where the adoption rate is less than 28 percent and, that as one moves up from the lowest quintile to the highest quintile, the range of adoption rates increases. For example, the first quintile row reports the range of adoption rates for those counties with the lowest adoption rate. For the first quintile, the adoption rate for fixed broadband meeting the speed benchmark or faster speeds ranges is only 5.2 percentage points (0.0–5.2). In contrast, the range of adoption rates for the top quintile (those counties with the highest fixed broadband adoption rates) is 57 percentage points

(43.0–100.0).

a. Graphical Representation of the Relationship Between Adoption Rate and Demographic Characteristics

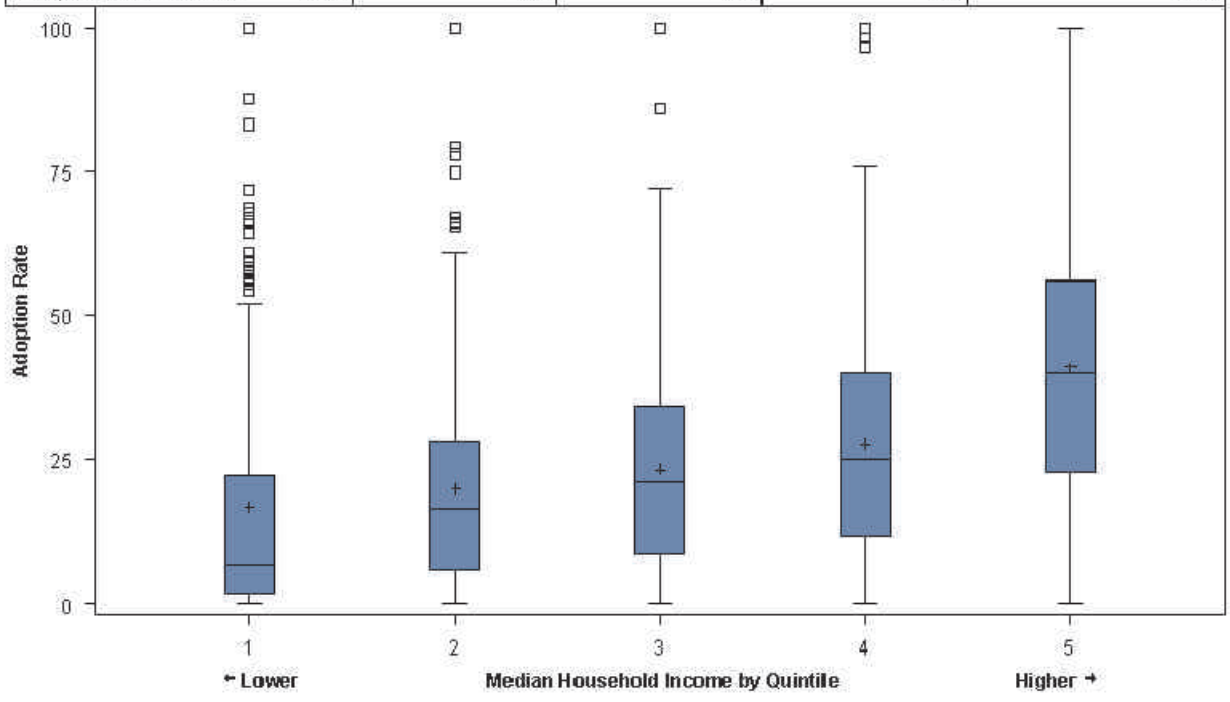
113. We also examine the relationship between the county level adoption rate for fixed broadband meeting the speed benchmark and two demographic variables, the county level median household income and the county level population density. Our analysis shows that the adoption rate in a county increases with both median household income and population density. We present the results at the county level because summarizing the data at this level is likely to be more understandable and informative then presenting the results at the census tract level.

(i) Adoption Rate Increases with Median Household Income

114. Chart 4 is a boxplot of the county level adoption rates against the quintile ranking for the county level median household income. Among other things, this chart shows that the counties with the lowest median household income have an average adoption rate for fixed broadband meeting the speed benchmark of 16.6 percent and a group standard deviation of 23.5. For the counties in this quintile, the 25th percentile adoption rate is 1.6 percent and the 75th percentile adoption rate is 22.2 percent. In contrast, the counties with the highest median household income have an average adoption rate for fixed broadband meeting the speed benchmark of 41.0 percent and a group standard deviation of 23.5. For the counties in this quintile (the counties with the highest median household income), the 25th percentile adoption rate is s 22.6 percent and the 75th percentile adoption rate is 56.1 percent.

Chart 4
Adoption Rate For Fixed Broadband Meeting the Speed Benchmark By Median Household Income Quintiles

Adoption Rate					
25th Percentile	1.6	5.7	8.6	11.6	22.6
75th Percentile	22.2	28.0	34.3	40.0	56.1
Average	16.6	19.8	23.2	27.5	41.0
Group Standard Deviation	23.5	18.5	18.0	19.4	23.5



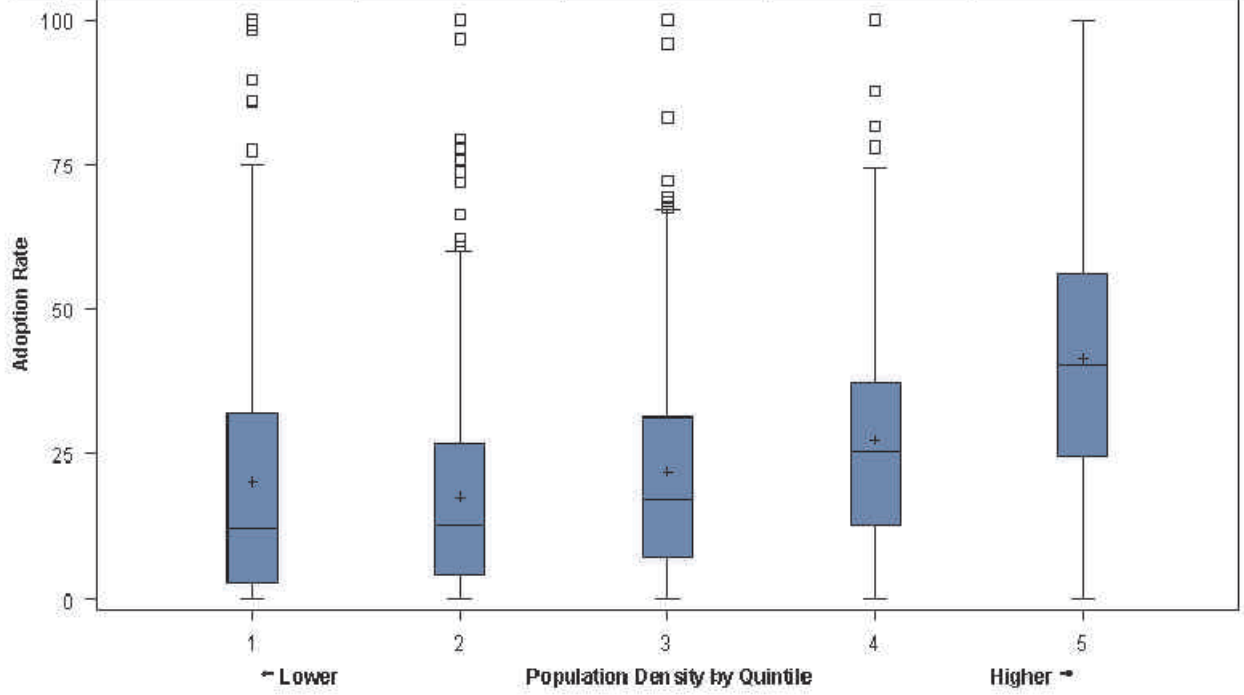
(ii) Adoption Rate for Broadband Increases with Population Density

115. Our analysis shows that the adoption rate in a county increases with population density. Chart 5 plots the county level adoption rate against the quintile ranking for the county level population density. This chart shows that the counties with the lowest population density have an average adoption rate for fixed broadband meeting the speed benchmark of 20.1 percent and a group standard deviation of 21.9. The 25th percentile adoption rate for these counties is 2.7 percent and the 75th percentile adoption rate is 31.9 percent. In contrast, the counties with the highest population density have an average adoption rate of 41.3 percent with a group standard deviation of 24.7. For the counties in the top quintile of population densities, the 25th percentile adoption rate is 24.5 percent and the 75th percentile is 56.1 percent.

116. The results of Charts 4 and 5 suggest that, at the county level, there is wide variability in adoption rates across median household income and population density. This can be seen by the increase in the interquartile range (the difference between the adoption rate between the 25th and 75th percentiles) as one examines the table from lowest to highest quintile for either median household income or population density. In addition, the charts illustrate that the variability in adoption rates generally increases with increases in the county median household income and county population density. Finally, we find that the average adoption rate for those counties with the highest rank order median household income group (or population density) is greater than the average adoption rate for those counties in the lowest rank median household income group (or population density).

Chart 5
Adoption Rate For Fixed Broadband Meeting the Speed Benchmark By Population Density Quintiles

Adoption Rate					
25th Percentile	2.7	4.0	7.1	12.7	24.5
75th Percentile	31.9	26.7	31.2	37.4	56.1
Average	20.1	17.4	21.9	27.3	41.3
Group Standard Deviation	21.9	17.6	20.3	18.3	24.7



E. International Broadband Service Capability

117. Section 1303(b) 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 speed benchmarks for broadband service utilized by the Commission to reflect different speed tiers."[265] As was the case with prior reports,[266] we are incorporating by reference a report from our International Bureau.[267]

118. The *2012 International Broadband Data Report* released today found that in 2011, U.S. investment in wired and wireless network infrastructure rose 24% with current trends showing that "providers are offering higher speeds, more data under their usage limits, and more advanced technology in both fixed and mobile broadband."[268] The International Bureau recognized that OECD data ranks the United States first out of 28 countries in cable modem coverage and Americans "have been quick to adopt 4G LTE technology, securing the United States' position as the world leader in LTE adoption."[269] The *2012 International Broadband Data Report* also found, based on OECD data, the United States ranks 7th (compared to 9th at the time of the previous report) for wireless (mobile) broadband penetration on a per capita basis, and ranks 15th (similar to Japan, Finland, and Canada) for wired (e.g., DSL or cable) broadband penetration on a per capita basis.[270] U.S. wired broadband adoption continues to lag behind such countries as South Korea, the United Kingdom, and Germany, but exceeds adoption rates in Israel, Australia, and the European Union average.[271] With respect to speeds, our review of data on average actual download speeds reported by a sample of consumers from 38 countries (including the United States and Hong Kong Special Administrative Region of the People's Republic of China), finds that the United States ranks 24th in average actual speeds purchased and experienced by consumers.[272] The United States ranks 17th when based on a stratified sampling technique using weighted average actual download speed.[273] For the first time, the International Bureau took a close look at the broadband prices for both fixed and mobile service plans around the world, including detailed price information for mobile broadband plans, broken down by technology (e.g., smartphones, stick modems, and tablets) and found that U.S. prices for standalone fixed broadband are in the mid-level range in our 38 country survey, but are higher in higher speed tiers.[274] The International Bureau also found the prices per GB of data for fixed broadband plans with usage limits and for smartphone data plans with usage limits are on the lower

[265] 47 U.S.C. § 1303(b).

[266] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8039, para. 62; *International Comparison Requirements Pursuant to the Broadband Data Improvement Act; International Broadband Data Report*, IB Docket No. 10-171, Second Report, 26 FCC Rcd 7378, 7395, para. 52 (2011) (*2011 International Broadband Data Report*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-732A1_Rcd.pdf; *2010 Sixth Broadband Progress Report*, 25 FCC Rcd at 9573, para. 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 (2010).

[267] The *2012 International Broadband Data Report* explains that the report satisfies the Commission's obligations under the BDIA. *See 2012 International Broadband Data Report* para. 39.

[268] *Id*. para. 2.

[269] *Id*. paras. 2–3.

[270] *Id*. para. 7.

[271] *Id*.

[272] *Id.* para. 8.

[273] *Id*.

[274] *Id*. para. 9.

end of the countries we surveyed.[275] This international analysis serves as useful benchmark for assessing our progress in comparison to other nations.

F. Other Indicators of Availability to All Americans

119. In addition to the considerations discussed above, our inquiry assesses broadband availability by examining factors such as broadband cost, quality, and adoption.[276] While we have access to what providers advertise for the price of broadband services on their websites, we do not currently have data sufficient to analyze the prices that consumers in fact pay for broadband, and we are unaware of any adequate third-party sources that capture this.[277] We base our analysis on our adoption rates noted above[278] and, for service quality, on the recent *First Measuring Broadband America Report* that presents the results of the Commission's nationwide study of fixed broadband performance (DSL, cable, and fiber-to-the-home) and the Commission's *Second Measuring Broadband America Report* that provides an update on the *First Measuring Broadband America Report*.[279]

1. Home Broadband Adoption

120. *Fixed Adoption Rates.* In this ever changing global digital economy, access to broadband has become essential. Americans are now able to use broadband for virtually every aspect of their life, from communicating with family and friends to obtaining important information about health care and government services. We find that many services today are increasingly only offered online.[280] Our assessment of adoption rates also gives us reason to be concerned that broadband may not be available to all Americans. Even though broadband is becoming a necessity of modern life, and the benefits of broadband are immense and growing rapidly, only 64 percent of American households adopt service

[275] *Id*.

[276] *See supra* Section IV.D.

[277] 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 and is contemplating collecting pricing information on broadband services. *Modernizing Form 477 NPRM*, 26 FCC Rcd 1508. We also note that last year in the *2011 International Broadband Data Report*, the International Bureau collected broadband prices for both fixed and mobile service plans but in this year's *2012 International Broadband Data Report*, the International Bureau presents a summary and analysis of fixed and mobile broadband prices from the United States and other countries. *See 2011 International Broadband Data Report*, 26 FCC Rcd at 7381, para. 7; *2012 International Broadband Data Report* paras. 9, 29–37, Apps. B, C. The *2012 International Broadband Data Repor*t, however, evaluates advertised prices rather than prices that consumers actually pay.

[278] *See supra* Section IV.D.

[279] *See generally* FIRST MEASURING BROADBAND AMERICA REPORT; SECOND MEASURING BROADBAND AMERICA REPORT.

[280] Some banks are "online only." *See, e.g.*, ING DIRECT OVERVIEW, http://home.ingdirect.com/about-us (providing banking throughout the United States and instead of having branches, has eight "cafes" in eight different cities in the United States). Some encyclopedias are online only. *See* Joab Jackson, *Encyclopedia Britannica Goes Online Only*, COMPUTERWORLD (Mar. 26, 2012), *available at* http://www.computerworld.com/s/article/9225506/Encyclopaedia_Britannica_Now_Online_Only; *see, e.g.*, WIKIPEDIA: ABOUT, http://en.wikipedia.org/wiki/Wikipedia:About. Online educational opportunities are increasing. *See, e.g.*, Press Release, MIT, MIT Launches Online Learning Initiative (Dec. 19, 2011), *available at* http://web.mit.edu/newsoffice/2011/mitx-education-initiative-1219.html. And those without a home Internet connection are at a disadvantage when applying for jobs. *See* WALMART, WELCOME TO THE HIRING CENTER, https://hiringcenter.walmartstores.com/OnlineHiringCenter/initialPage.jsp (requiring a 30–60 minute online application that can be saved and returned to later).

faster than 768 kbps/200 kbps.[281] Significantly fewer American households—only 40 percent—adopt fixed broadband meeting the speed benchmark.[282] The broadband adoption rates for American households are lower, on average, in the counties with the lowest median household income, in areas outside of urban areas, on Tribal lands, and in U.S. Territories.[283]

121. *NTIA's Broadband Adoption Analysis*. An NTIA study of broadband adoption supports our finding of an adoption gap.[284] On October 10, 2011, NTIA published *Exploring the Digital Nation*, which presents the results of a broadband adoption survey of 54,300 households.[285] For purposes of this study, NTIA defined broadband as Internet access services faster than dial-up, which includes a number of services that fall below our speed benchmark.[286] NTIA reports that, as of October 2010, more than 68 percent of households used broadband Internet access service, up from 64 percent one year earlier.[287] NTIA also found that "[a]pproximately 80 percent of households had at least one Internet user, either at home or elsewhere."[288]

122. NTIA also reports that demographic and geographic disparities demonstrate a persistent digital divide among certain groups.[289] For example, broadband adoption at home by rural, low-income, and minorities lagged significantly behind other groups of Americans.[290] NTIA stated that "households with lower incomes and less education, as well as Blacks, Hispanics, people with disabilities, and rural residents were less likely to have home Internet access service."[291] The results also showed that Asian households displayed the highest rates of broadband adoption (81 percent), followed by White (72 percent), Hispanic (57 percent), and Black (55 percent) households.[292] NTIA noted that Asian households on average were more likely to have broadband Internet access services than White households.[293] Further, households without computers comprised the vast majority of non-adopters of home broadband Internet access services.[294] Income was positively correlated with broadband service subscriptions: the

[281] *See supra* tbl. 17. While we find low broadband adoption rates, the *Second Measuring Broadband America Report* found that, on average, customers subscribed to faster speed tiers in 2012 than in 2011. SECOND MEASURING BROADBAND AMERICA REPORT at 5.

[282] *See supra* tbl. 17.

[283] *See supra* Chart 5, tbls. 19, 21, 23.

[284] DIGITAL NATION NOV. 2011 at 5.

[285] NTIA used the terms "adoption," "use," "utilization," "access," and "connection" interchangeably to indicate that a household reported having Internet access service. *Id*. at v n.1; *see also supra* Section IV.D.1.

[286] DIGITAL NATION NOV. 2011 at 5 n.6 ("[a] household with at least one of the following high-speed, high capacity, two-way Internet services is considered to have broadband: DSL, cable modem, fiber optics, satellite, mobile broadband, or some other non-dial-up Internet connection.")

[287] *Id.* at v, 5. NTIA adds that a "[a] shrinking share of home Internet users- about three percent of households in 2010- used dial-up to access the Internet, down from five percent in 2009." *Id*. at 5. NTIA also found that a small share of households (six percent) utilized mobile broadband services at home in 2010. *Id*. at 7.

[288] *Id.*

[289] *Id*. at ii.

[290] *Id*.

[291] *Id*. at 11. However, differences in socio-economic attributes do not entirely explain why certain racial and ethnic groups or rural residents lagged in adoption.

[292] *Id*. at 29.

[293] *Id.*

[294] *Id*. at 11.

higher the income of the household, the more likely it is to subscribe for broadband service.[295]

2. Measuring Broadband America Reports Found that Residential Wireline Broadband Services Deliver Quality Service and Speeds Reasonably Commensurate with Advertised Offerings

123. We include in our section 706(b) inquiry consideration of the quality of broadband services that are deployed and made available to consumers.[296] On August 2, 2011, in the *First Measuring Broadband America Report*, the Commission released results of the first nationwide study of home residential wireline broadband performance in the United States, using measurement technology deployed in the consumer's home.[297] The results enable consumers to compare the performance of different broadband offerings.[298] The Commission examined service offerings from 13 of the largest broadband providers at the time[299]—which collectively account for approximately 86 percent of all U.S. wireline broadband connections—using automated, direct measurements of broadband performance delivered to the homes of thousands of volunteer broadband subscribers from February through June 2011.[300] The Commission focused on three technologies—DSL, cable, and fiber-to-the-home—and broadband performance in three typical speed ranges—less than 3 Mbps, between 3 and 10 Mbps, and greater than 10 Mbps.[301] Measurements for satellite and fixed terrestrial wireless technologies were not included in the report due to the low number of samples.[302] On July 19, 2012, the Commission released the *Second Measuring Broadband America Report* that followed the structure of the *First Measuring Broadband America Report* and conducted the same measurements to provide a useful baseline for comparison.[303] In the *Second Measuring Broadband America Report*, the Commission compares broadband performance between data collected in March 2011 (data used and released in the *First*

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[295] *Id*. at 12 (showing that 93 percent of households with incomes of over $100,000 subscribe to broadband service; whereas, only 43 percent of households that have less than $25,000 subscribe to a broadband service).

[296] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8021, para. 19 ("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. 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." (footnotes omitted)).

[297] *See* FIRST MEASURING BROADBAND AMERICA REPORT at 3.

[298] *See id*. at 3.

[299] The *First Measuring Broadband America Report* indicates that the participating ISPs were: AT&T (DSL); Cablevision (cable); CenturyLink (DSL); Charter (cable); Comcast (cable); Cox (cable); Frontier (DSL); Mediacom (cable); Insight (cable); Qwest (DSL); TimeWarner (cable); Verizon (DSL and fiber-to-the-home); and Windstream (DSL). *See id.* at 31 n.10. Since the report, two of these providers—Qwest and CenturyLink—have merged. *See 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 (2011) (*CenturyLink/Qwest Merger*).

[300] To do this, the Commission used measurement technology deployed in these volunteers' homes. *See* FIRST MEASURING BROADBAND AMERICA REPORT at 3.

[301] *Id.* at 10. To account for network variances across the United States, volunteers were recruited from the four Census Regions: Northeast, Midwest, South, and West. These speed ranges were chosen to provide alignment with broadband tiers as categorized in the "Form 477" reports that the Commission uses as its primary tool for collecting data about broadband networks and services. *Id*. at 33 n.26.

[302] *Id*. at 33 n.25; *see also FCC*, Raw Bulk Data 2011—Measuring Broadband America Report, http://www.fcc.gov/measuring-broadband-america/raw-bulk-data-2011#rawbulk (providing links to the raw data sets, which includes the results from the satellite and fixed terrestrial wireless technologies).

[303] SECOND MEASURING BROADBAND AMERICA REPORT at 8.

Measuring Broadband America Report) with data collected in April 2012.[304] The Commission found that accurate delivery of advertised performance by ISPs has improved overall since the last report.[305] Below, we highlight the Commission's findings.

124. *Actual Speeds.* The results of the *First Measuring Broadband America Report* indicate that most of the broadband providers studied deliver actual speeds that are generally 80 percent to 90 percent of advertised speeds or better, although performance varies by technology and service provider.[306] These results are significantly better than those of the *2010 OBI Broadband Performance* study, conducted pursuant to the 2010 National Broadband Plan, which found actual speeds were roughly 50 percent of those advertised.[307] The *First Measuring Broadband America Report* found that even during peak usage periods—between 7:00 pm and 11:00 pm on weeknights, when more home users are online and service quality declines—most major broadband providers deliver actual speeds that are at least 80 percent of advertised speeds.[308] The report also found that, while there are some differences between technologies, DSL, cable, and fiber-to-the-home all are delivering quality service generally consistent with the speeds advertised.[309] The *Second Measuring Broadband America Report* found that ISP performance has improved with ISPs delivering on average 96 percent of advertised speeds during peak intervals, and with five ISPs routinely meeting or exceeding advertised rates.[310]

125. *Download Speeds/Upload Speeds*. The *First Measuring Broadband America Report* found that on average, during peak periods, DSL-based services delivered download speeds that were 82 percent of advertised speeds, cable-based services delivered 93 percent of advertised speeds, and fiber-to-the-home services delivered 114 percent of advertised speeds.[311] The *Second Measuring Broadband America Report* found that all technologies improved, concluding that on average, during peak periods, DSL-based services delivered download speeds that were 84 percent of advertised speeds, cable-based services delivered 99 percent of advertised speeds, and fiber-to-the-home services delivered 117 percent of advertised speeds.[312]

126. The *First Measuring Broadband America Report* found that the peak period speeds were lower than 24-hour average speeds[313] by 0.4 percent for fiber-to-the-home services, 5.5 percent for DSL-based services, and 7.3 percent for cable-based services.[314] In comparison, the *Second Measuring Broadband America Report* found that peak period speeds were lower than 24-hour average speeds by 0.8

[304] *Id*. at 4, 14.

[305] *Id*. at 4–5.

[306] Press Release, FCC, FCC Unveils New Research That Measured Broadband Performance; Continues Consumer Empowerment Campaign To Help Americans Choose The Right Broadband Service Package At Home (Feb. 17, 2011), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-308834A1.pdf; FIRST MEASURING BROADBAND AMERICA REPORT at 26–27.

[307] 2010 OBI BROADBAND PERFORMANCE at 12; 2010 NATIONAL BROADBAND PLAN at 21; *see also* FIRST MEASURING BROADBAND AMERICA REPORT at 4.

[308] FIRST MEASURING BROADBAND AMERICA REPORT at 4, 18.

[309] *Id.* at 18–21.

[310] SECOND MEASURING BROADBAND AMERICA REPORT at 10.

[311] FIRST MEASURING BROADBAND AMERICA REPORT at 4.

[312] SECOND MEASURING BROADBAND AMERICA REPORT at 10.

[313] FIRST MEASURING BROADBAND AMERICA REPORT at 32 n.18 (stating that a 24-hour average was computed each day and then averaged over Monday through Sunday).

[314] *Id*. at 4.

percent for fiber-to-the-home services, 3.4 percent for DSL-based services and 4.1 percent for cable-based services.[315] The *First Measuring Broadband America Report* also found that peak period performance results for upload speeds were similar to or better than those for download speeds. The upload speeds were not significantly affected during peak periods, showing an average decrease of only 0.7 percent from the 24-hour average speed.[316] The report found that on average, DSL-based services delivered 95 percent of advertised upload speeds, cable-based services delivered 108 percent, and fiber-to-the-home services delivered 112 percent.[317] The *Second Measuring Broadband America Report* found with respect to upload speeds, on average, DSL-based services delivered 103 percent, and cable-based services delivered 110 percent of advertised upload speeds, and fiber-to-the-home services delivered 106 percent.[318]

127. *Latency*. The Commission in the *First Measuring Broadband America Report* also tested latency, which is the time it takes for a packet of data to travel from one designated point to another in a network.[319] The fiber-to-the-home services provided 17 milliseconds (ms) round-trip latency on average, while cable-based services averaged 28 ms, and DSL-based services averaged 44 ms. The *Second Measuring Broadband America Report* found that latency was largely unchanged from last year as fiber-to-the-home services provided 18 ms round-trip latency on average, while cable-based services averaged 26 ms, and DSL-based services averaged 43 ms.[320]

128. *Applications (Web Browsing, VoIP, Streaming Video)*. The *First Measuring Broadband America Report* found in specific tests designed to mimic basic web browsing—accessing a series of web pages, but not streaming video or using video chat sites or applications—that performance increased with the higher subscribed-to speed tier, but only up to about 10 Mbps.[321] Latency and other factors reduced performance at the highest speed tiers.[322] The report also found that, for these high speed tiers, consumers are unlikely to experience much if any improvement in basic web browsing from subscribing to higher speeds—e.g., moving from a 10 Mbps broadband offering to a 25 Mbps offering. The *Second Measuring Broadband America Report* had comparable results.[323]

129. The *First Measuring Broadband America Report* assessed VoIP and video streaming capabilities of the broadband services. The report found that VoIP services, which can be used with a data rate as low as 100 kbps but require relatively low latency, were adequately supported by all of the broadband service tiers.[324] The report noted that VoIP quality might suffer during times when household bandwidth is shared by other services, but the VoIP measurements the Commission utilized were not designed to detect such effects.[325] The report found that video streaming should work well across all technologies tested, provided that the consumer has selected a broadband service tier that matches the

[315] SECOND MEASURING BROADBAND AMERICA REPORT at 10.

[316] FIRST MEASURING BROADBAND AMERICA REPORT at 5.

[317] *Id.*

[318] SECOND MEASURING BROADBAND AMERICA REPORT at 11.

[319] FIRST MEASURING BROADBAND AMERICA REPORT at 5; *see also USF/ICC Transformation Order*, 26 FCC Rcd 17663, 17698, para. 96 (for purposes of the report, the Commission defined latency "as the round-trip time from the consumer's home to the closest server used for speed measurement within the provider's network.").

[320] SECOND MEASURING BROADBAND AMERICA REPORT at 11–12.

[321] FIRST MEASURING BROADBAND AMERICA REPORT at 6.

[322] *Id.* at 5.

[323] SECOND MEASURING BROADBAND AMERICA REPORT at 12.

[324] FIRST MEASURING BROADBAND AMERICA REPORT at 6.

[325] *Id*.

quality of streaming video desired.[326] The *Second Measuring Broadband America Report* found similar results.[327]

130. We are continuing to study broadband performance and are currently expanding the Measuring Broadband project to include satellite broadband, as well as fixed wireless technologies.[328] We intend to publish an additional report in 2012 and are pursuing ways to ensure that mobile broadband consumers have detailed and accurate information about actual mobile broadband performance.[329]

3. Elementary and Secondary Schools May Lack a Sufficient Level of Broadband Service

131. Section 706(b) requires that we examine the availability of broadband to "elementary and secondary schools and classrooms."[330] We rely again on the results of the one-time survey of E-rate funded schools and libraries.[331]

132. In January 2011, the Commission released the results of a survey of E-rate funded schools and libraries.[332] The goal of the survey was to collect data on the current state of broadband connectivity and challenges that schools and libraries face now and in the future.[333] As many as 80 percent[334] of E-rate recipients say that their broadband connections do not fully meet their needs, and 78 percent of recipients say that they need additional bandwidth.[335] The survey results suggest that E-rate recipients face challenges when trying to provide students higher-bandwidth applications.[336] Changes in 2010 to the E-rate program are designed to help improve high-speed connectivity among E-rate recipients[337] and also to create initiatives to promote broadband.[338] For instance, schools and libraries can

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[326] *Id*.

[327] SECOND MEASURING BROADBAND AMERICA REPORT at 13.

[328] *Id*. at 49.

[329] *Id*.; *2012 Measuring Broadband America Public Notice*.

[330] 47 U.S.C. § 1302.

[331] FCC E-RATE SURVEY.

[332] *Id.*

[333] *Id*. at 2.

[334] *Id.*

[335] *Id*. at 7 (showing that only 22 percent of respondents believe their connection speeds completely meet their needs).

[336] *Id*. at 9 (showing that broadband is more likely to be inadequate with more data intensive applications, like video-conferencing). Last year, we also examined SBI Data at anchor schools but noted that the speed threshold was likely insufficient for a school system. *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8036–37, para. 56. SBI defines "anchor institutions" 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." *Id*. While we note that 3 Mbps/768 kbps is not is insufficient for a school system, similar to last year, we present the results of SBI Data with respect to anchor institutions. Based upon SBI Data as of June 30, 2011, more than 47.5 percent of the roughly 43,534 K–12 schools that speed tier information is available for have 3 Mbps/768 kbps or greater.

[337] *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, para. 5 (2010).

[338] *Id*. ("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 (continued….)

now use universal service funds more efficiently to bring higher-speed broadband at lower cost to their communities.[339] The Commission also launched a pilot program to investigate the merits and challenges of wireless off-premises connectivity services for mobile learning devices, and to help the Commission determine whether and how those services should ultimately be eligible for E-rate support.[340] As part of the pilot program, the Commission authorized up to $10 million for funding year 2011 to support a small number of innovative, interactive off-premise wireless connectivity projects for schools and libraries.[341]

133. We lack comprehensive data regarding the actual or desired level of broadband service in our nation's elementary and secondary schools. NTIA has stated that, "based on studies by state education technology directors, most schools need a connection of 50 to 100 Mbps per 1,000 students."[342] While school systems will need speeds substantially faster than the speed benchmark, we find, based on SBI Data, that providers offer download speeds of at least 25 Mbps to only 63.7 percent of the nation's schools, suggesting that many schools may not have a sufficient level of broadband service.[343] The Department of Education also has developed the School and Broadband Availability Map, in collaboration with NTIA and the Commission.[344] This map relies on the SBI Data and other primary data sources concerning colleges and public schools[345] to show information about the type of school, the location of the school, and the maximum download speed providers advertise in the area where the school is located.[346] This map is a tool to better understand the state of broadband at schools across the country, but it doesn't provide comprehensive information on what resources schools have.

134. In light of the foregoing, although we do not have precise or comprehensive data regarding the availability of broadband to "elementary and secondary schools and classrooms," it continues to appear that many schools and classrooms are underserved by broadband today.

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

135. Based on the data presented above, we conclude that broadband is not yet being deployed to all Americans in a reasonable and timely fashion.[347] Our analysis shows that the nation's broadband

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broadband and other communications services; (2) simplifying and streamlining the E-rate application process; and (3) improving safeguards against waste, fraud, and abuse.").

[339] *Id*. at 18764, para. 6.

[340] *Id.* at 18785–87, paras. 44–50.

[341] *Id.* at 18785–86, para. 46.

[342] *NTIA National Broadband Plan Press Release*.

[343] *See* Schools in the Community Anchor Institution data of the National Broadband Map, *available at* http://www2.ntia.doc.gov/files/broadband-data/All-NBM-CAI-June-2011.zip (download).

[344] DEPARTMENT OF EDUCATION, SCHOOLS & BROADBAND AVAILABILITY MAP, http://maps.ed.gov/broadband/.

[345] NATIONAL BROADBAND MAP, http://www.broadbandmap.gov/. To build the education broadband availability tool set, four primary data sources were used: NTIA U.S. Broadband Availability Data (Fall 2010) for nationwide broadband availability, NTIA U.S. Community Anchor Institutions (Fall 2010) for PK–12 school, college and university connectivity, NCES Integrated Postsecondary Education Data System (2009) for data on U.S. colleges and universities, and NCES Common Core of Data (2008–09) for data on pre-kindergarten through grade 12 public schools.

[346] *See* NATIONAL BROADBAND MAP, COMMUNITY ANCHOR INSTITUTIONS, http://www.broadbandmap.gov/community-anchor-institutions (showing community anchor institutions within a radius of whatever address is entered).

[347] 47 U.S.C. § 1302(b). We adopt the same statutory construction of section 706(b) as we did in the *2011 Seventh Broadband Progress Report*. *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8032–35, paras. 46–52. (continued….)

deployment gap remains significant and is particularly pronounced for Americans living in rural areas and on Tribal lands. We find that as of June 30, 2011, approximately 19 million Americans did not have access to fixed broadband. Significantly, approximately 76 percent of these Americans reside in rural areas. Our analysis further shows that Americans residing on Tribal lands disproportionately lack access to fixed broadband.[348] 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 other respects.[349] Moreover, as many as 80 percent of E-rate recipients say that their broadband connections do not fully meet their needs, and 78 percent of recipients say that they need additional bandwidth.[350] These data combined with our findings concerning availability above provide further indication that broadband is not yet being reasonably and timely deployed to all Americans.[351]

136. Private industry is continuing to build out broadband and has invested significantly into broadband networks to date.[352] Some reports indicate that wireline companies have averaged

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We find that "is being deployed" refers to "existing deployment and current actions that will meaningfully affect broadband deployment in the near future. . . . [but not] general plans or goals to deploy broadband, particularly long-range plans or goals that are uncertain to be realized." *Id.* at 8033, para. 47. We interpret "all Americans" as having its ordinary meaning, and thus as establishing the goal of universal broadband availability for every American. *Id.* at 8033, para. 48. We find that "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." *Id.* at 8033, para. 49. As indicated in the last report, broadband "deployment" and "availability" are broader than physical deployment of broadband. *See supra* para. 27. For example, we might conclude that a service is not reasonably deployed if it is not of sufficient quality. *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8020, paras. 18–20. Although we find a significant number of Americans are unserved by broadband today, we note that for fixed services, the Commission found in the *First Measuring Broadband America Report* and the *Second Measuring Broadband America Report* that residential wireline broadband services deliver quality of service and speeds reasonably commensurate with advertised offerings. FIRST MEASURING BROADBAND AMERICA REPORT at 4; SECOND MEASURING BROADBAND AMERICA REPORT at 4–5.

[348] *See supra* Section IV.C.3.

[349] *See supra* Section IV.E.

[350] *See supra* Section IV.F.3; FCC E-RATE SURVEY at 2, 7 (showing that only 22 percent of respondents believe their connection speeds complete meet their needs).

[351] We incorporate by reference here our findings concerning availability to all Americans above. *See* Section IV.F. We reject commenters claims that there is pervasive broadband coverage throughout the United States, and the Commission should therefore conclude that broadband is being deployed to all Americans in a reasonable and timely fashion. *See* AT&T Comments at 3, 6; Comcast Comments at 16–17; CTIA Comments at 3; TIA Comments at 10; USTelecom Comments at 2; Sprint Reply at 1. While we recognize broadband has been deployed to most Americans, we still find that a large number of Americans remain unserved and may remain unserved.

[352] *See* AT&T Comments at 1–2, 10–11; CTIA Comments at 5–8. Others are also continuing to explore ways to deploy next generation networks nationwide. *See, e.g.*, INTERNET2, *available at* http://www.internet2.edu/resources/AboutInternet2.pdf; John Markoff, *Partnership to Bring Ultra-Speed Internet to Six Communities*, N.Y. TIMES, May 22, 2012 (discussing Gigabit Squared's partnership with Gig.U and with public and private universities to deliver "ultrahigh-speed Internet service" to six communities), *available at* http://www.nytimes.com/2012/05/23/technology/partnership-plans-to-bring-ultrahigh-speed-internet-to-six-communities.html?_r=3; Press Release, EPB, Chattanooga Announces Nationals Only 150 Mbps Residential Internet Offer: Chattanooga Area Ten Years Ahead of FCC's National Broadband Plan (June 4, 2010) ("EPB Fiber Optics, Chattanooga's municipally-owned fiber-to-the-home network, announced it will introduce a 150 Mbps symmetrical residential Internet product later this month."), *available at* https://www.epb.net/downloads/news/chattanooga-announces-nations-only-150-mbps-residential-internet-offer.pdf.

approximately $41 billion a year between 1996 and 2010 in capital expenditures to expand their networks,[353] and mobile providers have been spending billions of dollars to deploy mobile broadband networks.[354] Although data limitations hinder our ability to quantify mobile broadband deployment, it is clear that higher-speed mobile broadband services have been significantly deployed since our last report.

137. While we recognize these efforts, it appears that millions of Americans may be left without access to broadband indefinitely absent the strides we are making with broadband deployment with universal service reforms.[355] The large deployment gap we find today[356] is likely due to the very challenging economics posed by many unserved and underserved areas.[357] To this end, the Recovery Act's approximately $7 billion in one-time funding for the BTOP and BIP programs marked a significant down payment to expand broadband to unserved and underserved areas.[358] While we noted in the last report that those funds will not fully address the challenges we face in bringing broadband to these areas,[359] NTIA and RUS continue the progress and promise of these programs for many Americans.[360] To help bring broadband to the remaining unserved and underserved areas,[361] the Commission adopted its

[353] USTelecom Comments at 5.

[354] *See* CTIA Comments at 3–8.

[355] USTELECOM, RESEARCH BRIEF 2 chart 2 (Apr. 20, 2012) (showing declining capital expenditures for wireline broadband providers from 2008 to 2011), *available at* http://www.ustelecom.org/sites/default/files/documents/042012_Investment_2011_Research_Brief.pdf; see also USTelecom Comments at 5 (showing annual spending on broadband deployment down substantially after 2001). Moreover, in some rural areas where broadband networks are deployed, providers have not yet upgraded the infrastructure and those consumers remain unable to receive broadband meeting the benchmark needed to ensure "advanced telecommunications capability" is available. Eric Mack, *Bringing Broadband to the Boonies, Part 2: DSL's Dark Side*; CNET, Mar. 27, 2012 (*Bringing Broadband to the Boonies*), http://news.cnet.com/8301-17938_105-57401255-1/bringing-broadband-to-the-boonies-part-2-dsls-dark-side/?part=rss&tag=feed&subj=.

[356] 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, GN Docket No. 10-159, 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. Also, as shown in the online map, the landscape of the unserved areas is so complex that bifurcating the country would not be practical. *See* ONLINE SECTION 706 FIXED BROADBAND DEPLOYMENT MAP, http://www.fcc.gov/maps/section-706-fixed-broadband-deployment-map; *see also infra* App. I.

[357] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8034–35, para. 51. The 2010 National Broadband Plan estimated that $24 billion would be needed to bring broadband to all unserved Americans. *See generally* 2010 NATIONAL BROADBAND PLAN, Ch. 8 (discussing the economics of serving unserved areas).

[358] *See supra* Section II.

[359] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8034–35, para. 51 n.175 (stating that "[t]hese 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.").

[360] *See supra* Section II.

[361] *See* 2010 NATIONAL BROADBAND PLAN at 136 ("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*. at 21 (stating that "it is unlikely there will be (continued….)

comprehensive *USF/ICC Transformation Order*, which created the Connect America Fund to, among other things, accelerate broadband build-out to Americans living in "costly-to-serve communities where even with our actions to lower barriers to investment nationwide, private sector economics still do not add up, and therefore the immediate prospect for stand-alone private sector action is limited."[362] While it will take some time to realize the full benefits of the reforms, this effort will assist in bringing broadband to Americans living in rural, insular, and other high-cost areas, including Tribal lands.

138. In sum, as we have held in the last two reports, the standard against which we measure our progress is universal broadband deployment. We have not achieved this goal as of yet and likely will not achieve it in any reasonable timeframe absent continued implementation of the Commission's broadband-related initiatives, including its universal service reforms.[363] Measured against this standard, the data demonstrate that broadband is not being reasonably and timely deployed to all Americans. We would likely reach this same finding even if we considered the best available mobile data. Over 14 million Americans lack access, even if access to either fixed or mobile broadband is considered adequate and even when all LTE, WiMax, and HSPA+ deployments are included.[364]

V. REMOVING BARRIERS TO INFRASTRUCTURE INVESTMENT & PROMOTING COMPETITION

139. Because we determine that broadband deployment is not reasonable and timely, the statute directs the Commission to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[365] In the last report, we found that there are many barriers to infrastructure investment.[366] High costs of deploying and operating broadband networks and low adoption rates present barriers.[367] We continue to identify and reduce potential obstacles to deployment, competition, and adoption—concepts that in the past report we found to be interrelated.[368] We will continue to take steps to remove barriers and maximize Americans' access to—and the adoption of—affordable broadband.

140. We continue to review the key barriers identified in the last report. These include: (1) costs and delays in building out networks; (2) broadband service quality; (3) lack of affordable broadband Internet access services; (4) 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) other reasons, such as consumers' lack of trust in broadband and Internet content and services, including concerns about

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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").

[362] *USF/ICC Transformation Order*, 26 FCC Rcd at 17668–69, para. 5.

[363] Private industry, state and local governments, and federal agencies, including the Commission, continue to work on closing this broadband deployment gap. *See supra* Section II.

[364] *See supra* tbl. 15 (showing that over 14 million Americans lack access to either fixed or mobile broadband, using SBI Data for fixed services and Mosaik Data for mobile services). As explained above, we consider the SBI Data not to be a reliable indicator of the deployment of mobile broadband services, not just because of the likelihood of over-reporting but because the data set includes deployment of technologies that do not meet our speed benchmark. *See supra* paras. 36–40, 89 & tbl. 15.

[365] *See* 47 U.S.C. § 1302(b).

[366] *See 2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8040, para. 65; *see generally* 2010 NATIONAL BROADBAND PLAN at 167–99.

[367] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8040, para. 65.

[368] *Id*.

inadequate privacy protections.[369]

141. *Costs and Delays in Building Out Networks.* We seek to ensure ubiquitous access to and participation in the digital economy. Such ubiquity offers benefits not only to those who are not currently connected; it offers benefits to all Americans. A large proportion of unserved areas are in rural areas or on Tribal lands. The challenges of building out broadband in these particular areas are significant. Building out new networks on Tribal lands and in rural areas is costly as infrastructure often must be built over long distances, and lower population density and generally lower incomes present fewer revenue-generating opportunities for service providers.[370] We have acknowledged that there is no business case for broadband investment in some parts of the nation.[371] Moreover, in some rural areas where broadband networks are deployed, providers have not yet upgraded the infrastructure and those consumers remain unable to receive broadband meeting the speed benchmark needed to ensure "advanced telecommunications capability" is available.[372]

142. Other obstacles to deployment include providers' difficulty in accessing key inputs for broadband infrastructure, such as utility poles, conduits, rooftops, and rights-of-way.[373] As NTIA notes, "[a]ccess to rights-of-way—the conduits, corridors, trenches, tower sites, and other physical passage ways that modern communications networks traverse—is critical for the deployment of broadband services."[374] With regard to wireless broadband, permitting obstacles for cell towers,[375] and the limited supply of wireless spectrum continue to present challenges to deployment.[376] These obstacles delay or prevent broadband deployment, and are likely to limit competitive entry, raise costs, lower service quality and have other negative impacts on businesses and consumers.[377]

143. The Commission has taken several steps to remove barriers to broadband deployment and adoption. On October 27, 2011, the Commission adopted the *USF/ICC Transformation Order*, which will target the $4.5 billion spent annually to ensure rural connectivity towards support for fixed and mobile voice and broadband facilities in areas that would otherwise not have service, including rural and insular areas, and on Tribal lands.[378] The policies adopted in the *USF/ICC Transformation Order* will stimulate high-quality fixed and mobile voice and broadband service in regions where it is not

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[369] *Id*.

[370] *See* TIM KELLY ET AL., WORLD BANK, WHAT ROLE SHOULD GOVERNMENTS PLAY IN BROADBAND DEVELOPMENT? (2009), *available at* http://www.oecd.org/ict/4d/43631862.pdf; *see also* 2010 NATIONAL BROADBAND PLAN at 136–39.

[371] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8040, para. 66; 2010 NATIONAL BROADBAND PLAN at 136.

[372] *Bringing Broadband to the Boonies*.

[373] *Id*.

[374] NTIA, STATE AND LOCAL RIGHTS OF WAY, http://www.ntia.doc.gov/legacy/ntiahome/staterow/statelocalrow.html.

[375] *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).

[376] 2010 NATIONAL BROADBAND PLAN at xii, Ch. 5.

[377] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8040, para. 66; 2010 NATIONAL BROADBAND PLAN at 136.

[378] *See USF/ICC Transformation Order*, 26 FCC Rcd 17663.

economically viable, without subsidies, to deploy and/or operate modern communications networks.[379] These policies include establishment of a Mobility Fund—initially funded with $300 million, as well as $50 million for a Tribal Mobility Fund—to provide dedicated support to expand mobile broadband nationwide to tens of thousands of road miles where millions of Americans live, work, and travel.[380] The Commission will be implementing these reforms for the next several years.[381] The Bureau announced support amounts for the first phase of the Connect America Fund to spur immediate new broadband buildout on April 25, 2012 and on July 24, 2012, a number of carriers committed to use over $110 million to deploy broadband to unserved areas in 37 states.[382]

144. In 2011, the Commission launched the Broadband Acceleration Initiative that focused on removing barriers to build-out and expediting cost-cutting initiatives.[383] The *Pole Attachment Order*,[384] part of this initiative, adopted a pricing methodology that lowered the pole attachment rate for wireline, wireless, and cable companies' broadband attachments to a level closer to the rate paid by cable providers, thus encouraging broadband competition and investment.[385] Additionally, the Commission lowered costs of deployment through greater certainty by establishing a specific timeline for access. [386] Indeed, at least one wireless infrastructure provider has documented to the Commission how this order was essential in achieving cost savings through lower rates and expanding broadband networks through a greater ability to attach equipment in a timely manner.[387] The Commission has also initiated an inquiry about regulations and practices that impede build-out at all levels of government: Tribal, federal, state, and local.[388] As part of this inquiry, the Commission has provided recommendations to the administration and executive branch agencies in the last year on identifying ways in which the federal government can streamline its processes to ease infrastructure deployment on federal lands.[389] The Commission is also working with state, local, and Tribal officials through the Intergovernmental Advisory Council to foster best practices. In addition, Congress took action to streamline mobile broadband deployments by requiring a state or local government to approve any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such

[379] *See id*. at 17709, para. 115.

[380] *See id*. at 17771–825, paras. 295–497. Additional Mobility Fund funding consists of $50 million for Phase I support on Tribal lands and $500 million for Phase II support. *See supra* Section II.

[381] *See* USF/ICC EXECUTIVE SUMMARY paras. 8, 19 (discussing multi-year implementation efforts).

[382] *See FCC Public-Private Effort Press Release*.

[383] FCC, THE FCC'S BROADBAND ACCELERATION INITIATIVE, REDUCING REGULATORY BARRIERS TO SPUR BROADBAND BUILDOUT 1 (2011) (BROADBAND ACCELERATION INITIATIVE), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-304571A2.pdf; *see 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, 26 FCC Rcd 5384 (2011) (*ROW NOI*) (inquiring about regulations and practices at all levels of government that slow broadband deployment).

[384] *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, 26 FCC Rcd 5240 (2011).

[385] *Id.* at 5243–45, 5295–38, paras. 8, 126–220.

[386] *Id*. at 5243–45, para. 8.

[387] *See* Letter from Norine Luker, Senior Director Utility Administration, NextG Networks, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245 (filed Feb. 22, 2012).

[388] *See generally ROW NOI*.

[389] Press Release, The White House, Executive Order—Accelerating Broadband Infrastructure Deployment (Jun. 14, 2012), *available at* http://www.whitehouse.gov/the-press-office/2012/06/14/executive-order-accelerating-broadband-infrastructure-deployment.

tower or base station.[390]

145. We have also continued our efforts to free critical spectrum and make it available for deployment and innovation of mobile broadband networks. Since the last report, on August 9, 2011, in the *2011 Wireless Backhaul Report and Order*, we removed regulatory barriers and made available as much as 650 megahertz, which covers almost two-thirds of the U.S. landmass, for microwave wireless backhaul.[391] Such facilities are an essential component of many broadband networks, particularly mobile wireless networks. Based on the recommendations in the 2010 National Broadband Plan, this reform permits fixed microwave operations in several spectrum bands previously reserved for specialized microwave services where wireless backhaul is the only practical middle mile solution.[392] We sought comment on additional ways to increase the flexibility, capacity, and cost-effectiveness of the microwave bands, while protecting incumbent licensees in these bands.[393] In a Notice of Proposed Rulemaking released in March 2012, we proposed to increase the supply of spectrum for mobile broadband by removing unnecessary barriers to enable flexible use of spectrum currently assigned to the Mobile Satellite Service (MSS) in the 2 GHz band.[394] In particular, we sought comment on whether we should free up 40 megahertz of spectrum in the 2 GHz band spectrum for mobile broadband by removing rules that have limited this spectrum to satellite use.[395] On April 27, 2012, in response to the recently enacted Spectrum Act, the Commission took preliminary steps toward making a portion of the UHF and VHF frequency bands (U/V bands) currently used by the broadcast television service available for new uses, while also preserving the integrity of the television broadcast service.[396] The spectrum to be repurposed will serve to further address this nation's growing demand for wireless broadband services, promote ongoing innovation and investment in mobile communications, and help to ensure that the United States keeps pace with the global wireless revolution.[397]

146. *Broadband Service Quality*. Although the *First Measuring Broadband America Report* and the *Second Measuring Broadband America Report* found that quality and speeds are reasonably commensurate with advertised offerings, we nevertheless recognize that there likely are opportunities to improve broadband service quality. The Commission has taken steps to understand and assess broadband service quality of residential wireline services (DSL, cable, and fiber-to-the-home) in the recent *Measuring Broadband America Reports*. As explained above, the *First Measuring Broadband America Report* established for the first time that the majority of residential wireline broadband consumers are receiving performance close to the level advertised by their providers.[398] The report also identified ISPs that fell short of advertised speeds; a few months after the report was released, the Commission noticed a significant improvement by a major ISP and announced the results in a blog post.[399] The *Second*

[390] Middle Class Tax Relief Act, § 6409(a)(1), 126 Stat. at 232–34.

[391] *See 2011 Wireless Backhaul Report and Order*, 26 FCC Rcd at 11623, para. 16; *see also 2012 Wireless Backhaul Second Report and Order*.

[392] *2011 Wireless Backhaul Report and Order*, 26 FCC Rcd at 11616, paras. 1–2.

[393] *Id.* at 11616, para. 3.

[394] *See Wireless Services in 2000-2020 MHz NPRM and NOI*, 27 FCC Rcd 3561.

[395] *Id*.

[396] *Incentive Auctions Order*, 27 FCC Rcd at 4616–17, para. 1.

[397] *Id*.

[398] The *First Measuring Broadband America Report* also identified ISPs that fell short of advertised speeds. FIRST MEASURING BROADBAND AMERICA REPORT at 5.

[399] *2012 Measuring Broadband Public Notice*, 27 FCC Rcd 1680. A few months after the report was released, the FCC noticed a significant improvement by a major ISP and announced the results in a blog post. Joel Gurin, (continued….)

Measuring Broadband America Report found that consumers are experiencing performance more closely aligned with what is advertised than they experienced one year ago, adding that "[t]here is evidence that our August 2011 Report helped prompt these changes, and had a substantial impact on both the industry and on consumer broadband experience."[400] While this work focused on fixed broadband services, we will continue our efforts to measure the broadband service quality of other technologies, such as satellite and mobile services. With these services, there may be a variety of technical network and other factors—including latency and capacity constraints—that may impact consumers' ability to use the full range of Internet-based applications and services.[401] We are continuing to study broadband performance and are currently expanding the Measuring Broadband project.[402]

147. *Lack of Affordability.* NTIA found that "[h]ouseholds reporting affordability as the major barrier to subscribing to broadband service cited both the fixed cost of purchasing a computer and the recurring monthly subscription costs as important factors.[403] The report further shows that, among dial-up households stating expense or affordability as their main reason for not having broadband, the cost of monthly Internet access service was a more serious concern than fixed costs. The majority (75 percent) of these households cited the monthly service cost, and another 10 percent reported both the monthly service cost and fixed costs, as their main impediments to adopting broadband Internet access at home.[404] Data further indicate that income divide translates to digital divide. Low income households of less than $25,000 are the least likely income group to adopt broadband or use a computer, and the opposite is true for households with an income of more than $100,000.[405]

148. In pursuit of its goal to make broadband more affordable to everyone, the Commission adopted comprehensive reforms to the Lifeline program on January 31, 2012.[406] As a universal service program that seeks to fulfill Congress's mandate to ensure the availability of communications to all Americans, Lifeline for the past 25 years has helped tens of millions of low-income Americans afford basic phone service. The order begins to modernize the program with the express goal of ensuring availability of broadband for all low-income Americans. The Commission has established a Broadband Pilot Program using up to $25 million in savings from other reforms to test and determine how Lifeline can best be used to increase broadband adoption among Lifeline-eligible consumers. Starting this year, the program will solicit applications from broadband providers and will select a number of projects to fund.[407] Lifeline will help reduce the monthly cost of broadband service, but ETC applicants will be

(Continued from previous page)
Broadband Speed: FCC Data is Improving the Market, OFFICAL FCC BLOG (Dec. 5, 2011), http://www.fcc.gov/blog/broadband-speed-fcc-data-improving-market.

[400] SECOND MEASURING BROADBAND AMERICA REPORT at 4–5.

[401] *See supra* Section III.

[402] *2012 Measuring Broadband Public Notice*, 27 FCC Rcd 1680; SECOND MEASURING BROADBAND AMERICA REPORT at 49.

[403] DIGITAL NATION NOV. 2011 at vi, 37; *see also* Horrigan, *Broadband Adoption and Use in America* at 5; KATHRYN ZICKUHR & AARON SMITH, PEW INTERNET, DIGITAL DIFFERENCES 7 (2012) (showing that 10 percent of non-Internet users do not use the Internet because it is too expensive), 8 (finding that 35 percent of dial-up users will not switch to broadband until the price falls) (2012) (PEW INTERNET, DIGITAL DIFFERENCES), *available at* http://pewinternet.org/~/media//Files/Reports/2012/PIP_Digital_differences_041312.pdf.

[404] DIGITAL NATION NOV. 2011 at 36.

[405] *Id*. at 44 (showing that 42.9 percent of households with incomes of less than $25,000 adopt broadband and 54.4 percent use a computer and showing that 92.6 percent of households with incomes of more than $100,000 adopt broadband and 96 percent use a computer).

[406] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6660, para. 3.

[407] *See Lifeline Pilot Program Public Notice*, 27 FCC Rcd 4840.

expected to help address other challenges to broadband adoption, including the provision of no-cost or low-cost devices to participants in their pilot project and digital literacy training.[408] If the pilot is successful, the program may be expanded in the future.

149. As part of its Broadband Adoption Initiative, the Commission helped facilitate "Connect to Compete."[409] In May 2011, Chairman Genachowski issued a challenge to help close the adoption gap. This is a first-of-its-kind national nonprofit initiative to address the barriers to broadband adoption, digital literacy, and the employment skills gap. The program targets families with children who are eligible for free school lunch. In response, many private and grassroots community organizations have partnered together. For example, thirteen broadband cable providers, covering all 50 states, have agreed to offer 1 Mbps Internet service for $9.95 plus tax per month, with no installation fees and a no- or low-cost modem rental fee. This offering lasts for two years with a three year sign-up window.

150. Efforts of network operators are also helpful in making broadband affordable.[410] The Commission's efforts to speed deployment[411] and free spectrum[412] may lead to more competitive offerings and help bring down the cost of broadband for many Americans. The Commission is also investigating the need for IP-to-IP interconnection rules, which could add certainty to some providers' business models.[413] As part of their merger agreements, some companies are also implementing measures to help improve adoption in their footprints.[414]

151. *Lack of Access to Computers.* Another barrier to adoption is the cost of equipment necessary to access broadband. NTIA's October 10, 2011, *Exploring the Digital Nation* found that "[f]ifteen percent of non-adopters of Internet service indicate that an inadequate or no computer is the major reason they do not go online from home."[415] In a large-scale study of broadband adoption in low-income communities, researchers found that hardware, software, and equipment maintenance fees deter

[408] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6804–05, para. 349.

[409] *See* CONNECT2COMPETE (CONNECT2COMPETE), www.connect2compete.org; Broadband Adoption Taskforce, Presentation to the FCC (Nov. 30, 2011) (*FCC Broadband Adoption Presentation*), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-311281A1.pdf; *see also* Press Release, FCC, FCC Chairman Genachowski & Connect2Compete Partners Announce Adoption Pilot Program (May 31, 2012), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0531/DOC-314389A1.pdf.

[410] *See* 2010 NATIONAL BROADBAND PLAN at 33–49.

[411] Since the last report, the Commission has continued its Broadband Acceleration Initiative and worked with the administration and executive branch agencies and state and local governments to encourage deployments along rights of way and collocation of new and upgraded communications facilities. *See supra* Sections I, II.

[412] *See, e.g.*, *2011 Wireless Backhaul Report and Order*.

[413] *See USF/ICC Transformation Order*, 26 FCC Rcd at 18044–45, paras. 1009–11.

[414] *See, e.g.*, Letter from Melissa E. Newman, Vice President—Federal Regulatory Affairs, CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-110 (filed Apr. 16, 2012) (redacted) (submitting CenturyLink's first Semi-Annual Report on its "Internet Basics" adoption program), *available at* http://apps.fcc.gov/ecfs/document/view?id=7021910757. *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) (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).

[415] DIGITAL NATION NOV. 2011 at vi, 35; *see also* PEW INTERNET, DIGITAL DIFFERENCES at 7 (showing that 12 percent of non-Internet users do use the Internet because they don't have a computer).

some low-income consumers from taking up broadband service, even if they have had it previously.[416] In the *Lifeline Reform and Modernization Order*, ETC applicants to the Broadband Pilot Program are expected to help address challenges to broadband adoption, including the provision of no-cost or low-cost devices to participants.[417] Two partners in the Connect to Compete program will help to alleviate this problem by offering computers for $150[418] and $250[419] respectively, and these computers will come loaded with Windows 7 and Microsoft Office.[420]

152. *Lack of Relevance.* NTIA's *Exploring the Digital Nation* found that the most common reason households without broadband Internet or dial-up service gave for not subscribing was lack of interest.[421] NTIA found that 28 percent of households that owned a computer, but did not have Internet access, explained that they did not need it.[422] For those households that did not own a computer, the perceived lack of need to access the Internet was the top reason why Internet was not accessed at home.[423] The Commission is collaborating with the Connect-to-Compete program, which is offering new content that may promote relevancy of broadband to consumers.[424] At least six of the Connect to Compete partners—Arise Virtual Solutions, CareerBuilder.com, Glassdoor.com, Indeed.com, Monster.com, and oDesk—will have content that is part of a portal to promote job skills. CareerBuilder.com, for instance, will offer online prep and certification courses for $1 per course in high demand employment areas and will release a "Skills Gap Monitor" that lists the top 5 "in-demand jobs" for which further online training or certification could serve as a qualification.[425] At least six other partners—Brainfuse, Discovery Education, EverFi, LearningExpress, MetrixLearning, and Sesame Workshop—will contribute to a portal with customized education content. Discovery Education, for example, will provide educational video clips and digital lessons to help bolster student achievement and proven resources for student success will be accessible free of charge to America's neediest students and their parents.[426]

153. *Poor Digital Literacy.* The *2012 Pew Internet Digital Differences* survey found that 21 percent of non-adopters cite factors pointing to digital literacy as the main reason they are not online.[427] In a prior survey, many of these users have reported that they would need assistance to begin using the

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[416] 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), *available at* http://webarchive.ssrc.org/pdfs/Broadband_Adoption_v1.1.pdf.

[417] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6804–05, para. 349.

[418] Redeemtech's refurbished $150 computers will have a Core 2 Duo processor, 2GB of RAM, 80GB hard drive, DVD player, and a wireless card. The computers will have a 90 day warranty and have family settings. Phone tech support will also be available. *See FCC Broadband Adoption Presentation*.

[419] Microsoft will offer new education laptops starting at $250. *Id*.

[420] CONNECT2COMPETE.

[421] DIGITAL NATION NOV. 2011 at 35; PEW INTERNET, DIGITAL DIFFERENCES at 7 (showing that 42 percent of non-Internet users do use the Internet for reasons relating to a lack of interest (i.e., "just not interested," "it's a waste of time," and "don't want it/need it" answers)).

[422] DIGITAL NATION NOV. 2011 at 36.

[423] *Id*.

[424] CONNECT2COMPETE.

[425] *FCC Broadband Adoption Presentation*.

[426] *Id*.

[427] PEW INTERNET, DIGITAL DIFFERENCES at 7; *see also* Horrigan, *Broadband Adoption and Use in America* at 5 ("22 percent of non-adopters cite factors pointing to lack of digital literacy as the main reason they are not online.").

Internet.[428] A lack of digital skills can keep people from subscribing to a service at home, and impacts the number of activities they do online.[429] The Lifeline Broadband Pilot Program expects its ETC applicants to promote digital literacy with its participants.[430] In addition, at least two partners in the Connect-to-Compete program have committed to promoting digital literacy. Best Buy will offer in-person basic digital literacy training beginning in 20 cities, including training the trainers, with plans to expand to additional communities, and Microsoft will provide basic digital literacy training and advanced training, including training on Microsoft Office, beginning in 15 states with plans to go nationwide. Microsoft will also provide a new online training portal.[431]

154. *Consumers' Lack of Trust in Broadband.* A recent private survey indicated that 94 percent of consumers are concerned about online privacy and more than half think about it often.[432] The *Broadband Adoption and Use in America* survey similarly found that this concern is also prevalent in non-adopters.[433] To make sure that consumers are getting consistent and clear information and guidance from government agencies, the Commission has partnered with the FTC, the Department of Commerce, and the Small Business Administration on a number of education efforts like Net Cetera[434] and OnGuard Online,[435] which offer advice on how to protect children's personal information and guard against identity theft. The Commission has also worked with industry to better protect against cybersecurity threats.[436]

155. We must continue to address all the obstacles we have identified to achieve universal broadband deployment and availability. One study estimates that the consumer surplus gain for households from home broadband use relative to no home Internet connection is roughly $32 billion in annual economic value, or about $100 for every American, every year.[437] Since our conclusion in the

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[428] *See* Horrigan, *Broadband Adoption and Use in America* at 32.

[429] *Id*. 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), *available at* http://webuse.org/p/a25 (click "PDF" to download).

[430] *Lifeline Reform and Modernization Order*, 27 FCC Rcd at 6804–05, para. 349.

[431] *FCC Broadband Adoption Presentation*.

[432] TRUSTe Research & Harris Interactive, 2011 Consumer Research Results, Privacy and Online Behavioral Advertising 11 (2011) (discussing the results of its survey), *available at* http://www.truste.com/ad-privacy/TRUSTe-2011-Consumer-Behavioral-Advertising-Survey-Results.pdf.

[433] Of broadband users at home, 56 percent strongly agree that too much 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; *see also* PEW INTERNET, DIGITAL DIFFERENCES at 7 (showing that 1 percent of non-Internet users do use the Internet because they are worried about viruses/spyware/spam).

[434] ONGUARDONLINE.GOV, NET CETERA: CHATTING WITH KIDS ABOUT BEING ONLINE, http://onguardonline.gov/features/feature-0004-featured-net-cetera-toolkit.

[435] ONGUARDONLINE.GOV, www.onguardonline.gov.

[436] *See* Press Release, FCC, FCC Advisory Committee Adopts Recommendations to Minimize Three Major Cyber Threats, Including Anti-Bot Code of Conduct, IP-Route HiJacking Industry Framework, and Secure DNS Best Practices (Mar. 22, 2012), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-313158A1.pdf.

[437] *See* MARK DUTZ ET AL., COMPASS LEXECON, commissioned by the Internet Innovation Alliance, THE SUBSTANTIAL CONSUMER BENEFITS OF BROADBAND CONNECTIVITY FOR U.S. HOUSEHOLDS 26 (July 2009), *available at* http://internetinnovation.org/files/special-reports/CONSUMER_BENEFITS_OF_BROADBAND.pdf.

2011 Seventh Broadband Progress Report that broadband was not being deployed to all Americans in a reasonable and timely fashion,[438] we have made progress on promoting competition and removing barriers to infrastructure investment, as required by the statute.[439] We will continue to improve the data we collect to better inform our policies[440] and continue to adopt policies that will accelerate broadband deployment, remove barriers to infrastructure investment, and promote competition in telecommunications markets.[441]

156. In addition to addressing those challenges, we also must continue to protect the freedom and openness of the Internet. As the Commission recognized in the *Open Internet Order*, "[t]he Internet's openness . . . enables a virtuous circle of innovation in which new uses of the network—including new content, applications, services, and devices—lead to increased end-user demand for broadband, which drives network improvements, which in turn lead to further innovative network uses."[442] The Commission further found that "[e]ach round of innovation increases the value of the Internet for broadband providers, edge providers, online businesses, and consumers," while, by contrast, "[r]estricting edge providers' ability to reach end users, and limiting end users' ability to choose which edge providers to patronize, would reduce the rate of innovation at the edge and, in turn, the likely rate of improvements to network infrastructure."[443] As discussed above, the open Internet rules were adopted to ensure the continuation of the Internet's virtuous cycle of innovation and investment, and the Commission must continue to prioritize those efforts consistent with the mandate of section 706.[444]

VI. ORDERING CLAUSE

157. Accordingly, IT IS ORDERED that, pursuant to section 706 of the Telecommunications Act of 1996, as amended, 47 U.S.C. § 1301 et seq., this Report IS ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

[438] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8009, 8032–35, paras. 1, 46–52.

[439] *See supra* Section II.

[440] *See, e.g.*, *Modernizing Form 477 NPRM*, 26 FCC Rcd at 1508, para. 1 (proposing rules to "modernize and streamline how we collect, use, and disseminate data, and to ensure that all of the data we collect is useful for supporting informed policymaking, promoting competition, and protecting consumers").

[441] *See* 2010 NATIONAL BROADBAND PLAN at xi–xv.

[442] *Open Internet Order*, 25 FCC Rcd at 17911, para. 14.

[443] *Id*.

[444] *See supra* Section II (discussing the *Open Internet Order*).

APPENDIX A

Commenters

Commenter	Abbreviation
American Library Association	ALA
AT&T Inc.	AT&T
Broadband Alliance of Mendocino County	BAMC
Comcast Corporation	Comcast
CTIA - The Wireless Association	CTIA
Fiber-to-the-Home Council	FTTH Council
Free State Foundation	Free State Foundation
Information Use Management & Policy Institute	Information Institute
Internet 2 K20 Initiative's National CAI Data Collection Working Group	Internet2 K20
Massachusetts Department of Telecommunications and Cable	MDTC
MetroPCS Communications, Inc.	MetroPCS
National Association of Telecommunications Officers and Advisors	NATOA
Navajo Nation Telecommunications Regulatory Commission	NNTRC
Organization for the Promotion and Advancement of Small Telecommunications Companies, the National Telecommunications Cooperative Association, and the Western Telecommunications Alliance	OPASTCO
Rex Buddenberg	Rex Buddenberg
SouthEast Association of Telecommunications Officers and Advisors	SEATOA
Telecommunications Industry Association	TIA
United States Telecom Association	USTelecom
Verizon and Verizon Wireless	Verizon

Reply Commenters

Commenter	Abbreviation
Comcast Corporation	Comcast
CTIA - The Wireless Association	CTIA
Fiber-to-the-Home Council	FTTH Council
Maneesh Pangasa	
SouthEast Association of Telecommunications Officers and Advisors	SEATOA
Sprint	Sprint

APPENDIX B

Data Sources and Definitions

Data Sources

SBI Data. Our estimate of deployment is based upon SBI Data as of June 30, 2011. We also compare these results with SBI Data as of June 30, 2010. 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). The data for mobile wireless service provide us with an estimate of mobile network deployment by speed, but we do not rely upon these mobile data to estimate where mobile wireless services meet the speed benchmark.

Mosaik Data. Mosaik was formerly known as "American Roamer." We report some estimates with the Mosaik Data as of July 31 2011. The data for mobile wireless service provide us with an estimate of mobile network deployment by technology, but we do not rely upon these mobile data to estimate where mobile wireless services meets the speed benchmark.

Form 477 Data. The adoption rates rely on Residential Form 477 subscription data as of June 30, 2011. 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, and a catch all category, All Other.

Demographic Data. We rely primarily upon 2011 GeoLytics data for population and household count for the fifty states and the District of Columbia. For the U.S. Territories, we rely on the 2010 Census for population and household count. We rely on the ACS Five-Year Estimates 2006–2010 for income, education, and race-identification data. These data are based upon surveys conducted from January 1, 2006 to December 31, 2010. We use these data rather than data from the 2010 Census because the ACS estimates will be updated each year and will enable us to examine trends over time. The ACS collects survey information continuously nearly every day of the year and then aggregates the results over five years. The data collection is spread evenly across the entire period represented so as not to over-represent any particular month or year within the period. These multiyear estimates describe the population and characteristics of an area for the full five-year period, not for any specific day, period, or year within the multiyear time period. 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. Thus, our demographic analysis excludes the U.S. Territories for which we do not have data. We rely upon the 2010 census for land area and American Indian Area Alaska Native Area Hawaiian Home Land Class Code (AIANHHCC) affiliation.

Definitions

Adoption Rate. We measure adoption of services at or above the speed benchmark. Because fixed broadband services are not available throughout all areas, we measure adoption in this report by examining the ratio of the number of residential Form 477 broadband subscriptions to the total number of households in which this same minimum broadband speed service is available as evidenced in the SBI Data. We calculate adoption rates for four geographic areas: the census tract, the county, the state, and the United States as a whole.

Deployment Rate. We measure deployment of services at or above the speed benchmark. The

deployment rate is the ratio of the population with access to the fixed broadband service to the total population. We calculate deployment rates for three geographic areas: the county, the state, and the United States as a whole.

Educational Attainment. ACS Five-Year Estimates 2006–2010. We measure educational attainment as the portion of the population aged 25 years old and older that has attained at least an Associates Degree.[1]

Income Measures. ACS Five-Year Estimates 2006–2010. We report three income measures: per capita income, median (household) income, and the poverty rate (the proportion of the population living below the poverty level as defined by the Office of Management and Budget).[2] Per capita income and median household income in the past twelve months are measured in 2010 Inflation-Adjusted Dollars. The survey reports the population for which income data are available and the population living below the poverty threshold appropriate for that person's family size and composition. The population living below the poverty level is the sum of people in families and the number of unrelated individuals with incomes in the last twelve months below the poverty threshold.[3]

Land Area. The land area is based upon the 2010 Census and measured in square miles of land.

Non-Urban Area. A census tract that is not part of the "Urban core."

Non-White Proportion. ACS Five-Year Estimates 2006–2010. 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.[4] Survey respondents to the ACS can select multiple races to which they identify and results from the 2010 Census indicate that approximately 2.9 percent of the population identifies with more than one race. 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 identifies as non-White.

Population Density. Population density of an area is the total population residing in the area divided by the square miles of land in the area. We use the most recent population data available for each area.

Rural Areas. The designation of a census block as rural is based upon the 2010 Census.

Tribal Lands. Our assessment of Tribal lands is conducted by examining the census blocks that have been identified by the Census Bureau as federally recognized Tribal lands for the 2010 Census. These areas fall into one of the following categories of the AIANHHCC: (1) Joint Use Areas; (2) Legal federally recognized American Indian area consisting of reservation and associated off-reservation trust land; (3) Legal federally recognized American Indian area consisting of reservation only; (4) Legal federally recognized American Indian area consisting of off-reservation trust land only; (5) Statistical American Indian area defined for a federally recognized Tribe that does not have reservation or off-reservation trust

[1] *See* U.S. CENSUS, AMERICAN COMMUNITY SURVEY, PUERTO RICO COMMUNITY SURVEY, 2010 SUBJECT DEFINITIONS 59–61 (2010) (discussing Educational Attainment measures), *available at* http://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2010_ACSSubjectDefinitions.pdf.

[2] *See id.* at 77–83 (discussing Income Measures in the Past 12 Months and adjustments to the data for inflation), 102–05 (discussing poverty measures).

[3] *See id.* at 102–05.

[4] *See id.* at 105–12 (discussing racial classifications).

land, specifically a Tribal designated statistical area (TDSA) or Oklahoma Tribal Statistical Area (OTSA);[5] (6) Alaskan Native village statistical area; and (7) Hawaiian Home Lands established by the Hawaiian Homes Commission Act of 1921. Two categories of federally recognized areas were not designated by any census block with a population (off-reservation trust land portion of an American Indian area with both a reservation and off-reservation trust land; and the reservation portion of an American Indian area with both a reservation and off-reservation trust land). We exclude state-recognized areas from the analysis of Tribal lands.

For purposes of this report, we aggregate these Tribal lands into 4 groups: Tribal Lands in the Lower 48 States (areas 1 through 4 defined above); Tribal Statistical Areas (area 5 defined above); Alaskan Village Areas (area 6 defined above) and Hawaiian Home Lands (area 7 defined above).

Because demographic data are generally not available at the census block, we aggregate the SBI Data up to the census tract. However, because a census tract can be composed of Tribal lands and non-Tribal lands, a census tract is designated as one of the four Tribal land groupings if the land area of the Tribal lands comprises at least 50 percent of the land area within the census tract. The particular Tribal land grouping is determined by the Tribal land that accounts for the largest proportion of the census tract. Because this process resulted in only two census tracts being designated as a Hawaiian Home Land we exclude this Tribal group from our demographic analysis because there are too few observations for the statistical analysis.

Urban Area. A census tract is defined as being Urban if it is in the "Urban Core." A census tract is in the "Urban Core" if it has a land area less than three square miles and a population density of at least 1,000 people per square mile. This definition is consistent with the Census Bureau's criteria for identifying initial Urban Core areas for the 2010 Census.

[5] The statistical areas are largely in Oklahoma, but also include areas in California, New York, and Washington.

Appendix C

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by State

	All Areas			Non-Rural Areas			Rural Areas		
Areas	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**
United States	**315.887**	**18.992**	**6.0**	**254.886**	**4.521**	**1.8**	**61.000**	**14.471**	**23.7**
Alabama	4.824	0.549	11.4	2.851	0.046	1.6	1.973	0.503	25.5
Alaska	0.715	0.140	19.6	0.471	0.021	4.4	0.244	0.119	48.9
Arizona	6.571	0.312	4.7	5.903	0.073	1.2	0.667	0.239	35.8
Arkansas	2.946	0.400	13.6	1.660	0.031	1.8	1.286	0.370	28.8
California	37.781	1.238	3.3	35.893	0.574	1.6	1.887	0.664	35.2
Colorado	5.112	0.221	4.3	4.409	0.043	1.0	0.703	0.178	25.3
Connecticut	3.581	0.027	0.7	3.153	0.015	0.5	0.427	0.011	2.6
Delaware	0.910	0.029	3.1	0.757	0.009	1.1	0.153	0.020	13.0
District of Columbia	0.606	0.000	0.0	0.606	0.000	0.0	0.000	0.000	Not Apply
Florida	18.954	0.584	3.1	17.265	0.343	2.0	1.689	0.241	14.3
Georgia	9.861	0.336	3.4	7.412	0.093	1.3	2.449	0.243	9.9
Hawaii	1.362	0.021	1.5	1.250	0.001	0.1	0.112	0.020	17.7
Idaho	1.604	0.209	13.1	1.134	0.015	1.3	0.470	0.195	41.4
Illinois	12.907	0.423	3.3	11.430	0.045	0.4	1.476	0.378	25.6
Indiana	6.519	0.282	4.3	4.731	0.061	1.3	1.788	0.221	12.4
Iowa	3.064	0.218	7.1	1.969	0.014	0.7	1.095	0.204	18.7
Kansas	2.874	0.220	7.7	2.139	0.021	1.0	0.735	0.199	27.0
Kentucky	4.370	0.458	10.5	2.555	0.040	1.5	1.815	0.418	23.0
Louisiana	4.602	0.406	8.8	3.380	0.044	1.3	1.223	0.362	29.6
Maine	1.326	0.063	4.7	0.512	0.006	1.2	0.814	0.057	7.0
Maryland	5.776	0.186	3.2	5.038	0.044	0.9	0.738	0.142	19.2

Appendix C

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by State

	All Areas			Non-Rural Areas			Rural Areas		
Areas	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**
Massachusetts	6.557	0.064	1.0	6.034	0.030	0.5	0.523	0.033	6.4
Michigan	9.823	0.616	6.3	7.326	0.055	0.8	2.497	0.561	22.4
Minnesota	5.329	0.427	8.0	3.909	0.033	0.8	1.420	0.394	27.7
Mississippi	2.979	0.362	12.1	1.470	0.018	1.2	1.509	0.343	22.8
Missouri	6.020	0.454	7.5	4.240	0.024	0.6	1.780	0.430	24.2
Montana	1.000	0.267	26.7	0.559	0.022	4.0	0.441	0.245	55.4
Nebraska	1.839	0.186	10.1	1.351	0.025	1.9	0.488	0.161	33.0
Nevada	2.762	0.063	2.3	2.602	0.015	0.6	0.160	0.048	30.2
New Hampshire	1.316	0.099	7.5	0.794	0.020	2.5	0.522	0.079	15.2
New Jersey	8.809	0.063	0.7	8.342	0.037	0.4	0.466	0.026	5.6
New Mexico	2.098	0.298	14.2	1.627	0.078	4.8	0.471	0.220	46.7
New York	19.466	0.246	1.3	17.125	0.002	0.0	2.342	0.245	10.4
North Carolina	9.727	0.627	6.4	6.452	0.134	2.1	3.276	0.493	15.0
North Dakota	0.675	0.107	15.9	0.407	0.010	2.5	0.268	0.097	36.2
Ohio	11.522	0.397	3.4	8.979	0.041	0.5	2.543	0.356	14.0
Oklahoma	3.788	0.615	16.2	2.513	0.072	2.9	1.276	0.543	42.5
Oregon	3.885	0.132	3.4	3.153	0.005	0.2	0.732	0.127	17.3
Pennsylvania	12.725	0.218	1.7	10.011	0.033	0.3	2.715	0.185	6.8
Rhode Island	1.045	0.002	0.2	0.950	0.000	0.0	0.096	0.002	2.3
South Carolina	4.702	0.549	11.7	3.127	0.153	4.9	1.575	0.395	25.1
South Dakota	0.822	0.173	21.1	0.468	0.015	3.2	0.354	0.158	44.6
Tennessee	6.421	0.440	6.8	4.266	0.039	0.9	2.155	0.400	18.6
Texas	25.707	1.521	5.9	21.805	0.443	2.0	3.903	1.078	27.6

Appendix C

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by State

	All Areas			Non-Rural Areas			Rural Areas		
Areas	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**	**Population (Millions)**	**Population Without Access (Millions)**	**Percentage of Population Without Access**
Utah	2.845	0.052	1.8	2.578	0.007	0.3	0.267	0.045	16.7
Vermont	0.625	0.059	9.4	0.243	0.001	0.2	0.381	0.058	15.2
Virginia	8.063	0.878	10.9	6.085	0.134	2.2	1.978	0.744	37.6
Washington	6.827	0.217	3.2	5.742	0.028	0.5	1.085	0.189	17.4
West Virginia	1.858	0.854	45.9	0.903	0.283	31.4	0.955	0.571	59.8
Wisconsin	5.710	0.396	6.9	4.010	0.006	0.1	1.700	0.390	23.0
Wyoming	0.574	0.076	13.2	0.371	0.004	1.1	0.203	0.072	35.4
U.S. Territories	**4.102**	**2.215**	**54.0**	**2.926**	**1.213**	**41.5**	**1.176**	**1.002**	**85.2**
American Samoa	0.056	0.044	78.6	0.012	0.004	30.9	0.043	0.040	92.0
Commonwealth of the Northern Mariana Islands	0.054	0.054	100.0	0.039	0.039	100.0	0.015	0.015	100.0
Guam	0.159	0.086	54.3	0.046	0.000	0.1	0.114	0.086	76.1
Puerto Rico	3.725	1.922	51.6	2.779	1.120	40.3	0.946	0.802	84.8
United States Virgin Islands	0.109	0.109	100.0	0.051	0.051	100.0	0.058	0.058	100.0

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Alabama			
Autauga	8,622	93.1	24,568
Baldwin	16,096	117.3	26,469
Barbour	7,988	30.9	15,875
Bibb	9,592	37.0	19,918
Blount	4,519	90.1	21,070
Bullock	4,355	17.5	20,289
Butler	4,227	27.1	16,916
Calhoun	7,808	196.9	20,574
Chambers	5,210	56.9	16,626
Cherokee	8,294	47.2	21,322
Chilton	13,180	63.5	20,517
Choctaw	3,622	15.1	17,214
Clarke	11,506	20.7	17,372
Clay	6,781	23.0	18,332
Cleburne	6,122	27.1	17,490
Coffee	9,540	75.2	22,797
Colbert	13,286	92.0	21,079
Conecuh	8,617	15.5	15,755
Coosa	3,211	17.8	19,209
Covington	7,482	37.1	19,822
Crenshaw	7,359	23.0	19,793
Cullman	7,982	110.5	20,284
Dale	18,585	89.4	21,722
Dallas	4,423	44.6	16,646
DeKalb	4,145	92.6	18,152
Elmore	7,934	130.6	22,640
Escambia	11,629	40.4	16,259
Etowah	4,938	195.6	20,439
Fayette	8,917	27.4	17,711
Franklin	10,006	50.4	18,094
Geneva	11,345	47.2	18,351
Greene	4,820	13.9	14,738
Hale	7,698	24.2	16,523
Henry	7,239	31.1	19,716
Houston	9,966	178.4	22,725
Jackson	6,834	49.3	18,905
Jefferson	8,347	592.1	26,529
Lamar	7,180	23.9	19,789

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Lauderdale	20,431	140.0	22,341
Lawrence	9,713	49.6	19,370
Lee	3,848	235.6	22,794
Limestone	6,857	152.4	24,007
Lowndes	3,506	15.6	16,524
Macon	6,707	34.9	16,380
Madison	20,535	426.6	29,918
Marengo	5,672	21.4	18,323
Marion	10,236	41.4	19,030
Marshall	2,645	167.2	19,875
Mobile	12,760	338.1	21,548
Monroe	10,237	22.3	17,652
Montgomery	5,526	293.5	24,622
Morgan	4,053	208.6	23,090
Perry	4,630	14.6	13,433
Pickens	6,200	22.2	16,278
Pike	13,206	49.1	19,013
Randolph	6,037	39.6	19,844
Russell	4,739	83.4	17,415
St. Clair	12,406	137.2	22,192
Shelby	4,152	255.3	33,978
Sumter	6,464	15.1	14,460
Talladega	11,363	111.8	18,713
Tallapoosa	2,743	58.3	22,542
Tuscaloosa	14,443	149.6	22,546
Walker	11,468	84.6	20,516
Washington	4,281	16.2	18,824
Wilcox	4,957	13.2	12,573
Winston	10,018	39.8	18,055
Alaska			
Aleutians East	3,269	0.5	22,279
Aleutians West	5,372	1.2	29,920
Anchorage	1,755	171.0	34,678
Bethel	17,145	0.4	18,584
Bristol Bay	981	1.9	31,260
Denali	133	0.1	42,245
Dillingham	4,877	0.3	22,597
Fairbanks North Star	19,827	13.4	30,395
Haines	391	1.1	27,979
Hoonah-Angoon	1,657	0.3	24,932

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Juneau	508	11.6	34,923
Kenai Peninsula	21,983	3.5	29,127
Ketchikan Gateway	42	2.8	29,520
Kodiak Island	5,273	2.1	26,413
Lake and Peninsula	1,642	0.1	15,161
Matanuska-Susitna	5,586	3.8	27,910
Nome	9,520	0.4	20,549
North Slope	9,228	0.1	22,109
Northwest Arctic	7,590	0.2	21,278
Petersburg	1,062	1.2	30,971
Prince of Wales-Hyder	2,576	1.4	24,193
Sitka	184	3.1	29,982
Skagway	30	2.1	35,536
Southeast Fairbanks	5,331	0.3	27,657
Valdez-Cordova	833	0.3	30,703
Wade Hampton	7,608	0.4	11,269
Wrangell	344	0.9	28,731
Yakutat	659	0.1	28,576
Yukon-Koyukuk	4,712	0.0	18,614
Arizona			
Apache	57,074	6.5	12,294
Cochise	1,807	21.6	23,010
Coconino	48,181	7.3	22,632
Gila	20,736	11.4	19,600
Graham	6,804	8.4	15,644
Greenlee	184	4.8	21,281
La Paz	10,755	4.6	21,165
Maricopa	27,505	426.2	27,816
Mohave	20,734	15.3	21,523
Navajo	58,306	11.0	16,745
Pima	9,052	109.1	25,093
Pinal	19,911	74.9	21,716
Santa Cruz	8,480	39.5	16,209
Yavapai	19,844	26.7	25,527
Yuma	2,591	36.8	18,418
Arkansas			
Arkansas	1,075	19.1	22,142
Ashley	4,733	23.4	18,779
Baxter	2,219	76.1	21,513
Benton	7,311	271.2	25,186

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Boone	10,479	63.4	20,507
Bradley	4,619	17.7	18,845
Calhoun	4,923	8.5	16,457
Carroll	6,668	44.0	19,743
Chicot	2,834	18.0	14,668
Clark	6,206	26.7	17,186
Clay	1,146	24.8	18,892
Cleburne	4,492	47.1	20,371
Cleveland	2,522	14.4	19,481
Columbia	6,411	31.7	20,110
Conway	7,637	38.7	19,909
Craighead	2,520	139.0	21,728
Crawford	5,214	105.9	18,715
Crittenden	6,051	83.9	18,241
Cross	4,822	28.8	18,248
Dallas	1,523	12.0	16,457
Desha	1,264	16.7	17,582
Drew	7,757	22.3	18,903
Faulkner	3,918	179.0	22,811
Franklin	2,602	29.9	18,010
Fulton	1,367	19.8	17,067
Garland	5,355	143.5	22,786
Grant	3,615	28.5	22,229
Greene	11,620	73.7	18,225
Hempstead	4,953	31.1	17,177
Hot Spring	19,297	54.1	18,248
Howard	5,500	23.4	18,216
Independence	19,899	48.2	19,912
Izard	1,654	23.5	17,737
Jackson	6,689	28.2	14,874
Jefferson	21,331	87.9	18,681
Johnson	5,060	39.2	16,937
Lafayette	5,055	14.3	17,699
Lawrence	6,042	29.4	15,168
Lee	5,015	17.1	13,103
Lincoln	5,474	25.0	15,024
Little River	7,641	24.6	18,808
Logan	3,031	31.5	19,121
Lonoke	1,690	91.3	22,473
Madison	5,154	19.3	18,611

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Marion	11,177	28.2	19,532
Miller	1,824	69.8	19,654
Mississippi	4,438	51.6	17,736
Monroe	1,485	13.1	17,084
Montgomery	2,442	12.2	20,010
Nevada	2,185	14.4	21,020
Newton	7,910	10.1	15,904
Ouachita	7,028	35.3	18,244
Perry	3,144	19.1	19,844
Phillips	13,491	30.6	15,244
Pike	1,395	18.7	18,122
Poinsett	3,456	32.3	16,625
Polk	4,466	24.1	16,913
Pope	2,590	77.3	19,693
Prairie	696	13.2	18,134
Pulaski	4,333	506.5	27,158
Randolph	2,964	27.6	18,751
St. Francis	12,372	43.7	13,693
Saline	7,527	151.6	24,584
Scott	3,580	12.8	17,668
Searcy	2,963	12.5	15,298
Sebastian	1,750	239.0	22,284
Sevier	2,031	30.9	15,590
Sharp	2,954	28.6	16,570
Stone	2,255	20.6	16,090
Union	5,677	39.9	20,447
Van Buren	5,389	24.6	17,999
Washington	7,626	220.2	22,421
White	5,879	75.7	20,900
Woodruff	761	12.0	18,344
Yell	10,235	24.2	16,345
California			
Alameda	1,969	2064.5	33,961
Alpine	1,055	1.5	32,159
Amador	6,872	63.9	26,329
Butte	868	135.1	23,404
Calaveras	13,208	45.0	28,408
Colusa	1,111	19.1	21,317
Contra Costa	10,228	1479.6	37,818
Del Norte	2,608	28.8	18,974

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
El Dorado	12,321	106.0	34,393
Fresno	101,185	160.0	20,329
Glenn	696	21.8	19,987
Humboldt	57,613	37.7	24,025
Imperial	28,880	43.4	16,395
Inyo	9,412	1.8	26,762
Kern	241,472	106.4	20,100
Kings	69,699	112.6	17,875
Lake	174	51.5	21,531
Lassen	5,233	7.8	19,756
Los Angeles	24,705	2451.2	27,344
Madera	23,977	72.7	18,724
Marin	9,952	488.9	53,940
Mariposa	6,552	12.6	27,064
Mendocino	29,903	25.1	23,357
Merced	21,544	134.9	18,041
Modoc	8,615	2.5	20,536
Mono	5,596	4.7	27,321
Monterey	70,236	128.7	25,776
Napa	84	184.1	34,310
Nevada	20,799	103.0	30,727
Orange	715	3844.3	34,017
Placer	11,814	251.8	35,680
Plumas	684	7.7	28,732
Riverside	43,187	313.1	24,431
Sacramento	6,144	1478.0	26,953
San Benito	4,979	40.2	25,508
San Bernardino	55,610	103.2	21,867
San Diego	78,813	743.1	30,715
San Joaquin	43,034	497.9	22,851
San Luis Obispo	37,615	82.5	29,790
San Mateo	6,000	1628.2	43,958
Santa Barbara	9,709	156.5	29,731
Santa Clara	668	1411.3	39,804
Santa Cruz	95	597.4	32,862
Shasta	13,960	46.8	23,772
Sierra	259	3.4	27,389
Siskiyou	4,483	7.2	22,179
Solano	3,845	502.0	28,649
Sonoma	8,277	308.3	32,597

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Stanislaus	19,865	347.3	22,064
Tehama	450	21.8	20,198
Trinity	13,959	4.4	22,073
Tulare	46,581	94.7	17,966
Tuolumne	33,912	24.8	25,483
Ventura	6,291	450.9	32,348
Yolo	40	201.0	27,420
Yuba	460	117.7	19,937
Colorado			
Adams	1,604	388.3	23,999
Alamosa	17	21.6	18,820
Arapahoe	2,190	726.1	31,898
Archuleta	4,817	9.2	25,421
Baca	293	1.5	21,472
Bent	56	4.3	16,505
Boulder	821	408.9	36,947
Chaffee	4,873	17.6	26,110
Cheyenne	206	1.0	22,999
Clear Creek	1,016	22.7	34,506
Conejos	81	6.5	17,541
Costilla	88	2.9	16,525
Crowley	4,423	7.5	18,966
Custer	2,513	5.8	26,860
Delta	1,190	27.6	22,080
Dolores	339	2.0	19,244
Douglas	462	347.6	42,418
Eagle	11,381	32.0	36,753
Elbert	5,711	12.4	34,782
El Paso	18,425	296.0	27,945
Fremont	5,995	30.5	19,083
Garfield	4,930	19.9	28,457
Gilpin	658	36.7	33,591
Grand	4,337	8.1	30,055
Gunnison	3,130	4.8	28,490
Hinsdale	200	0.8	43,293
Huerfano	1,882	4.3	23,139
Jackson	747	0.9	23,814
Jefferson	1,593	702.6	34,714
Kiowa	238	0.8	22,877
Kit Carson	1,878	3.8	21,086

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Lake	1,540	19.8	20,437
La Plata	6,786	30.8	29,836
Larimer	2,822	117.1	30,046
Las Animas	6,268	3.3	21,887
Lincoln	1,171	2.1	23,440
Logan	5,072	12.2	22,564
Mesa	12,699	45.5	27,067
Mineral	298	0.8	46,358
Moffat	2,636	3.0	24,563
Montezuma	9,404	12.7	24,616
Montrose	1,786	19.0	23,613
Morgan	4,352	22.2	20,181
Otero	3,181	15.0	18,056
Ouray	870	8.5	29,051
Park	3,879	7.3	31,663
Phillips	4,447	6.5	23,453
Pitkin	3,361	17.9	64,381
Prowers	85	7.6	18,429
Pueblo	24,219	67.8	21,609
Rio Blanco	1,708	2.1	28,382
Rio Grande	1,413	13.2	17,199
Routt	12,407	10.2	33,079
Saguache	2,924	2.0	18,686
San Juan	59	1.7	31,232
San Miguel	4,017	5.7	38,247
Sedgwick	1,029	4.2	21,652
Summit	2,370	46.5	35,770
Teller	4,694	41.8	28,726
Washington	2,098	1.9	23,125
Weld	4,081	65.1	24,732
Yuma	3,288	4.3	21,872
Connecticut			
Fairfield	385	1470.6	48,295
Hartford	5,370	1221.1	33,151
Litchfield	2,179	205.5	35,848
Middlesex	5,340	449.1	37,519
New Haven	3,308	1429.7	31,720
New London	7,205	410.3	32,888
Tolland	2,679	372.0	33,108
Windham	124	232.5	26,457

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Delaware			
Kent	13,932	285.0	24,194
New Castle	1,688	1270.4	31,220
Sussex	12,959	215.3	26,779
District of Columbia			
District of Columbia	218	9921.1	42,078
Florida			
Alachua	8,763	285.2	24,741
Baker	2,009	47.7	19,593
Bay	3,179	223.3	25,033
Bradford	9,006	99.0	16,997
Brevard	703	536.8	27,606
Broward	25,037	1430.5	28,631
Calhoun	2,344	26.2	15,091
Charlotte	8,128	230.4	26,938
Citrus	2,923	247.1	22,551
Clay	12,104	324.4	26,872
Collier	11,122	161.8	37,046
Columbia	7,213	87.1	19,366
DeSoto	3,589	54.8	15,989
Dixie	3,931	23.6	17,066
Duval	43,619	1137.9	25,854
Escambia	14,153	451.1	23,474
Flagler	1,007	208.2	24,939
Franklin	517	22.2	21,005
Gadsden	1,991	91.2	16,843
Gilchrist	321	49.4	18,309
Glades	3,452	16.1	17,872
Gulf	1,142	27.5	17,968
Hamilton	4,106	28.8	15,794
Hardee	5,991	44.6	14,668
Hendry	8,447	34.9	14,734
Hernando	1,886	376.5	22,775
Highlands	7,301	98.9	19,579
Hillsborough	8,250	1218.5	27,062
Holmes	9,467	41.8	15,285
Indian River	145	278.2	31,918
Jackson	12,888	55.0	17,177
Jefferson	3,742	24.5	19,647
Lafayette	3,568	16.7	18,069

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Lake	11,621	326.2	25,323
Lee	22,915	809.1	29,445
Leon	7,296	417.6	25,803
Levy	3,791	37.1	18,703
Liberty	3,329	10.3	17,003
Madison	6,051	27.6	16,346
Manatee	6,923	438.5	28,072
Marion	14,071	214.8	22,384
Martin	2,146	268.7	35,772
Miami-Dade	128,691	1320.1	22,957
Monroe	3,148	72.8	35,516
Nassau	5,334	115.6	29,089
Okaloosa	11,635	192.1	28,621
Okeechobee	1,118	52.8	19,664
Orange	84	1283.0	25,490
Osceola	576	210.0	20,536
Palm Beach	26,698	669.0	33,610
Pasco	4,306	639.7	24,164
Pinellas	1,885	3319.6	28,742
Polk	13,129	343.1	21,881
Putnam	9,577	102.5	18,402
St. Johns	12,257	328.4	36,027
St. Lucie	2,137	502.4	23,296
Santa Rosa	5,677	151.5	25,384
Sarasota	8,732	686.4	33,045
Seminole	6	1372.0	29,795
Sumter	6,280	179.3	24,180
Suwannee	1,289	61.3	18,782
Taylor	4,332	22.3	18,649
Union	2,734	64.7	13,657
Volusia	6,755	450.8	24,768
Wakulla	1,698	52.5	21,892
Walton	5,916	54.2	27,746
Washington	9,974	44.0	18,470
Georgia			
Appling	6,598	36.5	18,977
Atkinson	285	25.4	15,456
Bacon	11,047	43.4	17,110
Baker	3,011	10.0	16,379
Baldwin	1,073	178.6	17,488

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Banks	394	80.7	19,497
Barrow	345	453.8	20,882
Bartow	3,181	221.8	22,241
Ben Hill	549	71.2	15,529
Berrien	1,427	43.5	16,049
Bibb	324	623.2	21,436
Bleckley	2,034	61.3	18,960
Brantley	18	41.6	18,905
Brooks	1,089	33.2	20,346
Bryan	752	71.9	28,365
Bulloch	31,995	106.7	17,812
Burke	2,614	28.0	15,934
Butts	326	130.5	20,963
Calhoun	1,048	24.4	12,452
Camden	275	83.4	22,022
Candler	354	46.3	16,068
Carroll	867	225.7	20,523
Catoosa	1,125	398.5	22,563
Charlton	1,501	15.7	16,652
Chatham	11,239	629.7	25,397
Chattahoochee	7,124	42.0	22,202
Chattooga	284	83.7	15,158
Cherokee	387	528.1	30,217
Clarke	108	990.1	19,839
Clay	849	16.4	13,353
Clinch	971	8.6	16,709
Cobb	318	2052.9	33,110
Coffee	1,085	74.4	16,664
Colquitt	681	85.1	17,362
Columbia	422	437.7	29,479
Cook	884	76.6	16,528
Coweta	723	299.5	26,161
Crawford	1,386	38.9	20,692
Crisp	2,702	86.3	17,187
Dade	1,869	95.4	20,168
Dawson	265	109.2	25,557
Decatur	1,056	47.0	17,833
DeKalb	3	2607.2	28,412
Dodge	1,785	44.2	16,288
Dooly	5,135	37.8	14,871

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Dougherty	1,567	288.3	19,210
Douglas	469	685.6	24,515
Early	1,059	21.3	16,330
Echols	284	9.4	14,201
Effingham	4,190	113.0	23,465
Elbert	2,059	57.1	17,100
Emanuel	2,135	33.6	16,076
Evans	1,711	61.1	19,072
Fannin	286	62.0	21,103
Fayette	479	554.0	35,076
Floyd	6,399	189.7	20,640
Forsyth	130	820.2	35,385
Franklin	1,314	84.7	19,276
Fulton	4,163	1790.7	37,211
Gilmer	220	67.6	20,439
Glascock	835	21.9	16,844
Glynn	504	193.5	28,040
Gordon	3,226	157.8	18,285
Grady	368	55.7	17,785
Greene	571	41.2	24,943
Gwinnett	197	1928.0	26,901
Habersham	431	159.9	19,286
Hall	730	474.3	23,675
Hancock	4,991	20.0	10,925
Haralson	2,005	102.6	19,033
Harris	1,003	70.6	31,073
Hart	13,050	109.2	19,124
Heard	2,011	40.4	18,077
Henry	74	649.0	25,773
Houston	561	378.8	25,206
Irwin	1,127	27.0	16,561
Jackson	581	187.6	22,473
Jasper	3,208	38.3	20,263
Jeff Davis	4,369	46.3	15,730
Jefferson	3,204	32.0	15,165
Jenkins	2,184	24.0	17,629
Johnson	5,056	33.4	15,659
Jones	227	73.8	21,598
Lamar	179	100.8	17,725
Lanier	1,400	56.6	16,894

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Laurens	2,153	60.4	19,387
Lee	2,105	81.1	23,867
Liberty	2,046	127.0	18,662
Lincoln	766	37.9	19,627
Long	5,027	37.0	15,068
Lowndes	2,189	224.7	20,041
Lumpkin	1,785	108.2	20,088
McDuffie	820	85.4	17,261
McIntosh	10,415	34.1	20,964
Macon	870	36.7	12,902
Madison	325	100.6	18,975
Marion	437	23.9	17,729
Meriwether	4,646	43.8	18,295
Miller	892	21.8	19,895
Mitchell	4,848	46.2	16,322
Monroe	4,206	68.1	23,656
Montgomery	1,110	38.2	17,168
Morgan	3,779	52.4	27,732
Murray	116	114.8	16,925
Muscogee	3,172	876.2	22,514
Newton	645	379.3	21,583
Oconee	505	184.3	34,271
Oglethorpe	403	34.5	17,572
Paulding	2,629	475.0	23,450
Peach	392	187.5	18,681
Pickens	103	129.7	25,892
Pierce	3,860	60.9	18,283
Pike	1,627	85.2	21,051
Polk	794	135.7	18,214
Pulaski	544	47.9	16,621
Putnam	3,235	62.3	25,576
Quitman	1,283	16.9	13,642
Rabun	398	44.3	22,471
Randolph	1,494	17.8	17,632
Richmond	478	620.6	20,604
Rockdale	47	670.8	24,367
Schley	780	31.3	16,122
Screven	8,672	22.8	16,189
Seminole	130	37.0	19,263
Spalding	437	330.2	19,607

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Stephens	1,709	147.6	18,285
Stewart	1,330	13.1	15,612
Sumter	7,483	67.7	17,436
Talbot	1,382	17.4	18,007
Taliaferro	918	8.8	13,955
Tattnall	6,083	53.9	16,742
Taylor	2,668	23.8	14,693
Telfair	4,197	38.0	13,420
Terrell	263	27.4	15,553
Thomas	648	83.3	21,261
Tift	792	158.0	18,394
Toombs	2,554	75.7	17,974
Towns	4,292	64.0	21,527
Treutlen	30	35.0	16,710
Troup	2,596	164.0	19,699
Turner	432	30.8	15,973
Twiggs	2,155	25.1	15,904
Union	547	67.7	24,182
Upson	355	83.7	17,398
Walker	2,048	155.1	19,440
Walton	834	267.7	22,521
Ware	2,250	41.2	18,295
Warren	1,180	20.2	15,987
Washington	5,559	31.4	15,033
Wayne	1,162	47.5	18,393
Webster	938	13.4	16,295
Wheeler	1,698	25.1	10,043
White	247	114.1	23,680
Whitfield	349	360.5	19,780
Wilcox	1,926	24.6	12,692
Wilkes	2,717	22.5	16,993
Wilkinson	515	21.4	17,929
Worth	3,972	37.8	18,348
Hawaii			
Hawaii	18,297	46.9	26,194
Honolulu	335	1580.2	29,516
Kauai	365	109.3	26,513
Maui	1,517	134.2	29,180
Idaho			
Ada	1,042	382.7	27,915

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Adams	1,160	2.9	22,730
Bannock	8,107	75.0	21,275
Bear Lake	720	6.1	19,284
Benewah	7,725	12.2	18,312
Bingham	12,919	22.1	18,633
Blaine	3,512	8.2	32,656
Boise	4,195	3.7	24,288
Bonner	18,868	23.8	24,745
Bonneville	9,737	57.7	23,218
Boundary	6,083	8.9	18,011
Butte	1,109	1.3	20,414
Camas	1,158	1.1	19,659
Canyon	1,013	332.8	18,366
Caribou	1,819	3.9	20,637
Cassia	2,747	9.1	17,782
Clark	1,009	0.6	19,737
Clearwater	3,658	3.6	20,507
Custer	468	0.9	22,625
Elmore	3,872	8.8	20,388
Franklin	2,233	19.6	17,967
Fremont	3,154	7.2	18,616
Gem	488	30.2	20,431
Gooding	6,569	21.4	17,694
Idaho	11,003	1.9	18,980
Jefferson	11,728	25.1	19,019
Jerome	7,236	38.5	16,947
Kootenai	13,401	114.4	24,418
Latah	2,646	34.5	20,218
Lemhi	1,985	1.8	21,699
Lewis	1,753	8.0	18,580
Lincoln	3,351	4.4	19,011
Madison	11,096	81.7	13,735
Minidoka	116	26.9	17,747
Nez Perce	3,648	46.7	23,899
Oneida	755	3.6	17,950
Owyhee	2,735	1.5	17,373
Payette	2,369	56.7	18,814
Power	1,675	5.7	18,412
Shoshone	3,439	4.9	19,020
Teton	10,886	24.2	23,633

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Twin Falls	10,894	41.4	19,892
Valley	2,248	2.8	27,577
Washington	3,145	7.1	20,015
Illinois			
Adams	10,789	78.4	24,308
Alexander	6,920	34.1	15,858
Bond	2,058	46.5	24,341
Boone	397	197.6	26,105
Brown	1,016	22.8	17,133
Bureau	2,980	40.4	24,103
Calhoun	4,355	20.3	23,109
Carroll	835	34.4	25,914
Cass	683	36.3	19,825
Champaign	676	203.1	24,553
Christian	2,455	48.8	21,519
Clark	3,172	32.5	23,173
Clay	3,040	29.4	20,802
Clinton	370	80.1	25,392
Coles	927	106.0	20,601
Cook	244	5526.4	29,335
Crawford	3,385	44.5	21,545
Cumberland	2,207	31.9	21,262
DeKalb	86	169.7	24,179
De Witt	2,424	41.4	24,320
Douglas	556	47.7	21,438
DuPage	2	2799.1	37,849
Edgar	2,730	29.6	22,175
Edwards	3,049	30.0	21,113
Effingham	2,519	71.3	24,843
Fayette	5,309	30.9	21,663
Ford	884	28.9	23,401
Franklin	8,999	96.8	18,504
Fulton	11,218	42.6	20,309
Gallatin	2,050	17.2	21,537
Greene	4,813	25.2	22,107
Grundy	459	123.9	27,895
Hamilton	5,265	19.5	21,602
Hancock	4,798	23.9	22,885
Hardin	779	24.0	18,515
Henderson	3,263	19.2	22,492

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Henry	4,050	61.2	24,915
Iroquois	4,509	26.6	23,400
Jackson	6,658	102.5	19,294
Jasper	2,314	19.5	21,467
Jefferson	16,011	67.9	21,370
Jersey	3,061	62.5	24,368
Jo Daviess	2,928	37.5	26,819
Johnson	9,035	36.7	16,402
Kane	186	1009.4	29,480
Kankakee	4,194	169.6	22,888
Kendall	291	382.0	30,565
Knox	4,442	73.3	20,908
Lake	677	1596.5	38,120
LaSalle	2,667	100.7	24,982
Lawrence	5,439	45.2	19,297
Lee	2,459	49.9	24,440
Livingston	986	37.0	23,259
Logan	9,128	48.8	22,063
McDonough	1,503	54.9	18,344
McHenry	1,282	517.6	31,838
McLean	7,623	144.2	28,167
Macon	5,726	190.1	24,726
Macoupin	12,101	55.1	23,222
Madison	640	376.5	26,127
Marion	8,633	68.7	20,493
Marshall	966	32.4	24,991
Mason	2,096	26.9	23,427
Massac	6,249	64.7	20,216
Menard	6,897	40.4	26,281
Mercer	7,511	29.2	25,332
Monroe	122	86.6	31,091
Montgomery	7,504	42.7	21,700
Morgan	4,502	62.2	23,244
Moultrie	466	44.1	22,954
Ogle	3,171	70.9	24,959
Peoria	10,431	301.9	28,157
Perry	5,033	50.4	17,926
Piatt	348	38.2	26,492
Pike	6,076	19.9	19,996
Pope	3,739	12.2	20,134

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Pulaski	3,818	30.2	18,444
Putnam	1,728	37.6	27,004
Randolph	3,909	57.8	19,950
Richland	2,102	44.7	22,874
Rock Island	3,295	345.4	25,071
St. Clair	367	411.5	24,770
Saline	5,888	65.5	20,903
Sangamon	13,536	227.7	28,394
Schuyler	1,840	17.2	20,649
Scott	3,459	21.1	27,530
Shelby	5,966	29.3	21,891
Stark	942	20.7	25,311
Stephenson	7,021	83.8	22,608
Tazewell	10,885	210.1	27,036
Union	9,497	43.1	19,512
Vermilion	8,342	90.4	20,218
Wabash	6,018	53.0	23,350
Warren	4,384	32.5	20,047
Washington	2,241	26.0	24,846
Wayne	8,740	23.4	21,493
White	5,343	29.4	22,081
Whiteside	3,390	85.5	23,405
Will	2,823	822.8	29,811
Williamson	10,939	158.6	22,164
Winnebago	3,176	581.8	24,008
Woodford	6,247	74.4	29,475
Indiana			
Allen	3,377	543.9	24,532
Bartholomew	3,007	191.0	26,860
Benton	172	21.7	21,949
Boone	663	136.6	38,696
Brown	6,092	48.1	24,312
Carroll	2,536	53.9	23,163
Cass	11,257	94.4	20,562
Clay	24,765	75.0	20,569
Clinton	864	82.4	21,131
Crawford	9,949	34.4	18,598
Daviess	11,769	74.0	20,254
Dearborn	4,007	165.1	25,023
Decatur	764	69.0	22,719

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
DeKalb	26	116.7	21,779
Delaware	1,383	296.4	20,405
Dubois	2,107	98.7	24,801
Elkhart	1,386	431.4	22,187
Fayette	16,344	112.4	18,928
Floyd	38	508.6	25,971
Franklin	4,108	60.3	23,090
Fulton	1,670	56.7	21,119
Gibson	7,786	68.4	22,542
Greene	2,192	60.7	20,676
Hamilton	11	714.9	38,500
Hancock	140	233.9	28,017
Harrison	2,619	81.4	23,539
Hendricks	1,096	364.1	28,880
Henry	61	126.0	19,879
Jackson	2,363	83.5	21,498
Jasper	3,402	60.5	23,676
Jefferson	2,446	90.3	21,278
Jennings	73	75.5	18,636
Johnson	473	443.8	28,224
Knox	1,233	74.4	20,381
Kosciusko	5,492	146.0	24,019
LaGrange	170	98.5	18,388
Lake	3,649	1001.0	23,142
LaPorte	11,343	187.6	22,599
Madison	274	291.4	21,722
Marion	550	2290.5	24,498
Marshall	225	106.3	22,493
Martin	8,936	30.5	21,750
Miami	2,403	97.4	18,854
Montgomery	3,481	75.7	22,788
Morgan	6,846	171.5	23,972
Newton	28	35.1	24,055
Noble	5	116.0	19,783
Ohio	2,299	70.4	25,703
Orange	5,193	49.8	19,119
Owen	2,750	55.6	20,581
Parke	5,352	38.7	19,494
Perry	7,379	50.7	20,806
Pike	5,565	38.2	20,005

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Porter	1,515	397.6	27,922
Posey	1,356	62.8	26,727
Pulaski	93	30.8	20,491
Putnam	6,276	79.0	20,441
Randolph	585	57.7	19,552
Ripley	1,040	64.3	22,025
Rush	4,756	42.2	21,215
St. Joseph	896	584.5	23,082
Scott	135	126.6	19,414
Shelby	1,396	108.4	26,398
Spencer	3,732	52.8	23,609
Starke	224	76.0	17,991
Steuben	77	110.1	22,950
Sullivan	9,845	47.8	20,093
Switzerland	5,825	47.8	21,214
Tippecanoe	3,483	351.1	22,203
Tipton	33	60.6	23,499
Union	4,300	46.5	19,243
Vermillion	3,255	62.8	22,178
Vigo	4,346	267.7	20,398
Wabash	9,828	79.0	20,475
Warrick	8,403	157.0	29,737
Washington	676	55.1	19,278
Wayne	1,458	170.4	21,789
White	3,683	48.5	22,323
Whitley	2,823	99.5	24,644
Iowa			
Adair	1,544	13.4	23,497
Adams	881	9.4	23,549
Allamakee	3,508	22.5	21,349
Appanoose	1,331	25.6	20,084
Audubon	1,411	13.7	24,207
Benton	9,314	36.3	25,111
Black Hawk	2,052	232.9	23,357
Boone	637	46.0	25,998
Bremer	1,136	55.8	26,522
Buchanan	835	36.8	23,437
Buena Vista	1,246	35.3	21,256
Butler	3,931	25.6	24,030
Calhoun	180	16.7	23,049

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Carroll	754	36.6	25,094
Cass	4,641	24.7	21,787
Cedar	3,202	32.0	24,742
Cerro Gordo	2,838	77.4	25,463
Cherokee	1,419	20.6	24,507
Chickasaw	2,720	24.5	22,447
Clarke	2,294	21.5	23,271
Clay	84	29.3	25,398
Clayton	377	23.2	22,303
Clinton	3,384	70.5	23,573
Crawford	2,736	24.0	21,181
Dallas	1,097	118.0	33,051
Davis	5,639	17.4	21,970
Decatur	2,333	15.8	18,195
Delaware	705	30.5	22,578
Des Moines	5,309	97.1	22,555
Dickinson	1,123	44.0	29,459
Dubuque	2,410	155.0	25,045
Emmet	307	26.1	24,371
Fayette	1,053	28.3	21,566
Floyd	3,997	32.5	21,416
Franklin	3,720	18.3	22,507
Fremont	936	14.4	23,612
Greene	6,028	16.1	23,947
Grundy	1,063	24.8	26,916
Guthrie	2,107	18.4	26,590
Hamilton	787	26.8	24,765
Hancock	2,126	19.8	22,713
Hardin	538	30.5	24,154
Harrison	1,349	21.2	24,221
Henry	703	46.5	23,056
Howard	2,598	20.1	22,417
Humboldt	662	22.3	24,568
Ida	2,730	16.2	23,841
Iowa	1,458	27.8	26,721
Jackson	810	31.1	23,008
Jasper	2,338	50.1	23,160
Jefferson	1,017	38.6	23,853
Johnson	51	216.1	28,008
Jones	1,082	35.9	22,873

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Keokuk	2,158	17.9	22,088
Kossuth	928	15.9	27,415
Lee	3,550	69.0	21,324
Linn	46	298.1	28,239
Louisa	1,414	28.3	20,367
Lucas	1,756	20.4	19,967
Lyon	2,472	19.5	21,613
Madison	3,291	28.3	25,711
Mahaska	2,727	39.2	21,568
Marion	1,885	60.0	24,613
Marshall	836	71.5	22,407
Mills	3,578	34.5	25,400
Mitchell	4,118	22.9	22,820
Monona	1,192	13.1	22,774
Monroe	1,340	18.2	21,228
Montgomery	1,719	25.2	21,301
Muscatine	4,293	98.5	24,138
O'Brien	1,673	24.8	24,771
Osceola	3,542	16.0	23,063
Page	1,707	29.7	21,204
Palo Alto	151	16.6	23,071
Plymouth	3,997	28.8	28,060
Pocahontas	63	12.6	23,385
Polk	788	763.5	29,246
Pottawattamie	14,381	98.4	23,782
Poweshiek	1,243	32.1	25,218
Ringgold	1,344	9.5	21,858
Sac	3,796	17.9	23,837
Scott	2,005	364.7	27,408
Shelby	205	20.4	22,389
Sioux	6,981	43.9	21,333
Story	74	158.8	25,450
Tama	1,624	24.6	23,041
Taylor	851	11.7	21,335
Union	2,009	29.9	20,435
Van Buren	470	15.6	20,209
Wapello	2,821	82.6	22,376
Warren	4,449	82.4	28,798
Washington	920	38.2	23,979
Wayne	2,474	12.0	18,795

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Webster	33	52.8	22,653
Winnebago	4,670	27.0	22,684
Winneshiek	2,404	30.5	23,608
Woodbury	4,303	117.9	22,069
Worth	2,666	19.0	27,240
Wright	323	22.6	23,068
Kansas			
Allen	2,207	26.4	20,195
Anderson	2,353	13.9	20,558
Atchison	849	39.0	20,995
Barber	236	4.2	23,542
Barton	1,135	31.0	23,688
Bourbon	4,740	23.8	18,596
Brown	1,826	17.4	19,555
Butler	12,832	46.5	26,436
Chase	1,194	3.5	21,890
Chautauqua	1,051	5.7	21,613
Cherokee	6,852	36.5	20,075
Cheyenne	1,282	2.7	19,460
Clark	126	2.3	24,605
Clay	710	13.4	24,858
Cloud	738	13.3	18,690
Coffey	2,013	13.6	23,744
Comanche	367	2.4	22,974
Cowley	1,708	32.1	20,720
Crawford	3,974	66.4	19,753
Decatur	938	3.2	21,966
Dickinson	1,059	23.6	22,009
Doniphan	1,605	20.2	21,704
Douglas	2,764	244.6	24,851
Edwards	760	4.8	24,899
Elk	994	4.5	20,958
Ellis	1,107	31.9	24,093
Ellsworth	2,010	9.1	21,704
Finney	1,494	28.7	20,976
Ford	1,946	31.4	19,348
Franklin	5,563	45.6	22,294
Geary	459	92.1	20,709
Gove	2,148	2.5	22,775
Graham	2,340	2.9	25,026

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Grant	85	13.7	25,188
Gray	143	6.8	22,606
Greeley	173	1.6	28,698
Greenwood	2,224	5.7	21,325
Hamilton	18	2.7	20,190
Harper	475	7.4	22,467
Harvey	4,309	64.3	22,890
Haskell	291	7.4	21,966
Hodgeman	452	2.2	20,859
Jackson	2,190	20.4	23,306
Jefferson	3,964	35.8	25,580
Jewell	515	3.3	22,443
Johnson	3,732	1165.6	37,882
Kearny	49	4.5	20,888
Kingman	1,387	8.9	22,861
Kiowa	191	3.3	19,430
Labette	5,003	33.5	21,021
Lane	39	2.4	25,261
Leavenworth	9,034	165.9	25,925
Lincoln	980	4.4	23,084
Linn	7,088	16.1	22,472
Logan	329	2.5	22,856
Lyon	6,053	39.8	18,245
McPherson	3,944	32.4	26,467
Marion	3,778	13.2	21,166
Marshall	2,202	11.3	21,295
Meade	177	4.6	23,909
Miami	9,125	57.7	26,218
Mitchell	1,111	9.0	23,350
Montgomery	3,102	55.3	21,037
Morris	112	8.6	23,967
Morton	26	4.3	22,862
Nemaha	3,847	14.2	22,484
Neosho	4,402	28.9	18,683
Ness	41	2.9	27,622
Norton	1,966	6.3	19,080
Osage	2,364	22.9	22,697
Osborne	908	4.3	22,536
Ottawa	216	8.4	22,665
Pawnee	1,782	9.1	17,927

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Phillips	1,252	6.3	21,870
Pottawatomie	1,067	26.2	25,157
Pratt	1,315	13.1	23,585
Rawlins	712	2.3	22,895
Reno	9,217	51.5	22,149
Republic	1,099	6.8	24,731
Rice	1,197	13.8	19,316
Riley	6,025	118.8	19,999
Rooks	446	5.8	23,435
Rush	82	4.6	23,608
Russell	1,409	7.8	23,243
Saline	1,500	77.5	23,669
Scott	426	6.9	28,872
Sedgwick	15,722	506.3	25,297
Seward	82	36.5	18,083
Shawnee	3,396	329.3	25,705
Sheridan	1,142	2.9	24,933
Sherman	791	5.7	22,651
Smith	1,377	4.3	23,644
Stafford	1,345	5.5	23,171
Stanton	29	3.1	19,196
Stevens	100	7.8	21,633
Sumner	155	20.2	23,114
Thomas	1,233	7.2	23,883
Trego	776	3.3	22,095
Wabaunsee	1,101	9.0	23,072
Wallace	474	1.6	23,269
Washington	2,513	6.5	20,577
Wichita	308	3.1	20,375
Wilson	2,407	16.5	18,708
Woodson	1,295	6.6	23,986
Wyandotte	770	1046.2	18,827
Kentucky			
Adair	3,212	45.9	15,790
Allen	16,229	58.5	16,897
Anderson	4,226	107.6	24,516
Ballard	4,440	33.6	23,001
Barren	6,262	87.7	20,067
Bath	132	41.6	15,487
Bell	8,169	79.6	14,627

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Boone	13,376	494.9	28,520
Bourbon	67	69.3	21,355
Boyd	907	309.3	22,064
Boyle	3,195	159.3	22,534
Bracken	1,301	41.0	18,671
Breathitt	7,808	28.2	16,442
Breckinridge	5,494	35.6	17,757
Bullitt	667	254.0	22,791
Butler	4,661	29.7	17,236
Caldwell	3,208	37.9	19,498
Calloway	7,812	97.3	20,951
Campbell	15,571	595.7	27,096
Carlisle	3,112	26.9	17,260
Carroll	2,648	84.8	21,845
Carter	1,958	67.6	18,147
Casey	1,261	35.9	14,252
Christian	6,969	102.8	18,476
Clark	79	142.4	23,966
Clay	4,843	46.7	12,300
Clinton	2,011	52.3	14,802
Crittenden	4,183	26.1	19,463
Cumberland	3,324	22.1	15,025
Daviess	3,151	212.2	22,064
Edmonson	857	40.3	18,959
Elliott	841	34.3	13,072
Estill	950	57.9	15,725
Fayette	1,931	1055.7	28,345
Fleming	3,335	41.3	17,629
Floyd	3,564	100.0	15,883
Franklin	4,215	237.2	26,857
Fulton	983	32.5	16,908
Gallatin	2,555	84.9	17,810
Garrard	1,366	73.9	18,735
Graves	11,098	67.5	19,976
Grayson	1,826	52.1	17,443
Green	471	39.4	21,281
Greenup	1,890	107.5	21,533
Hancock	2,647	45.9	19,952
Hardin	1,249	170.4	22,997
Harlan	8,032	62.9	15,224

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Harrison	7,043	62.0	20,037
Hart	4,530	44.6	16,726
Henderson	1,394	106.0	22,192
Henry	3,275	53.9	21,090
Hickman	1,132	20.0	19,953
Hopkins	4,167	86.6	21,347
Jackson	12,723	39.2	13,935
Jefferson	223	1958.2	26,473
Jessamine	819	289.2	24,097
Johnson	4,465	89.4	18,486
Kenton	9,800	1004.2	27,205
Knott	6,425	46.4	16,110
Knox	3,621	83.4	14,101
Larue	1,149	54.6	18,474
Laurel	1,406	136.3	19,604
Lawrence	795	38.4	15,903
Lee	5,606	37.3	12,983
Leslie	6,281	28.0	14,753
Letcher	6,236	72.0	17,393
Lewis	2,453	28.8	14,915
Lincoln	3,794	74.0	16,985
Livingston	1,764	30.5	20,800
Logan	6,818	48.7	19,443
Lyon	1,651	39.0	19,036
McCracken	2,047	264.9	24,709
McCreary	8,502	43.4	12,197
McLean	2,441	37.7	21,071
Madison	2,760	191.7	21,536
Magoffin	2,455	43.1	13,849
Marion	1,978	58.1	18,445
Marshall	2,496	104.8	23,056
Martin	7,336	56.7	14,785
Mason	1,767	73.5	21,717
Meade	2,591	92.2	18,823
Menifee	607	31.1	15,418
Mercer	3,626	86.2	23,645
Metcalfe	2,751	35.1	16,835
Monroe	1,661	32.9	15,534
Montgomery	29	136.8	20,004
Morgan	1,068	36.4	17,705

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Muhlenberg	5,827	67.2	18,538
Nelson	8,651	105.8	21,763
Nicholas	233	36.0	18,452
Ohio	7,194	40.9	18,258
Oldham	578	328.6	32,702
Owen	4,951	31.1	21,754
Owsley	4,743	24.0	10,767
Pendleton	5,350	53.5	19,523
Perry	2,282	85.0	19,049
Pike	12,941	82.5	18,973
Powell	3,582	70.8	15,796
Pulaski	1,621	96.8	19,540
Robertson	1,099	22.9	15,374
Rockcastle	2,400	54.5	15,621
Rowan	165	83.6	17,435
Russell	17,134	70.2	17,868
Scott	4,318	173.7	26,838
Shelby	5,182	113.7	27,593
Simpson	3,454	74.0	20,426
Spencer	2,722	94.2	25,589
Taylor	1,186	92.6	18,014
Todd	5,321	33.5	17,460
Trigg	3,369	32.7	23,387
Trimble	1,941	58.4	21,161
Union	2,164	43.2	18,811
Warren	4,823	214.6	23,206
Washington	5,898	39.7	20,873
Wayne	3,080	45.6	16,109
Webster	2,000	40.7	18,879
Whitley	2,988	82.0	15,258
Wolfe	611	33.2	11,214
Woodford	243	133.3	28,501
Louisiana			
Acadia	10,918	94.8	18,116
Allen	7,275	34.0	17,108
Ascension	1,277	385.4	26,888
Assumption	234	69.0	20,348
Avoyelles	11,855	50.8	16,944
Beauregard	19,116	31.0	21,543
Bienville	5,382	17.6	18,873

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Bossier	9,949	141.0	25,630
Caddo	15,816	290.9	22,594
Calcasieu	3,440	181.7	23,591
Caldwell	5,484	19.1	19,888
Cameron	1,841	5.0	24,634
Catahoula	5,334	14.8	17,166
Claiborne	9,745	22.7	16,925
Concordia	3,822	29.9	15,911
De Soto	8,565	30.6	20,112
East Baton Rouge	8,208	975.7	26,260
East Carroll	2,779	18.2	15,947
East Feliciana	6,768	44.7	18,376
Evangeline	7,811	51.5	17,561
Franklin	10,306	33.1	18,676
Grant	8,716	35.2	18,536
Iberia	6,531	128.3	20,112
Iberville	7,015	53.9	19,379
Jackson	3,820	28.6	19,308
Jefferson	1,797	1456.1	25,842
Jefferson Davis	7,853	48.8	20,487
Lafayette	5,200	836.2	26,791
Lafourche	521	90.2	22,898
La Salle	7,621	24.1	20,049
Lincoln	5,328	98.8	19,665
Livingston	3,340	203.7	23,372
Madison	3,411	19.2	13,089
Morehouse	3,261	34.8	15,713
Natchitoches	13,331	31.7	18,207
Orleans	4,151	2220.1	24,929
Ouachita	6,665	252.3	21,893
Plaquemines	2,772	27.4	23,378
Pointe Coupee	7,205	41.2	21,533
Rapides	12,960	100.9	21,982
Red River	4,708	23.2	20,044
Richland	7,021	37.4	18,060
Sabine	11,776	28.0	20,626
St. Bernard	136	122.9	19,448
St. Charles	1,277	190.0	25,728
St. Helena	6,555	27.8	16,387
St. James	636	91.7	22,509

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
St. John the Baptist	851	216.7	20,842
St. Landry	3,825	91.4	17,839
St. Martin	4,798	71.4	20,687
St. Mary	4,123	98.4	20,057
St. Tammany	525	280.1	29,282
Tangipahoa	10,579	157.5	19,788
Tensas	1,869	8.6	15,218
Terrebonne	1,330	91.3	22,931
Union	10,192	25.8	20,375
Vermilion	6,211	49.8	21,389
Vernon	13,426	38.1	20,191
Washington	16,794	71.3	17,120
Webster	9,358	69.4	19,254
West Baton Rouge	1,834	124.9	22,101
West Carroll	3,990	32.1	16,462
West Feliciana	8,691	38.6	18,118
Winn	8,029	16.0	15,833
Maine			
Androscoggin	1,224	230.1	22,752
Aroostook	9,096	10.7	20,251
Cumberland	4,567	336.9	31,041
Franklin	3,744	18.1	20,838
Hancock	5,840	34.4	26,876
Kennebec	3,185	140.7	24,656
Knox	528	108.2	25,291
Lincoln	1,106	75.1	28,003
Oxford	4,387	27.9	21,254
Penobscot	10,033	45.3	22,977
Piscataquis	3,640	4.4	19,870
Sagadahoc	567	138.2	26,983
Somerset	6,038	13.3	20,709
Waldo	1,978	53.1	22,213
Washington	3,455	12.9	19,401
York	3,280	197.9	27,137
Maryland			
Allegany	12,992	176.3	20,764
Anne Arundel	2,375	1294.0	38,660
Baltimore	8,979	1342.1	33,719
Calvert	9,245	415.6	36,323
Caroline	11,397	105.5	24,294

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Carroll	13,734	372.6	33,938
Cecil	6,246	294.2	28,640
Charles	15,467	321.3	35,780
Dorchester	4,642	61.1	25,139
Frederick	23,173	353.9	35,172
Garrett	13,245	46.5	23,888
Harford	3,929	560.7	33,559
Howard	1,044	1151.7	45,294
Kent	5,508	73.4	29,536
Montgomery	1,628	1988.8	47,310
Prince George's	5,821	1773.7	31,215
Queen Anne's	5,817	129.8	35,964
St. Mary's	1,732	298.7	34,000
Somerset	9,044	82.6	16,919
Talbot	5,821	141.8	37,958
Washington	12,693	324.9	26,588
Wicomico	8,440	267.7	25,505
Worcester	3,134	109.5	31,520
Massachusetts			
Barnstable	9,394	541.4	35,246
Berkshire	7,092	140.7	28,300
Bristol	1,676	988.4	27,736
Dukes	1,537	160.9	33,390
Essex	2,960	1511.3	33,828
Franklin	9,783	101.8	27,544
Hampden	2,389	753.3	24,718
Hampshire	3,181	300.0	28,367
Middlesex	2,235	1844.1	40,139
Nantucket	348	230.6	53,410
Norfolk	999	1698.4	42,371
Plymouth	14,223	751.0	33,333
Suffolk	93	12500.9	30,720
Worcester	7,797	528.4	30,557
Michigan			
Alcona	3,161	16.3	19,904
Alger	1,439	10.4	19,858
Allegan	13,545	135.2	23,108
Alpena	2,933	51.3	21,140
Antrim	1,228	49.2	23,912
Arenac	5,436	43.0	19,073

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Baraga	350	9.7	19,107
Barry	8,265	106.6	24,493
Bay	3,817	242.7	23,049
Benzie	2,148	54.3	23,649
Berrien	7,285	275.5	24,025
Branch	6,479	88.3	19,049
Calhoun	13,671	191.3	22,166
Cass	9,478	106.0	22,698
Charlevoix	1,296	61.8	28,403
Cheboygan	7,603	36.0	23,038
Chippewa	4,998	24.7	20,309
Clare	9,819	54.0	18,491
Clinton	6,942	133.4	27,223
Crawford	2,232	25.0	21,002
Delta	4,338	31.4	22,064
Dickinson	1,858	34.3	23,854
Eaton	9,224	186.4	25,963
Emmet	7,031	69.8	28,308
Genesee	3,808	660.0	22,458
Gladwin	11,859	50.2	20,571
Gogebic	3,635	14.7	19,933
Grand Traverse	1,674	188.3	27,091
Gratiot	6,615	74.6	18,388
Hillsdale	11,884	77.5	20,006
Houghton	3,443	36.3	18,267
Huron	8,949	39.1	22,098
Ingham	4,890	502.4	23,883
Ionia	11,370	111.4	19,386
Iosco	5,389	46.7	20,513
Iron	1,367	10.1	19,986
Isabella	11,252	122.7	18,510
Jackson	19,337	226.2	21,947
Kalamazoo	4,739	445.9	25,138
Kalkaska	2,813	30.5	19,770
Kent	8,851	714.1	24,791
Keweenaw	887	4.0	21,307
Lake	7,131	19.8	16,084
Lapeer	14,369	136.0	25,110
Leelanau	1,694	62.1	32,194
Lenawee	4,525	132.8	22,529

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Livingston	11,357	319.2	31,609
Luce	2,555	7.3	17,195
Mackinac	4,593	10.7	22,170
Macomb	5,975	1748.2	26,524
Manistee	2,428	45.2	21,612
Marquette	5,348	37.1	23,347
Mason	8,546	57.8	21,760
Mecosta	8,890	76.3	18,745
Menominee	7,573	22.9	21,624
Midland	6,693	161.0	28,363
Missaukee	8,472	26.1	19,560
Monroe	4,588	276.2	25,520
Montcalm	16,533	89.4	18,569
Montmorency	4,131	17.8	19,102
Muskegon	7,656	344.5	19,719
Newaygo	17,713	59.2	20,870
Oakland	22,522	1381.6	36,138
Oceana	8,914	51.7	18,402
Ogemaw	5,492	38.0	18,321
Ontonagon	353	5.1	21,448
Osceola	11,264	41.0	17,861
Oscoda	4,788	15.0	18,524
Otsego	3,653	46.2	22,568
Ottawa	2,411	470.7	25,045
Presque Isle	7,677	20.1	20,870
Roscommon	1,140	46.3	20,194
Saginaw	9,939	247.5	21,662
St. Clair	28,872	224.7	23,828
St. Joseph	10,582	122.3	20,192
Sanilac	20,198	44.3	19,645
Schoolcraft	3,179	7.2	20,455
Shiawassee	6,107	131.7	21,869
Tuscola	13,780	68.6	19,937
Van Buren	13,395	125.4	22,002
Washtenaw	15,403	487.1	31,316
Wayne	8,203	2927.7	22,125
Wexford	9,851	57.9	19,952
Minnesota			
Aitkin	7,461	8.9	22,966
Anoka	7,641	784.4	29,347

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Becker	15,561	24.8	24,385
Beltrami	534	17.8	21,016
Benton	9,812	94.0	23,648
Big Stone	1,473	10.5	23,746
Blue Earth	2,359	86.1	23,691
Brown	847	41.9	24,591
Carlton	12,868	41.1	23,932
Carver	5,624	262.2	35,807
Cass	7,052	14.1	24,348
Chippewa	1,968	21.3	23,610
Chisago	6,401	129.9	26,576
Clay	4,437	57.4	23,011
Clearwater	84	8.7	20,913
Cook	3,468	3.6	28,873
Cottonwood	2,256	18.1	23,162
Crow Wing	1,918	63.2	24,282
Dakota	2,273	714.0	34,142
Dodge	1,538	46.0	26,969
Douglas	2,911	57.1	25,633
Faribault	798	20.1	22,667
Fillmore	9,761	24.1	23,758
Freeborn	4,455	44.1	23,645
Goodhue	4,105	61.1	27,472
Grant	72	10.9	23,233
Hennepin	7,941	2091.0	35,902
Houston	4,891	34.1	24,865
Hubbard	9,108	22.1	24,413
Isanti	13,509	87.5	25,165
Itasca	17,289	16.9	23,465
Jackson	3,715	14.5	25,144
Kanabec	10,192	31.1	21,304
Kandiyohi	2,463	53.1	25,844
Kittson	222	4.1	25,030
Koochiching	2,027	4.2	24,576
Lac qui Parle	988	9.4	24,291
Lake	1,724	5.1	26,087
Lake of the Woods	458	3.1	27,192
Le Sueur	1,752	62.3	25,958
Lincoln	948	10.9	24,922
Lyon	5,130	36.3	23,755

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
McLeod	1,423	75.0	27,590
Mahnomen	4,973	9.8	17,999
Marshall	1,375	5.3	24,552
Martin	358	29.2	25,321
Meeker	3,292	38.3	23,839
Mille Lacs	3,780	45.9	21,744
Morrison	8,565	29.5	22,934
Mower	6,560	54.8	23,740
Murray	2,352	12.2	24,045
Nicollet	2,508	73.5	25,656
Nobles	5,124	30.3	20,953
Norman	3,267	7.7	22,817
Olmsted	6,137	223.7	32,704
Otter Tail	28,857	28.9	23,445
Pennington	1,729	22.6	22,687
Pine	13,628	21.1	21,328
Pipestone	5,099	20.5	22,289
Polk	3,125	16.1	23,105
Pope	980	16.4	25,935
Ramsey	5,324	3344.4	28,956
Red Lake	21	9.4	23,171
Redwood	2,649	18.1	23,548
Renville	3,573	15.8	23,956
Rice	3,656	130.3	24,678
Rock	3,910	20.0	23,079
Roseau	3,378	9.3	22,975
St. Louis	36,507	32.0	25,014
Scott	1,675	370.1	33,612
Sherburne	1,741	207.5	27,376
Sibley	3,457	25.8	24,073
Stearns	9,205	112.6	24,816
Steele	6,213	85.8	25,062
Stevens	464	17.2	24,585
Swift	1,471	13.1	21,571
Todd	7,650	26.3	21,014
Traverse	907	6.2	24,188
Wabasha	4,300	41.4	26,282
Wadena	1,752	25.7	19,344
Waseca	2,392	45.4	23,121
Washington	7,956	628.5	36,248

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Watonwan	829	25.6	22,334
Wilkin	1,806	8.6	24,447
Winona	8,379	82.5	21,864
Wright	2,419	192.9	28,454
Yellow Medicine	1,798	13.6	23,171
Mississippi			
Adams	1,120	69.5	17,473
Alcorn	7,713	93.0	17,954
Amite	7,449	17.9	16,861
Attala	6,197	26.7	17,659
Benton	3,751	21.9	14,998
Bolivar	2,268	38.6	16,051
Calhoun	3,746	25.5	15,183
Carroll	3,017	17.1	16,025
Chickasaw	6,837	34.4	15,985
Choctaw	1,758	20.5	16,545
Claiborne	2,359	19.5	12,571
Clarke	5,102	24.2	16,467
Clay	5,708	49.9	17,604
Coahoma	2,379	46.6	15,687
Copiah	5,745	37.9	17,473
Covington	2,951	47.7	17,713
DeSoto	2,653	349.2	24,531
Forrest	3,400	162.8	19,272
Franklin	1,330	14.6	21,583
George	771	48.1	19,452
Greene	1,393	20.7	14,064
Grenada	2,858	52.0	19,701
Hancock	2,785	89.8	21,935
Harrison	1,174	319.7	22,880
Hinds	6,830	281.1	20,676
Holmes	2,707	25.4	11,585
Humphreys	1,283	22.4	13,282
Issaquena	598	3.4	11,810
Itawamba	1,735	44.0	18,517
Jackson	1,145	191.8	22,655
Jasper	3,349	25.5	18,268
Jefferson	3,587	14.8	12,534
Jefferson Davis	5,221	30.4	15,120
Jones	4,779	98.3	18,632

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Kemper	4,937	13.5	12,903
Lafayette	5,924	76.1	21,267
Lamar	2,389	116.0	26,052
Lauderdale	3,111	114.5	20,116
Lawrence	5,702	30.3	19,142
Leake	3,674	40.8	14,617
Lee	7,545	185.7	21,831
Leflore	2,621	54.7	12,957
Lincoln	7,098	60.2	20,620
Lowndes	2,265	117.7	21,273
Madison	3,159	136.2	31,517
Marion	5,575	50.3	17,549
Marshall	8,111	53.3	16,825
Monroe	7,745	48.2	18,884
Montgomery	843	26.5	16,584
Neshoba	8,968	52.5	17,609
Newton	7,796	37.7	16,727
Noxubee	3,747	16.5	12,759
Oktibbeha	2,014	105.1	19,356
Panola	9,815	50.8	15,987
Pearl River	5,381	70.6	20,014
Perry	2,147	19.0	18,238
Pike	5,232	99.7	17,620
Pontotoc	12,384	60.5	17,820
Prentiss	5,197	60.9	17,068
Quitman	2,281	19.9	13,080
Rankin	4,219	186.4	26,637
Scott	3,940	46.6	16,608
Sharkey	1,154	11.2	14,322
Simpson	5,570	46.8	18,397
Smith	6,926	26.1	18,686
Stone	3,135	40.9	21,691
Sunflower	4,801	41.6	11,993
Tallahatchie	4,371	23.5	12,687
Tate	7,102	72.1	18,318
Tippah	7,902	48.7	16,365
Tishomingo	4,266	46.1	17,017
Tunica	2,286	23.6	15,711
Union	4,498	65.7	17,945
Walthall	8,294	38.5	16,157

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Warren	3,467	82.3	22,079
Washington	7,076	69.7	15,946
Wayne	7,188	25.4	17,099
Webster	2,112	24.3	17,888
Wilkinson	3,662	14.5	14,333
Winston	8,533	31.5	17,244
Yalobusha	3,127	27.0	16,623
Yazoo	6,654	30.5	14,339
Missouri			
Adair	25	45.2	17,098
Andrew	2,700	40.1	24,009
Atchison	666	10.2	23,659
Audrain	2,953	36.9	18,800
Barry	1,486	46.2	19,363
Barton	3,020	20.6	19,117
Bates	8,394	20.3	19,056
Benton	7,632	27.1	19,955
Bollinger	10,393	20.0	18,172
Boone	2,220	241.1	25,124
Buchanan	845	220.4	21,638
Butler	3,406	61.7	19,368
Caldwell	4,411	22.1	19,499
Camden	9,458	67.9	25,509
Cape Girardeau	10,774	131.8	23,014
Carroll	4,431	13.2	25,021
Carter	3,031	12.5	15,881
Cass	3,704	144.8	26,326
Cedar	3,401	29.2	16,432
Chariton	3,423	10.3	19,978
Christian	630	142.8	23,720
Clark	2,794	14.2	19,114
Clay	1	570.6	28,204
Cole	24	194.4	25,935
Cooper	258	31.2	19,234
Crawford	2,079	33.3	17,317
Dade	3,157	15.9	16,638
Dallas	9,177	31.3	18,400
Daviess	2,417	14.8	19,900
DeKalb	1,514	29.7	16,916
Dent	5,468	20.9	18,111

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Douglas	3,131	17.0	15,117
Dunklin	2,609	58.8	16,619
Franklin	3,776	110.8	23,365
Gasconade	568	29.2	21,240
Gentry	1,941	13.5	19,021
Grundy	3,829	23.6	18,148
Harrison	8,637	12.5	18,967
Henry	5,050	31.7	20,304
Hickory	7,754	24.1	18,215
Holt	93	10.5	21,666
Howard	2,953	21.9	21,829
Howell	17,258	44.0	17,135
Iron	3,299	19.1	17,200
Jackson	1,892	1117.2	25,213
Jasper	6,499	186.8	19,899
Jefferson	4,253	335.9	24,586
Johnson	4,761	63.3	20,405
Knox	47	8.2	18,481
Laclede	9,892	47.1	19,858
Lafayette	4,068	53.1	23,043
Lawrence	247	63.7	18,777
Lewis	1,902	20.1	18,973
Lincoln	3,895	86.7	21,862
Linn	3,719	20.5	20,742
Livingston	3,227	28.6	20,295
McDonald	3,243	43.1	17,070
Macon	2,888	19.5	18,411
Madison	5,170	24.9	17,239
Maries	659	17.5	19,155
Marion	5,269	65.8	20,718
Mercer	3,797	8.4	19,031
Miller	1,685	41.9	18,202
Mississippi	1,071	34.9	15,927
Moniteau	871	37.7	19,267
Monroe	2,670	13.6	19,834
Montgomery	767	22.7	19,634
Morgan	4,615	34.6	18,789
New Madrid	2,680	27.7	18,811
Newton	7,584	93.7	20,832
Nodaway	6,565	26.5	18,909

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Oregon	6,151	13.7	15,093
Ozark	8,239	13.0	17,298
Pemiscot	4,598	36.7	15,841
Perry	6,663	40.2	22,200
Pettis	323	62.4	19,351
Phelps	7,318	67.1	20,817
Pike	6,828	27.6	18,769
Platte	103	214.6	34,037
Polk	1,885	49.5	18,138
Pulaski	10,576	94.8	19,800
Putnam	3,614	9.5	20,005
Ralls	5,759	21.7	22,605
Randolph	10,433	52.9	17,049
Ray	6,486	41.0	25,244
Reynolds	6,254	8.3	16,964
Ripley	8,409	22.3	15,115
St. Clair	6,578	14.5	18,309
Ste. Genevieve	9,036	36.1	22,665
St. Francois	8,871	146.4	18,852
Saline	3,013	30.9	18,581
Schuyler	86	14.5	18,410
Scotland	19	11.1	19,895
Scott	3,640	93.3	19,566
Shannon	5,175	8.5	15,309
Shelby	141	12.6	18,056
Stoddard	5,727	36.2	20,911
Stone	32	70.0	21,748
Sullivan	1,239	10.3	16,633
Taney	1,723	84.1	21,474
Texas	11,278	22.1	15,790
Vernon	10,422	25.5	18,314
Warren	3,536	78.0	24,358
Washington	11,751	33.3	16,867
Wayne	4,804	17.7	17,105
Webster	931	62.2	18,699
Worth	906	8.0	18,229
Wright	2,280	27.8	16,413
Montana			
Beaverhead	3,268	1.7	21,110
Big Horn	8,043	2.6	15,066

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Blaine	6,532	1.5	16,813
Broadwater	3,433	4.8	19,606
Carbon	5,453	4.9	24,983
Carter	661	0.3	20,681
Cascade	4,763	30.1	22,963
Chouteau	5,371	1.5	20,202
Custer	1,964	3.1	21,676
Daniels	1,728	1.2	24,737
Dawson	2,165	3.8	24,602
Deer Lodge	2,561	12.6	21,921
Fallon	956	1.8	26,819
Fergus	4,784	2.7	22,295
Flathead	4,829	18.3	24,721
Gallatin	16,987	35.6	27,423
Garfield	1,228	0.3	22,424
Glacier	1,499	4.4	17,053
Golden Valley	449	0.8	19,319
Granite	1,101	1.8	23,222
Hill	4,442	5.6	21,420
Jefferson	5,922	7.0	26,437
Judith Basin	1,914	1.1	24,029
Lake	1,902	19.5	20,164
Lewis and Clark	11,082	18.6	25,894
Liberty	2,268	1.6	19,097
Lincoln	16,726	5.5	19,626
McCone	1,049	0.7	23,265
Madison	4,918	2.2	32,205
Meagher	1,878	0.8	17,318
Mineral	1,078	3.5	19,209
Missoula	17,595	42.7	24,343
Musselshell	4,579	2.5	20,875
Park	6,397	5.6	24,717
Petroleum	495	0.3	21,008
Phillips	4,224	0.8	24,227
Pondera	2,002	3.8	18,989
Powder River	920	0.5	21,543
Powell	2,994	3.0	17,849
Prairie	1,186	0.7	21,296
Ravalli	21,661	16.9	23,908
Richland	5,722	4.7	26,888

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Roosevelt	10,327	4.4	17,821
Rosebud	1,504	1.9	19,844
Sanders	3,013	4.2	18,472
Sheridan	3,320	2.0	26,537
Silver Bow	4,268	47.8	21,357
Stillwater	5,850	5.1	27,168
Sweet Grass	3,740	2.0	22,785
Teton	1,641	2.6	20,509
Toole	2,517	2.8	20,464
Treasure	198	0.7	20,882
Valley	7,357	1.5	24,305
Wheatland	2,202	1.5	18,474
Wibaux	1,006	1.1	22,579
Yellowstone	21,057	56.9	26,152
Nebraska			
Adams	675	55.9	23,084
Antelope	4,396	7.7	20,419
Arthur	147	0.6	19,722
Banner	559	1.0	22,042
Blaine	105	0.7	20,586
Boone	4,336	8.0	22,790
Box Butte	1,104	10.6	23,434
Boyd	241	3.9	21,003
Brown	532	2.5	17,330
Buffalo	2,095	48.2	22,616
Burt	1,207	13.8	23,302
Butler	1,368	14.1	22,494
Cass	595	45.3	27,584
Cedar	3,350	11.8	20,595
Chase	1,044	4.3	22,730
Cherry	1,975	0.9	22,601
Cheyenne	1,931	8.4	26,983
Clay	322	11.3	21,147
Colfax	3,438	25.7	20,872
Cuming	5,273	15.9	22,783
Custer	3,569	4.2	21,685
Dakota	6,745	80.3	19,048
Dawes	2,117	6.5	18,573
Dawson	405	24.4	19,384
Deuel	429	4.3	23,758

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Dixon	1,947	12.9	20,478
Dodge	6,210	69.6	22,049
Douglas	2,899	1592.7	28,092
Dundy	447	2.1	24,701
Fillmore	907	10.2	21,990
Franklin	539	5.6	19,764
Frontier	654	2.8	22,374
Furnas	745	6.7	21,644
Gage	2,159	26.0	21,619
Garden	679	1.2	19,740
Garfield	417	3.6	19,235
Gosper	129	4.5	23,132
Grant	228	0.8	20,518
Greeley	2,019	4.4	19,235
Hall	2,327	109.4	22,552
Hamilton	230	16.7	23,240
Harlan	64	6.1	25,050
Hayes	909	1.4	21,977
Hitchcock	2,536	4.1	20,853
Holt	3,702	4.3	22,498
Hooker	89	1.1	21,197
Howard	2,129	11.1	22,325
Jefferson	1,490	13.0	21,976
Johnson	2,593	13.9	17,606
Kearney	745	12.4	27,227
Keith	1,549	7.8	25,315
Keya Paha	356	1.0	20,691
Kimball	751	3.9	22,263
Knox	8,592	7.8	19,894
Lancaster	620	344.5	25,949
Lincoln	1,668	14.3	25,319
Logan	506	1.4	22,320
Loup	256	1.1	20,004
McPherson	539	0.6	21,000
Madison	20,843	60.6	22,157
Merrick	3,236	16.2	21,819
Morrill	1,940	3.5	21,367
Nance	2,233	8.4	21,457
Nemaha	811	17.9	22,151
Nuckolls	130	7.7	20,299

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Otoe	780	25.5	23,773
Pawnee	1,195	6.2	21,865
Perkins	2,660	3.3	23,542
Phelps	2	16.8	23,951
Pierce	2,513	12.7	21,419
Platte	8,191	48.7	23,358
Polk	1,748	12.2	23,831
Red Willow	1,148	15.3	21,246
Richardson	1,138	15.1	20,516
Rock	1,384	1.5	23,871
Saline	1,394	24.6	20,431
Sarpy	1,056	680.3	29,212
Saunders	1,300	27.6	26,898
Scotts Bluff	4,951	50.4	21,212
Seward	1,245	29.2	26,386
Sheridan	2,777	2.2	20,066
Sherman	801	5.6	20,900
Sioux	987	0.6	25,824
Stanton	3,372	14.2	23,018
Thayer	524	9.1	21,648
Thomas	57	0.9	31,499
Thurston	5,740	17.7	15,686
Valley	1,129	7.4	21,058
Washington	6,886	51.8	27,884
Wayne	1,590	21.5	19,681
Webster	1,115	6.5	18,906
Wheeler	277	1.5	20,614
York	1,459	23.9	25,412
Nevada			
Churchill	503	5.1	22,997
Clark	16,455	253.5	27,422
Douglas	1,413	65.7	35,239
Elko	6,758	2.9	26,879
Esmeralda	478	0.2	34,571
Eureka	1,459	0.5	30,306
Humboldt	8,638	1.7	25,965
Lander	2,335	1.1	25,287
Lincoln	218	0.5	18,148
Lyon	1,747	27.1	21,041
Mineral	910	1.3	23,226

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Nye	9,509	2.5	22,687
Pershing	2,950	1.1	17,519
Storey	1,400	15.8	31,079
Washoe	4,147	67.9	29,687
White Pine	4,107	1.2	21,615
Carson City	127	379.6	27,568
New Hampshire			
Belknap	1,015	149.2	28,517
Carroll	2,422	51.8	28,411
Cheshire	22,242	108.9	27,045
Coos	7,078	18.2	22,976
Grafton	11,245	52.4	28,170
Hillsborough	9,172	456.7	33,108
Merrimack	14,976	156.5	30,544
Rockingham	15,944	424.7	35,889
Strafford	4,660	334.7	28,059
Sullivan	10,398	81.9	26,322
New Jersey			
Atlantic	8,268	496.3	27,247
Bergen	182	3888.0	42,006
Burlington	10,543	557.9	34,802
Camden	2,371	2332.3	29,478
Cape May	1,788	382.3	33,571
Cumberland	13,287	329.6	21,883
Essex	53	6200.1	31,535
Gloucester	3,652	904.6	31,210
Hunterdon	7,619	298.6	48,489
Mercer	1,433	1634.1	36,016
Middlesex	953	2631.9	33,289
Monmouth	2,911	1339.7	40,976
Morris	803	1070.1	47,342
Ocean	2,444	917.2	29,826
Passaic	428	2735.9	26,095
Salem	1,999	200.0	27,296
Somerset	1,097	1079.7	47,067
Sussex	692	288.0	35,982
Union	21	5225.9	34,096
Warren	2,593	302.7	32,985
New Mexico			
Bernalillo	21,557	582.8	26,143

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Catron	1,702	0.5	20,895
Chaves	116	11.1	18,504
Cibola	17,485	6.0	14,712
Colfax	3,906	3.6	21,047
Curry	21	34.2	19,925
DoÃ±a Ana	3,535	56.6	18,315
Eddy	100	13.1	24,587
Grant	11,683	7.6	21,164
Guadalupe	203	1.5	13,710
Harding	261	0.3	14,684
Hidalgo	963	1.5	17,451
Lea	4	15.1	19,637
Lincoln	45	4.3	24,290
Los Alamos	430	163.2	49,474
Luna	12,462	8.7	15,687
McKinley	53,020	13.2	12,932
Mora	4,974	2.6	22,035
Otero	119	9.7	19,255
Quay	1,398	3.1	18,234
Rio Arriba	13,378	7.0	19,913
Sandoval	20,513	37.1	25,979
San Juan	44,676	23.6	20,725
San Miguel	12,503	6.3	18,508
Santa Fe	13,917	76.7	32,188
Sierra	2,926	2.9	16,667
Socorro	7,636	2.7	17,801
Taos	23,371	15.3	22,145
Torrance	7,679	4.9	17,278
Union	1,199	1.2	19,228
Valencia	16,022	73.5	19,955
New York			
Albany	3,779	579.8	30,863
Allegany	6,977	47.3	20,058
Bronx	13	33549.6	17,575
Broome	3,947	283.1	24,314
Cattaraugus	16,386	60.8	20,824
Cayuga	8,826	115.2	22,959
Chautauqua	6,604	126.8	21,033
Chemung	3,781	216.8	23,457
Chenango	833	56.4	22,036

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Clinton	4,459	79.0	22,660
Columbia	4,442	98.9	31,844
Cortland	1,466	98.4	22,078
Delaware	8,797	33.1	22,928
Dutchess	1,051	373.2	31,642
Erie	9,269	875.9	26,378
Essex	5,102	22.0	24,390
Franklin	10,369	31.9	19,807
Fulton	926	112.1	23,147
Genesee	1,721	121.2	24,323
Greene	1,808	76.1	23,461
Hamilton	1,072	2.8	29,965
Herkimer	5,891	45.5	21,908
Jefferson	9,790	92.0	21,823
Lewis	2,746	21.2	20,970
Livingston	269	103.1	22,923
Madison	753	112.0	24,311
Monroe	34	1130.4	26,999
Montgomery	1,266	124.8	22,347
Niagara	2,589	413.3	24,224
Oneida	4,054	193.6	23,458
Onondaga	1,359	598.3	27,037
Ontario	1,371	168.0	28,950
Orange	342	461.9	28,944
Orleans	961	109.0	20,812
Oswego	2,818	127.8	21,604
Otsego	8,137	61.8	22,902
Putnam	365	431.1	37,915
Queens	748	20772.4	25,553
Rensselaer	3,855	244.9	27,457
Rockland	24	1806.5	34,304
St. Lawrence	15,127	41.8	20,143
Saratoga	986	271.7	32,186
Schenectady	675	762.1	27,500
Schoharie	7,014	52.6	25,105
Schuyler	8,428	55.4	22,123
Seneca	7,496	107.7	21,818
Steuben	15,259	70.8	23,279
Suffolk	1,190	1635.6	35,755
Sullivan	3,605	80.4	23,422

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Tioga	3,108	98.2	24,596
Tompkins	5,313	213.4	25,737
Ulster	2,504	162.2	28,954
Warren	1,186	75.9	27,744
Washington	14,023	76.4	22,347
Wayne	4,558	154.8	24,092
Westchester	45	2211.2	47,814
Wyoming	3,639	70.8	20,605
Yates	3,210	74.9	23,255
North Carolina			
Alamance	13,005	362.9	22,819
Alexander	2,017	144.3	20,716
Alleghany	8,936	47.7	18,919
Anson	5,583	50.5	16,856
Ashe	7,394	64.0	20,350
Avery	806	71.5	23,465
Beaufort	21,828	58.2	22,728
Bertie	6,162	30.6	17,614
Bladen	2,158	40.2	17,890
Brunswick	4,456	133.7	26,315
Buncombe	723	368.2	25,665
Burke	979	179.8	19,220
Cabarrus	158	510.4	26,165
Caldwell	1,646	176.6	19,686
Camden	981	42.9	25,544
Carteret	64	131.6	26,791
Caswell	8,506	55.6	17,814
Catawba	358	391.6	22,969
Chatham	9,697	95.1	29,991
Cherokee	4,920	61.0	20,747
Chowan	2,152	86.4	20,900
Clay	1,977	50.2	20,474
Cleveland	3,790	211.7	19,284
Columbus	10,294	62.2	18,784
Craven	18,015	146.5	24,591
Cumberland	2,153	492.0	22,285
Currituck	2,055	91.6	26,083
Dare	209	87.8	30,327
Davidson	30,050	297.4	22,268
Davie	39	158.9	26,139

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Duplin	4,401	72.8	16,693
Durham	282	957.2	27,503
Edgecombe	20,449	111.3	16,747
Forsyth	29,141	874.9	26,213
Franklin	9,289	126.3	21,331
Gaston	734	590.9	22,305
Gates	6,125	36.6	19,893
Graham	2,860	30.2	17,825
Granville	7,656	114.8	21,733
Greene	5	81.3	17,362
Guilford	10,917	770.3	26,267
Halifax	9,212	75.4	17,223
Harnett	2,316	198.3	19,274
Haywood	1,440	106.9	24,233
Henderson	2,424	291.9	26,061
Hertford	3,968	69.1	17,002
Hoke	1,916	124.2	17,630
Hyde	3,311	9.4	14,992
Iredell	2,284	286.7	25,610
Jackson	7,028	82.7	20,228
Johnston	12,471	221.5	22,437
Jones	3,396	21.7	20,066
Lee	602	231.8	21,061
Lenoir	15,080	148.6	19,017
Lincoln	122	269.6	23,560
McDowell	2,837	102.7	18,798
Macon	3,613	66.6	26,156
Madison	2,756	46.5	18,792
Martin	7,702	52.6	18,728
Mitchell	650	70.1	18,804
Montgomery	6,640	56.6	18,618
Moore	14,437	128.5	25,786
Nash	22,391	179.4	23,909
New Hanover	8	1077.9	29,363
Northampton	4,682	40.7	17,128
Onslow	2,743	236.3	21,048
Orange	5,121	343.8	32,912
Pamlico	1,090	39.0	23,320
Pasquotank	2,423	184.2	21,736
Pender	7,546	62.6	22,872

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Perquimans	3,131	56.2	22,085
Person	2,772	100.9	21,848
Pitt	36,131	264.3	21,935
Polk	2,561	86.5	24,008
Randolph	17,150	183.0	21,297
Richmond	939	98.4	17,692
Robeson	13,445	142.8	15,321
Rockingham	27,745	165.5	20,801
Rowan	2,388	274.0	21,525
Rutherford	7,413	120.4	18,961
Sampson	2,766	67.9	19,086
Scotland	2,920	113.5	16,297
Stanly	532	154.1	21,139
Stokes	17,099	106.1	20,852
Surry	40,556	138.9	20,541
Swain	2,361	26.7	19,297
Transylvania	2,994	88.7	23,939
Tyrrell	1,221	11.4	15,812
Union	2,123	337.3	28,596
Vance	2,735	178.4	17,622
Wake	2,158	1124.7	32,592
Warren	5,835	48.7	17,838
Washington	1,825	37.9	16,982
Watauga	1,932	165.0	20,961
Wayne	3,630	223.0	20,446
Wilkes	5,933	91.8	19,406
Wilson	1,468	223.2	20,691
Yancey	2,136	57.9	18,576
North Dakota			
Adams	279	2.3	20,118
Barnes	2,396	7.4	26,152
Benson	4,766	4.9	14,545
Billings	507	0.7	28,666
Bottineau	1,916	3.8	26,277
Bowman	353	2.7	27,354
Burke	1,799	1.7	32,347
Burleigh	2,132	50.8	28,784
Cass	5,450	86.2	28,184
Cavalier	1,126	2.6	26,468
Dickey	221	4.6	21,824

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Divide	2,027	1.6	28,462
Dunn	1,444	1.7	24,832
Eddy	641	3.7	20,302
Emmons	1,598	2.3	21,358
Foster	805	5.3	27,945
Golden Valley	599	1.6	21,899
Grant	1,297	1.4	25,840
Griggs	3	3.3	24,122
Hettinger	467	2.2	24,928
Kidder	940	1.7	23,502
LaMoure	142	3.5	27,056
Logan	503	2.0	21,654
McHenry	2,404	2.8	22,911
McIntosh	805	2.7	22,608
McKenzie	6,342	2.4	27,605
McLean	4,298	4.3	27,029
Mercer	261	8.0	30,616
Morton	2,451	14.5	25,303
Mountrail	5,746	4.2	25,762
Nelson	254	3.2	22,838
Oliver	265	2.5	29,348
Pembina	68	6.5	27,019
Pierce	1,379	4.3	18,575
Ramsey	1,251	9.6	24,130
Ransom	1,594	6.3	21,995
Renville	1,085	2.7	26,856
Richland	3,723	11.2	24,342
Rolette	10,535	15.4	13,632
Sargent	649	4.4	26,553
Sheridan	685	1.3	24,286
Sioux	219	3.8	13,542
Slope	214	0.6	24,824
Stark	2,375	18.3	25,282
Stutsman	12,904	9.4	23,307
Towner	811	2.1	24,203
Traill	558	9.2	23,340
Ward	6,515	30.6	25,326
Wells	1,511	3.2	23,531
Williams	7,119	11.0	29,153
Ohio			

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Adams	9,946	48.8	17,693
Allen	1,734	263.6	21,713
Ashland	1,729	126.2	20,558
Ashtabula	23,136	143.7	19,898
Athens	13,497	128.1	16,642
Auglaize	1,209	114.5	25,290
Belmont	26,414	131.6	20,266
Brown	5,486	91.2	20,167
Butler	1,137	795.5	25,892
Carroll	4,473	72.4	21,575
Champaign	583	93.7	23,438
Clark	598	346.5	22,110
Clermont	618	439.6	27,900
Clinton	2,621	103.5	22,163
Columbiana	14,664	201.2	19,635
Coshocton	10,221	64.8	19,635
Crawford	1,030	107.7	20,590
Cuyahoga	62	2767.3	26,263
Darke	4,472	88.1	21,483
Defiance	979	95.0	22,139
Delaware	2,617	401.3	40,682
Erie	438	305.2	25,290
Fairfield	3,341	291.1	26,130
Fayette	789	71.7	20,525
Franklin	76	2197.4	26,909
Fulton	1,709	105.4	22,804
Gallia	12,727	66.2	20,199
Geauga	2,083	233.1	32,735
Greene	3,441	391.3	28,328
Guernsey	6,775	76.2	19,187
Hamilton	5	1976.0	28,799
Hancock	1,297	140.7	25,158
Hardin	4,313	68.3	19,100
Harrison	1,822	39.2	19,318
Henry	660	67.6	22,638
Highland	9,280	78.5	18,966
Hocking	8,097	69.8	19,048
Holmes	17,201	100.0	17,009
Huron	2,309	121.1	21,743
Jackson	6,554	78.9	18,775

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Jefferson	3,708	169.5	20,470
Knox	5,731	116.4	21,204
Lake	235	1011.6	28,221
Lawrence	6,741	137.7	19,452
Licking	3,702	245.5	25,534
Logan	3,943	99.8	22,974
Lorain	3,580	617.2	25,002
Lucas	372	1287.4	23,981
Madison	732	93.9	23,980
Mahoning	1,634	573.6	22,824
Marion	1,516	164.6	19,849
Medina	887	411.4	29,986
Meigs	6,908	54.8	18,003
Mercer	556	88.4	22,348
Miami	701	252.2	25,006
Monroe	12,627	31.9	18,738
Montgomery	192	1150.5	24,828
Morgan	5,995	36.0	18,777
Morrow	3,558	85.6	20,795
Muskingum	9,226	129.1	20,561
Noble	4,793	36.9	20,029
Ottawa	911	161.7	27,809
Paulding	660	46.9	20,919
Perry	13,144	88.6	18,916
Pickaway	2,855	112.8	21,432
Pike	2,720	65.1	17,494
Portage	1,485	331.2	25,097
Preble	2,043	99.4	23,290
Putnam	352	71.5	24,023
Richland	7,014	249.6	21,459
Ross	1,010	113.6	20,595
Sandusky	1,645	148.6	22,286
Scioto	4,770	130.6	17,778
Seneca	1,446	102.5	20,976
Shelby	2,505	121.4	21,948
Stark	1,551	651.8	24,015
Summit	111	1306.2	26,676
Trumbull	5,256	336.3	21,854
Tuscarawas	11,171	162.8	20,536
Union	5,387	122.8	27,389

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Van Wert	1,073	70.0	20,772
Vinton	5,190	32.3	16,736
Warren	7,700	537.2	31,935
Washington	13,402	97.4	22,786
Wayne	10,753	206.2	22,645
Williams	1,502	89.2	21,381
Wood	1,742	203.7	26,671
Wyandot	1,849	55.3	22,553
Oklahoma			
Adair	21,006	39.6	13,732
Alfalfa	2,803	6.5	21,029
Atoka	10,217	14.7	15,772
Beaver	2,971	3.1	23,525
Beckham	6,574	25.2	21,144
Blaine	11,030	13.0	19,445
Bryan	10,409	47.9	19,103
Caddo	3,145	23.0	16,787
Canadian	1,246	132.7	26,970
Cherokee	26,529	63.0	16,084
Choctaw	8,408	19.6	17,231
Cimarron	1,107	1.3	18,358
Cleveland	1,168	482.4	25,831
Coal	3,397	11.4	17,338
Comanche	93	116.2	20,778
Cotton	2,458	9.8	20,948
Craig	5,888	19.9	18,784
Creek	24,019	74.0	21,891
Custer	6,364	28.4	22,003
Delaware	10,461	56.5	20,142
Dewey	4,850	4.9	21,055
Ellis	4,257	3.5	23,767
Garfield	7,907	57.7	22,812
Garvin	2,587	34.6	20,176
Grady	56	48.3	21,687
Grant	3,129	4.5	22,204
Greer	1,127	9.7	13,241
Harmon	2,886	5.4	17,677
Harper	2,290	3.6	23,693
Haskell	5,476	22.2	18,735
Hughes	6,343	17.4	18,083

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Jackson	4,305	32.7	21,249
Jefferson	1,838	8.5	17,491
Johnston	4,187	17.0	18,451
Kay	5,523	50.5	21,167
Kingfisher	13,860	16.9	23,481
Kiowa	5,194	9.3	18,921
Latimer	8,117	15.5	20,353
Le Flore	34,669	31.9	17,357
Lincoln	9,903	36.0	20,774
Logan	3,213	57.6	25,090
McClain	451	62.4	23,556
McCurtain	6,912	17.9	17,456
McIntosh	11,715	32.8	16,095
Major	5,385	7.8	24,897
Marshall	3,811	43.4	18,794
Mayes	13,479	63.4	19,975
Muskogee	18,101	87.8	19,161
Noble	4,034	15.8	20,032
Nowata	4,033	18.6	20,752
Okfuskee	7,867	19.6	15,046
Okmulgee	16,610	57.2	19,071
Osage	21,929	21.1	21,446
Ottawa	3,373	67.2	17,638
Pawnee	10,649	28.9	19,520
Payne	14,871	113.3	19,540
Pittsburg	11,793	35.5	20,714
Pontotoc	7,923	52.8	21,136
Pottawatomie	7,631	88.5	19,437
Pushmataha	8,563	8.3	15,460
Roger Mills	3,810	3.3	28,427
Rogers	26,355	129.9	25,358
Seminole	4,568	40.4	17,032
Sequoyah	27,549	63.5	18,049
Stephens	5,979	52.3	22,790
Texas	5,999	10.3	21,356
Tillman	3,147	9.1	15,894
Tulsa	10,545	1070.0	26,769
Wagoner	18,861	133.4	24,049
Washington	6,578	124.1	26,663
Washita	7,231	11.9	21,511

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Woods	3,488	6.9	24,292
Woodward	20,517	16.5	24,635
Oregon			
Baker	5,664	5.2	21,683
Benton	240	127.7	26,177
Clackamas	1,302	203.1	31,785
Clatsop	2,250	45.1	25,347
Columbia	9,007	76.0	24,613
Coos	6,105	39.6	21,981
Crook	1,839	7.2	22,275
Curry	757	13.6	23,842
Deschutes	643	54.1	27,920
Douglas	15,776	21.5	21,342
Gilliam	473	1.6	25,559
Grant	4,823	1.6	22,041
Harney	2,415	0.7	20,849
Hood River	382	43.6	23,930
Jackson	5,606	73.7	24,410
Jefferson	2,328	12.4	20,009
Josephine	12,429	50.7	21,539
Klamath	10,246	11.2	22,081
Lake	4,319	1.0	22,586
Lane	10,403	78.0	23,869
Lincoln	761	47.3	24,354
Linn	263	52.1	22,165
Malheur	13,732	3.2	16,335
Marion	1,338	271.0	21,915
Morrow	1,952	5.5	20,201
Multnomah	12	1732.5	28,883
Polk	1,285	105.3	24,345
Sherman	239	2.1	21,688
Tillamook	1,498	22.9	22,824
Umatilla	4,274	23.8	20,035
Union	3,249	12.7	22,947
Wallowa	1,314	2.2	23,023
Wasco	1,671	10.6	21,922
Washington	29	743.8	30,522
Wheeler	1,402	0.8	20,598
Yamhill	1,507	142.0	24,017
Pennsylvania			

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Adams	2,101	196.6	25,606
Allegheny	1,508	1663.5	29,549
Armstrong	19,970	104.8	21,828
Beaver	1,982	389.6	24,168
Bedford	5,540	49.2	20,545
Berks	2,779	485.2	25,518
Blair	4,899	240.9	22,880
Bradford	385	54.4	20,979
Bucks	32	1035.2	35,687
Butler	1,020	233.5	28,446
Cambria	824	207.5	21,278
Cameron	110	12.6	21,375
Carbon	360	172.7	22,956
Centre	8,465	139.0	23,744
Chester	209	674.0	41,251
Clarion	2,520	66.4	20,259
Clearfield	7,083	71.2	
Clinton	2,942	44.0	19,261
Columbia	506	139.3	22,403
Crawford	8,517	87.3	20,383
Cumberland	810	435.3	30,119
Dauphin	596	512.9	27,727
Elk	74	38.2	22,729
Erie	9,444	350.0	22,644
Fayette	5,157	172.4	19,209
Forest	1,958	18.4	14,325
Franklin	5,685	197.2	25,307
Fulton	810	34.2	21,739
Greene	4,111	66.9	20,258
Huntingdon	11,662	52.3	20,616
Indiana	9,054	107.1	20,587
Jefferson	3,444	69.2	20,305
Juniata	4,663	63.1	20,682
Lackawanna	2,676	467.6	24,152
Lancaster	4,635	555.4	25,854
Lawrence	1,304	252.2	21,467
Lebanon	5,442	373.3	25,525
Lehigh	63	1025.3	27,301
Luzerne	1,092	360.5	23,245
Lycoming	4,502	94.2	21,802

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
McKean	158	44.2	21,022
Mercer	6,438	172.3	21,765
Mifflin	2,591	113.3	19,085
Monroe	4,051	279.3	24,824
Montgomery	83	1654.4	40,076
Montour	317	139.3	26,124
Northampton	28	813.6	28,362
Northumberland	1,467	206.0	20,654
Perry	2,050	83.7	23,701
Pike	183	107.5	27,564
Potter	121	15.8	20,594
Schuylkill	4,985	190.8	21,408
Snyder	4,348	120.2	21,072
Somerset	8,800	71.9	19,903
Sullivan	55	14.1	19,718
Susquehanna	388	52.3	22,173
Tioga	1,231	36.8	20,358
Union	588	142.9	21,612
Venango	4,459	80.9	20,522
Warren	5,104	46.9	22,170
Washington	8,074	243.0	26,045
Wayne	862	73.5	22,525
Westmoreland	7,601	354.1	25,845
Wyoming	35	71.5	22,899
York	5,173	488.4	27,196
Rhode Island			
Kent	267	976.4	31,221
Newport	151	799.7	36,994
Providence	760	1523.4	25,169
Washington	1,181	382.2	34,737
South Carolina			
Abbeville	78	51.4	16,653
Aiken	18,465	151.2	24,172
Allendale	2,938	25.5	14,190
Anderson	1,754	265.1	22,117
Bamberg	3,686	40.5	16,236
Barnwell	3,475	41.1	17,592
Beaufort	2,925	288.5	32,731
Berkeley	5,908	167.5	22,865
Calhoun	3,047	39.7	20,845

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Charleston	13,387	385.8	29,401
Cherokee	5,069	141.4	17,862
Chester	10,684	56.7	17,687
Chesterfield	3,169	58.4	17,162
Clarendon	52	57.8	16,562
Colleton	22,680	36.8	17,842
Darlington	10,303	121.8	20,096
Dillon	9,207	78.8	14,684
Dorchester	18,734	248.9	24,497
Edgefield	8,382	54.2	19,901
Fairfield	11,150	34.6	18,877
Florence	13,020	172.2	21,932
Georgetown	15,756	74.1	23,942
Greenville	2,177	588.5	25,931
Greenwood	4,933	153.6	21,728
Hampton	11,387	37.7	16,262
Horry	140,135	247.6	24,811
Jasper	8,035	38.8	17,997
Kershaw	7,368	86.5	21,777
Lancaster	2,436	143.0	19,308
Laurens	4,018	93.1	18,757
Lee	346	46.6	12,924
Lexington	40,650	383.1	26,393
McCormick	95	28.3	19,411
Marion	12,007	67.0	16,653
Marlboro	6,164	60.7	13,817
Newberry	10,581	59.9	21,410
Oconee	6,755	119.5	24,055
Orangeburg	28,498	83.4	17,579
Pickens	2,091	242.3	20,647
Richland	45,452	514.7	25,805
Saluda	9,824	44.2	18,717
Spartanburg	5,434	358.3	21,924
Sumter	1,187	161.1	18,944
Union	2,883	55.8	18,495
Williamsburg	2,944	36.9	13,513
York	9,418	347.1	25,707
South Dakota			
Aurora	504	3.8	21,291
Beadle	270	13.9	23,409

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Bennett	2,870	2.9	16,153
Bon Homme	4,633	12.6	20,074
Brookings	2,858	40.8	20,995
Brown	413	21.4	23,878
Brule	1,368	6.5	19,779
Buffalo	1,234	4.1	11,410
Butte	1,288	4.6	20,418
Campbell	251	1.9	22,338
Charles Mix	3,346	8.3	17,403
Clark	2,223	3.8	23,909
Clay	2,059	33.9	19,518
Codington	3,355	39.6	24,781
Corson	718	1.6	13,359
Custer	6,916	5.3	24,353
Day	1,763	5.5	20,542
Deuel	691	7.1	22,276
Dewey	4,642	2.3	15,632
Edmunds	517	3.6	24,268
Fall River	6,008	4.1	21,574
Faulk	483	2.4	21,898
Grant	2,116	10.6	22,887
Gregory	3,620	4.2	21,311
Haakon	1,155	1.1	25,877
Hamlin	4,488	11.7	21,558
Hand	1,082	2.4	23,238
Hanson	413	7.6	21,391
Harding	49	0.5	22,004
Hughes	2,463	22.9	28,236
Hutchinson	2,881	8.9	21,944
Hyde	1,059	1.6	22,995
Jackson	2,579	1.6	14,568
Jerauld	1,206	3.9	24,942
Jones	727	1.0	24,630
Kingsbury	2,663	6.2	24,660
Lake	464	20.4	22,447
Lawrence	3,280	30.5	25,465
Lincoln	6,298	81.3	33,261
Lyman	2,431	2.3	16,930
McCook	2,894	9.8	25,502
McPherson	76	2.1	19,255

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Marshall	3,210	5.6	22,441
Meade	4,687	7.2	22,045
Mellette	2,045	1.6	16,971
Miner	692	4.1	25,450
Minnehaha	10,108	214.4	26,392
Moody	2,799	12.4	24,948
Pennington	9,615	36.9	25,894
Perkins	213	1.0	25,780
Potter	1,590	2.6	23,986
Roberts	7,342	9.2	19,825
Sanborn	41	4.0	21,055
Shannon	10,494	6.5	7,772
Spink	120	4.2	25,295
Stanley	580	2.0	27,435
Sully	1,316	1.3	26,596
Todd	8,408	7.1	11,010
Tripp	4,771	3.4	21,192
Turner	4,340	13.5	22,871
Union	4,120	31.9	33,783
Walworth	609	7.6	23,716
Yankton	3,045	43.2	24,776
Ziebach	2,675	1.4	11,069
Tennessee			
Anderson	3,152	225.3	24,242
Bedford	5,244	97.3	18,471
Benton	7,198	41.7	19,114
Bledsoe	2,135	32.3	12,907
Blount	4,235	223.6	24,071
Bradley	2,554	305.3	21,444
Campbell	5,705	85.0	16,426
Cannon	63	52.8	18,076
Carroll	5,472	47.4	19,712
Carter	2,148	168.7	17,601
Cheatham	2,413	130.4	24,392
Chester	3,676	60.3	17,343
Claiborne	7,871	74.6	17,128
Clay	415	33.2	18,367
Cocke	9,521	82.7	16,957
Coffee	20	124.1	20,737
Crockett	1,198	55.0	19,742

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Cumberland	791	83.4	20,544
Davidson	13,821	1255.8	27,780
Decatur	901	35.0	19,757
DeKalb	184	62.2	17,976
Dickson	8,759	102.6	21,415
Dyer	1,826	75.0	19,169
Fayette	8,882	56.2	26,898
Fentress	61	36.7	17,291
Franklin	3,853	74.1	20,817
Gibson	2,668	83.3	20,065
Giles	8,971	48.2	19,778
Grainger	573	82.0	16,783
Greene	4,068	111.4	18,782
Grundy	30	38.3	14,000
Hamblen	546	392.7	21,162
Hamilton	875	624.6	26,588
Hancock	4,698	30.6	13,717
Hardeman	8,496	40.7	15,838
Hardin	6,648	45.3	18,122
Hawkins	7,258	117.6	19,600
Haywood	6,598	35.0	17,047
Henderson	5,483	53.9	19,988
Henry	8,765	57.8	20,687
Hickman	10,053	40.3	18,447
Houston	363	42.9	17,791
Humphreys	6,613	34.9	20,874
Jackson	26	37.4	17,452
Jefferson	6,513	190.8	19,680
Johnson	3,121	61.1	16,638
Knox	2,857	862.7	27,349
Lake	1,502	46.4	11,813
Lauderdale	5,387	58.9	16,006
Lawrence	21,061	67.8	18,086
Lewis	3,755	43.2	17,473
Lincoln	3,957	59.2	22,811
Loudon	2,975	216.4	27,046
McMinn	11,630	122.4	19,796
McNairy	9,298	46.8	18,488
Macon	368	72.9	16,518
Madison	2,424	176.7	22,948

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Marion	2,555	56.7	20,811
Marshall	6,170	83.1	20,157
Maury	4,394	135.9	23,136
Meigs	4,508	61.3	18,768
Monroe	6,433	71.6	18,651
Montgomery	3,483	327.0	22,092
Moore	1,538	49.8	26,678
Morgan	17,196	42.2	17,883
Obion	1,108	57.9	21,235
Overton	52	51.3	17,720
Perry	2,626	19.2	17,028
Pickett	2	31.0	19,327
Polk	4,319	38.5	17,481
Putnam	258	183.7	19,434
Rhea	4,549	102.0	17,655
Roane	6,576	150.6	23,196
Robertson	7,126	142.5	22,658
Rutherford	11,855	441.3	24,390
Scott	22,004	41.9	15,087
Sequatchie	74	54.4	18,094
Sevier	7,074	154.7	22,047
Shelby	11,109	1215.1	25,002
Smith	2,750	61.6	21,026
Stewart	4,323	29.2	20,670
Sullivan	743	380.7	23,263
Sumner	6,261	310.5	26,014
Tipton	9,129	135.7	21,585
Trousdale	2,886	70.2	19,996
Unicoi	1,733	98.5	20,540
Union	3,195	85.8	16,155
Van Buren	252	20.5	17,160
Warren	29	92.6	18,508
Washington	3,936	383.1	24,114
Wayne	4,395	23.2	15,814
Weakley	1,982	60.2	18,895
White	64	69.4	17,880
Williamson	10,062	326.7	41,220
Wilson	3,369	206.2	27,814
Texas			
Anderson	16,684	55.7	17,465

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Andrews	438	10.2	29,605
Angelina	4,522	110.1	20,104
Aransas	990	93.2	25,610
Archer	1,131	10.2	23,882
Armstrong	85	2.1	24,195
Atascosa	2,764	37.2	18,461
Austin	12,301	44.5	26,959
Bailey	886	8.7	18,275
Bandera	12,107	26.1	24,249
Bastrop	3,644	84.9	22,918
Baylor	1,625	4.2	22,894
Bee	43	36.5	14,188
Bell	13,744	303.8	22,722
Bexar	2,044	1420.4	23,225
Blanco	4,641	14.7	27,010
Borden	323	0.7	40,916
Bosque	4,740	18.5	21,269
Bowie	5,853	105.5	22,293
Brazoria	54,267	237.4	27,529
Brazos	11,445	340.6	21,018
Brewster	2,963	1.5	23,577
Briscoe	50	1.8	17,652
Brooks	1,711	7.7	14,728
Brown	6,720	40.5	20,586
Burleson	8,323	26.1	21,379
Burnet	15,830	44.0	25,245
Caldwell	326	70.1	18,106
Calhoun	3,923	42.5	22,835
Callahan	4,303	15.2	22,300
Cameron	1,110	466.0	13,695
Camp	6,245	64.8	18,710
Carson	1,479	6.6	24,977
Cass	14,250	32.4	20,137
Castro	2,415	9.1	16,073
Chambers	6,917	59.7	26,453
Cherokee	24,969	48.7	17,230
Childress	2,163	10.1	16,338
Clay	784	9.7	24,565
Cochran	817	3.9	16,018
Coke	3,151	3.6	18,384

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Coleman	4,052	7.1	16,494
Collingsworth	903	3.4	21,726
Colorado	10,618	21.9	22,676
Comal	5,843	203.0	31,862
Comanche	4,359	15.0	18,086
Concho	2,423	4.2	17,731
Cooke	626	44.0	23,598
Coryell	18,853	72.0	18,936
Cottle	187	1.7	17,385
Crane	108	5.8	20,185
Crockett	847	1.4	24,194
Crosby	541	6.7	17,940
Culberson	577	0.6	16,060
Dallam	1,405	4.5	18,940
Dallas	575	2761.2	26,185
Dawson	675	15.4	15,288
Deaf Smith	1,916	13.2	16,687
Delta	211	20.3	20,837
Denton	622	779.4	32,538
DeWitt	1,226	22.1	20,020
Dickens	162	2.7	18,642
Dimmit	1,236	7.5	14,045
Donley	1,526	4.0	20,137
Duval	1,364	6.5	15,134
Eastland	6,039	20.0	17,973
Ector	591	156.9	22,859
Edwards	166	1.0	31,109
Ellis	709	165.8	25,346
El Paso	8,201	806.2	16,768
Erath	8,539	35.6	20,903
Falls	2,211	23.2	14,979
Fannin	1,510	38.3	20,221
Fayette	7,981	26.0	26,898
Fisher	1,657	4.4	20,516
Floyd	1,054	6.4	18,093
Foard	1,303	1.8	18,368
Fort Bend	49,401	710.9	32,016
Franklin	2,333	38.1	23,821
Freestone	5,751	22.7	23,235
Frio	751	15.2	15,036

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Gaines	4,932	12.0	22,785
Galveston	17,473	783.0	28,959
Garza	573	7.0	16,185
Gillespie	8,699	23.9	28,072
Glasscock	1,111	1.4	26,104
Goliad	1,999	8.5	28,120
Gonzales	181	18.8	18,716
Gray	2,802	24.9	20,567
Grayson	1,000	130.2	23,242
Gregg	6,087	450.1	23,024
Grimes	12,831	34.1	17,365
Hale	1,804	36.5	16,322
Hall	362	3.7	20,126
Hamilton	2,789	10.3	22,429
Hansford	1,494	6.2	21,095
Hardeman	693	5.8	17,401
Hardin	13,683	62.0	23,965
Harris	255,229	2459.8	26,788
Harrison	34,622	73.5	22,019
Hartley	2,163	4.2	24,616
Haskell	2,117	6.5	22,734
Hays	4,560	242.5	25,998
Hemphill	898	4.3	29,343
Henderson	13,688	89.8	21,580
Hidalgo	715	508.7	13,480
Hill	1,681	36.9	20,554
Hockley	1,605	25.3	20,255
Hood	507	124.4	30,687
Hopkins	7,419	46.2	21,163
Houston	8,138	19.3	18,813
Howard	795	39.4	17,832
Hudspeth	937	0.8	11,485
Hunt	463	102.5	21,646
Hutchinson	1,390	24.9	21,075
Irion	795	1.5	31,857
Jack	1,266	10.0	21,349
Jackson	4,684	17.1	24,337
Jasper	22,221	37.8	19,182
Jeff Davis	1,193	1.1	22,007
Jefferson	14,799	288.3	22,095

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Jim Hogg	207	4.7	17,163
Jim Wells	2,144	47.5	16,976
Johnson	320	212.0	23,669
Jones	12,015	21.8	15,880
Karnes	61	20.0	15,949
Kaufman	713	137.5	23,909
Kendall	9,116	53.0	36,418
Kenedy	400	0.3	16,655
Kent	83	0.9	27,021
Kerr	1,579	45.7	25,454
Kimble	2,063	3.6	27,118
King	84	0.3	39,511
Kinney	856	2.7	14,207
Kleberg	2,322	36.6	18,580
Knox	1,308	4.2	20,375
Lamar	4,443	54.9	20,588
Lamb	1,754	13.7	17,553
Lampasas	9,092	28.1	22,943
La Salle	1,721	4.6	13,542
Lavaca	2,540	19.9	23,168
Lee	2,692	26.5	23,074
Leon	6,609	15.9	22,484
Liberty	33,978	65.3	18,807
Limestone	871	25.8	18,420
Lipscomb	779	3.6	24,839
Live Oak	123	11.1	21,540
Llano	5,905	20.7	29,027
Loving	67	0.1	42,220
Lubbock	12,452	315.0	22,831
Lynn	637	6.6	19,752
McCulloch	178	7.9	20,116
McLennan	876	229.3	20,652
McMullen	199	0.6	21,358
Madison	4,881	29.5	14,245
Marion	7,977	27.3	20,125
Martin	1,798	5.3	19,695
Mason	653	4.4	23,555
Matagorda	7,886	33.5	22,623
Maverick	3,337	43.1	12,444
Medina	3,862	35.3	20,604

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Menard	686	2.5	23,362
Midland	2,173	156.4	30,956
Milam	3,759	24.3	21,509
Mills	30	6.7	20,438
Mitchell	2,000	10.4	13,358
Montague	2,655	21.3	22,328
Montgomery	16,758	455.3	31,959
Moore	1,273	24.8	18,239
Morris	3,551	51.1	20,292
Motley	189	1.2	19,754
Nacogdoches	7,257	69.0	18,180
Navarro	10,702	47.7	20,539
Newton	8,633	15.4	17,721
Nolan	2,308	16.9	19,973
Nueces	8	410.3	22,558
Ochiltree	1,122	11.4	21,143
Oldham	1,001	1.4	22,504
Orange	5,822	245.5	23,155
Palo Pinto	3,085	29.7	21,551
Panola	14,071	29.8	22,846
Parker	196	133.1	28,539
Parmer	1,995	11.7	16,926
Pecos	4,020	3.3	16,717
Polk	13,301	42.6	16,961
Potter	10,905	134.5	18,725
Presidio	5,709	2.0	15,635
Rains	2,463	47.9	20,855
Randall	3,718	134.2	28,668
Reagan	415	3.0	23,028
Real	570	4.8	15,074
Red River	5,520	12.4	18,105
Reeves	4,551	5.2	13,112
Refugio	907	9.6	18,638
Roberts	386	1.0	29,291
Robertson	5,516	19.4	21,113
Runnels	2,827	10.0	20,056
Rusk	29,237	58.3	22,392
Sabine	5,190	22.1	18,155
San Augustine	5,106	16.7	17,184
San Jacinto	18,323	46.9	21,453

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
San Patricio	1,082	94.1	20,766
San Saba	31	5.3	19,721
Schleicher	1,462	2.7	21,299
Scurry	3,913	19.0	22,424
Shackelford	891	3.6	22,346
Shelby	15,406	32.2	20,103
Sherman	985	3.3	21,587
Smith	13,855	232.3	25,374
Somervell	255	46.6	26,314
Starr	4,780	50.5	11,659
Stephens	3,310	10.9	19,573
Sterling	285	1.2	20,640
Stonewall	800	1.7	25,177
Sutton	870	2.9	23,325
Swisher	116	8.8	16,513
Tarrant	12	2147.8	27,333
Taylor	12,296	144.4	22,606
Terrell	959	0.4	18,871
Terry	700	14.3	22,306
Throckmorton	312	1.8	20,677
Titus	12,966	81.7	17,520
Tom Green	11,084	73.3	22,292
Travis	1,467	1069.0	31,785
Trinity	3,256	21.2	19,828
Tyler	11,697	23.9	19,450
Upshur	25,579	67.8	21,946
Upton	335	2.7	23,112
Uvalde	1,486	17.2	17,842
Val Verde	5,719	15.7	16,615
Van Zandt	18,255	62.5	20,989
Victoria	14,954	99.4	24,146
Walker	21,452	87.0	13,920
Waller	12,178	85.5	21,621
Ward	686	13.1	20,055
Washington	12,535	56.3	25,464
Webb	7,272	76.4	14,163
Wharton	14,527	38.2	21,049
Wheeler	1,359	5.9	27,282
Wichita	7,433	208.5	22,837
Wilbarger	2,342	14.0	19,916

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Willacy	1,055	38.0	10,800
Williamson	9,637	395.0	29,663
Wilson	123	55.1	25,149
Winkler	180	8.5	19,309
Wise	701	66.1	24,075
Wood	14,829	65.8	21,682
Yoakum	1,664	10.1	19,937
Young	2,637	20.3	24,656
Zapata	1,218	14.4	13,915
Zavala	1,021	9.1	10,180
Utah			
Beaver	129	2.6	16,131
Box Elder	3,284	8.9	20,465
Cache	553	98.7	19,670
Carbon	1,966	14.6	20,260
Daggett	520	1.5	22,862
Duchesne	2,504	6.0	21,787
Emery	1,130	2.5	19,968
Garfield	894	1.0	23,187
Grand	1,833	2.6	20,611
Iron	324	14.6	16,898
Juab	3,076	3.1	18,193
Kane	1,371	1.8	25,155
Millard	2,672	1.9	18,839
Morgan	1,963	16.1	24,276
Piute	58	2.1	16,140
Rich	384	2.3	25,376
Salt Lake	1,063	1415.0	25,041
San Juan	14,839	2.0	15,150
Sanpete	810	18.0	15,731
Sevier	53	11.1	18,856
Summit	675	19.6	40,270
Tooele	1,101	8.6	22,020
Uintah	2,390	7.5	24,160
Utah	2,772	270.5	20,210
Wasatch	849	20.7	26,873
Washington	1,336	59.7	21,378
Wayne	637	1.2	19,829
Weber	2,679	410.2	22,849
Vermont			

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Addison	3,590	47.9	26,599
Bennington	3,795	54.8	27,962
Caledonia	5,600	48.1	22,504
Chittenden	3,718	292.3	31,095
Essex	2,691	9.5	20,040
Franklin	3,546	75.3	24,767
Grand Isle	196	85.0	30,499
Lamoille	3,724	53.4	27,164
Orange	8,428	41.9	25,951
Orleans	5,339	39.2	20,652
Rutland	3,615	66.1	25,426
Washington	2,735	86.3	28,337
Windham	4,575	56.3	27,247
Windsor	6,949	58.1	29,053
Virginia			
Accomack	6,350	73.3	22,766
Albemarle	20,567	137.4	36,685
Alleghany	2,844	36.1	22,013
Amelia	10,666	36.4	24,197
Amherst	11,167	68.8	21,097
Appomattox	7,932	45.7	22,388
Augusta	21,496	77.0	23,571
Bath	2,838	8.8	22,083
Bedford	16,984	92.5	27,732
Bland	4,270	19.2	20,468
Botetourt	5,514	61.5	29,540
Brunswick	9,807	30.6	16,739
Buchanan	8,782	47.2	16,742
Buckingham	11,382	29.7	16,752
Campbell	11,397	109.8	22,044
Caroline	10,283	56.1	25,024
Carroll	29	63.3	18,670
Charles City	2,617	39.9	23,955
Charlotte	7,900	26.4	17,348
Chesterfield	9,844	760.9	31,711
Clarke	5,712	80.3	34,630
Craig	3,227	15.9	23,461
Culpeper	12,824	126.6	27,507
Cumberland	6,230	34.3	19,691
Dickenson	12,950	48.5	16,278

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Dinwiddie	10,674	56.4	23,423
Essex	3,775	44.4	23,795
Fairfax	1,355	2781.2	49,001
Fauquier	16,093	101.2	38,710
Floyd	1,534	40.5	21,425
Fluvanna	7,941	90.2	29,407
Franklin	16,065	82.2	23,527
Frederick	27,819	192.9	27,977
Giles	11,307	48.7	20,985
Gloucester	5,747	171.1	27,395
Goochland	15,199	79.5	38,553
Grayson	111	35.1	19,499
Greene	4,377	118.6	24,969
Greensville	8,288	41.8	17,631
Halifax	20,966	44.3	19,909
Hanover	12,404	214.0	34,201
Henrico	1,149	1331.5	33,001
Henry	16,042	141.0	19,206
Highland	2,354	5.7	25,690
Isle of Wight	3,499	114.3	29,547
James City	2,516	482.7	38,162
King and Queen	5,181	22.1	21,777
King George	2,228	137.2	32,630
King William	4,374	60.0	26,853
Lancaster	1,433	85.2	29,275
Lee	5,011	58.9	16,513
Loudoun	17,196	626.3	45,356
Louisa	25,383	69.0	27,562
Lunenburg	8,196	29.9	17,744
Madison	11,299	41.7	26,081
Mathews	3,459	104.8	27,011
Mecklenburg	5,955	52.4	20,162
Middlesex	1,508	84.5	28,539
Montgomery	16,727	246.1	22,040
Nelson	11,694	32.1	26,996
New Kent	4,186	91.2	31,741
Northampton	1,848	58.9	23,233
Northumberland	2,094	64.6	28,646
Nottoway	7,753	50.7	20,318
Orange	9,412	101.4	26,447

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Page	9,459	77.8	22,969
Patrick	8,083	38.3	18,396
Pittsylvania	34,032	65.6	20,652
Powhatan	4,356	109.6	25,851
Prince Edward	7,876	68.0	18,192
Prince George	2,297	133.3	25,769
Prince William	2,632	1211.0	35,737
Pulaski	9,429	109.2	20,976
Rappahannock	5,352	27.4	37,149
Richmond	4,273	48.5	19,965
Roanoke	12,230	371.7	31,046
Rockbridge	13,353	37.6	23,753
Rockingham	19,143	91.2	25,274
Russell	13,445	61.3	17,909
Scott	6,010	43.3	18,667
Shenandoah	3,227	83.8	24,502
Smyth	7,125	71.1	19,906
Southampton	7,238	31.6	21,201
Spotsylvania	7,195	305.7	31,012
Stafford	1,938	480.1	34,691
Surry	6,782	25.5	23,835
Sussex	6,692	24.9	16,735
Tazewell	7,946	86.9	19,016
Warren	8,589	178.6	29,098
Washington	18,128	98.6	23,488
Westmoreland	3,549	77.2	27,501
Wise	14,165	102.9	17,944
Wythe	7,582	63.8	20,589
York	1,037	621.8	35,823
Bedford	15	901.4	20,092
Bristol	12,322	1367.2	19,700
Buena Vista	1,440	988.6	19,030
Charlottesville	3,598	4342.9	24,578
Chesapeake	5,574	654.8	29,306
Colonial Heights	517	2312.8	26,115
Covington	2	1084.2	20,781
Danville	1,240	992.8	18,840
Emporia	62	859.8	19,245
Franklin	1	1065.8	19,453
Fredericksburg	907	2367.0	27,870

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Hampton	2,246	2671.1	24,051
Harrisonburg	1,531	2818.4	16,750
Lexington	407	2831.5	17,022
Lynchburg	3,416	1577.6	21,586
Martinsville	2,105	1252.4	19,766
Newport News	5,866	2611.5	24,249
Norfolk	4,713	4427.5	23,773
Norton	259	527.1	24,145
Poquoson	84	793.5	36,840
Portsmouth	3,332	2832.5	22,302
Radford	20	1664.6	16,496
Richmond	595	3437.5	26,034
Roanoke	7,036	2287.3	22,530
Salem	750	1732.2	27,081
Staunton	340	1199.4	24,077
Suffolk	4,019	213.6	28,441
Virginia Beach	3,150	1746.8	30,873
Waynesboro	379	1411.1	23,190
Williamsburg	359	1590.3	22,851
Winchester	481	2848.5	26,341
Washington			
Adams	4,807	10.1	16,689
Asotin	1,144	34.4	23,731
Benton	226	104.6	27,161
Chelan	4,615	25.4	24,378
Clallam	6,902	41.6	24,449
Clark	2,533	687.2	27,828
Columbia	423	4.7	25,810
Cowlitz	3,152	91.2	22,948
Douglas	2,962	21.7	22,359
Ferry	7,172	3.4	18,021
Franklin	4,659	67.4	18,660
Garfield	955	3.2	22,825
Grant	17,640	34.3	19,718
Grays Harbor	12,751	38.4	21,656
Island	3,367	376.6	29,079
Jefferson	6,134	16.7	28,528
King	7,498	926.0	38,211
Kitsap	5,726	635.0	29,755
Kittitas	3,482	18.1	23,467

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Klickitat	5,663	11.0	21,553
Lewis	14,047	31.8	21,695
Mason	6,933	64.8	22,530
Okanogan	20,270	8.0	20,093
Pacific	3,990	22.5	23,326
Pierce	22,103	481.7	27,446
San Juan	2,345	90.9	35,487
Skagit	9,453	68.8	26,925
Skamania	2,972	6.8	24,140
Snohomish	10,673	346.7	30,635
Thurston	9,075	357.3	29,707
Wahkiakum	1,030	15.6	23,115
Walla Walla	321	46.7	23,027
Whatcom	10,361	97.2	25,407
Yakima	1,937	58.1	19,325
West Virginia			
Barbour	8,694	49.3	17,304
Berkeley	9,120	333.0	25,460
Boone	17,055	49.1	20,457
Braxton	5,153	28.7	17,469
Brooke	7,597	266.7	22,377
Cabell	14,954	342.5	21,907
Calhoun	7,108	27.7	17,121
Clay	8,546	27.6	16,205
Doddridge	4,379	25.7	14,658
Fayette	31,796	69.4	17,082
Gilmer	3,733	25.9	13,899
Grant	7,371	25.6	19,358
Greenbrier	28,845	34.8	20,044
Hampshire	24,079	38.2	17,752
Hancock	2,986	367.6	23,118
Hardy	14,194	24.4	16,944
Harrison	12,913	167.0	21,010
Jackson	9,225	62.8	20,633
Jefferson	6,907	259.4	29,733
Kanawha	124,452	213.2	25,439
Lewis	3,289	43.1	18,240
Lincoln	8,912	49.6	16,439
Logan	28,129	80.9	18,614
McDowell	16,422	41.0	12,955

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Marion	10,257	182.8	20,752
Marshall	13,794	106.9	21,064
Mason	24,140	63.3	19,609
Mercer	38,173	149.1	18,431
Mineral	19,938	86.4	20,805
Mingo	18,073	63.0	17,629
Monongalia	10,681	268.7	23,116
Monroe	13,467	29.0	18,927
Morgan	7,083	77.0	20,732
Nicholas	13,302	40.7	19,359
Ohio	7,321	417.8	23,950
Pendleton	6,197	11.1	19,401
Pleasants	6,710	58.3	18,770
Pocahontas	8,508	9.2	19,763
Preston	31,470	52.3	19,329
Putnam	30,552	162.2	25,857
Raleigh	70,444	130.8	20,457
Randolph	11,160	28.5	18,472
Ritchie	1,312	23.3	18,255
Roane	11,072	30.7	15,103
Summers	13,150	37.9	15,190
Taylor	6,149	98.6	18,562
Tucker	6,438	17.1	20,020
Tyler	7,847	35.7	18,245
Upshur	7,605	68.9	18,823
Wayne	21,429	83.3	18,410
Webster	2,536	16.5	17,268
Wetzel	13,555	46.1	19,899
Wirt	4,069	24.6	18,438
Wood	4,136	236.9	22,890
Wyoming	7,307	47.5	17,662
Wisconsin			
Adams	9,637	31.9	21,917
Ashland	3,510	15.4	19,730
Barron	3,696	53.1	22,666
Bayfield	2,162	10.1	24,028
Brown	2	472.2	26,816
Buffalo	3,289	20.2	22,579
Burnett	3,993	18.6	22,767
Chippewa	7,594	62.4	23,952

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Clark	16,690	28.6	19,797
Columbia	13,595	74.3	26,993
Crawford	5,302	29.2	21,346
Dane	5,832	412.3	32,392
Dodge	6,720	101.4	23,663
Door	8,843	57.2	29,154
Douglas	7,221	33.7	24,552
Dunn	6,639	51.8	21,624
Eau Claire	7,402	155.1	24,826
Florence	1,043	8.9	20,283
Fond du Lac	8,972	141.6	25,360
Forest	3,614	9.2	20,578
Grant	11,307	44.6	20,758
Green	3,080	63.9	26,721
Green Lake	4,348	54.2	24,973
Iowa	4,203	31.1	25,156
Iron	1,424	7.6	21,286
Jackson	7,857	20.8	20,778
Jefferson	10,221	151.1	24,729
Juneau	5,858	34.9	23,026
Kenosha	2,169	617.6	26,168
Kewaunee	876	59.7	24,574
La Crosse	3,067	255.6	24,917
Lafayette	4,586	26.4	22,026
Langlade	2,345	22.8	22,025
Lincoln	10,414	32.5	23,793
Manitowoc	1,804	138.0	25,161
Marathon	23,965	87.5	25,893
Marinette	8,763	29.6	22,999
Marquette	4,275	34.2	22,895
Menominee	89	11.7	14,794
Milwaukee	282	3932.3	23,740
Monroe	9,981	50.1	23,052
Oconto	3,806	37.7	24,521
Oneida	8,458	32.1	28,085
Outagamie	1,520	278.9	26,965
Ozaukee	32	370.9	39,778
Pepin	1,150	32.0	24,233
Pierce	10,291	72.0	26,313
Polk	8,009	48.3	24,704

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Portage	10,100	87.9	24,873
Price	3,856	11.1	23,125
Racine	376	591.4	26,321
Richland	7,401	30.7	21,301
Rock	4,644	224.9	23,926
Rusk	4,443	16.0	20,573
St. Croix	7,857	119.2	31,377
Sauk	8,878	75.4	25,452
Sawyer	2,714	13.2	23,527
Shawano	3,953	46.9	22,539
Sheboygan	973	226.5	24,976
Taylor	11,316	21.2	22,639
Trempealeau	4,080	39.7	23,224
Vernon	856	37.8	21,618
Vilas	8,750	24.8	27,128
Walworth	5,713	185.5	26,769
Washburn	5,173	20.0	23,221
Washington	68	309.2	30,580
Waukesha	1,223	710.9	36,752
Waupaca	9,936	69.9	23,293
Waushara	3,945	39.0	22,002
Winnebago	2,686	385.7	26,383
Wood	7,355	93.9	24,893
Wyoming			
Albany	1,074	8.5	25,622
Big Horn	476	3.8	24,486
Campbell	4,074	9.9	31,968
Carbon	4,600	2.0	26,122
Converse	1,659	3.3	27,656
Crook	2,653	2.6	24,520
Fremont	10,768	4.4	24,173
Goshen	1,122	6.0	23,753
Hot Springs	163	2.4	25,269
Johnson	1,060	2.1	26,753
Laramie	2,907	34.4	27,406
Lincoln	13,249	4.6	24,421
Natrona	1,286	14.4	28,235
Niobrara	484	1.0	22,885
Park	6,738	4.1	26,203
Platte	2,293	4.1	24,185

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Sheridan	2,493	11.7	26,756
Sublette	2,066	2.3	31,433
Sweetwater	5,302	4.3	30,961
Teton	2,926	5.4	42,224
Uinta	7,328	10.4	24,460
Washakie	412	3.8	28,557
Weston	819	3.1	28,463
American Samoa			
Eastern	20,009		
Manu'a	1,143		
Swains Island	17		
Western	22,461		
Guam			
Guam	86,467		
Commonwealth of the Northern Mariana Islands			
Rota	2,721		
Saipan	47,784		
Tinian	3,377		
Puerto Rico			
Adjuntas	28,193	422.8	5,974
Aguada	50,862	1648.6	7,414
Aguadilla	50,991	1395.9	7,908
Aguas Buenas	13,118	1025.0	7,494
Aibonito	30,851	1374.9	8,213
Añasco	78,107	1988.2	7,584
Arecibo	22,138	664.7	8,867
Arroyo	34,354	2289.1	7,547
Barceloneta	3,417	1023.4	8,479
Barranquitas	7,725	693.7	6,588
Bayamón	11,027	4253.3	12,180
Cabo Rojo	45,723	649.8	8,999
Caguas	26,454	2052.0	11,880
Camuy	10,531	489.5	7,368
Canóvanas	14,313	1242.1	9,852
Carolina	17,803	2907.5	13,740
Cataño	1,908	3320.1	9,893
Cayey	17,465	814.0	9,633
Ceiba	5,319	673.1	9,658
Ciales	7,821	212.1	6,376
Cidra	14,342	874.2	10,175

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Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Coamo	28,018	359.2	7,660
Comerío	12,532	724.1	6,755
Corozal	19,188	863.8	6,974
Culebra	1,496	128.9	10,349
Dorado	1,164	1694.1	14,687
Fajardo	5,844	906.4	9,949
Florida	1,344	861.6	7,336
Guánica	24,438	659.6	6,104
Guayama	60,074	924.4	8,821
Guayanilla	38,436	909.4	6,803
Guaynabo	5,030	2994.7	20,409
Gurabo	18,094	1489.5	12,155
Hatillo	5,400	1217.1	7,934
Hormigueros	18,377	1620.0	9,877
Humacao	5,834	1218.7	9,640
Isabela	45,877	829.6	6,859
Jayuya	14,525	326.2	6,976
Juana Díaz	56,389	935.6	7,928
Juncos	6,923	1491.8	8,968
Lajas	53,337	889.7	6,857
Lares	11,686	544.8	6,775
Las Marías	20,403	440.1	6,417
Las Piedras	12,124	1350.9	9,078
Loíza	14,191	1188.7	8,050
Luquillo	2,626	931.1	10,506
Manatí	5,527	703.5	8,949
Maricao	15,433	421.5	5,327
Maunabo	12,009	570.0	7,366
Mayagüez	80,071	1031.3	9,416
Moca	61,823	1228.1	6,906
Morovis	12,402	945.1	6,212
Naguabo	8,711	363.3	7,548
Naranjito	10,834	990.5	6,384
Orocovis	34,480	750.2	6,134
Patillas	24,550	525.9	6,928
Peñuelas	19,511	437.4	6,480
Ponce	118,580	1225.8	9,545
Quebradillas	23,595	1040.2	6,295
Rincón	19,153	1340.5	8,768
Río Grande	20,503	922.0	10,049

Appendix D

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark by County

County	County Population Without Access	County Population Density	County Per Capita Income ($2010)
Sabana Grande	41,810	1166.9	7,859
Salinas	49,998	720.9	6,944
San Germán	41,638	764.1	8,066
San Juan	17,951	6825.6	16,031
San Lorenzo	22,899	913.1	8,399
San Sebastián	25,394	788.9	6,456
Santa Isabel	28,690	843.3	8,530
Toa Alta	21,567	2212.4	11,055
Toa Baja	6,297	3040.8	10,938
Trujillo Alto	12,398	2488.7	14,588
Utuado	35,651	434.6	6,775
Vega Alta	17,150	2143.1	8,890
Vega Baja	20,862	1237.3	9,053
Vieques	8,873	174.8	8,054
Villalba	17,781	499.0	6,877
Yabucoa	20,416	780.8	7,449
Yauco	90,054	1320.6	7,374
United States Virgin Islands			
St. Croix	53,424		
St. John	6,938		
St. Thomas	48,240		

Appendix E

Tribal Lands Without Access to Fixed Broadband Meeting the Speed Benchmark by State

Tribal Lands	Population	Population Without Access	% Population Without Access
All Areas	3,857,121	1,118,982	29.0%
Lower 48 States	1,050,085	506,034	48.2%
Alabama	281	238	84.7%
Alaska	1,472	56	3.8%
Arizona	181,085	152,886	84.4%
California	59,626	21,022	35.3%
Colorado	13,953	4,646	33.3%
Connecticut	341	78	22.9%
Florida	3,601	798	22.1%
Idaho	31,733	20,566	64.8%
Iowa	1,049	20	1.9%
Kansas	5,787	1,156	20.0%
Louisiana	768	349	45.4%
Maine	2,548	193	7.6%
Massachusetts	78	0	0.0%
Michigan	34,137	3,799	11.1%
Minnesota	38,397	16,778	43.7%
Mississippi	7,427	2,001	26.9%
Montana	67,007	28,380	42.4%
Nebraska	8,514	6,901	81.1%
Nevada	12,010	4,391	36.6%
New Mexico	139,781	103,775	74.2%
New York	14,109	6,095	43.2%
North Carolina	9,036	3,104	34.3%
North Dakota	23,742	18,748	79.0%
Oklahoma	92,590	25,351	27.4%
Oregon	8,763	3,206	36.6%
South Carolina	853	0	0.0%
South Dakota	62,958	44,853	71.2%
Texas	1,823	999	54.8%
Utah	32,255	10,290	31.9%
Washington	128,605	13,022	10.1%
Wisconsin	38,781	3,919	10.1%
Wyoming	26,975	8,418	31.2%
Tribal Statistical Areas	2,529,095	515,261	20.4%
California	3,153	3	0.1%
New York	2,713	1,101	40.6%
Oklahoma	2,486,306	511,279	20.6%
Washington	36,923	2,879	7.8%
Alaskan Village Areas	247,105	97,578	39.5%
Hawaiian Home Lands	30,836	109	0.4%

Appendix F

Americans Without Access to Fixed Broadband Meeting the Speed Benchmark on Certain Tribal Lands

	All Areas			Non-Rural Areas			Rural Areas		
Tribal Lands	**Population**	**Population Without Access**	**% Population Without Access**	**Population**	**Population Without Access**	**% Population Without Access**	**Population**	**Population Without Access**	**% Population Without Access**
All	3,857,121	1,118,982	29.0%	1,903,421	150,668	7.9%	1,953,700	968,314	49.6%
Lower 48 States	1,050,085	506,034	48.2%	360,939	83,652	23.2%	689,146	422,383	61.3%
Statistical or legal area administered and/or claimed by two or more American Indian Tribes	45,105	3,422	7.6%	35,730	98	0.3%	9,375	3,324	35.5%
Legal federally recognized American Indian area consisting of reservation and associated off-reservation trust land	590,706	323,726	54.8%	203,566	52,302	25.7%	387,140	271,424	70.1%
Legal federally recognized American Indian area consisting of reservation only	410,951	177,923	43.3%	121,472	31,252	25.7%	289,479	146,672	50.7%
Legal federally recognized American Indian area consisting of off-reservation trust land only	3,323	963	29.0%	171	0	0.0%	3,152	963	30.6%
Tribal Statistical Area	2,529,095	515,261	20.4%	1,424,974	52,104	3.7%	1,104,121	463,157	41.9%
Alaskan Village Areas	247,105	97,578	39.5%	91,150	14,912	16.4%	155,955	82,666	53.0%
Hawaiian Home Lands	30,836	109	0.4%	26,358	0	0.0%	4,478	109	2.4%
There were no census blocks with population for two categories. *See supra* App. B (Data Sources and Definitions).									

Appendix G

Overall Fixed Broadband Deployment Rates by State

Area	Deployment Rate 768 kbps/200 kbps or Faster	Deployment Rate 3 Mbps/768 kbps or Faster	Deployment Rate 6 Mbps/1.5 Mbps or Faster
All Areas	97.0%	94.0%	84.7%
Alabama	93.1	88.6	79.8
Alaska	89.5	80.4	1.3
Arizona	98.2	95.3	84.2
Arkansas	92.7	86.4	66.4
California	98.2	96.7	90.8
Colorado	97.9	95.7	78.5
Connecticut	99.3	99.3	84.8
Delaware	98.2	96.9	91.4
District of Columbia	100.0	100.0	99.8
Florida	97.6	96.9	95.8
Georgia	97.7	96.6	92.0
Hawaii	98.5	98.5	26.6
Idaho	94.7	86.9	70.4
Illinois	98.4	96.7	92.9
Indiana	98.4	95.7	90.5
Iowa	97.4	92.9	83.5
Kansas	97.2	92.3	84.2
Kentucky	93.7	89.5	58.4
Louisiana	93.9	91.2	78.6
Maine	97.3	95.3	47.1
Maryland	97.9	96.8	89.8
Massachusetts	99.5	99.0	95.3
Michigan	96.7	93.7	89.6
Minnesota	97.3	92.0	82.1
Mississippi	90.3	87.9	75.3
Missouri	96.0	92.5	89.1
Montana	91.1	73.3	7.6
Nebraska	95.7	89.9	73.5
Nevada	99.0	97.7	96.0
New Hampshire	98.0	92.5	68.5
New Jersey	99.4	99.3	92.8
New Mexico	93.0	85.8	71.4
New York	99.2	98.7	87.2
North Carolina	97.7	93.6	87.8
North Dakota	97.0	84.1	75.6

Appendix G

Overall Fixed Broadband Deployment Rates by State

Area	Deployment Rate 768 kbps/200 kbps or Faster	Deployment Rate 3 Mbps/768 kbps or Faster	Deployment Rate 6 Mbps/1.5 Mbps or Faster
Ohio	97.7	96.6	79.6
Oklahoma	91.8	83.8	69.4
Oregon	98.6	96.6	94.7
Pennsylvania	98.7	98.3	88.5
Rhode Island	99.8	99.8	99.7
South Carolina	96.5	88.3	71.7
South Dakota	97.1	78.9	72.7
Tennessee	95.3	93.2	88.8
Texas	96.7	94.1	86.7
Utah	99.0	98.2	95.2
Vermont	94.6	90.6	78.3
Virginia	93.0	89.1	76.3
Washington	98.1	96.8	92.9
West Virginia	89.0	54.1	34.7
Wisconsin	96.7	93.1	80.0
Wyoming	93.2	86.8	56.4
U.S. Territories			
American Samoa	30.5	21.4	0.0
Guam	45.7	45.7	45.7
Commonwealth of Northern Mariana Islands	93.3	0.0	0.0
Puerto Rico	80.5	48.4	30.0
U.S. Virgin Islands	62.4	0.0	0.0

Appendix H

Overall Fixed Broadband Adoption Rates by State

Area	Adoption Rate 768 kbps/200 kbps or Faster	Adoption Rate 3 Mbps/768 kbps or Faster	Adoption Rate 6 Mbps/1.5 Mbps or Faster
All Areas	64.0	40.4	27.6
Alabama	52.9	25.1	12.4
Alaska	58.0	^	^
Arizona	65.4	42.5	34.9
Arkansas	48.5	21.4	14.3
California	70.1	45.1	24.5
Colorado	71.9	55.1	^
Connecticut	75.0	51.0	47.9
Delaware	74.1	67.2	^
District of Columbia	65.7	55.8	42.1
Florida	69.4	42.3	29.4
Georgia	60.7	35.8	23.6
Hawaii	^	^	^
Idaho	57.3	19.4	3.8
Illinois	62.3	36.3	^
Indiana	57.4	33.8	22.9
Iowa	60.5	22.1	3.2
Kansas	61.8	26.6	18.1
Kentucky	56.2	36.5	10.6
Louisiana	55.0	29.4	22.5
Maine	64.8	22.7	8.8
Maryland	72.2	67.1	61.5
Massachusetts	76.3	69.7	57.5
Michigan	60.7	40.5	19.7
Minnesota	64.7	43.5	29.3
Mississippi	44.4	14.6	13.0
Missouri	55.2	24.0	4.9
Montana	60.9	44.2	2.0
Nebraska	66.0	45.1	^
Nevada	61.8	35.8	6.7
New Hampshire	75.4	58.2	^
New Jersey	78.2	72.5	70.7
New Mexico	56.5	35.1	22.2
New York	70.6	48.6	37.2
North Carolina	60.3	13.8	1.6
North Dakota	61.3	38.1	29.9

Appendix H

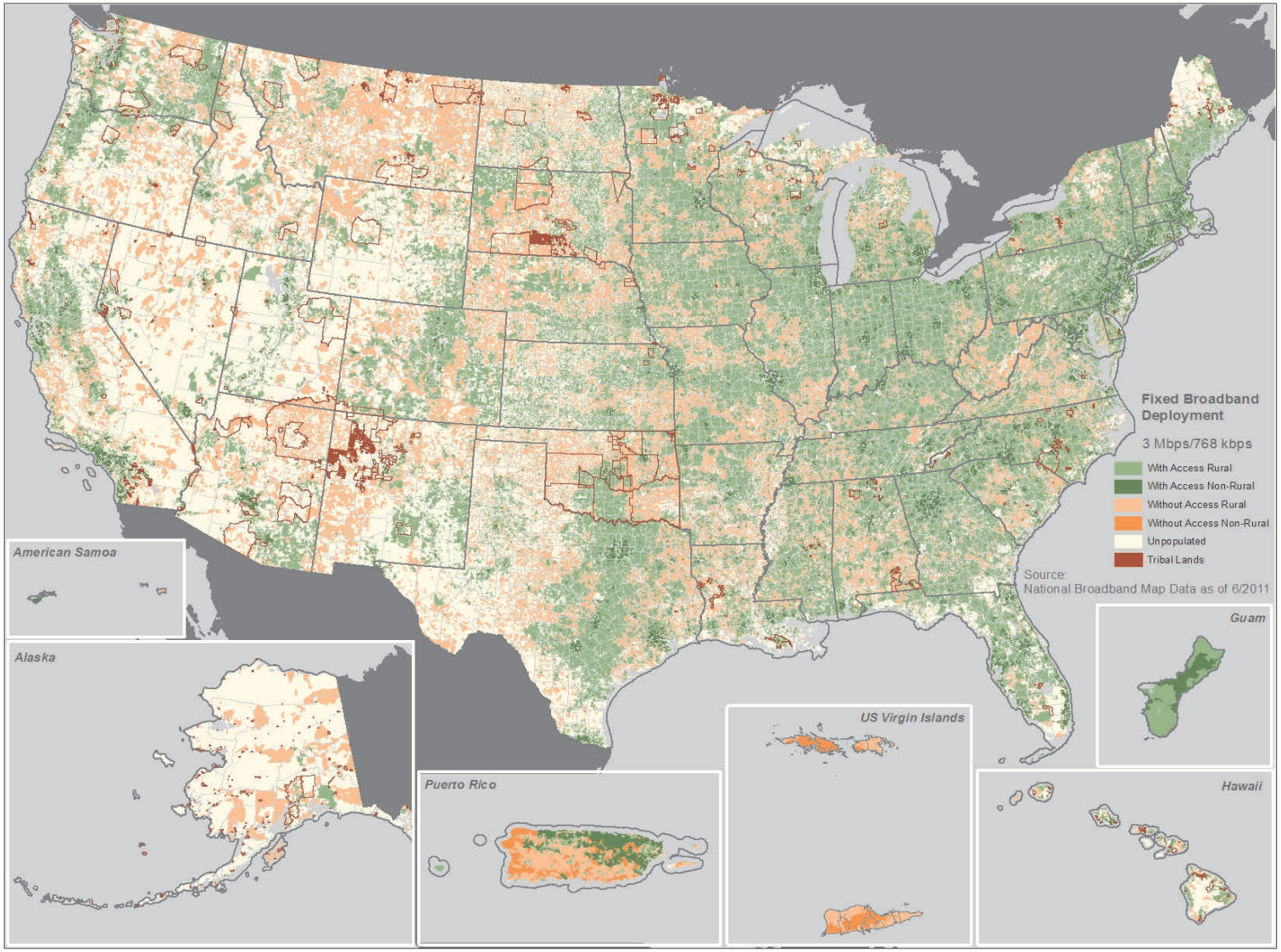
Overall Fixed Broadband Adoption Rates by State

Area	Adoption Rate 768 kbps/200 kbps or Faster	Adoption Rate 3 Mbps/768 kbps or Faster	Adoption Rate 6 Mbps/1.5 Mbps or Faster
Ohio	59.0	19.2	3.6
Oklahoma	55.8	28.0	^
Oregon	63.6	49.2	35.1
Pennsylvania	65.8	51.1	41.6
Rhode Island	^	^	^
South Carolina	55.6	21.5	10.6
South Dakota	58.6	44.5	43.6
Tennessee	52.0	33.5	24.4
Texas	59.2	29.3	14.6
Utah	68.8	47.9	32.1
Vermont	66.7	57.3	^
Virginia	69.0	62.8	59.1
Washington	67.7	54.1	45.4
West Virginia	59.2	47.4	34.9
Wisconsin	62.1	26.0	4.9
Wyoming	60.0	46.4	4.0
U.S. Territories			
American Samoa	^	0.0	NA
Guam	^	^	^
Commonwealth of the Northern Mariana Islands	^	NA	NA
Puerto Rico	30.5	^	0.0
United States Virgin Islands	^	NA	NA

A ^ signifies that data has been withheld to maintain firm confidentiality. Also, (NA) signifies that the services are not available in the area.

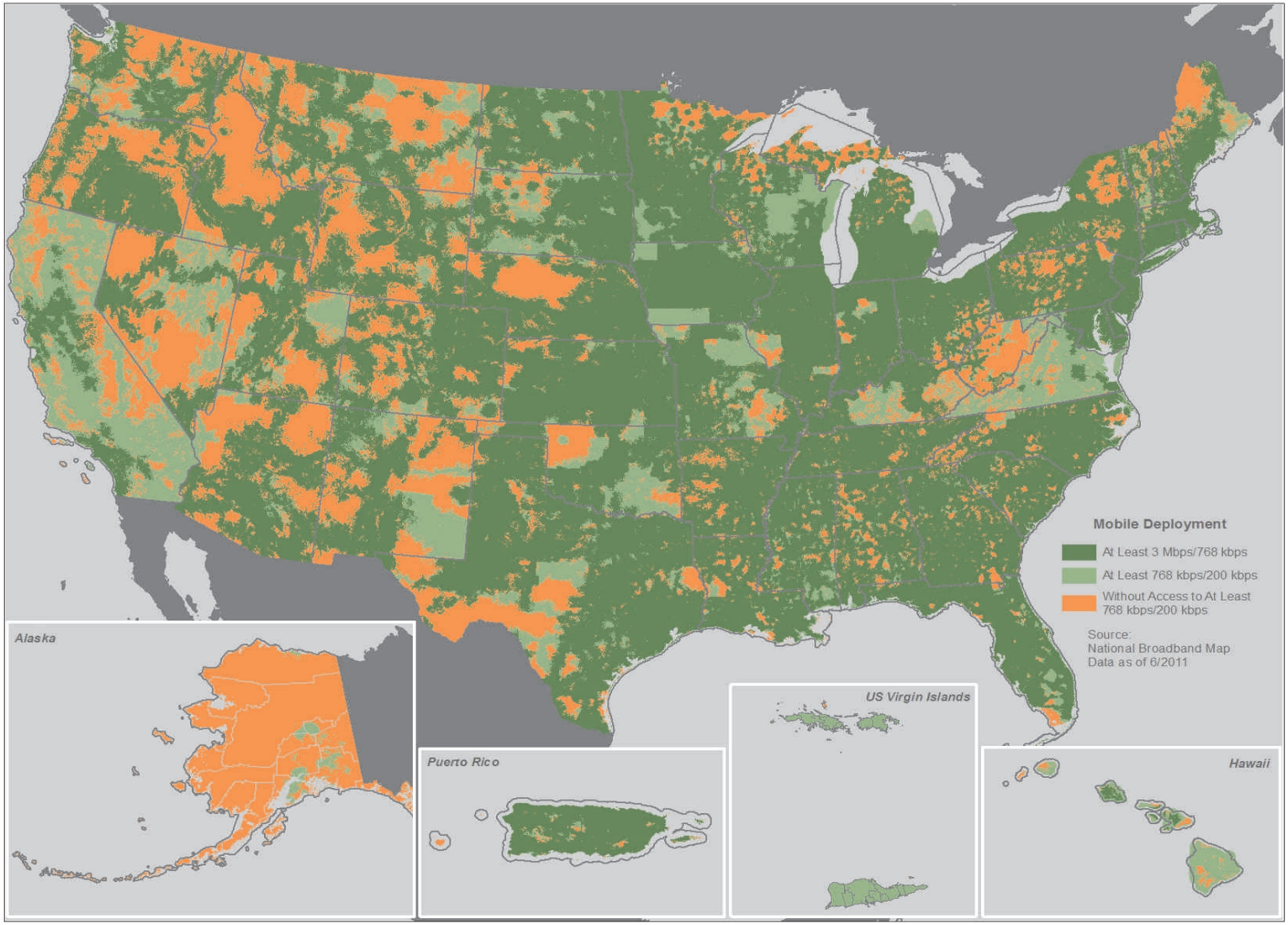
APPENDIX I

Section 706 Fixed Broadband Deployment Map



APPENDIX J

Section 706 Mobile Deployment Map



APPENDIX K

Commission's Report on Internet Access Services: Status as of June 30, 2011

This report can be found on the FCC website at

http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0614/DOC-314630A1.pdf

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. 11-121

Today, we deliver our annual Broadband Progress Report to Congress. It is the most accurate and comprehensive Report since its inception. The data in this report paint the clearest picture yet about the progress we have made on broadband—and the urgent challenges that remain.

The U.S. has now regained global leadership in key areas of the broadband economy, including mobile, where we lead in mobile apps and 4G deployment; but, in this flat, competitive global economy, we need to keep driving toward faster broadband and universal access.

The Report's conclusions only reaffirm what I hear all too often from small business owners, parents, educators and others across the country—we can't let up on our efforts to unleash the benefits of broadband for every American. Increasing broadband deployment, increasing adoption, increasing speeds and capacity are vital throughout our country; they're essential to growing our innovation economy and driving our global competitiveness.

I heard this message just last month when I visited three rural communities in Nevada and California that either recently received new broadband, or will be getting it in the near future as a result of our new Connect America Fund.

These meetings were a vivid reminder of why Congress directed the FCC, each year, 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." As we've refocused the FCC on broadband, we've significantly improved and expanded this report. It's become a critical annual check-in on where we stand and what we still have to do.

This year's Report reflects the huge strides that both the private and public sector have made to extend broadband, while also explaining that there's more work to do. Fixed providers are offering higher speeds, including through the deployment of fiber and new technologies like DOCSIS 3.0. Mobile providers continue to expand their coverage and deploy new faster network technologies like LTE. In fact, we're leading the world in deploying 4G mobile broadband at scale.

At the Commission, we've adopted landmark reforms to our universal service programs, particularly those targeted at increasing broadband deployment and affordability to all Americans. We've created the new Connect America Fund, and just a few weeks ago, the Commission announced that nearly 400,000 residents and small business owners in 37 states will gain access to high-speed Internet within three years as a result of the new Fund. And we've made universal access to mobile service and express universal service goal for the first time ever—the first Mobility Fund auction in September will provide funding to extend mobile broadband to thousands of unserved road miles where Americans live, work, and travel.

We have also continued to push forward with our Broadband Acceleration Initiative to lower the costs and increase the speed of broadband build-out. We have adopted major reforms to facilitate access to utility poles and faster tower siting, and our National Broadband Plan recommended key initiatives in

the President's recent Executive Order on accelerating broadband infrastructure deployment, including the "Dig Once" initiative. We've laid out clear rules of the road to protect the openness of the Internet, promoting a virtuous cycle of innovation, investment, and competition. And we've taken numerous steps to unleash spectrum for broadband, both licensed and unlicensed.

Some look at the progress that's being made and say, "Mission Accomplished." I disagree. Our data show that 19 million Americans remain without access to fixed broadband. The residents and business owners I met with in California and Nevada will finally get broadband in the coming months—but millions more, especially in rural areas and Tribal lands, are still waiting. And until we fully implement our Connect America reforms, this gap won't close. In this context, we cannot declare that broadband deployment to all Americans is "reasonable and timely."

Our data also show that a significant broadband adoption gap remains—fewer than 70% of Americans have subscribed to fixed broadband, even counting speeds as low as 768 kbps. We have to continue striking at the barriers that are keeping Americans offline.

And while we've made great strides in the rollout of next-generation high-speed services, there's a lot left to do. Industry reports that the upgrade of cable infrastructure to DOCSIS 3.0 technology means that more than 80% of Americans have access to networks technically capable of 100 Mbps or more. But our data show that just 27% of Americans are being offered broadband services at those speeds today, and U.S. prices for these higher speed services exceed many other countries.

And while 100 Mbps is impressive progress from where we were, it's not where we want to end up. We need to see ongoing increases in broadband speed and capacity, so that we're routinely talking about gigabits, not megabits. Broadband abundance is the goal that will drive U.S. leadership in innovation, and our finding today reflects our belief that we need to keep our feet on the accelerator.

On mobile, passage of the incentive auction concept suggested in our National Broadband Plan reflects important progress, along with the other steps we are taking to free up new spectrum for mobile broadband. But demand for spectrum capacity continues to increase at a dramatic rate, so we can no more declare mission accomplished in mobile than we can in fixed broadband.

Having the very best data is critical to tackling each of these challenges. This is our first Broadband Progress report ever to include extensive data on mobile broadband and the availability of next-generation, high-speed services. It incorporates the most robust analysis of international data that the Commission has ever done. And we're releasing it with new online, interactive maps, which show exactly where broadband is and isn't available and provide technology-by-technology deployment statistics for every county in the nation.

To ensure our report keeps pace with changing demands, today we also adopt a Notice of Inquiry to seek public input on how to assess our Nation's progress toward its broadband goals in next year's report. As the importance of mobile broadband continues to grow for American consumers and businesses, mobile broadband should be incorporated in our analysis in the Ninth Broadband Progress Report. And our report needs to formally include an evaluation the deployment of next generation services, which promote a mindset of abundance, and fuel world-leading innovation. Today's Inquiry lays the foundation for these important updates.

It is our responsibility to ensure that our goals for broadband availability reflect the real needs of American consumers and businesses. One study projects that the average Internet household will generate over 130 gigabytes of traffic per month by 2016 at a compounded growth rate of 21% a year. Meanwhile, the average smartphone user consumed 435 MB a month in early 2011, an increase of 89%

from the year before.

In short, the goalposts *are* moving. Every year consumers and businesses need higher speeds and more capacity to keep up, innovators need new test beds for the latest technologies, and our competitors around the world are pushing hard to gain a strategic advantage by deploying faster, higher capacity broadband to their citizens. As broadband providers respond to meet this incredible demand, so too our broadband benchmarks and our broadband policies must keep up with these changes to foster economic growth, job creation, and our global competitiveness.

I thank the staff of the Wireline Competition Bureau and Wireless Telecommunications Bureau for their excellent work on this item.

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. 11-121

It is discouraging that, for the third year in a row, the majority has decided to clutch to its earlier negative findings as to whether "advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion" pursuant to Section 706 of the Telecommunications Act of 1996.[1]

In reality, the growth of broadband deployment in America, especially regarding the mobile marketplace, has been swift and strong. For instance, between 2003 and 2009, broadband deployment steadily increased from reaching 15 percent of Americans to 95 percent of Americans.[2]

Furthermore, mobile broadband is the fastest growing segment of the broadband market. America has always led the world in wireless connectivity thanks to de-regulatory policies and our lead is growing. For instance, our country has approximately 21 percent of the globe's 3G/4G subscribers and approximately 69 percent of the world's LTE subscribers even though the United States is home to less than five percent of the global population.[3] Furthermore, the investments made by American wireless providers have been higher than their international counterparts. For example, in 2011, over $25 billion was invested in United States' wireless infrastructure[4] compared to $18.6 billion invested in the 15 largest European economies combined.[5]

The mobile market in the United States has more competition than most international markets. Nine out of ten American consumers have a choice of at least *five* wireless service providers, according to the most recent FCC statistics.[6] In Europe, however, that figure is around three.[7] Therefore, Americans benefit from lower prices and higher mobile usage rates compared to consumers in the European Union

[1] 47 U.S.C. § 1302(b) (Section 706 of the Telecommunications Act of 1996 has since been amended by the Broadband Data Improvement Act (BDIA), Pub. L. No. 110-385, 122 Stat. 4096 (2008) and is now codified in Title 47, Chapter 12 of the U.S. Code. It is commonly referred to as "Section 706").

[2] *See, e.g.,* FCC, OMNIBUS BROADBAND INITIATIVE (OBI), CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, GN Docket No. 09-51 (2010).

[3] *See* INFORMA TELECOMS AND MEDIA (WCIS Database) (Dec. 2011).

[4] *See* CTIA-THE WIRELESS ASSOC., CTIA SEMI-ANNUAL WIRELESS INDUSTRY SURVEY (2012), http://www.ctia.org/advocacy/research/index.cfm/AID/10316; *see also* CTIA-THE WIRELESS ASSOC., SEMI-ANNUAL 2011 TOP-LINE SURVEY RESULTS 10 (2012), http://files.ctia.org/pdf/CTIA_Survey_Year_End_2011_Graphics.pdf (providing cumulative capital investment numbers).

[5] *See* BOA/MERRILL LYNCH EUROPEAN TELECOMS MATRIX Q112 (Mar. 30, 2012) (GLOBAL TELECOMS MATRIX Q112) (estimating €14,368 YE 2011. Conversion at $1.2948/1€). The European countries included in the Matrix: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and UK; there are 27 members of the European Union (EU).

[6] 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, WT Docket No. 10-133, *Fifteenth Report*, 26 FCC Rcd 9664, 9669 (2011).

[7] *See* GLOBAL TELECOMS MATRIX Q112.

(EU)—4 cents per minute versus 17 cents generally in the EU.[8] Also, wireless subscriber usage on average in the United States is often three to seven times as much compared to some countries.[9] Moreover, American consumers pay at least one-third less than consumers in many other parts of the world.[10]

The instant Section 706 report does discuss advances in the deployment of mobile broadband. Notwithstanding the fact that the number of Americans who gained access to mobile broadband grew significantly since last year, the report discards these important statistics, in part, for being "overstated," and ignores them in its pre-determined 706 finding. Even if these mobile broadband statistics were incorporated, the majority indicates that it "would likely reach this same finding even if we considered the best available mobile data. Over 14 million Americans lack access, even if access to either fixed or mobile broadband is considered adequate and even when all LTE, WiMax, and HSPA+ deployments are included."[11] In other words, it appears that the majority has already tipped its hand for next year's report—reducing the number of unserved Americans to 14 million would still not be good enough for the majority's outcome-driven Section 706 purposes.

Furthermore, even if a future Section 706 report reaches the elusive "magic number," that still may not be adequate progress for the majority. My colleagues continue to argue that Congress did not mean "physical" deployment when it referred to "deployment" and "availability." Rather than look to the plain statutory language to determine Congress's intent, the majority has relied on legislative report language to argue that even if broadband is physically deployed to a particular area but is not affordable, it is not available under Section 706. That interpretation is flawed. The actual statutory language states otherwise: as part of the inquiry, the statute requires the Commission to look at demographic information for "geographical areas that are *not served* by any provider of advanced telecommunications capability."[12] Congress was directing the Commission to study whether certain areas are actually not served by a provider, not whether consumers in certain areas choose not to adopt broadband.

This creative interpretation of Section 706 ties in nicely with the majority's efforts to expand its jurisdictional reach. For example, the report identifies low broadband service quality, affordability of broadband, lack of access to computers, lack of relevance, and poor digital literacy as some of the barriers to infrastructure investment. These are really adoption issues, not deployment issues. And, by identifying these "barriers," the majority has continued to use Section 706 as a tool for mission creep.[13] Section 706 is narrow in scope, however, and does not provide the Commission with specific or general

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[8] Roger Entner, *The Wireless Industry: The Essential Engine of U.S. Economic Growth*, RECON ANALYTICS, at 1 (May 2012), http://reconanalytics.com/wp-content/uploads/2012/04/Wireless-The-Ubiquitous-Engine-by-Recon-Analytics-1.pdf).

[9] *See* GLOBAL TELECOMS MATRIX Q112 at 71.

[10] *See id*.

[11] Para. 138 of the instant report.

[12] 47 U.S.C. 1302(c) (emphasis added).

[13] For example, in January of 2012, over my partial dissent, the Commission established a broadband pilot program as part of the Lifeline program. I had concerns with the establishment of the pilot, in part, because the Commission did not have authority to pursue it under Section 706 or any other section of the Communications Act. *See Lifeline & Link Up Reform & Modernization Lifeline & Link Up Fed.-State Joint Bd. on Universal Serv. Advancing Broadband Availability Through Digital Literacy Training*, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 6656 (2012).

authority to do much of anything. Section 706 has a *de*-regulatory bent and should not be used for other purposes beyond what Congress intended, especially creating more rules, red tape and bureaucracy.[14]

In sum, the Section 706 process should be used to assess the progress of broadband deployment in our nation, as Congress intended. Unfortunately, that has not been the majority's practice for the past three years. Instead, the majority has used this process as an opportunity to create a pretext to justify more regulation. The fact that the report's closing paragraph heralds the use of Section 706 for the majority's adoption of unprecedented regulation of Internet network management, or "net neutrality" rules, underscores my point. Referencing the net neutrality order, the majority says "the open Internet rules were adopted to ensure the continuation of the Internet's virtuous cycle of innovation and investment, and the Commission must continue to prioritize those efforts consistent with the mandate of section 706."[15] In reality, the 706 process has been co-opted by the majority, and used in the course of a "cynical cycle" of regulation.

For all of these reasons, I must respectfully dissent.

[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).

[15] Para. 156 of the instant report.

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. 11-121

I wish to commend the Staff on today's release of the *Eighth Broadband Progress Report* and *Notice of Inquiry for the Ninth Broadband Progress Report*. This year's Report is more detailed than ever before, and it closely reviews the actions taken by both the private and public sectors to advance the availability of broadband to all Americans.

In addition to the significant investments made by industry by way of deployment to date, the FCC has achieved many of the goals we set forth to make broadband available to those who do not currently have it. Since last year's *Report*, we have reformed the Universal Service Fund's high-cost program so that it directly supports the deployment of broadband-enabled networks in rural areas. We have taken important steps to address the availability of broadband for low-income consumers through the Lifeline program, including providing the flexibility for consumers to use their subsidy to purchase bundled voice and broadband services. We also have implemented a pilot project that will offer broadband service to low-income consumers. Moreover, the public-private initiative Connect-to-Compete was launched, and similar industry-led programs are entering their second year—all of which are providing low-cost service, equipment, and training to consumers who otherwise could not afford broadband.

As we continue to implement our reforms and further address the barriers to deployment and broadband adoption, I expect that the statistics presented in our annual assessment will continue to improve. But it is clear from today's *Report* that we are not ready to declare victory just yet, as approximately 19 million Americans still lack access to terrestrial fixed broadband services that meet our broadband definition, and the adoption gap still shows that about 1/3 of Americans do not subscribe to broadband. Broadband service has not been made available to *all* Americans in a reasonable and timely fashion. Moreover, for low-income consumers and residents of rural areas, Tribal Lands, and the Territories, this finding is even more acute. It is necessary, therefore, that we continue to promote reforms and policies that will ensure broadband availability to *all Americans* no matter where they live, work, or travel in this great nation.

While I am pleased that we have included a discussion specific to the Territories in this year's *Report* and request comment in the *NOI* on the broadband challenges in the Territories, it is clear that we must continue to pay particular attention to the specific needs of remote and insulated areas. The same holds true for Tribal Lands. We should continue to evaluate the impact of our reforms and policies in these areas and be open to further refining them. In doing so, it is my hope that we can make more progress in addressing the broadband needs in those areas.

I also believe that the *NOI's* review of the broadband definition, including whether we should modify our findings to include mobile service, are important discussions that I encourage interested parties to engage with us on. As noted in the *Report and NOI*, the marketplace is rapidly evolving. More consumers are relying upon their mobile devices to access broadband than ever before. We included in our *USF Transformation Order* the goal that consumers have access to mobile broadband and voice service, by allocating $300 million in Mobility Fund Phase I and $500 million annually in Phase II. Moreover, our inquiry includes questions about the speeds offered and consumed for fixed service, as well as the capacity of networks, including latency and data capacity. I am particularly interested in the

data the Commission would rely upon should we modify our *Ninth Broadband Progress Report*. In particular, the Commission has yet to complete its proceeding to update the Form 477 wherein we collect broadband subscriber information. Taking the necessary steps to ensure that the Commission has the relevant data to assess such additional broadband criteria will be crucial if we determine to include such data in the *Ninth Broadband Progress Report*.

STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL

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. 11-121

Today's report shows real progress in the deployment of advanced telecommunications capability to all Americans. It reveals that for some, broadband services are faster and more robust than ever. Consider, for instance, that more than 80 percent of households now have access to broadband at speeds as high as 100 Mbps.

But at the same time, this report demonstrates that broadband remains out of reach for 19 million Americans. The bulk of these Americans—14.5 million—live in rural areas that lack basic infrastructure for fixed broadband service. Furthermore, nearly one in three Americans do not subscribe to broadband, citing lack of relevance, lack of affordability, and lack of digital literacy.

These numbers are even more troubling when the United States is compared with the rest of the world. Today, this report cites data that show that the United States is ranked fifteenth in the world for fixed broadband penetration. We are ranked seventh in the world for mobile broadband penetration.

The United States should lead the world in broadband. Until the data unequivocally demonstrate that we do, how can the answer to our Section 706 inquiry—whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion—be anything but no? We know that in the 21st century access to broadband means access to opportunity. It means access to jobs, access to education, and access to healthcare. This is the platform that will drive innovation, boost productivity, and enhance our ability to compete with other nations. So we must make our markets the most attractive worldwide for investment in all aspects of the digital economy.

To do so, the Commission is already taking action to advance broadband deployment and adoption for the millions of Americans without access today. We are moving forward with comprehensive universal service reform, implementing the 21st Century Communications and Video Accessibility Act, and developing public and private partnerships to promote broadband adoption and digital literacy. We are also poised to carry out the world's first incentive auction to free up additional spectrum for mobile broadband services. These are exciting developments, though today's report is a thoughtful reminder that we still have work to do before every American has access and we unequivocally lead the world's broadband ranks.

Though there are challenges ahead, I believe that we are up for the task. The Notice of Inquiry we release today is a small step towards figuring out how to address these challenges, including a fresh perspective on the consumer experience. In particular, our inquiry includes factors beyond speed, like latency and capacity, that impact how consumers use their broadband connections. So I look forward to tackling these issues with my colleagues and thank Commission staff for their hard work on this report.

DISSENTING STATEMENT OF COMMISSIONER AJIT PAI

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. 11-121

From 1999 to 2008, the Commission found that broadband was being deployed to all Americans in a reasonable and timely fashion. In 2010, however, this suddenly changed. Today, the Commission determines for the third straight year that the objective set forth in section 706(b) of the Telecommunications Act of 1996 is no longer being met. Because the Commission's conclusion rests on a flawed interpretation of the statute, and because I see the elimination of regulatory uncertainty—not the public fisc or new regulation—as the key to accelerating broadband deployment, I respectfully dissent from today's report.

Official statistics tell us that the recession technically ended three years ago. Yet for many Americans, the recovery still has not come. The Federal Reserve estimates that the economy's output is still $800 billion smaller than it could be.[1] The unemployment rate has risen to 8.3 percent,[2] which understates our economy's woes given that more than five million people have given up searching for employment since the recession began.[3] Even the communications sector is not immune; telecommunications companies employ 160,000 fewer workers than they did three-and-a-half years ago, meaning that the sector's workforce has shrunk by over fifteen percent.[4]

Despite our general economic problems and the current regulatory environment, the private sector deserves credit for what it has been able to accomplish recently when it comes to infrastructure investment. Communications network operators invested $66 billion in 2011.[5] According to State Broadband Initiative data, private sector investment brought fixed terrestrial broadband service meeting the Commission's speed benchmark to 7.4 million Americans[6] and mobile broadband service to 46.7 million Americans[7] from June 2010 to June 2011.

[1] *See* Federal Reserve Bank of St. Louis, FRED Economic Data, http://research.stlouisfed.org/fred2/graph/ (compare NGDPPOT to GDP as of Aug. 15, 2012).

[2] *See* Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, (Seas) Unemployment Rate, http://go.usa.gov/Gw9.

[3] *Compare* Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, (Seas) Labor Force Participation Rate, http://go.usa.gov/Gwk (showing that the labor force participation rate has declined from 66.0% in November 2007 to 63.7% in July 2012), *with* Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, (Seas) Civilian Labor Force Level, http://go.usa.gov/Gw0 (showing that 155 million Americans participated in the labor force in July 2012, and accordingly 5.6 million more Americans would have participated had the participation rate not declined from November 2007 to July 2012).

[4] Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, (Seas) Telecommunications Labor Force Level, http://go.usa.gov/GwB (showing that telecommunications employment fell from 994,700 in January 2009 to 830,100 in May 2012).

[5] US Telecom, Broadband Investment, http://bit.ly/ygeVLS.

[6] *See Eighth Broadband Progress Report* at tbl. 7.

[7] *See id.* at tbl. 14.

The report sets aside this evidence because under its reading of the statute,[8] progress is irrelevant. "[T]he standard against which we measure our progress is universal broadband deployment,"[9] it maintains, and "approximately 19 million Americans did not have access to fixed broadband [in 2011]."[10] In other words, because fixed broadband service meeting the Commission's speed benchmark is not already (or very soon to be) available to all Americans, "broadband is not yet being deployed to all Americans in a reasonable and timely fashion."[11]

My colleague, Commissioner McDowell, and my predecessor, Commissioner Baker, previously noted problems with this interpretation of Section 706.[12] I hope to flesh out some aspects of the statute that further highlight the deficiencies in the Commission's recent approach.

First, the Commission has consistently ignored in recent years the statute's direction that "advanced telecommunications capability" may be deployed "using *any* technology."[13] That instruction does not permit us to segregate fixed connections from mobile connections, focusing on the former and neglecting the latter. Instead, in making our statutory finding we should consider all broadband services meeting the statutory definition regardless of the technologies used to deploy them. If the Commission followed this statutory command and relied on the State Broadband Initiative data to look at *all* broadband services meeting the benchmark,[14] it would have concluded that 5.5 million Americans—not

[8] *See* 47 U.S.C. § 1302 (codifying Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat. 153 (as amended)) (directing Commission to "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.").

[9] *Eighth Broadband Progress Report* at para. 138.

[10] *Id.* at para. 135.

[11] *Id.*

[12] *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. 10-159, Seventh Broadband Progress Report and Order on Reconsideration, 26 FCC Rcd 8008, 8101 (2011) (*Seventh Broadband Progress Report*) (Dissenting Statement of Commissioner Robert M. McDowell) (calling the Commission's decision to adopt a 4 Mbps/1 Mbps benchmark "arbitrary," arguing that the Commission "should never have mandated a one-size-fits-all definition of broadband" that ignores divergent consumer preferences, and arguing against interpretations of "availability" and "deployment" that would read those statutory terms to mean something other than "availability" and "deployment"); *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. 09-137, 09-51, Sixth Broadband Deployment Report, 25 FCC Rcd 9556, 9696 (2010) (Dissenting Statement of Commissioner Meredith A. Baker) ("The goal encapsulated by section 706 is universal broadband availability. Nowhere in section 706 does it require that goal to be reached definitively in 2010. Rather, the question is whether network providers continue to make demonstrable progress towards that goal.").

[13] 47 U.S.C. § 1302(d)(1) (emphasis added).

[14] In truth, we have never examined the availability of broadband service at our speed benchmark given that we have never collected data measuring deployment at the benchmark. Instead, we have relied on the deployment of fixed services meeting a 3 Mbps/768 kbps benchmark as the next-best thing. We should extend that same proxy to mobile services; vague concerns that providers may be over-reporting surely apply just as much to the wireline world as the wireless, *see Eighth Broadband Progress Report* at para. 37, and the widespread deployment of LTE, WiMax, and HSPA+ in the past two years demonstrates that at least some mobile offerings in otherwise unserved areas qualify as "advanced telecommunications capability," *id*. at para. 6 & n.27; *see also* tbl. 15 (implying that, based on Mosaik data, 221.7 million Americans had access to LTE, WiMax, or HSPA+ as of June 2011).

19 million—lack access to advanced telecommunications capability.[15] Not only does this mistaken interpretation lead to a 245% overstatement of the problem, it also leads the Commission to report to Congress something it never asked for: a list of geographical areas, some of which are served by a provider of advanced telecommunications capability and some of which are not.[16]

Second, I do not see how the Commission's test can be reconciled with the statutory language that instructs us to ask if broadband "is being deployed . . . in a reasonable and timely fashion."[17] That language most naturally requires a comparison of broadband deployment within the country at one point in time with broadband deployment at a later point in time, after which an assessment can be made as to whether "reasonable and timely" advancements have been made. Our metric, in other words, is progress—not total achievement—and Congress emphasized the point by using the progressive present tense in its command (*i.e.*, Congress used the phrase "is *being* deployed" in Section 706 rather than "is deployed").[18]

An example illustrates the point. Suppose that you are building a house and ask the contractor to report back to you on a weekly basis whether the project "is being constructed in a reasonable and timely fashion." Each week, the contractor submits a report responding to the question in the negative because the house has yet to be completed. Most people would consider such a response to be beside the point, but the Commission essentially uses that same reasoning today.

Aside from being inconsistent with the statute's use of the progressive present tense, the Commission's "are-we-there-yet" test has the added defect of reading the phrase "in a reasonable and timely fashion" out of the statute. We should not treat statutory terms as mere surplusage,[19] especially when there is a way to read the statute that respects every word Congress chose to legislate.

Third, the Commission's approach is a short-sighted one that disserves our goal of being a data-driven agency. In recent years, the Commission has relied on an expansive reading of section 706(b) that purports to grant us heretofore unknown and unspecified authorities to carry out the public interest so long as doing so tangentially relates to broadband. But our authority under this provision only lasts so long as our section 706 determination is negative. In other words, the Commission's authority to enforce net neutrality, subsidize broadband for low-income households, or support digital literacy programs[20]

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[15] Given that the Commission, in the Notice of Inquiry released today, is seeking comment on whether to *add* latency and data capacity thresholds in the *next* report, I fail to understand how the Commission can rely on these two issues in *this* report as support for its decision to exclude consideration of mobile broadband in making its statutory finding.

[16] In contrast, the statute requires the Commission to "compile a list of geographical areas that are not served by *any* provider of advanced telecommunications capability." 47 U.S.C. § 1302(c) (emphasis added).

[17] Because the majority adopts the construction of the statute in the *Seventh Broadband Progress Report* whole cloth, *Eighth Broadband Progress Report* at n.347, I address the arguments raised in that report.

[18] Verizon made this precise point about the progressive tense in comments on last year's Notice of Inquiry. But the Commission seems to have misunderstood the argument, thinking that Verizon was making the unremarkable observation that "is being deployed" is in the present tense. *See Seventh Broadband Progress Report*, 26 FCC Rcd at 8033, para. 47 & n.163. The progressive present tense is used for actions that are occurring, without definite starting or stopping points. The simple present tense is used for actions that occur, implying a distinct start and finish.

[19] *See Duncan v. Walker*, 533 U.S. 167, 174 (2001).

[20] *See Preserving the Open Internet; Broadband Industry Practices*, GN Docket No. 09-191, WC Docket No. 07-52, Report and Order, 25 FCC Rcd 17905, 17972, para. 123 (2010) (asserting that section 706(b) gives the Commission "additional authority to take actions such as enforcing open Internet principles"); *Lifeline and Link Up Reform and* (continued….)

hangs in the balance each year, dependent on a finding that broadband is not being deployed in a reasonable and timely fashion. If we are willing to set an objective with no intent of reaching it, then I suppose that this is not a problem.[21] But if we believe instead that data should drive our decisions—not vice versa—then section 706(b) can never be a reliable authority for implementing good policy since we will eventually be forced to concede once again that broadband is being deployed in a timely and reasonable fashion.

Finally, I do agree with the Commission that when it comes to deploying broadband infrastructure, our country should be doing much better. But to improve our performance, the Commission needs to take Section 706's deregulatory imperatives to heart. Today's report, in large measure, misidentifies the primary barriers to infrastructure investment and broadband deployment. In my discussions with those in the private sector responsible for making broadband investment decisions, they do not identify the price of computers, poor digital literacy, a lack of consumer interest, or a lack of consumer trust[22] as the primary factors behind their decisions to keep tens of billions of dollars of capital sitting on the sidelines. Rather, they indicate that their caution stems primarily from regulatory uncertainty and in particular their concerns about whether and how Internet Protocol-based (IP) networks are going to be regulated in the future.

As it turns out, section 706 itself supplies an answer to this problem. That provision first directs the Commission to encourage deployment via "price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment."[23] And if we find that broadband is not being deployed in a reasonable and timely fashion, then we must "accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[24] In my view, there is plenty to do.

Twenty years after the advent of price-cap regulation, most price-cap carriers still must file the same studies and accounting information as rate-of-return carriers. Sixteen years after the Telecommunications Act of 1996, incumbent local exchange carriers still must file tariffs as if they were local monopolists, despite competition from all corners. Thirteen years after the Commission provided a path to pricing flexibility for special access services, carriers are facing the specter of re-regulation. Eight years after the *Vonage Order*,[25] we still treat interconnected VoIP providers as second-class carriers rather than first-rate competitors. And two years after the Commission considered reclassifying broadband

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Modernization; Lifeline and Link Up; Federal-State Joint Board on Universal Service; Advancing Broadband Availability Through Digital Literacy Training, WC Docket Nos. 11-42, 03-109, 12-23, CC Docket No. 96-45, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 6656, 6798–99, paras. 331–32 (asserting that section 706(b) gives the Commission "authority . . . to provide USF support to ETCs through a low-income broadband Pilot Program to subsidize low-income consumers' purchase of broadband services") (*Lifeline Reform Order*); *Eighth Broadband Progress Report* at paras. 140, 153 (suggesting poor digital literacy is a "key barrier" to infrastructure investment and noting that Lifeline broadband pilot projects are expected to promote digital literacy, citing *Lifeline Reform Order*, 27 FCC Rcd at 6805, para. 350).

[21] *Cf.* Yoda, STAR WARS: EPISODE V—THE EMPIRE STRIKES BACK (Lucasfilm 1980) ("Always with you it cannot be done.").

[22] *See Eighth Broadband Progress Report* at para. 140.

[23] 47 U.S.C. § 1302(a).

[24] *Id.* § 1302(b).

[25] *Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission*, WC Docket No. 03-211, Memorandum Opinion and Order, 19 FCC Rcd 22404 (2004).

Internet access service as a telecommunications service, that docket (GN Docket No. 10-127) remains open, a sword of Damocles hanging over every broadband investor's head.

The directive from Congress may not be easy to carry out, but it is clear: Promote competition. Eliminate regulatory uncertainty. Repeal archaic twentieth-century regulations that assumed regulated monopolies running copper networks. Empower small businesses, large businesses, entrepreneurs, and others with capital to invest in broadband infrastructure, unfettered by government mandate and unshackled from outdated restraints. To be sure, all of this will not happen overnight. But we should begin immediately down this path by creating an IP Transition Task Force that would develop a holistic set of recommendations for facilitating and expediting our transition to an all-IP world. If the private sector came to the conclusion that the Commission was committed to a deregulatory approach to IP networks and was serious about eliminating the regulatory uncertainty surrounding the IP transition, I am confident that broadband infrastructure investment would increase substantially and quickly.

* * *

Notwithstanding my bottom-line assessment of this item, the staff has made a significant number of improvements to this year's report that merit recognition. For example, the report contains a more thorough and thoughtful analysis of deployment in rural areas, U.S. territories, and Tribal lands; additional reporting on mobile data speeds; and a novel approach to calculating adoption rates (even if adoption is not strictly related to the question of deployment). For all of these accomplishments and more, I thank the analysts, the economists, the geographers, the engineers, the attorneys, and other members of our expert staff that put this report together.

In light of their efforts, I wish that I could support this item. But for the reasons outlined above, I must respectfully dissent.