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Defining Broadband: Minimum Threshold Speeds and Broadband Policy

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Summary

Broadband—whether delivered via fiber, cable modem, copper wire, satellite, or mobile wireless—is increasingly the technology underlying telecommunications services such as voice, video, and data. Since the initial deployment of high-speed internet in the late 1990s, broadband technologies have been deployed throughout the United States primarily by the private sector. These providers include telephone, cable, wireless, and satellite companies as well as other entities that provide commercial telecommunications services to residential, business, and institutional customers.

How broadband is defined and characterized in statute and in regulation can have a significant impact on federal broadband policies and how federal resources are allocated to promote broadband deployment in unserved and underserved areas. One way broadband can be defined is by setting a minimum threshold speed for what constitutes "broadband service." Section 706 of the Telecommunications Act of 1996 requires the Federal Communications Commission (FCC) to regularly initiate an inquiry concerning the availability of broadband to all Americans and to determine whether broadband is "being deployed to all Americans in a reasonable and timely fashion." If the determination is negative, the act directs the FCC to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."

Starting in 1999, there have been 11 Section 706 reports, each providing a snapshot and assessment of broadband deployment. As part of this assessment, and to help determine whether broadband is being deployed in "a reasonable and timely fashion," the FCC has set a minimum broadband speed that essentially serves as the benchmark the FCC uses to determine what it considers broadband service for the purposes of its Section 706 determination. In 2015 the FCC, citing changing broadband usage patterns and multiple devices using broadband within single households, raised its minimum fixed broadband benchmark speed from 4 Mbps (download)/1 Mbps (upload) to 25 Mbps/3 Mbps.

On August 8, 2017, the FCC adopted and released its *Thirteenth Section 706 Notice of Inquiry* (*NOI*). One proposal under consideration was establishing a lower benchmark speed specifically for mobile broadband. Stakeholders who supported an FCC determination that broadband is *not* being deployed in a reasonable and timely fashion generally opposed lowering the broadband benchmark by considering the presence of either fixed (at 25 Mbps/3 Mbps) or mobile (at 10 Mbps/1 Mbps) broadband as an indication that an area has adequate broadband service. On the other hand, stakeholders who supported an FCC determination that broadband *is* being deployed in a reasonable and timely fashion generally supported changing the FCC's broadband benchmark methodology to include the presence of either fixed or mobile broadband as an indication that an area is receiving adequate broadband service.

On February 2, 2018, the FCC adopted and released its latest 706 report, the *2018 Broadband Deployment Report.* While the FCC concluded that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion, it concluded that adoption of a single mobile benchmark is currently unworkable and that mobile broadband service is not a full substitute for fixed service at this time.

As broadband technology advances, commercially available download and upload speeds will likely increase, and the level at which broadband benchmark threshold speeds should be set is likely to remain controversial. Accordingly, the FCC's annual Section 706 determination is likely to be an issue in Congress as long as it is seen by stakeholders as providing a justification for current or future FCC regulatory or deregulatory policies.

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Introduction

Broadband—whether delivered via fiber, cable modem, copper wire, satellite, or mobile wireless—is increasingly the technology underlying telecommunications services such as voice, video, and data. Since the initial deployment of high-speed internet in the late 1990s, broadband technologies have been deployed throughout the United States primarily by the private sector. These providers include telephone, cable, wireless, and satellite companies as well as other entities that provide commercial telecommunications services to residential, business, and institutional customers.

The Federal Communications Commission's (FCC's) 2010 National Broadband Plan identified broadband as a basic infrastructure necessary for improving economic growth, job creation, civic engagement, global competitiveness, and a better quality of life. Broadband enables or enhances applications such as entertainment, telemedicine, distance education, telework, e-commerce, public safety, and energy conservation. Increasingly viewing broadband as a basic infrastructure, Congress and successive Administrations have focused on addressing gaps specifically related to broadband availability and adoption.[1] In general, rural areas tend to be less served by broadband than urban or suburban areas.[2] Tribal areas and populations stand out as being particularly underserved and unserved by broadband service, as compared to the nation as a whole.[3]

How broadband is defined and characterized in statute and in regulation can have a significant impact on federal broadband policies and how federal resources are allocated to promote broadband deployment in unserved and underserved areas. The issue of how the FCC defines broadband with respect to minimum threshold speeds has come to the forefront, as stakeholders recognize that minimum speed threshold levels can play a role in determining what steps the FCC may or may not take with respect to an array of broadband policies.

Definitions of Broadband

The FCC's working definition of broadband is in Section 706 of the Telecommunications Act of 1996 (P.L. 104-104), which 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.[4]

A similar definition can be found in the statute that authorizes the Rural Broadband Access Loan and Loan Guarantee program in the Rural Utilities Service (RUS) at the U.S. Department of Agriculture (USDA):

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[1] Broadband availability refers to whether or not broadband service is offered, while broadband adoption refers to the extent to which American households actually subscribe to and use broadband.

[2] CRS In Focus IF10441, *Broadband Deployment: Status and Federal Programs*, by Lennard G. Kruger.

[3] See CRS Report R44416, *Tribal Broadband: Status of Deployment and Federal Funding Programs*, by Lennard G. Kruger.

[4] 47 U.S.C. 1302(d)(1). Another FCC definition of broadband internet access service can be found in the FCC's *Open Internet Order* (47 C.F.R 8.2(a)): "A mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service. This term also encompasses any service that the Commission finds to be providing a functional equivalent of the service described in the previous sentence, or that is used to evade the protections set forth in this part."

> The term broadband service means any technology identified by the Secretary as having the capacity to transmit data to enable a subscriber to the service to originate and receive high-quality voice, data, graphics, and video.[5]

Another way broadband can be defined is by setting a minimum threshold speed for what constitutes "broadband service." Broadband speeds are characterized with respect to both download speeds and upload speeds. The Government Accountability Office (GAO) defines download speed as the rate at which data are transferred to the consumer, and upload speed as the rate at which data are transferred from the consumer to the internet.[6] Both are measured by the number of bits of data transferred per second (typically expressed as megabits per second or Mbps).[7]

Typically, broadband delivered by fixed wired technologies (e.g., cable modem and fiber) provides higher speeds than mobile wireless and satellite broadband technologies. For example, according to the *akamai state of the internet report*, the average mobile speed in the United States was 10.7 Mbps versus an overall average (for all broadband technologies) of 18.7 Mbps in the first quarter of 2017.[8] Similarly, the FCC's *Measuring Fixed Broadband Report—2016* shows that cable and fiber provide significantly higher median download speeds than satellite broadband.[9]

Download and upload speeds can determine what kinds of applications are possible for broadband users. For example, **Table 1** shows minimum download speeds for typical online activities, **Table 2** shows minimum download speed needs for light, moderate, and high household use, and **Table 3** shows baseline download speed requirements for community institutions.

[5] 7 USC 950bb(b)(1).

[6] Government Accountability Office, *Broadband Performance: Additional Actions Could Help FCC Evaluate Its Efforts to Inform Consumers*, GAO-15-363, April 2015, p. 4, available at http://www.gao.gov/assets/670/669739.pdf.

[7] Other technical characteristics—such as latency or service reliability—could also be used to define and measure the adequacy of broadband service. According to GAO, latency is "a measure of the time that it takes for data to travel from a computer to a server and back again." See Ibid.

[8] Akamai Technologies, Inc., *akamai's [state of the internet] Q1 2017 report*, p. 24, 44, available at https://www.akamai.com/fr/fr/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf. Akamai operates global Content Delivery Network services and publishes quarterly state of the internet reports based on data from its global cloud delivery platform.

[9] FCC, *Measuring Fixed Broadband Report—2016*, December 2016, available at https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-report-2016#_Toc458762536.

Table 1. Minimum Download Speeds for Typical Online Activities

Activity	Minimum Download Speed (Mbps)
General Usage	
General Browsing and Email	1
Streaming Online Radio	Less than 0.5
VoIP Calls	Less than 0.5
Student	5-25
Telecommuting	5-25
File Downloading	10
Social Media	1
Watching Video	
Streaming Standard Definition Video	3-4
Streaming High Definition (HD) Video	5-8
Streaming Ultra HD 4K Video	25
Video Conferencing	
Standard Personal Video Call (e.g., Skype)	1
HD Personal Video Call (e.g., Skype)	1.5
HD Video Teleconferencing	6
Gaming	
Game Console Connecting to the Internet	3
Online Multiplayer	4

Source: FCC, *Broadband Speed Guide*, last updated/reviewed February 6, 2018, available at https://www.fcc.gov/reports-research/guides/broadband-speed-guide.

Note: Speeds are based on running one activity at a time. Additional speed may enhance performance.

Table 2. Minimum Download Speed Needs for Light, Moderate, and High Household Use

	Light Use (Basic functions: email, browsing, basic video, VoIP, internet radio)	Moderate Use (Basic functions plus *one* high-demand application: streaming HD video, multiparty video conferencing, online gaming, telecommuting)	High Use (Basic functions plus *more than one* high-demand application running at the same time)
1 user on 1 device	Basic	Basic	Medium
2 users or devices at a time	Basic	Medium	Medium/Advanced
3 users or devices at a time	Medium	Medium	Advanced
4 users or devices at a time	Medium	Advanced	Advanced

Source: FCC, *House Broadband Guide*, last updated/reviewed February 6, 2018, available at https://www.fcc.gov/research-reports/guides/household-broadband-guide.

Notes: Basic Service = 3 to 8 Mbps; Medium Service = 12 to 25 Mbps; Advanced Service = more than 25 Mbps.

Table 3. Baseline Download Speed Requirements for Community Institutions

Institution	Typical Application	Download Speeds
Hospital	sharing health records	1 Gbps+
	performing virtual consultations	
	connecting first responders	
Library	operating public computer centers	100 Mbps-1 Gbps+
	mobile hotspot lending	
	enabling maker spaces	
School	sharing educational material	100 Mbps-1 Gbps+
	online testing	
	accessing databases	
Small Business	managing inventory	50 Mbps+
	operating point-of-sale terminals	
	coordinating shipping	
Home	completing homework	25 Mbps+
	streaming video	
	web browsing	

Source: BroadbandUSA, National Telecommunications and Information Administration, *What Speed Do You Need?* available at https://www2.ntia.doc.gov/files/what_speed_061917.pdf.

Notes: Download speeds in this table are suggested by BroadbandUSA, which states that "download speed requirements vary based on the activity, location and number of users, and these needs will continue to change as technology advances."

Minimum Speeds in Federal Broadband Programs

Currently, there are two primary streams of federal funding to support broadband infrastructure deployment in rural areas: the FCC's Universal Service Fund programs and the portfolio of RUS broadband grant and loan programs at USDA (see **Table 4**). Each of these programs has set a minimum broadband speed threshold to determine which areas are or are not eligible for support. As **Table 4** shows, minimum broadband speed thresholds are not uniform across programs—they differ based on the particular needs and goals of the individual program.

Because broadband technology is always advancing, the statutes that have established these programs have built in flexibility for the implementing agency to set minimum threshold broadband speeds. For example, the 2014 farm bill (P.L. 113-79), which authorizes the Rural Broadband Access Loan program, established a "minimum broadband acceptable level of broadband service for a rural area" of at least 4 Mbps downstream transmission capacity and 1 Mbps upstream transmission capacity.[10] However, the statute states that

> At least once every 2 years, the Secretary shall review, and may adjust through notice published in the Federal Register, the minimum acceptable level of broadband service ... to ensure that high quality, cost-effective broadband service is provided to rural areas over time.[11]

The statute further adds that in adjusting the minimum acceptable level of broadband service, the Secretary may consider establishing different transmission rates for fixed broadband service and mobile broadband service, and that the Secretary shall not establish requirements for bandwidth or speed that have the effect of precluding the use of evolving technologies appropriate for rural areas.[12] Accordingly, the latest Notice of Solicitation of Applications (NOSA) for the Rural Broadband Access Loan program defined existing broadband service as a minimum of 25 Mbps (download)/3 Mbps (upload) for both fixed (wired) and mobile (wireless) broadband.[13]

[10] 7 U.S.C. 950bb(e)(1).

[11] 7 U.S.C. 950bb(e)(2).

[12] 7 U.S.C. 950bb(e)(3).

[13] Department of Agriculture, Rural Utilities Service, "Rural Broadband Access Loan and Loan Guarantees Program," Notice of Solicitation of Applications (NOSA), 83 *Federal Register* 13225-13226, March 28, 2018, available at https://www.gpo.gov/fdsys/pkg/FR-2018-03-28/pdf/2018-06175.pdf.

Table 4. Federal Broadband Programs and Minimum Broadband Speeds

Program	Description	Minimum Broadband Speeds
	Federal Communications Commission	
Connect America Fund (High Cost Program)	Program provides support for eligible telecommunications carriers to help offset the higher-than-average costs of providing telecommunications services in rural, insular, or other high cost areas.	Requires providers to offer a minimum speed of 10 Mbps (download)/1 Mbps (upload).[a]
Schools and Libraries (E-rate)	Provides discounts to providers offering telecommunications services, internet access, and internal connections to qualifying K-12 schools and libraries.	100 Mbps per 1,000 users (short term goal); 1 Gbps per 1,000 users (long term goal).[b]
Rural Health Care	Provides support to qualifying rural public and nonprofit health care providers for telecommunications and broadband connectivity.	No minimum bandwidth requirement for supported services; however, certain types of support are limited to connections that provide actual speeds of 1.5 Mbps (symmetrical) or higher.[c]
Low Income Program (Lifeline)	Provides support to assist eligible households pay monthly service charges. Support is not given directly to the subscriber but to their designated telecommunications provider, who in turn charges the subscriber lower rates.	Minimum service standard for fixed broadband speed set at 15 Mbps (download)/2 Mbps (upload). Minimum is 4 Mbps/1 Mbps in cases where the provider does not offer any generally available residential fixed broadband package that meets the 15 Mbps/2 Mbps standard.[d]
	USDA Rural Utilities Service	
Farm Bill Broadband Loans	Provides loans for the costs of construction, improvement, or acquisition of facilities and equipment needed to provide broadband service in rural areas.	Existing broadband service is defined as a minimum of 25 Mbps (download)/3 Mbps (upload) for both fixed (wired) and mobile (wireless) broadband. Funded projects must provide minimum speeds of 25 Mbps (download/3 Mbps (upload) for fixed and mobile broadband.[e]
Telecommunications Infrastructure Loans	Provides loans for the construction, maintenance, improvement and expansion of telephone service and broadband in extremely rural areas (less than 5,000 population).	All facilities financed must be capable of supporting broadband services, defined as "any technology identified by the Administrator as having the capacity to transmit data to enable a subscriber to originate and receive high-quality voice, data, graphics, and video."[f]

Program	Description	Minimum Broadband Speeds
Community Connect Grants	Provides grants to fund broadband deployment into rural areas where it is not yet economically viable for private sector providers to deliver service.	Existing broadband service is defined as a minimum of 10 Mbps (download)/1 Mbps (upload) for both fixed and mobile broadband. Funded projects must provide minimum speeds of 25 Mbps (download)/3 Mbps (upload) for both fixed (wired) and mobile (wireless) broadband.[g]

Source: CRS, compiled from agency program regulations and documents.

a. FCC, "In the Matter of Connect America Fund," *Report and Order*, FCC 14-190, WC Docket No. 10-90, adopted December 11, 2014, p. 6, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-190A1.pdf.

b. FCC, "In the Matter of Modernizing the E-rate Program for Schools and Libraries," *Report and Order and Further Notice of Proposed Rulemaking*, FCC 14-99, WC Docket No. 13-184, adopted July 11, 2014, p. 16, available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0723/FCC-14-99A1.pdf.

c. FCC, "In the Matter of Rural Health Care Support Mechanism," *Report and Order*, FCC 12-150, WC Docket No. 02-60, adopted December 12, 2012, p. 52, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-12-150A1.pdf.

d. FCC, *Public Notice*, "Wireline Competition Bureau Announced Updated Lifeline Minimum Service Standards and Indexed Budget Amount," June 26, 2017, available at https://apps.fcc.gov/edocs_public/attachmatch/DA-17-619A1.pdf.

e. Department of Agriculture, Rural Utilities Service, "Rural Broadband Access Loan and Loan Guarantees Program," Notice of Solicitation of Applications (NOSA), 83 *Federal Register*, pp. 13225-13226, March 28, 2018, available at https://www.gpo.gov/fdsys/pkg/FR-2018-03-28/pdf/2018-06175.pdf.

f. Department of Agriculture, Rural Utilities Service, *Infrastructure Loan Application Guide*, updated as of December 1, 2015, p.41, available at https://www.rd.usda.gov/programs-services/telecommunications-infrastructure-loans-loan-guarantees.

g. Department of Agriculture, Rural Utilities Service, "Announcement of Grant Application Deadlines and Funding Levels," Notice of Solicitation of Applications (NOSA), 83 *Federal Register*, pp. 11494-11499, March 15, 2018, available at https://www.gpo.gov/fdsys/pkg/FR-2018-03-15/pdf/2018-05200.pdf.

Section 706 and the FCC's Definition of Minimum Broadband Speed

Section 706 of the Telecommunications Act of 1996 requires the FCC to regularly initiate an inquiry concerning the availability of broadband to all Americans and to determine whether broadband is "being deployed to all Americans in a reasonable and timely fashion." If the determination is negative, the act directs the FCC to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[14]

Starting in 1999, there have been 11 Section 706 reports, each providing a snapshot and assessment of broadband deployment. As part of this assessment, and to help determine whether broadband is being deployed in "a reasonable and timely fashion," the FCC has set a minimum broadband speed that essentially serves as the benchmark it uses to determine what constitutes broadband service for the purposes of its Section 706 determination. **Table 5** shows each Section 706 report, the date adopted, the FCC determination of whether broadband was being deployed in

[14] 47 U.S.C. 1302(b).

a reasonable and timely fashion, the minimum broadband benchmark speed used in that FCC determination, and the vote of the FCC Commissioners. As **Table 5** shows, the minimum speeds have risen, from 200 kbps in 1999, to 4 Mbps/1 Mbps in 2010, to 25 Mbps/3 Mbps in 2015.

As **Table 5** also shows, there has seldom been agreement among FCC commissioners as to whether broadband is being deployed in a timely and reasonable manner. For example, during the George W. Bush Administration, the finding that broadband deployment was reasonable and timely was associated with the FCC's deregulatory policies, whereas during the Obama Administration, the finding that broadband deployment was not reasonable and timely has been associated with FCC policies favoring a greater level of government intervention in the marketplace.

An important factor in the Section 706 determination has proven to be how the FCC chooses to define broadband service in terms of minimum speed. In 2015, the FCC, citing changing broadband usage patterns and multiple devices using broadband within single households, raised its minimum broadband benchmark speed from 4 Mbps/1 Mbps to 25 Mbps/3 Mbps. Critics asserted that the FCC excessively raised broadband benchmark speeds in order to produce a negative finding and to justify the FCC's pursuit of policies addressing such regulatory issues as Universal Service Fund reform and net neutrality.

On February 2, 2018, the FCC adopted and released its latest 706 report, the *2018 Broadband Deployment Report.*[15] The FCC concluded that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion. This determination was based on evaluating progress—comparing deployment in the present year to deployment in previous years. According to the *Report*

> We find that analyzing progress to determine whether deployment is occurring in a reasonable and timely fashion is the approach that is most consistent with the language of section 706, as the analysis of such progress enables the Commission to determine whether advanced telecommunications capability "is being deployed" in the manner that section 706 requires. The use of the present progressive tense—"is being deployed"—as well as the language requiring an evaluation of whether that deployment is "reasonable and timely" indicates that Congress intended that the Commission evaluate the current state of deployment to all Americans, not a rigid requirement that each and every American be served *at this moment*.[16]

The FCC's latest 706 determination that broadband is being deployed in a reasonable and timely fashion is a departure from the FCC's previous five determinations that broadband was not being deployed in a reasonable and timely fashion. The latest 706 determination was approved by the three Republican FCC Commissioners, with the remaining two Democratic commissioners dissenting. According to FCC Commissioner Rosenworcel's dissent

> This report concludes that in the United States the deployment of broadband to all Americans is reasonable and timely. This is ridiculous—and irresponsible. Today there are 24 million Americans without access to broadband. There are 19 million Americans in rural areas who lack the ability to access high-speed services at home. There are 12 million school-aged children who are falling into the Homework Gap because they do not have the broadband at home they need for nightly schoolwork. Ask any one of them if they think

[15] Federal Communications Commission, *2018 Broadband Deployment Report*, In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket no. 17-199, FCC 18-10, adopted and released February 2, 2018, 89 pp., available at https://www.fcc.gov/document/fcc-releases-2018-broadband-deployment-report.

[16] *2018 Broadband Deployment Report*, p. 4.

> the deployment of the most essential digital age infrastructure is reasonable and timely and you will get a resounding "No." To call these numbers a testament to our national success is insulting and not credible.[17]

Table 5. Section 706 Reports, 1999-2018

	Date Adopted	Is Broadband Deployed to All Americans in Reasonable and Timely Fashion?	Broadband Definition (threshold speed)	Vote of FCC Commissioners
First Broadband Progress Report	1/28/1999	Yes	200 kbps in both directions	5-0
Second Broadband Progress Report	8/3/2000	Yes	200 kbps in at least one direction	4-0
Third Broadband Progress Report	2/6/2002	Yes	200 kbps in at least one direction	3-1
Fourth Broadband Progress Report	9/9/2004	Yes	200 kbps in at least one direction	3-2
Fifth Broadband Progress Report	3/19/2008	Yes	200 kbps in at least one direction	3-2
Sixth Broadband Progress Report	7/16/2010	No	4 Mbps/1 Mbps	3-2
Seventh Broadband Progress Report	5/20/2011	No	4 Mbps/1 Mbps	3-1
Eighth Broadband Progress Report	8/14/2012	No	4 Mbps/1 Mbps	3-2
2015 Broadband Progress Report	1/29/2015	No	25 Mbps/3 Mbps	3-2
2016 Broadband Progress Report	1/28/2016	No	25 Mbps/3 Mbps	4-1
2018 Broadband Deployment Report	2/2/2018	Yes	25 Mbps/3 Mbps	3-2

Source: FCC, *Archive of Released Broadband Progress Notices of Inquiry*, available at https://www.fcc.gov/general/archive-released-broadband-progress-notices-inquiry.

Thirteenth Section 706 Report Notice of Inquiry

On August 8, 2017, the FCC adopted and released its *Thirteenth Section 706 Notice of Inquiry* (*NOI*).[18] Comments and data received from the *NOI* were used to develop the FCC's latest Section 706 broadband progress report, the *2018 Broadband Deployment Report*.[19]

[17] Ibid., p. 89.

[18] FCC, *Thirteenth Section 706 Report Notice of Inquiry*, GN Docket No. 17-199, FCC 17-109, August 8, 2017, available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0808/FCC-17-109A1.pdf.

[19] In two past instances, a Section 706 NOI did not lead to a Section 706 report: the *Ninth NOI*, released on February 4, 2015, and the *Twelfth NOI* released on August 4, 2016.

In the *NOI*, the FCC proposed to maintain the 25 Mbps/3 Mbps benchmark for fixed broadband, while at the same time soliciting comments on how the presence and nature of mobile broadband should factor into the determination of whether broadband is being deployed to all Americans in a timely and reasonable fashion. On the one hand, the FCC asked for comments on whether the presence of fixed *or* mobile broadband should indicate that an area is served:

> Given that Americans use both fixed and mobile broadband technologies, we seek comment on whether we should evaluate the deployment of fixed and mobile broadband as separate and distinct ways to achieve advanced telecommunications capability. Taking into account the differences between the various services and the geographic, economic, and population diversity of our nation, we seek comment on focusing this Section 706 Inquiry on whether some form of advanced telecommunications capability, be it fixed or mobile, is being deployed to all Americans in a reasonable and timely fashion.[20]

Alternatively, the *NOI* sought comment on whether the FCC should "evaluate broadband deployment based on the presence of both fixed *and* mobile services," given that "mobile and fixed broadband have different technical characteristics and limitations, and broadband providers choose to market their fixed and mobile products in different ways."[21]

Within the context of seeking whether to assess fixed *or* mobile versus fixed *and* mobile, the FCC sought comment on the benchmarks they should use to define "advanced telecommunications capability." While proposing to maintain the current speed benchmark of 25 Mbps/3 Mbps for fixed broadband, the FCC sought comment on potential benchmarks and metrics for mobile broadband:

> The Commission has not previously set a mobile speed benchmark. Our consideration of whether and how to set a speed benchmark will be informed by assessing the mobile broadband services and speeds that are available to consumers today, as well as evidence regarding what services consumers are choosing today, and what might be available in the near future.... Should the Commission set a mobile speed benchmark, and if so, what it should be? We anticipate that any speed benchmark we set would be lower than the 25 Mbps/3 Mbps benchmark adopted for fixed broadband services, given differing capabilities of mobile broadband.... We seek comment on whether a mobile speed benchmark of 10 Mbps/1 Mbps is appropriate for mobile broadband services. Would a download speed benchmark higher or lower than 10 Mbps be appropriate for the purpose of assessing American consumers' access to advanced telecommunications capability?[22]

Debate over Broadband Service Benchmarks

How and at what level the FCC sets broadband service benchmarks in its Section 706 reports has been a controversial issue in Congress. For example, in a January 2016 letter to FCC Chairman Tom Wheeler regarding the *2016 Broadband Progress Report*, a group of Republican Senators disputed the FCC's determination that broadband was not being deployed to all Americans in a reasonable and timely fashion. They asserted that the benchmark of 25 Mbps/3 Mbps was set at an arbitrarily high level and "fails to accurately capture what most Americans consider broadband." Specifically, the Senators argued that most commonly used applications require speeds considerably below the 25/3 level, that "the majority of Americans who can purchase 25 Mbps service choose not to," and that the use of the 25/3 benchmark "discourages broadband

[20] *Thirteenth Section 706 Report Notice of Inquiry*, p. 5.

[21] Ibid.

[22] Ibid., p. 7.

providers from offering speeds at or above the benchmark." The letter also made the point that the FCC's 25/3 benchmark is inconsistent with the Connect America Fund benchmark of 10/1 for rural broadband, and with the FCC's *Open Internet Order*'s definition of broadband, which includes any service above dial-up.[23]

Conversely, the August 2017 *NOI* led other Members of Congress to object that the FCC may be preparing to effectively lower the broadband benchmark speed by potentially deeming an area as served by broadband if it has either fixed broadband (which the FCC proposes to maintain at 25/3 Mbps) *or* mobile broadband (which the FCC proposes to set at a level of 10 Mbps/1 Mbps). Such a change in setting the broadband benchmark could, they asserted, lead to an unwarranted FCC determination that advanced telecommunications services *are* being deployed to all Americans in a timely and reasonable fashion. For example, an August 2017 letter from a group of Democratic Senators to the FCC noted that "the Commission appears ready to decide that mobile broadband could be a substitute, rather than a complement, to fixed broadband service, and that slower-speed mobile service substitutes as effectively." The letter argued that mobile broadband is not yet equivalent to fixed broadband services and that "such a striking change in policy would significantly and disproportionately disadvantage Americans in rural, tribal, and low income communities across the nation, whose livelihoods depend on a reliable and affordable broadband connection."[24] Similarly, a group of Democratic Senators and Representatives, in an October 2017 letter to the FCC, expressed concern "with any effort to weaken the FCC's current policy finding that every American should have access to broadband services with speeds of at least 25 Mbps download/3 Mbps upload," and that "[f]inding instead that only mobile service of 10 Mbps download/1 Mbps upload is sufficient would result in significantly slower and less reliable Internet access for millions of Americans."[25]

Much of the debate over the FCC's broadband benchmark played out in comments and letters filed in response to the FCC's *Thirteenth Section 706 NOI*. In general, those parties who support an FCC determination that broadband is *not* being deployed to all Americans in a timely and reasonable fashion were opposed to altering the current broadband benchmark by considering the presence of fixed or mobile broadband as an area that is "served." They asserted that mobile broadband is not a satisfactory substitute or replacement for fixed broadband service. Among their arguments were that mobile broadband currently lacks the capacity, speed, and reliability of fixed broadband;[26] that mobile wireless data caps and overage charges make the cost of mobile data prohibitively high;[27] that few businesses rely solely on mobile broadband and are unlikely to

[23] Letter from 6 Republican Senators to Chairman Tom Wheeler, Federal Communications Commission, January 21, 2016, available at https://assets.documentcloud.org/documents/2697501/Letter-to-Fcc-Chairman-Wheeler-Broadband.pdf.

[24] Letter from 12 Democratic Senators to the Federal Communications Commission, August 31, 2017, available at https://prodnet.www.neca.org/publicationsdocs/wwpdf/0901sen.pdf.

[25] Letter from 9 Democratic Senators and 36 Democratic House Members to the Federal Communications Commission, October 5, 2017, available at https://ecfsapi.fcc.gov/file/100571368034/10.5.2017%20FCC%20Chariman%20Pai%20letter.pdf.

[26] Comments of the California Public Utilities Commission before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, October 5, 2017, p. 4-5, available at https://ecfsapi.fcc.gov/file/1005131709819/GN%20Docket%2017-199%20CPUC%20Comments%20to%20the%20FCC.pdf.

[27] Comments of the Open Technology Institute at New America before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, September 21, 2017, p. 8-11, available at https://ecfsapi.fcc.gov/file/10921256530521/OTI%20FCC%20Section%20706%20Comments.pdf.

locate in "mobile-only" communities;[28] and that low-income communities and communities of color are more smartphone-dependent than wealthier and white communities, with smartphones not providing full access to the benefits of the internet such as applying for a job, doing homework, or taking online classes or training.[29]

On the other hand, parties who favor an FCC determination that broadband *is* being deployed to all Americans in a timely and reasonable fashion supported the notion of altering the current broadband benchmark by considering the presence of fixed or mobile broadband as an area that is "served." Among their arguments were that LTE 4G mobile broadband deployment and usage is ubiquitous, with private sector investment continuing to grow for future deployments such as 5G;[30] that the FCC should consider whether *progress* in broadband deployment is reasonable and timely, as opposed to whether deployment already is complete and ubiquitous;[31] that consumers increasingly use mobile devices in fixed locations for many voice, data, graphics, and video applications, and that mobile broadband need not be a perfect or complete economic substitute for fixed broadband for the FCC to determine that both meet the definition of "advanced telecommunications capability";[32] and that many consumers in fact do view mobile and fixed broadband as interchangeable substitutes and that the two services provide a competitive constraint on each other and should be considered to be in the same market.[33]

Ultimately, the *2018 Broadband Deployment Report* concluded that adoption of a single mobile benchmark is currently unworkable, given available data and the inherent variability of actual mobile speeds, and that mobile broadband service is not a full substitute for fixed service at this time:

> ... we disagree with those that argue that mobile services are currently full substitutes for fixed service. Both fixed and mobile services can enable access to "information, entertainment, [and] employment options," but there are salient differences between the two technologies. Beyond the most obvious distinction that mobile services permit their users mobility, there are clear variations in consumer preferences and demands for fixed and mobile services. Each clearly provides capabilities that satisfy the statutory definition

[28] Comments of NTCA—The Rural Broadband Association before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, p. i-iii, available at https://ecfsapi.fcc.gov/file/10921173109916/09.21.17%20NTCA%20Comments%20on%20Section%20706%20NOI%2C%20GN%2017-199.pdf.

[29] Leadership Conference on Civil and Human Rights, Letter to the FCC, November 3, 2017, p. 2-3, available at https://ecfsapi.fcc.gov/file/1103708927319/Leadership%20Conference%20706%20Letter%2011-03-17.pdf.

[30] Comments of Verizon before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, September 21, 2017, p. 2-8, available at https://ecfsapi.fcc.gov/file/10921261086205/2017%2009%2021%20Verizon%20706%20comments_final.pdf.

[31] Comments of CTIA before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, September 21, 2017, p. 1-2, 4, available at https://ecfsapi.fcc.gov/file/109212607904338/170921%20CTIA%20Section%20706%20Comments.pdf.

[32] Comments of USTelcom Association before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, September 21, 2017, p. 5-6, available at https://ecfsapi.fcc.gov/file/1092177736005/2016%2013th%20BB%20Progress%20NOI%20Comments.pdf.

[33] Comments of the Free State Foundation before the FCC, In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, September 21, 2017, p. 3-4, available at https://ecfsapi.fcc.gov/file/1092136091140/FSF%20Comments%20in%20Section%20706%20Inquiry%20-%20Final%20-%20092117.pdf.

> of advanced telecommunications capability, and are important services that provide different functionalities, tailored to serve different consumer needs.[34]

Concluding Observations

During the FCC's consideration of its latest 706 Report, three issues for Congress were how and at what level broadband benchmarks should be set, whether the FCC would determine that broadband is being deployed in a reasonable and timely fashion, and how that determination and those benchmarks would impact current and future broadband policies and programs intended to improve broadband availability and adoption throughout the nation. As broadband technology advances, commercially available download and upload speeds will likely increase, and the level at which broadband benchmark threshold speeds should be set is likely to remain controversial. Accordingly, the FCC's annual Section 706 determination is likely to remain contentious as long as it is seen by stakeholders as providing a justification for current or future FCC regulatory or deregulatory policies.

The debate over the *Thirteenth NOI* followed this paradigm. Stakeholders who supported an FCC determination that broadband is not being deployed in a reasonable and timely fashion generally opposed lowering the broadband benchmark by considering the presence of either fixed (at 25 Mbps/3 Mbps) or mobile (at 10 Mbps/1 Mbps) broadband as an indication that an area has adequate broadband service.[35] On the other hand, stakeholders who supported an FCC determination that broadband is being deployed in a reasonable and timely fashion generally supported changing the FCC's broadband benchmark methodology to include the presence of either fixed or mobile broadband as an indication that an area is receiving adequate broadband service.[36]

Ultimately, the levels at which broadband speed benchmarks are set can have an impact on broadband speeds, particularly those offered in unserved and underserved rural areas served by providers utilizing federal subsidies or assistance such as the Connect America Fund or the loan and grant programs in the RUS. Higher broadband download and upload speeds can translate into more robust and varied applications, but are generally more costly to deploy. Lower broadband speeds, because they are less costly to deploy, may be built out to more rural communities, but may offer less capacity and economic benefits than the typically faster broadband connections available in urban and suburban areas. Given the finite amount of federal funding available, policymakers face a tradeoff between the quality of rural broadband connections versus the quantity of rural areas that will be considered "served."

[34] *2018 Broadband Deployment Report*, pp. 7-8.

[35] For example, those stakeholders typically supported policies such as Open Internet and Title II classification, removing state barriers to community broadband, and a more robust Lifeline program to support improved digital inclusion programs.

[36] For example, those stakeholders typically supported policies such as removing local and government barriers to wireless and wireline siting; identifying and allocating more licensed and unlicensed spectrum for commercial broadband services; removing Title II requirements; and removing requirements that incumbent providers maintain and lease their legacy networks that employ copper and outdated technology.

Author Information

Lennard G. Kruger
Specialist in Science and Technology Policy

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