

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning the Deployment of)	GN Docket No. 14-126
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)	

COMMENTS OF NETFLIX, INC.

Markham C. Erickson
Erik Stallman
Steptoe & Johnson LLP
1330 Connecticut Ave., NW
Washington, DC 20036
(202) 429-3000
Counsel for Netflix, Inc.

Christopher Libertelli
Corie Wright
Netflix, Inc.
1455 Pennsylvania Ave., NW
Suite 650
Washington, DC 20004
(202) 464-3322

September 4, 2014

Table of Contents

	PAGE
I. INTRODUCTION.....	1
II. THE COMMISSION SHOULD UPDATE ITS BROADBAND SPEED BENCHMARK TO ACCURATELY REFLECT THE MARKETPLACE NOW AND IN THE FUTURE.....	3
A. American Households Increasingly Use Broadband to Stream Video and Other Content on Multiple Devices Simultaneously.....	3
B. The Benchmark Should Reflect American Households’ Actual, Peak-Time Use of Broadband.....	6
C. Broadband Internet Access Service Providers Promote Broadband Speeds Well in Excess of the Commission’s Benchmark	8
D. The Benchmark Should Account for Data Caps and Other Measures That Restrict Broadband Use	10
III. THE COMMISSION SHOULD FACTOR QUALITY OF BROADBAND SERVICES INTO ITS ASSESSMENT OF BROADBAND AVAILABILITY	12
IV. THE COMMISSION SHOULD ACCELERATE BROADBAND DEPLOYMENT BY PROMULGATING STRONG OPEN INTERNET RULES AND REMOVING BARRIERS TO BROADBAND DEPLOYMENT.....	13
A. Strong Network Neutrality Rules Will Perpetuate the Virtuous Circle and Spur Broadband Deployment.....	13
B. The Commission Should Remove Barriers to Broadband Deployment	15
V. CONCLUSION	16

EXECUTIVE SUMMARY

The Commission last took the then-overdue step of updating its broadband speed benchmark in 2010. The subsequent four years have seen an explosion in new, innovative content and services available to consumers over the Internet. As a result, consumers demand faster broadband speeds, edge providers design content and services that require faster broadband speeds, and broadband Internet access service providers promote service packages that feature faster broadband speeds. As a practical reality, the marketplace has moved beyond thinking of high-speed Internet as 4 Mbps. Chairman Wheeler recently acknowledged this fact in remarks noting that the use of multiple devices can overwhelm 10 Mbps connections and a 25 Mbps connection “is fast becoming ‘table stakes’ in 21st century communications.” Consistent with the Chairman’s remarks, the Commission should revise its benchmark to reflect that reality.

The benchmark should acknowledge how consumers actually use broadband. Increasingly, multiple members of the same household use their broadband connection simultaneously to request streaming video and other content on multiple connected devices. The benchmark should allow for that use and should be based on actual speeds achievable during peak usage periods. Advertised speeds are nonetheless relevant to determine what consumers demand and expect from their broadband connections. The revised benchmark also should account for data caps and other terms of service that may restrict broadband use even when a broadband connection is technically capable of achieving minimum threshold speeds. A gigabit broadband service that heavily penalizes consistent use may be worth less to consumers than a 10 Mbps broadband service with no cap or penalty.

The Commission should analyze broadband quality in its assessment of broadband availability. Such an assessment must include congestion at interconnection points. Congestion can cause requested traffic to trickle into the network at a fraction of advertised or actual speeds available over the last mile. Particularly for consumers requesting streaming video or other congestion-sensitive content, congestion at interconnection points may limit substantially the broadband service that is available to consumers. An assessment of interconnection policies and practices will give the Commission a more complete and accurate picture of broadband availability.

Section 706, which mandates the Commission’s inquiry, also requires the Commission to encourage broadband deployment, and in appropriate circumstances, to take immediate action to accelerate broadband deployment by removing barriers to infrastructure investment. Consistent with the directive of Section 706, the Commission should promulgate strong open Internet rules that perpetuate the virtuous circle and create a level playing field for edge providers. It also should take action to remove barriers to broadband investment by both public and private sector broadband providers. Concrete action will promote continued investment and improvement in broadband services that meet or exceed the Commission’s revised benchmark.

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning the Deployment of)	GN Docket No. 14-126
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)	

COMMENTS OF NETFLIX, INC.

I. INTRODUCTION

The Commission last revised its broadband speed benchmark in 2010, characterizing the increase from 200 kbps in both directions to 4 megabits per second (“Mbps”) downstream/ 1 Mbps upstream as an “overdue step.”¹ Four years later, an update is equally overdue.

Consumers demand broadband speeds capable of delivering high-quality streaming video and other innovative content and services. Edge providers respond to that demand through media-rich applications and increasingly sophisticated interactive services. Broadband Internet access service providers promote gigabit broadband service tiers and even “starter” tiers exceed 4 Mbps downstream. Consumers, edge providers, and broadband providers—the three constituencies that drive the virtuous circle of broadband innovation, investment, and deployment—all understand broadband service to mean something greater than 4 Mbps downstream.

¹ 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, *Sixth Broadband Progress Report*, 25 FCC Rcd. 9556, 9558 ¶ 4, 9563 ¶ 11 (2010) (“*Sixth Broadband Progress Report*”).

The Commission should revise its benchmark to reflect how American households actually use broadband: multiple members accessing increasingly sophisticated content and services simultaneously. The benchmark should reflect actual speeds, rather than advertised speeds, and should account for demand at peak usage times. The benchmark also should be forward-looking, with sufficient headroom to accommodate Internet-delivered content and services that are still in their infancy.

In addition to updating its benchmark, the Commission should update its assessment of broadband availability. That assessment should include an examination of broadband quality that reaches interconnection as well as the performance of broadband networks over the last mile. American households are unlikely to demand 105 Mbps broadband packages if requested traffic trickles into the broadband provider's network through congested links at only one one-hundredth of that speed.

Section 706 requires the Commission to engage in its present inquiry. It also requires the Commission to take concrete steps to promote broadband investment, deployment, and adoption. Strong open Internet rules that prevent blocking or discrimination at interconnection points as well as over last-mile infrastructure will perpetuate the virtuous circle of end-to-end innovation that spurs broadband demand, deployment, and adoption. Where the Commission finds other barriers to broadband investment, deployment, or adoption, it should take affirmative steps to remove them. Netflix encourages the Commission to take the opportunity to update its broadband speed benchmark and its rules intended to promote broadband investment, deployment, and competition.

II. THE COMMISSION SHOULD UPDATE ITS BROADBAND SPEED BENCHMARK TO ACCURATELY REFLECT THE MARKETPLACE NOW AND IN THE FUTURE

The growing popularity of streaming video and other content requested by broadband consumers, and the innovations in the quality of that content, show that an update of the Commission's broadband speed benchmark is overdue. The revised benchmarks should be forward-looking and account for households with multiple members using increasingly sophisticated services simultaneously. It should reflect actual peak-time broadband use and take into account data caps and other terms of service that may deter broadband use.

A. American Households Increasingly Use Broadband to Stream Video and Other Content on Multiple Devices Simultaneously

The Commission's speed benchmark must account for the fact that American households increasingly use broadband Internet to access bandwidth-intensive content, and often access that content on multiple Internet-connected devices simultaneously. As the Commission's *Tenth Broadband Progress Inquiry* recognizes, "real-time entertainment, such as streaming video and audio, continues to be the largest traffic category on virtually every network."² That content accounts for 63.87 percent of peak-period downstream traffic in North America.³ That percentage likely will increase as new online video distributors ("OVDs") and other content providers enter the field and existing ones, like Netflix, offer increasingly advanced content to consumers. Twitch.tv's streaming service launched just over three years ago and already

² 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, *Tenth Broadband Progress Notice of Inquiry*, GN Docket No. 14-126, ¶ 6 (2014) ("*Tenth Broadband Progress Inquiry*").

³ Sandvine Intelligent Broadband Networks, *Global Internet Phenomena Report, 1H 2014*, 5 (2014) ("*Sandvine 1H 2014 Report*"), available at <https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/1h-2014-global-internet-phenomena-report.pdf>.

accounts for more traffic in the United States than HBO GO.⁴ In September 2013, Netflix began making 1080p Super HD video streams available to all users.⁵ In April 2014, Netflix began streaming Ultra HD 4K versions of some content,⁶ and Amazon will soon follow suit.⁷ Consumer demand for 4K content will increase as Ultra HD-capable televisions become more common.

The Commission's speed benchmark also must account for the fact that households increasingly have multiple members simultaneously accessing Internet-delivered content and services on multiple devices. The *Tenth Broadband Progress Inquiry* acknowledges this reality,⁸ as do the marketing materials of many wired broadband providers.⁹ Given the centrality of the Internet to Americans' everyday lives and the average of 2.58 individuals per household,¹⁰ simultaneous access of Internet content and services by multiple members of the same household is becoming the norm.

⁴ *Id.* at 6.

⁵ Mike Flacy, *Netflix Makes 1080p Super HD Streams Available to All Users*, Digital Trends (Sep. 27, 2013), <http://www.digitaltrends.com/home-theater/netflix-makes-1080p-super-hd-streams-available-to-all-users/#!bFdkOu>.

⁶ David Katzmaier, *Netflix Begins 4K Streams*, CNET (Apr. 8, 2014), <http://www.cnet.com/news/netflix-begins-4k-streams/>.

⁷ John Archer, *Amazon UHD/4K Movies and TV Shows to Start Streaming in October*, Forbes (Aug. 28, 2014), <http://www.forbes.com/sites/johnarcher/2014/08/28/amazon-uhd-4k-streams-hitting-samsung-tvs-in-october/>.

⁸ See *Tenth Broadband Progress Inquiry* ¶ 10 (“[M]embers of a household routinely use multiple broadband devices and sometimes do so simultaneously.”).

⁹ See, e.g., Time Warner Cable, *High Speed Internet Plans and Packages*, available at <http://www.timewarnercable.com/en/internet/internet-service-plans.html> (last visited Aug. 16, 2014) (recommending 50 Mbps “if you have multiple people on multiple devices in your home”).

¹⁰ *Tenth Broadband Progress Inquiry* ¶ 9; U.S. Census Bureau, C2010BR-14, *Households and Families: 2010*, 2010 Census Briefs, 1 (2012), available at <http://www.census.gov/prod/cen2010/briefs/c2010br-14.pdf>.

In view of the increasingly sophisticated services and content available over the Internet and the increasing likelihood that multiple members of a household will access those services and content simultaneously, the Commission’s existing 4 Mbps downstream/ 1 Mbps upstream benchmark is inadequate. For example, Apple TV recommends a 6 Mbps downstream broadband connection for accessing HD video content and 8 Mbps for accessing super HD video content.¹¹ If even a single family member wishes to stream 4K video content, Netflix recommends a broadband connection of at least 25 Mbps.¹²

The recommendations of content providers suggest that the Commission’s “high use household” scenario may not reflect accurately the broadband needs of even a moderate use household. That scenario calculates the total broadband requirements for simultaneous engagement in streaming video, an HD video call, cloud storage, and certain “background” services to be 10 Mbps downstream/ 2.9 Mbps upstream.¹³ That speed may be sufficient for some services, but section 706 defines “advanced telecommunications capability” as “broadband telecommunications capability that enables users to originate and receive *high-quality* voice, data, graphs, and video telecommunications[.]”¹⁴ The benchmark used to assess advanced telecommunications capability should accommodate the evolution in the standard for “high quality” video, as well as the likelihood that multiple members of a household will rely on broadband to access multiple streams of high-quality video simultaneously. As Chairman Wheeler said today, “[w]hen these devices are used at the same time, as they often are in the

¹¹ *Apple TV (2nd and 3rd generation): Troubleshooting Playback Performance*, Apple, <http://support.apple.com/kb/TS3623> (last visited Sept. 3, 2014).

¹² *Internet Connection Speed Recommendations*, Netflix, <https://help.netflix.com/en/node/306> (last visited Sept. 3, 2014).

¹³ *Tenth Broadband Progress Inquiry* ¶ 12, Table 2.

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

evenings, it's not hard to overwhelm 10 Mbps of bandwidth."¹⁵ As consumers interact with increasingly sophisticated content and services on increasingly sophisticated devices, "[a] 25 Mbps connection is fast becoming 'table stakes' in 21st century communications."¹⁶

The Commission's benchmark must accommodate forecasts about future demand, particularly if the Commission does not intend to adjust the benchmark annually. Many of the services that account for a substantial amount of the traffic requested by broadband users today did not exist a decade ago. It is likely that a decade from now, the same will hold true. The speed benchmark should leave room for the emergence of new content and services.

B. The Benchmark Should Reflect American Households' Actual, Peak-Time Use of Broadband

The Commission should maintain its existing practice of setting its benchmark in terms of actual speeds rather than advertised speeds. In its *Sixth Broadband Progress Report*, the Commission noted that "approximately half of all broadband consumers today purchase service that is advertised to deliver download speeds of 'up to' 7 Mbps (though evidence suggests that the actual speed of these connections may be roughly half of advertised speeds)."¹⁷ More recently, the Commission's Office of Engineering and Technology and Consumer and Governmental Affairs Bureau's *2014 Measuring Broadband America Report* found that "about

¹⁵ Tom Wheeler, Chairman, Federal Communications Commission, Prepared Remarks at 1776 Headquarters, 2 (Sep. 4, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0904/DOC-329161A1.pdf

¹⁶ *Id.* at 2.

¹⁷ *Id.* at 9564 ¶ 12 (citations omitted).

one-third of the ISPs delivered only 60 percent or better of advertised speeds 80 percent of the time to 80 percent of the consumers.”¹⁸

Anchoring the benchmark to actual speeds is particularly important given that certain technologies, like DSL, are less likely to either meet their advertised speed or improve maximum speeds over time.¹⁹ For example, a Frontier DSL, Verizon DSL, or Windstream (also using DSL technology) customer will experience a consistent speed that is less than 60 percent of the advertised speed.²⁰ A benchmark that does not look beyond advertised speeds likely would overstate broadband availability and deployment by failing to account for limitations of certain technologies.

An accurate assessment of whether available broadband meets the needs and expectations of American households also requires a speed benchmark based on peak usage periods. “Focusing on peak usage period provides the most useful information because it demonstrates the kind of performance users can expect when the delivery of Internet service is under highest demand.”²¹ Further, streaming video and other entertainment content dominates the traffic requested by households, and for the most part, households request that traffic during peak usage periods. A benchmark speed based on available broadband speeds averaged over a 24-hour

¹⁸ Federal Communications Commission, *2014 Measuring Broadband America Fixed Broadband Report* (2014), at 11, available at <http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf>.

¹⁹ *Id.* at 11, 14.

²⁰ *Id.* at 12.

²¹ *Id.* at 5; see also 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, *Eighth Broadband Progress Report*, 27 FCC Rcd. 10342, 10397-98 ¶ 126 (2012) (citing earlier *Measuring Broadband America* Reports finding that peak-period speeds were between 0.8 percent and 4.1 percent slower than average speeds, depending on the particular broadband service).

period likely would overstate the broadband speeds that households could receive at times during which they are most likely to use the Internet.

C. Broadband Internet Access Service Providers Promote Broadband Speeds Well in Excess of the Commission’s Benchmark

Although advertised speeds do not provide as solid a foundation for the Commission’s benchmark as actual speeds, the advertised speeds of broadband providers are instructive for assessing common understandings and expectations of broadband speeds. Most ISPs recommend speeds greater than 10 Mbps for seamless streaming of video or Internet gaming—and even more for homes with more than one Internet-connected device.²² Time Warner Cable, for example, suggested at least 20 Mbps if you want to “stream video,” 30 Mbps for gaming, and 50 Mbps “if you have multiple people on multiple devices in your home.”²³

²² See, e.g., AT&T, AT&T High-Speed Internet Plans – Comparison, <http://www.att-services.net/att-high-speed-internet-comparison.html#.U-J1ePldV8E> (last visited Sept. 3, 2014) (recommending packages offering speeds of 12 Mbps and up for customers who stream video clips and engage in teleconferencing, and speeds of 18 Mbps and up for customers who stream full-length videos and play interactive online games).

²³ Time Warner Cable, High Speed Internet Plans and Packages, *available at* <http://www.timewarnercable.com/en/internet/internet-service-plans.html> (last visited Aug. 16, 2014).

Figure 1: Screenshot of TWC Internet Offerings

Ultimate	Up to 50Mbps Home WiFi, TWC WiFi® Hotspots Upload up to 5Mbps	<ul style="list-style-type: none"> • Great if you have multiple people on multiple devices in your home • ONLINE ONLY PRICE: Save \$5/mo (was \$69.99)
Extreme	Up to 30Mbps Home WiFi, TWC WiFi® Hotspots Upload up to 5Mbps	<ul style="list-style-type: none"> • Great for extreme gamers • ONLINE ONLY PRICE: Save \$5/mo (was \$59.99)
Turbo	Up to 20Mbps TWC WiFi® Hotspots Upload up to 2Mbps	<ul style="list-style-type: none"> • Great if you stream video or email large files • ONLINE ONLY PRICE: Save \$5/mo (was \$49.99)
Standard	Up to 15Mbps TWC WiFi® Hotspots Upload up to 1Mbps	<ul style="list-style-type: none"> • Great for sharing photos and downloading music • ONLINE ONLY PRICE: Save \$5/mo (was \$39.99)

Comcast advised customers that they likely will need even more bandwidth—recommending 50 Mbps for “downloading, streaming and sharing—all at the same time” and 105 Mbps for “households with multiple computers or devices.”²⁴ Its 25 Mbps offering is more appropriate for households that want to “[s]hare photos, book travel, and watch the latest viral video craze.”²⁵

²⁴ See Comcast, New Customer Offers in Washington, DC, <http://www.comcast.com/shop/deals-dealfinder> (last visited Aug. 16, 2014).

²⁵ *Id.*

Figure 2: Screenshot of Comcast Internet Offering

<p>Extreme 105</p> <p><input type="checkbox"/> Hide Details</p>	<p>105 Mbps</p>	<p> CONSTANT GUARD™ </p>	<p> XFINITY CONNECT </p>	<p>Access to 1 million WiFi hotspots at no extra cost</p>	<p>\$114⁹⁵/mo</p>	<p>Add To Cart</p> <p>Details and Restrictions</p>
<p>Package Details: Get download speeds up to 105 Mbps and upload speeds up to 20 Mbps!</p> <ul style="list-style-type: none"> Perfect for hard-core gamers, households with multiple computers or devices and downloading large multi-media files. Constant Guard®—The most comprehensive online protection of any major Internet provider at home and now on your mobile devices. XFINITY WiFi—Stay connected at over 500,000 XFINITY WiFi and CableWiFi hotspots at no extra cost. XFINITY Connect with 7 e-mail accounts, each with 10GB of storage. Backed by the 30-Day Money-Back Comcast Customer Guarantee. <p>This special price is for customers who currently aren't subscribed to any XFINITY services.</p>						
<p>Blast®</p> <p><input type="checkbox"/> Hide Details</p>	<p>50 Mbps</p>	<p> CONSTANT GUARD™ </p>	<p> XFINITY CONNECT </p>	<p>Access to millions of WiFi hotspots at no extra cost</p>	<p>\$34⁹⁹/mo for the first 12 months</p>	<p>Add To Cart</p> <p>Details and Restrictions</p>
<p>Package Details: Get download speeds up to 50 Mbps and upload up to 10 Mbps!</p> <ul style="list-style-type: none"> Connect your devices and do more of what you love online with reliable Internet speeds for your home. Constant Guard®—The most comprehensive online protection of any major Internet provider at home and now on your mobile devices. Connect your household to blazing fast speeds for downloading, streaming and sharing—all at the same time. XFINITY WiFi—Stay connected at millions of XFINITY WiFi and CableWiFi hotspots at no extra cost. XFINITY Connect with 7 e-mail accounts, each with 10GB of storage. Backed by the 30-Day Money-Back Comcast Customer Guarantee™. <p>This special price is for customers who currently do not subscribe to any XFINITY services.</p>						

These promotional materials and the recommendations of other ISPs make clear that a 4 or even 10 Mbps downstream connection is inadequate for some of the most popular uses of broadband among American households. The benchmark should reflect the general agreement of users, content providers, and broadband providers on the speed necessary to “originate and receive” high-quality streaming video and other services.

D. The Benchmark Should Account for Data Caps and Other Measures That Restrict Broadband Use

Whether consumers can use broadband connections to receive the content they request without penalty is highly relevant to an assessment of their access to an “advanced telecommunications capability.” Data caps are intended to ration broadband use and thus may deter consumers’ use of next-generation services, such as Ultra HD 4K. Consumers could easily exceed a 250 GB data caps with normal data use and one long weekend of viewing 4K content.²⁶ Even for consumers who use broadband for more modest video consumption, data caps can introduce anxiety over the potential for extra charges and can cause consumers to ration their broadband consumption.²⁷ The Commission’s benchmark should be forward-looking in addressing those disincentives.

Similarly, the Commission should look at other economic and technical terms of service that may shape how consumers use broadband. For example, some providers exempt affiliated content and services from data caps that apply to traffic requested from nonaffiliated providers.²⁸ Certain wireless providers have unlimited data plans but also are rumored to throttle down the

²⁶ Leslie Horn, *You Can Burn Through Your Entire Broadband Data Cap in One Long Weekend*, Gizmodo (Feb. 18, 2014), <http://gizmodo.com/you-can-burn-through-your-entire-broadband-data-cap-in-1524579598>.

²⁷ See generally Marshini Chetty et al., ‘*You’re Capped!*’ *Understanding the Effects of Bandwidth Caps on Broadband Use in the Home*, Microsoft Research and Georgia Inst. Tech (May 5, 2012), available at http://research.microsoft.com/pubs/162079/YourCapped_HomeBroadbandUseUnderCaps_CHI2012.pdf (finding consumer anxiety related to bandwidth caps was related to uncertainty about which applications consumed the most bandwidth and multiple users on a plan using up allotted data and caused users to limit their usage habits).

²⁸ For example, Comcast exempts its XFINITY TV on Xbox application from data caps that apply to other content delivered to the same device. *FAQs: Xbox 360*, Comcast, <http://xbox.comcast.net/faqs.html> (last visited Sept. 3, 2014) (“The Xbox 360 running our XFINITY TV app essentially acts as an additional cable box for your existing cable service, and our data usage threshold does not apply.”).

connections of subscribers to those plans whose data usage is deemed “excessive.”²⁹ The Commission’s benchmark should account for practices that may prevent or deter consumers from using broadband connections to their fullest even when that service is technologically capable of performance consistent with advertised speeds and consumers’ expectations.

III. THE COMMISSION SHOULD FACTOR QUALITY OF BROADBAND SERVICES INTO ITS ASSESSMENT OF BROADBAND AVAILABILITY

Netflix agrees with the Commission that “[t]he quality of broadband services deployed and available to consumers also is an important factor impacting availability.”³⁰ In assessing the quality of the broadband actually available to consumers, the Commission must take into account the quality of a broadband Internet access service provider’s interconnection arrangements. Broadband Internet access service providers promote broadband packages based on the “blazing fast download speeds” those packages allow.³¹ The interconnection practices and policies of certain broadband Internet access service providers, however, prevent customers from experiencing speeds anywhere near advertised maximum speeds when requesting content from certain edge providers. In the period immediately before Netflix agreed to pay Comcast for interconnection, some Netflix members who were also Comcast subscribers experienced download speeds around 1.5 Mbps, regardless of how much they paid for faster broadband.³²

²⁹ Cam Burton, *T-Mobile to Throttle Customers Who Use Unlimited LTE Data for Torrents/p2p*, TmoNews, Aug. 13, 2014, available at <http://www.tmonews.com/2014/08/t-mobile-to-throttle-customers-who-use-unlimited-lte-data-for-torrentsp2p/>.

³⁰ *Tenth Broadband Progress Inquiry* ¶ 46.

³¹ Comcast, *New Customer Offers in Washington, DC 20509*, available at <http://www.comcast.com/internet-service.html> (last visited Sep. 2, 2014) (promotional text for “Blast!” 105 Mbps service offering).

³² *Petition to Deny of Netflix, Inc., Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations*, at 62 (filed Aug. 27, 2014).

An assessment of broadband availability and reasonable deployment that fails to account for congestion at the broadband Internet access provider’s interconnection points would yield an inaccurate picture of a broadband service’s ability to deliver the speeds it has sold to its subscribers. Streaming entertainment content, the largest single component of Internet traffic in North America, is particularly vulnerable to congestion at interconnection points. Although it has recognized the importance of interconnection policies and practices, the Commission still has “many more questions than answers.”³³ As the Commission continues to expand the *Measuring Broadband America* project, it should include measurements of congestion at interconnection points with residential broadband Internet access service providers’ networks and strive for an accurate, comprehensive picture of interconnection arrangements and capacity.

IV. THE COMMISSION SHOULD ACCELERATE BROADBAND DEPLOYMENT BY PROMULGATING STRONG OPEN INTERNET RULES AND REMOVING BARRIERS TO BROADBAND DEPLOYMENT

The Commission has reaffirmed its conclusion that open Internet rules are necessary to preserve the “virtuous of circle” whereby innovation at the “edge” of the Internet encourages broadband demand, deployment, and adoption. That conclusion is well-founded and the Commission should promulgate strong open Internet rules that extend beyond last-mile networks. It also should act to remove identified barriers to infrastructure investment.

A. Strong Network Neutrality Rules Will Perpetuate the Virtuous Circle and Spur Broadband Deployment and Adoption

The Commission’s *Open Internet Order* found that the Internet’s openness perpetuated 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

³³ Ruth Milkman, Chief of Staff, Federal Communications Commission, Remarks at the Progressive Policy Institute, 4 (May 27, 2014), <http://www.fcc.gov/document/ruth-milkman-chief-staff-fcc-progressive-policy-institute>.

drives network improvements, which in turn leads to further innovative network uses.”³⁴ In *Verizon v. FCC*, the D.C. Circuit held that the *Open Internet Order*’s reliance on the virtuous circle as justification for open Internet rules was “reasonable and supported by substantial evidence.”³⁵ Although the D.C. Circuit vacated those rules, the Commission recently recognized that the concerns behind them remain very much alive today:

[T]he risk of broadband provider practices that may reward them in the short term but over the long run erode Internet openness threatens to slow or even break the virtuous circle—chilling entry and innovation by edge providers, impeding competition in many sectors, dampening consumer demand, and deterring broadband deployment—in ways that may be irreversible or costly to undo.³⁶

American households’ use of broadband today vindicates the Commission’s reasoning that links an open Internet to broadband deployment. Many of the services that are most popular with broadband consumers today either did not exist or were relative newcomers when the Commission first adopted open Internet rules. Those services likely would not have been possible—and certainly would not be as ubiquitous as they are today—if broadband providers exploited their gatekeeper power to either block content and services or demand rents in exchange for prioritization. Edge providers have spurred consumer demand for broadband capable of delivering increasingly sophisticated content at faster speeds. The deployment of broadband capable of meeting consumer demand has incentivized existing edge providers to improve their offerings and new providers to enter the field. The virtuous circle works.

³⁴ Preserving the Open Internet, *Report and Order*, 25 FCC Rcd. 17905, 17910-11 ¶ 14 (2010), *aff’d in part, vacated and remanded in part sub nom. Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014)..

³⁵ *Verizon v. FCC*, 740 F.3d 623, 628 (D.C. Cir. 2014).

³⁶ Preserving the Open Internet, *Notice of Proposed Rulemaking*, 29 FCC Rcd. 5561, 5570 ¶ 26 (2014).

For it to keep working, however, the Commission must enact strong, meaningful open Internet rules. Those rules must be clear and comprehensive. Broadband providers should not be able to evade open Internet obligations by demanding payment or harming traffic at interconnection points. Consumers will be less likely to demand faster broadband connections if those connections do not allow them to receive the content that they request at speeds that allow for an acceptable user experience. To ensure that broadband consumers get what they pay for, and are therefore willing to participate in the virtuous circle, open Internet protections must extend beyond the last mile to the broadband Internet access provider's points of interconnection.

B. The Commission Should Remove Barriers to Broadband Deployment

Section 706 expressly requires the Commission, upon a finding that advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion, to “take immediate action to accelerate broadband deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.”³⁷ When the Commission encounters barriers to broadband investment or deployment, it is required to remove them promptly. For example, the City of Wilson, North Carolina, and the Electric Power Board of Chattanooga, Tennessee have asked the Commission to preempt state laws that prevent them from extending gigabit broadband networks to unserved and underserved households.³⁸ Expansion of those networks would bring a host of

³⁷ 47 U.S.C. § 1302(b).

³⁸ Petition Pursuant to Section 706 of the Telecommunications Act of 1996 for Removal of State Barriers to Broadband Investment and Competition, filed by City of Wilson, North Carolina, WC Docket No. 14-115 (filed July 24, 2014); Petition Pursuant to Section 706 of the Telecommunications Act of 1996 for Removal of State Barriers to Broadband Investment and Competition, filed by Electric Power Board, Chattanooga, Tennessee, WC Docket No. 14-116 (filed July 24, 2014).

