



In the Matter of)
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Inquiry Concerning the Deployment of) GN Docket No. 16-245
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 TechFreedom

September 6, 2016

Introduction & Summary

Gather round, one and all. It's that time of year again, when the FCC begins its annual broadband masquerade.¹ It all started long, long, ago, when Congress asked the FCC to produce annual reports on the progress of broadband deployment across the country.² This would allow the FCC to alert Congress as to whether more legislation was needed in order to promote deployment. That's why the Senate Report about the 1996 Telecom Act called Section 706 a “necessary fail-safe.”³ But that was back in the Before Time — when giant reptiles roamed the land and Congress and the President actually, occasionally, met together in woodland clearings to agree on — and actually pass — legislation.

In 2010, everything started to change. A court — this was back when courts still cared about things like whether Congress had actually asked an agency to do something — blocked the FCC from regulating “net neutrality” for lack of legal authority.⁴ The FCC Chairman at the time did try to get Congress to write a law, but that proved difficult.⁵ As Homer Simpson famously told Bart back in Season 3 (in 1992 — back when *The Simpsons* were still funny):

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, *Twelfth Broadband Progress Notice of Inquiry*, GN Docket No. 16-245 (Aug. 4, 2016) [“NOI” or “Inquiry”], available at <http://goo.gl/ggGrfw>.

² See Telecommunications Act of 1996, Pub. L. 104-104, § 706, 110 Stat. 153 (Feb. 8, 1996), as amended by Broadband Data Improvement Act, Pub. L. 110-385, 122 Stat. 4096 (Oct. 10, 2008) (codified at 47 U.S.C. § 1302).

³ S. Rep. No. 104-23, at 50–51 (Mar. 30, 1995), available at <https://goo.gl/CJt6TS>; 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, *Comments of TechFreedom*, GN Docket No. 14-126, at 4–10 (Sept. 4, 2014), available at <https://goo.gl/kbmpRL> (arguing that Section 706 is not an independent grant of regulatory authority); 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, *Reply Comments of TechFreedom and Int’l Ctr. for Law & Econ.*, GN Docket No. 14-126, at 15–21 (Apr. 6, 2015), available at <http://goo.gl/3uVhYQ>.

⁴ See *Comcast v. FCC*, 600 F.3d 642 (D.C. Cir. 2010).

⁵ See, e.g., Sam Gustin, *Four Lawmakers Oppose Google-Verizon Net Neutrality Deal*, AOL NEWS (Aug. 17, 2010), available at <http://goo.gl/bX1bLi>.

Homer: Son, come here. Of course I'm not mad. If something's hard to do, then it's not worth doing. You just stick that guitar in the garage next to your short-wave radio, your karate outfit, and your unicycle, and we'll go and watch TV.

Bart: What's on?

Homer: It doesn't matter.⁶

That's essentially what the FCC has done ever since. Getting new legislation enacted was hard, so it stopped trying — and since then, to all objections about its hyperactive agenda, the FCC has essentially said, “It doesn't matter — we can do whatever we want,” citing Section 706 as an independent basis of authority to regulate anything in any way the agency wants.

Crucial to this approach was the FCC's convenient conclusion in 2010, just before issuing its first Open Internet Order,⁷ that, for the first time since 1996, broadband was *not* being deployed in a “reasonable and timely fashion” according to Section 706(b).⁸ Since then, each year, the FCC has found new and more creative ways to contort the most recently available data and present them in whatever way will justify the agency's next regulatory push. By manufacturing a broadband crisis, the FCC could justify ever increasing broadband regulations designed to “solve” said crisis, including adopting net neutrality rules (which were mostly struck down in court)⁹ and preempting state laws regarding municipal broadband (which were also struck down in court),¹⁰ all under the guise of “accelerating” broadband deployment. Despite the clear focus in Section 706(b) on “removing barriers to infrastructure investment” and “promoting competition in the telecommunications market[,]” the FCC — in recent years — has time and

⁶ The Simpsons: The Otto Show, IMDb (1992), available at <http://goo.gl/n65HSa>.

⁷ See Preserving the Open Internet, *Report and Order*, GN Docket No. 09-191, ¶¶ 115–50 (Dec. 21, 2010), available at <https://goo.gl/Vc8ImS>.

⁸ 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, *Sixth Broadband Deployment Report*, GN Docket No. 09-137, ¶ 28 (July 16, 2010), available at <https://goo.gl/S8i0Aw> (finding, for the first time, that broadband deployment was not proceeding in a reasonable and timely manner).

⁹ See *Verizon v. FCC*, 740 F.3d 623, 659 (D.C. Cir. 2014) (striking down the rules against blocking and unreasonable discrimination, but leaving intact the rule on ISP transparency).

¹⁰ See *Tennessee v. FCC*, No. 15-3291, slip op. (6th Cir. Aug. 10, 2016), available at <https://goo.gl/GoXqCg>.

again used it as an excuse to increase regulatory oversight of broadband providers, which has had the entirely predictable effect of stultifying the broadband sector.¹¹

Like the *Simpsons*, the FCC is now simply re-hashing the same tired material. We know how this story will end. The FCC is simply using the annual 706(b) proceeding as a self-fulfilling prophecy: a way of justifying its relentless drive to increase regulation of the Internet, which in turn depresses investment, thereby justifying yet more regulation — the perfect vicious cycle. With this year’s proceeding, the outcome is a foregone conclusion. Once again, the FCC will assess the state of U.S. broadband deployment, find it lacking, and use this finding to justify yet more broadband regulations.

Only two questions remain. First, what new regulatory efforts or subsidies will the FCC use this year’s negative Section 706(b) finding to justify? Even that is little mystery: the answer is broadband taxes.¹² These taxes have been coming down the pike for well over a year now, as the Federal-State Joint Board on Universal Service has long since concluded its consideration of the issue, yet — conveniently, from the perspective of Democratic staffers at the FCC who want to maintain their position of leadership into the next Administration — they have still not reported their findings.¹³ Hillary Clinton’s grand talk of a \$25 billion national infrastructure bank to fund, among other things, broadband deployment will, in practice, probably be achieved, at least as far as broadband is concerned, through expanding the Universal Service Fund (“USF”).¹⁴

¹¹ See, e.g., 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, *2016 Broadband Progress Report*, GN Docket No. 15-191, at 80–84 (Jan. 28, 2016) [“2016 Broadband Progress Report”], available at <https://goo.gl/SOQz6T> (Pai, Commissioner, concurring) (noting the deleterious effects recent FCC actions have had on the overall state of broadband deployment).

¹² See, e.g., Harold Furchtgott-Roth, *FCC Plans Stealth Internet Tax Increase*, FORBES (Oct. 12, 2014), available at <http://goo.gl/dsYF4J>.

¹³ See, e.g., Ajit Pai, Comm’r, Fed. Commc’ns. Comm’n, *The FCC and Internet Regulation: A First-Year Report Card*, Remarks Before the Heritage Foundation, at 5 (Feb. 26, 2016), available at <https://goo.gl/3yXn7F> (noting that a recommendation from the Joint-Board was due back by April 2015, and that Title II reclassification would justify only a “short extension,” but more than a year after that deadline and almost two months after the D.C. Circuit ruled on the legal challenge to the 2015 Open Internet Order, there has still been no recommendation).

¹⁴ Press Briefing, *Hillary Clinton’s Infrastructure Plan: Building Tomorrow’s Economy Today*, at 1, 11–12 (Nov. 30, 2015), available at <https://goo.gl/ULNyrC> (describing Mrs. Clinton’s proposal

The obvious explanation for the FCC's delay in recommending USF expansion to cover broadband is that Americans will not be happy to see new taxes show up on their broadband bills every month.¹⁵ Chairman Wheeler's promise that the USF expansions will be revenue-neutral,¹⁶ by expanding the tax base without raising effective overall taxation rates, will, no doubt, be forgotten — if not by this FCC, then by the next one.

More specifically, the FCC is obviously delaying this announcement until after the election — lest “taxing the Internet” become a political weapon for Republicans. But make no mistake, these taxes are coming. And, if recent history is any guide, it seems likely that the FCC will use this year's 706(b) inquiry to once again find lacking the current state of broadband deployment — regardless of what the actual data say — and use that as an excuse to adopt broadband taxes and wide-scale reforms of its various Universal Service programs.

The second question is: On what basis will the FCC claim that broadband is not being deployed in a “reasonable and timely fashion” this time? In January 2015, the FCC justified yet another negative finding — in the face of overwhelmingly positive news — by raising the speed threshold to 25 Mbps down and 3 Mbps up.¹⁷ The FCC justified this change in its methodology by wildly exaggerating both the speeds needed to stream certain kinds of video, and by wildly overstating how common those video services are. Now, as few consumers actually *need* 25 Mbps speed yet, the FCC is trying to up the ante even further — by proposing

to create a central infrastructure bank to allocate \$25 billion to various projects, including broadband deployment).

¹⁵ See, e.g., Pai, *supra* note 13, at 5 (“As I said one year ago, read my lips: The money to fund this spending spree will come from a broadband tax. The only question is when. . . . [O]ne might reasonably suspect that this decision is conveniently being put off until after the November elections. After all, making people pay more to access the Internet isn't going to be popular.”).

¹⁶ See, e.g., Jim Puzzanghera, *FCC's Net Neutrality Rules Open Door to New Fee on Internet Access*, LOS ANGELES TIMES (Apr. 9, 2015), available at <http://goo.gl/aJID7R> (“‘I think it is incorrect . . . to say anything in what we have done will lead to an increase in [USF] fee contributions,’ Wheeler told House lawmakers at a recent hearing. ‘You would have a reduction in one area that may be accompanied by an increase in another that should end up washing out because the gross number is the same,’ he said.”) (alteration in original).

¹⁷ 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, *2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment*, GN Docket No. 14-126 (Jan. 29, 2015) [“2015 Broadband Progress Report”], available at <https://goo.gl/JAGtrL>.

to redefine “advanced telecommunications capability” once again, this time to include other measures of service quality.¹⁸

We make three recommendations:

1. Recognize that the 25 Mbps threshold is still not a useful measure of broadband deployment, both because few consumers actually need more than this and because focusing on this arbitrarily high standard skews the Commission’s analysis away from real problems of broadband access in rural America (despite significant progress in this regard).
2. Develop a robust methodology to assess the gap between urban and rural broadband deployment — one that cannot be so easily gamed for political purposes.
3. Focus on developing policies that actually promote deployment.

The FCC still has a chance to reverse its vicious cycle of broadband regulations begetting decreased investment, which in turn begets more regulations. It could cease its pernicious prestidigitation, stop moving the goalposts whenever it suits its regulatory agenda, and give an honest report on the state of broadband deployment that finally treats the broadband market in a holistic fashion and gives a fair assessment of the state of U.S. broadband deployment.

The Irony of the Commission’s Newfound Interest in Quality Metrics

Before responding to the NOI’s questions about additional metrics by which to measure the adequacy of broadband deployment (besides throughput), we must applaud the Commission for acknowledging the real challenges in using Internet Protocol to deliver some of the services most loved by consumers:

17. Are certain applications or classes of application uniquely sensitive to inconsistent network performance? The 2015 Measuring Broadband America Fixed Broadband Report found that **consistency of speed may be “more important to customers who are heavy users of applications that are both high bandwidth and sensitive to variations in actual speed,” and that “[s]ome video streaming and some cloud-based applications fit into this category.”** How does service consistency affect consumer experience with these, or other, types of applications?

¹⁸ See NOI, ¶ 4.

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29. We first seek comment on the specific ways that fixed broadband network latency impacts consumers' ability to "originate and receive high-quality voice, data, graphics, and video telecommunications," as section 706 requires. As discussed above, **we have previously found that latency plays a role in determining service quality for users of many highly-interactive applications, and we note that latency is likely to affect interactive, two-way communications platforms more significantly than one-way applications like streaming video.** We seek comment on how latency affects access to "high-quality" telecommunications services, as required by section 706. What is the best approach to differentiate "high-quality" from lesser-quality consumer experiences with telecommunications services? Which applications in particular are affected by higher latencies? Does latency impact "high-quality" access to video and data services, in addition to voice and gaming platforms? At what point does network latency become too great to support a "high-quality" experience for users of these applications?

....

31. We note that other standards developed by the ITU for "[r]eal-time, jitter sensitive, high interaction" applications suggest that an overall "mouth-to-ear" latency of 150 ms or less, rather than the 200 ms or less standard used as the baseline in the CAF Phase II Service Obligations Order, may be necessary for use of the most latency-sensitive applications. Further, as discussed above, this "mouthto-ear" figure includes latency generated by sources outside the network. To compensate for these nonnetwork sources of delay, the ITU's performance objectives indicate that highly-interactive applications may require an average network latency of 100 ms or less to function properly.⁶⁴ Additionally, for certain applications, particularly multiplayer online gaming platforms, even lower latencies may be desirable. Xbox Live, a popular online gaming platform, recommends a latency no greater than 150 ms for use of its service.

....

54. Packet loss occurs when packets of information are discarded or lost, and is typically the result of network congestion or buffer overflows on end systems. **Packet loss may directly affect the perceived quality of applications that do not request retransmission of lost packets, such as phone calls over the Internet, video chat, some online multiplayer games, and some video streaming.**¹⁹

¹⁹ NOI, ¶¶ 17, 29, 31, 54 (emphasis added).

The FCC seems completely oblivious to what anyone else would recognize as deeply ironic: all these questions, especially the last one, essentially validate what we and many others tried to tell the FCC: certain services suffer when competing with other, less-sensitive traffic on the network.²⁰ This is simply a technical reality — one that the FCC ignored in its rush to ban a market for prioritization *even when directed by users themselves*. The FCC explained its absolutist approach thusly:

Although there are arguments that some forms of paid prioritization could be beneficial, the practical difficulty is this: the threat of harm is overwhelming, case-by-case enforcement can be cumbersome for individual consumers or edge providers, and there is no practical means to measure the extent to which edge innovation and investment would be chilled. And, given the dangers, there is no room for a blanket exception for instances where consumer permission is buried in a service plan — the threats of consumer deception and confusion are simply too great.²¹

Bizarrely, the FCC cites, as evidence that the “threat of harm is overwhelming,” the neo-Marxist group Free Press²²: “In packet-switching, if there is no congestion, there is no meaning to priority.”²³ In other words, rather than actually establish consumer harm, or even the likelihood thereof, the FCC once again defaulted to “Things that are hard aren’t worth trying” — meaning, here, that the FCC simply wasn’t interested in what kind of network management could make the services consumers desired work at a given level of broadband speed. Instead, the FCC would simply decree that broadband providers must raise their speeds — so the need for prioritization would go away. Except it didn’t really, as the Inquiry’s question indicates.

And, of course, the FCC is essentially passing higher costs on to consumers: any money spent by broadband providers on upgrading their networks faster than

²⁰ See, e.g., Thomas W. Struble, *On the Relationship Between QoS & QoE: Why Differential Traffic Management on the Internet is Not a Zero-Sum Practice*, TPRC 44 (Aug. 31, 2016), available at <http://goo.gl/cI2Ldp> (arguing that the FCC’s ex ante ban on paid prioritization in the 2015 Open Internet Order was unwise, and will stultify development of new and innovative edge services that require priority treatment in order to deliver a high-quality experience for end-users).

²¹ 2015 OIO, ¶ 19.

²² Free Press Founder Robert McChesney has breezily admitted that “At the moment, the battle over network neutrality is not to completely eliminate the telephone and cable companies, but the ultimate goal is to get rid of the media capitalists in the phone and cable companies and to divest them from control.” Tanner Mirrlees, *Media Capitalism, the State and 21st Century Media Democracy Struggles: An Interview with Robert McChesney*, THE BULLET (Aug. 9, 2009), available at <http://goo.gl/T047yS>.

²³ *Id.* ¶ 19 n.21.

they otherwise would have (to overcome congestion that could have been addressed through prioritization) will ultimately be passed on to consumers. But that analysis is, again, hard — so the FCC simply didn't bother.

The Commission Should Re-Consider Its 25 Mbps Definition of Broadband

The FCC based its 2015 redefinition of broadband from 10 to 25 Mbps on essentially three claims, as summarized by Table 1 from that report:²⁴

Table 1: Simultaneous Household Uses 25 Mbps Versus 10 Mbps Download

	25 Mbps Downstream	10 Mbps Downstream
Download emails and participate in an online class	Yes	Yes
Stream 1 HD video	Yes	Yes
Participate in an online class, download files, and stream a movie	Yes	No
View 2 HD videos	Yes	No
Stream 1 4K TV service	Yes	No

All three of these claims are misleading — and none of them, either individual or taken together, would justify a 25 Mbps definition, even if it might justify a somewhat higher definition than 10 Mbps. Given the enormous weight the Commission places upon these absurd claims, we feel obliged to debunk each here.

It is true that Netflix recommends 5.0 Mbps for HD quality.²⁵ The Homer-esque FCC's "give up on things that are hard" approach must extend to basic arithmetic, too, because $5 \times 2 = 10$. That is, even if we thought that consumers "need" exactly 5 Mbps to support one HD stream, a 10 Mbps connection would necessarily allow for *two* such streams. Even if one introduced some "wobble room," to account for the possibility that *actual* speeds might fall somewhat short of *advertised* speeds — even though, on the average, just the opposite is true: ISPs *over-deliver*²⁶ — this would support a *somewhat* higher definition than 10 Mbps — not anything *near* 25 Mbps.

²⁴ 2015 Broadband Progress Report, at 27.

²⁵ Netflix, *Help Center: Internet Connection Speed Recommendations* (last visited Sept. 6, 2016), available at <https://goo.gl/ohi5oj>.

²⁶ See FCC, 2015 Measuring Broadband America Fixed Report, at 7 (Dec. 30, 2015), available at <https://goo.gl/qWtfDD> ("The ratio in September 2014 of the actual download speeds to advertised download speeds, averaged across all panelists, was 105.6%, an increase from the 101.6%

The FCC itself states that there should be wiggle room, 2.0 Mbps in fact, when it recommends 4.0 Mbps for streaming HD-quality video²⁷ (which would mean streaming two HD-quality videos would take 8.0 Mbps, squarely within the 10 Mbps range). Netflix's 5.0 Mbps number should not be used, taken at face value, by the FCC when it creates a justification for a 25 Mbps broadband definition, but analyzed and discarded when speaking to consumers. The round number that is closer to reality of streaming speeds should be used in both instances.

And the reality is that 4.0 Mbps is much closer. It turns out that HD video streaming, even on Google Fiber's gigabit network, is only 3.59 Mbps.²⁸ Verizon's FiOS network does slightly better, at 3.61 Mbps, but no ISP averages more than 3.68 Mbps.²⁹ That means consumers can run nearly *three* HD streams at 10 Mbps (and comfortably so at, say, 12 Mbps), and around *seven* at 25 Mbps. This evidence that 5.0 Mbps for HD-quality video streaming is the incorrect number to use, and, assuming knowledge of arithmetic, should show that 10 Mbps is more than enough for two concurrent HD-quality video streams.

Next stop: row three, "Participate in an online class, download files, and stream a movie." What does this even mean? How many files are we talking about? What kind? And why does it have to happen while we're busy watching both a movie *and* a university lecture?

Let's try this math thing again with the FCC's 4 Mbps figure it supplies to consumers: $4 \times 2 = 8$. That leaves 2 Mbps left over to "download files." Granted, that doesn't sound like a lot, so let's try again that "googling" thing again. How about "streaming video router?" Oooh, result #3 looks promising: "How to Set Up Your Wireless Router for HD Video Streaming" from PCMagazine in 2012:

- **Enable WMM:** Newer routers and wireless clients like the iPad support WMM (Wireless Multimedia). WMM is used to allow specific kinds of wire-

reported last year for September 2013. For uploads, the similar ratio increased to 113.2% compared to the previous year's 109.1%." (internal citation omitted); *see also* NOI, ¶ 66 n.139 ("Both the 2015 Broadband Progress Report and the 2016 Broadband Progress Report found that consumers of broadband services using cable, fiber, or satellite technologies receive services that are close to or exceed advertised speeds, while consumers receiving broadband services from certain DSL-based ISPs experience actual speeds that are on average below the advertised "up-to" speeds.") (citing 2016 Broadband Progress Report, ¶¶ 104–05 and 2015 Broadband Progress Report, ¶ 103).

²⁷ FCC, *Broadband Speed Guide*, available at <http://goo.gl/UPi7md>.

²⁸ Netflix, *ISP Leaderboard: July 2016* (last visited Sept. 6, 2016), available at <https://goo.gl/ol3Hdk>.

²⁹ *Id.*

less traffic (like video) to be set to high priority — working very much like QoS but requiring less configuration. If you continue to have problems with video, try enabling WMM settings on your router and wireless clients.³⁰

Maybe that's worth trying before assuming Americans are too helpless to figure out how stream a movie and a lecture while “downloading files?” (And if a sincere paternalist worries that setting this up is too hard for most Americans, surely the place to begin is in assessing how commonly ISPs and other sellers of routers activate by default such capacity on the routers they provide consumers — and at least encouraging those that do not yet do so to start.) There are many other things Americans could try in order to get out of this predicament as well (such as simply pausing the download), none of which necessitate arbitrarily raising the definition of broadband to 25 Mbps.

And, by the way, the FCC's own Broadband Speed Guide doesn't include “downloading files” but it *does* include email (.5 Mbps), VoIP and streaming radio (each .5 Mbps) and two kinds of web browsing: “Job searching, navigating government websites” (0.5 Mbps) and “Interactive pages and short educational videos” (1 Mbps).³¹ So... by the FCC's own numbers, Dad could watch an HD video, Mom could watch a university lecture while Sister is on a VoIP call, Brother browses the web and the Baby is entertained with streaming radio — at just 10 Mbps. Why wasn't *this* mentioned when the FCC redefined its speed threshold?

Finally, there's 4K streaming. Again, Netflix recommends 25 Mbps.³² Hmm, it's almost as if the FCC just copy-pasted from Netflix... But when asked about this at the Consumer Electronics Show 2014, Joris Evers, director of global communications for Netflix, “What sort of data rates, or bandwidth, will be required for streaming at 4K?,” he answered: “It's streaming at 15.6Mbps.”³³ So it's hardly surprising that Roku, which is perhaps more focused on informing its customers than manipulating an FCC eager to believe anything that confirms its preconcep-

³⁰ Samara Lynn, *How to Set Up Your Wireless Router for HD Video Streaming*, PC MAG (Feb. 7, 2012), available at <http://goo.gl/NjDQP>.

³¹ *Broadband Speed Guide*, *supra* note **Error! Bookmark not defined.**

³² Netflix, *supra* note 25.

³³ Mike Lowe, *Netflix UHD 4K Interview: When, Where and How to Get 4K Content*, POCKET-LINT (Jan. 14, 2014), available at <http://goo.gl/NcxREh>.

tions, recommends a mere 15 Mbps.³⁴ Other analysts agree.³⁵ It's also worth noting that Evers conceded the *real* minimum for 4K is lower still:

POCKET-LINT: What's the lowest before [4K] reverts to 1080p?

EVERS: I think it's 11.7Mbps.³⁶

So in reality, the FCC has set a broadband threshold high enough for Americans to receive not one 4K stream but two! Good job, FCC. Way to stand up for consumers. And thanks for not getting bogged down in whether anyone's actually streaming one, let alone *two* 4K streams. Way to stand up for the 1% (or less) of elite power users and early adopters!

The Commission Already Has a Forward Looking Definition

The Inquiry asks:

We also seek comment on the extent to which the availability of bandwidth intensive services, such as 4k Ultra HD TV, is relevant to our determination of whether to retain the current speed benchmark or increase it to a higher level. Is our current benchmark sufficient to support these bandwidth intensive services? Conversely, are there off-setting trends, such as advanced data compression techniques that may allow greater amounts of information to be transmitted using less bandwidth, which could suggest that our current threshold of 25 Mbps/3 Mbps will continue to remain adequate to allow consumers to access a full range of advanced services?³⁷

The Commission also asks if it should adopt "an additional, long-term speed benchmark for fixed services, in addition to our existing benchmark of 25 Mbps/3 Mbps."³⁸ In fact, the Commission's 25 Mbps benchmark *is already a long-term benchmark*, since it is justified not by what any remotely typical household does today but by what consumers *might* do in the future. For example, *The New York Times* warned its readers this January, "Despite the CES Hype, It's Better to

³⁴ Roku, *What You Need to Stream in 4K Ultra HD* (last visited Sept. 6, 2016), available at <https://goo.gl/X6qDni> ("For best results when streaming 4K Ultra HD, we recommend a minimum of 15 Mbps, especially if you use the internet for other purposes.").

³⁵ See, e.g., Akamai, Akamai's State of the Internet Q1 2014 Report (where 15 Mbps for "4K ready" definition is used), available at <http://goo.gl/L45hyi>.

³⁶ Lowe, *supra* note 33.

³⁷ NOI ¶ 17.

³⁸ *Id.* ¶ 19.

Wait on That 4K TV,”³⁹ explaining that prices are still too high, features are too limited, and content is even more so:

Right now, there isn't much to watch in 4K on cable TV. Comcast in 2014 began offering its first 4K-capable streaming app, and this year the cable provider will release a new box, the Xi6, that also supports high dynamic range. Despite these efforts, a Comcast spokesman said the total number of shows and movies produced in 4K is “still pretty small.”

A telltale sign that it's too early to buy a fancy television is you still won't be able to enjoy arguably the biggest show on television in ultra high definition: “Game of Thrones.” Jeff Cusson, a spokesman for HBO, which airs the show, said the company had “no plans at this time” to begin supporting 4K content. So fans who were hoping to gaze at the pores of characters like Daenerys Targaryen this year are out of luck. Other popular HBO shows like “Girls,” “Silicon Valley” and the “The Leftovers” will not be offered in 4K either.

Over all, sales of 4K TVs are picking up, which should encourage content providers to make more shows and movies in Ultra HD. Amazon said that in 2015, sales of 4K televisions tripled compared with the previous year, though it declined to reveal underlying sales numbers. Samsung, the No. 1 TV manufacturer, said it hoped that 60 percent of its TV sales in the United States this year would be 4K televisions, up from 30 percent last year. IHS, a research firm, predicts that 34 percent of American households will have big-screen 4K TVs by 2019, up from about 10 percent this year.⁴⁰

How much content is actually available today in 4k? Amazon's 4K Ultra HD Guide says this:

With all the buzz about 4K Ultra HD, you may have heard that even though the hardware is here, **4K Ultra HD content is still hard to come by**. There is no formalized broadcast standard yet for delivery of 4K Ultra HD to the home, and no 4K Ultra HD Blu-ray players and discs (expected to be available late 2015). However, content is available today and growing steadily. Sony released a 4K Ultra HD Media Player which comes preloaded with 4K content that can be viewed using Sony 4K TVs. Samsung also has a 4K Ultra HD Video Pack that can be viewed using Samsung 4K TVs.

³⁹ Brian X. Chen, *Despite the CES Hype, It's Better to Wait on That 4K TV*, N.Y. TIMES (Jan. 5, 2016), available at <http://goo.gl/3HWT2J>.

⁴⁰ *Id.*; see also IHS Markit, *One-Third of US Households Will Have 4K TVs in 2019, IHS Says* (Dec. 10, 2015), available at <http://goo.gl/Z31iaJ>.

4K Ultra HD content is now also available through online streaming providers such as Amazon Video, Netflix, and YouTube. Amazon Prime members can stream movies and TV series in 4K Ultra HD at no additional cost through the Amazon Video app on 4K Ultra HD compatible Smart TVs. If you're not a Prime Member, [start your free month](#) today. Additionally, other online streaming providers such as Netflix, YouTube, and M-Go also have 4K Ultra HD content. Netflix programming currently includes hit shows such as “House of Cards,” “Breaking Bad,” and “The Black List.” Netflix recommends a steady internet connection of 25Mbps or faster to stream 4K Ultra HD content. M-GO, currently limited to Samsung 4K TVs, is a streaming service starting off with a select number of titles with a plan to quickly expand. Online streaming providers aren't the only ones getting in on 4K - broadcast service providers are providing content as well. DIRECTV recently announced a 4K library of pay-per-view movies and documentaries (also currently limited to Samsung 4K TVs).⁴¹

Netflix currently makes available in 4K a mere 26 titles⁴² — compared to 4,335 movies and 1,197 shows overall,⁴³ or 0.47% of its total inventory. The recent list of 4K titles is so short, we include it here in its entirety:

⁴¹ Amazon, *4K Ultra HD Guide: What Can I Watch in 4K Ultra HD?* (last visited Sept. 6, 2016), available at <https://goo.gl/woMmAo>.

⁴² What's On Netflix, *List of 4K Titles on Netflix* (Mar. 17, 2016), available at <http://goo.gl/6UWLMn>.

⁴³ Victor Luckerson, *The Numbers of Movies on Netflix is Dropping Fast*, TIME (Mar. 25, 2016), available at <http://goo.gl/EX0K1q>.

List of 4K Titles on Netflix

Show entriesSearch:

Title Name	Title Type	Release Date
A Very Murray Christmas	Special	December 2015
Bloodline	TV Series	March 2015
Breaking Bad	TV Series	January 2008
Chef's Table	Documentary	April 2015
Chelsea Does	Documentary	January 2016
Crouching Tiger, Hidden Dragon: The Green Legend	Movie	February 2016
Daredevil	TV Series	April 2015
Flaked	TV Series	February 2016
Fuller House	TV Series	February 2016
Grace and Frankie	TV Series	May 2015
Green Eggs and Ham	TV Series	2016
House of Cards	TV Series	February 2013
Jessica Jones	TV Series	November 2015
Marco Polo	TV Series	December 2014
Moving Art: Deserts	Documentary	January 2014
Moving Art: Flowers	Documentary	January 2014
Moving Art: Forests	Documentary	January 2014
Moving Art: Oceans	Documentary	January 2014
Sense8	TV Series	June 2015
Special Correspondants	Movie	April 2016
The Blacklist	TV Series	September 2013
The Crown	TV Series	2016
The Get Down	TV Series	2016
The OA	TV Series	2016
Wet Hot American Summer: First Day of Camp	TV Series	2015
What Happened, Miss Simone?	Documentary	2015

Showing 1 to 26 of 26 entries

Previous 1 Next

We readily concede that watching *Breaking Bad* or *House of Cards* in 4K would be totally awesome. But even by the end of 2016, only 15% of American households are expected to own a 4K television.⁴⁴ And the percentage that also have a 4K plan from an online streaming service is likely even smaller. But is whether these early adopters can feel like Heisenberg's signature blue crystal meth is, "like, *right there with them in the room, dude*" really a relevant measure of broadband deployment?

Moreover, it is worth recalling that, whatever the bit rate required for *streaming* 4K video, it can always be *downloaded* with lower connection speeds for later

⁴⁴ Troy Dreier, *15% of US Homes Will Have 4K TV by End of Year, Says Sony: Video*, STREAMING MEDIA (May 31, 2016), available at <http://goo.gl/uwpyof>.

viewing — except, of course, for *live* events. And 4K streaming of live events seems still to be such an obscure niche that we could find no evidence that it is really a “thing” yet.

Sony appears to be leading the market today in offering 4K video through its PlayStation Video service — for example: “Sony blazed the trail with 4K content, and since the megacorp is able to handle the programming from acorn to oak, it offers more sheer volume than any other marquee service.”⁴⁵ But note that Sony’s service is *not* a streaming service, but rather a video downloading service.

This March, Sony launched a 4K streaming service, called Sony Ultra, allowing viewers to watch movies for the low, low price of \$30/film.⁴⁶ Let’s hear it for #TopOnePercentProblems! The pricing of this content alone speaks volumes about how nascent the technology really is.

In short, 4K devices remain rare, and there is little content to stream on them today. We do not doubt that *eventually* 4K streaming will be a “thing,” but it is hardly one yet. Measuring the availability of broadband under a standard set in January 2015 (based on data that was more than a year old by then) by the ability of consumers to do something that only a few will do even in the next year or two is gross methodological malpractice.

What Congress Actually Expected the FCC to Study

In the last inquiry, the FCC also asked about non-technical aspects of service. Adtran, a leading manufacturer of DSL and VDSL2 equipment, responded:

The Notice of Inquiry indicates that the Commission plans “to consider pricing, data allowances and adoption as additional factors relevant to our determination of whether advanced telecommunications capability is actually available to consumers under section 706.” Factors such as pricing and adoption are important issues. Indeed, Congress expressly directed the Commission to collect and publish information on pricing and adoption, *inter alia*, in Section 103 of the Broadband Data Improvement Act, codified at 47 U.S.C. 1303(c),²³ so it knows how to tell the Commission to collect this information if it thought it germane. It would have been unnecessary for Congress to have specifically called for the Commission to collect this information in the

⁴⁵ Ryan Waniata, *Got a New 4K UHD TV? Here's Where to Go to Start Watching the Best 4K Content Right Now*, DIGITAL TRENDS (Apr. 6, 2016), available at <http://goo.gl/tgieck>.

⁴⁶ Sony, Press Release, Sony Pictures Launching “Ultra” 4K Streaming Service on April 4th (Mar. 29, 2016), available at <https://goo.gl/HmabYs>.

Broadband Data Improvement Act if it were already subsumed under the question it directed the Commission to answer in Section 706 when it asked about advanced services deployment progress.⁴⁷

We concur. The text of the statute (not that such things still matter, we know) supports this view:

The term “advanced telecommunications capability” is defined, without regard to any transmission media or technology, 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.⁴⁸

The statute simply asks whether users can “originate and receive” services of a certain quality level.⁴⁹ Just how much of that service they can afford to consume is irrelevant to the inquiry contemplated by Congress. Thus, while speed and some technical aspects of service can validly be subsumed under “high-quality,” things like price, data tiers (a/k/a caps), privacy and security, *etc.* cannot.

A Sounder Methodology to Measuring Service Quality

We reiterate what we said in our 2014 comments responding to the FCC’s 706(b) inquiry:

If, instead, the Commission is to focus on speed numbers, it must take care to avoid setting arbitrary goals based on its assertions as to what Americans should be doing with broadband, and instead focus on what they are actually doing with broadband. The “all Americans” language in Section 706 could reasonably be interpreted to imply a Congressional concern for some degree of equality of opportunity across geographic and socioeconomic lines to access broadband at affordable prices — although, again, Section 706 does not actually refer to adoption, and since 2/3 of non-broadband-adopters say they will not adopt broadband at any price, it would be hugely over-simplistic to suggest that broadband simply is not being deployed at a low enough price. In fact, the FCC has already identified a host of other factors around perceived

⁴⁷ 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, *Comments of Adtran, Inc.*, GN Docket No. 15-191, at 8–9 (Sept. 15, 2015), available at <https://goo.gl/85Pca4> (internal citations omitted).

⁴⁸ 47 U.S.C. § 1302(d)(1).

⁴⁹ *Id.*

relevance and digital literacy that must be addressed. These are indeed problems, but they are not properly within the scope of Section 706's focus: broadband deployment, investment and competition. For example, instead of simply deciding that "advanced telecommunications capability" must include the ability to stream Netflix, the Commission could focus on actual broadband usage patterns among an adequately large percentage of households in areas that have already received the benefit of "reasonable and timely" broadband deployment – and then ask whether the rest of the country is catching up in a "reasonable and timely" fashion. If properly applied, this methodology would reflect the basic reality that broadband deployment will always proceed faster in some markets than in others, and that policies designed to ensure equal deployment everywhere would slow broadband deployment overall, thus harming consumers in the name of perfect equality.

What minimum speed threshold might such a methodology suggest today? As a first approximation of an answer, consider just Google Fiber subscribers. This would be far too narrow a sample for a Section 706(b) inquiry, but since Google Fiber is the fastest service on the U.S. market today, it is illustrative. What speed levels do Google Fiber subscribers actually use? Since the Commission is obsessively focused on streaming Netflix, it is worth noting that, even on Google Fiber's 1,000 gbps service, Netflix still streams, on average, at between 3.5 and 3.65 mbps — not significantly higher than some cable companies, and only 25% faster than, say, Comcast (2.82 mbps in July 2014). These are, of course, average streaming speeds and it is possible that they reflect a mix of Standard Definition (SD) and High Definition (HD) streaming. But if, even on Google Fiber, where presumably there would be no reason to stream anything other than HD, users are still streaming only 3.5- 3.65 mbps on average, should this number not give us some sense of the outer boundary of current actual bandwidth needs? ...

If the Commission persists in inventing minimum standards of use rather than distilling them from actual use patterns, this kind of problem will persist in the future, with the Commission perpetually revising its threshold according to arbitrary criteria that do not reflect actual usage. Instead, **the Commission should develop a methodology that can remain constant as the data changes, such as by sampling actual peak bandwidth usage (not purchased speeds) among all users in the top, say, 25% fastest broadband markets, and asking how speeds in the rest of the country compare with those speeds.** Measuring broadband deployment using a metric such as this, which relies more on standard deviation than upon any arbitrary minimum baseline level of throughput, would be a much more enduring way to measure whether the level and degree of broadband deployment overall, since it would be less subject to the skewing effect of outlying super-users and more representative of the average and typical broadband usage and need. Additionally, such a metric would be less manipulable by future Commissions of differing polit-

ical views, because such a metric would not need periodic adjustments to keep up with increasing bandwidth usages and needs since those would automatically be incorporated into any calculation of standard deviation, as it is based on both the mean and spread of a given data set. We strongly encourage the Commission to consider this, or another similar metric to replace the speed benchmarking it has been using in its Section 706(b) inquiries to date.⁵⁰

The same can be done for the non-speed service attributes about which the Commission inquires (assuming, for the sake of argument, that these are even within the scope of what Congress intended the 706(b) inquiry to focus on). There is no way to tell what the *right* amount of any of these metrics is in the abstract, as different services require different levels of quality in order to function, and these qualities change frequently as service providers develop more sophisticated encoding and compression techniques. But the Commission *could* draw useful comparisons along these metrics — by analyzing how the top end of the market compares with the lower end. This might well show, for example, that congestion is improving much faster at the top end of the market than at the low end. That could well indicate that there are disparities between rural and urban areas, or within urban areas — exactly the kind of problem Congress intended the Section 706(b) inquiry to identify as a “fail-safe.”

What the Data Say: Good News About Broadband Deployment

To be clear, broadband deployment is neither easy nor cheap.⁵¹ Finding ways to deploy ultra-fast broadband in a cost-effective manner is quite arguably the greatest infrastructure challenge of the 21st Century. However, for all the doom and gloom coming out of the FCC in recent years, there is actually a remarkable good news story to be told about how broadband deployment is proceeding outside the Ivory Towers of academia and the hallowed halls of the 12th Street Portals — in other words, in the real world.

⁵⁰ 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, *Comments of TechFreedom*, GN Docket No. 14-126 (Sept. 4th, 2014) at 12-13, <https://ecfsapi.fcc.gov/file/7521828237.pdf>

⁵¹ See, e.g., Joan Marsh, *Broadband Investment: Not for the Faint of Heart*, AT&T PUB. POL’Y BLOG (Aug. 30, 2016), available at <http://goo.gl/Rziejck>.

We have long countered the argument that cable ISPs have a monopoly in the market for high-speed broadband,⁵² and ongoing advances by telcos — squeezing faster and faster speeds out of legacy copper infrastructure — continue to put lie to this myth. From incremental improvements to VDSL technology,⁵³ to groundbreaking standardization work in G.fast and other next-gen broadband technologies,⁵⁴ telcos have not only been able to vastly improve their available speeds, but they have done so in a way that is much more cost-effective than other broadband solutions, such as FTTH, that are so in vogue among the digerati⁵⁵ — in no small part because of the FCC’s relentless propagandizing about the importance of Fiber to the Home and gigabit speeds, to the exclusion of other technological upgrade paths. For example, it reportedly costs CenturyLink (the third largest telco)⁵⁶ around \$500 to \$800 for each fiber connection it deploys to a home, but only around \$160 for each home connection using vectoring and copper bonding, which in many cases can provide broadband speeds in excess of 40 Mbps.⁵⁷

Even this comparison likely significantly understates the real cost advantage of the iterative approach to speed upgrades, since CenturyLink is installing Fiber to the Home in higher density urban areas and their suburbs, while relying on VDSL2 in lower density areas, and the average cost of upgrading homes in lower density areas is likely to be higher — because, for example, homes tend to be further from the fiber node, meaning there is more fiber to install in the “last mile.”

⁵² See, e.g., Applications of Comcast Corp. and Time Warner Cable, Inc. for Consent to Assign or Transfer Control of Licenses or Authorizations, *Comments of TechFreedom*, MB Docket No. 14-57, at 4–18 (Dec. 23, 2014), available at <http://goo.gl/vZ82BL> (attempting to dispel the cable-monopoly myth and relay good news about recent advancements by telcos in utilizing VDSL2 and other newer technologies to increase broadband speeds and better compete with cable ISPs).

⁵³ See, e.g., Sean Buckley, *Windstream Offers up to 100 Mbps via VDSL2 in Over 1,000 Markets*, FIERCETELECOM (July 6, 2016), available at <http://goo.gl/S2JBuH>.

⁵⁴ See, e.g., Sean Buckley, *CenturyLink Trials G.fast in Apartments, Sees Cost Savings in Vectoring, Bonding*, FIERCETELECOM (Aug. 12, 2016), available at <http://goo.gl/KWxeZb>.

⁵⁵ See, e.g., StockBot, *Is Google Fiber Succeeding?* SEEKING ALPHA (Sept. 2, 2016), available at <http://goo.gl/WmHtW0> (“Rolling out fiber connections throughout the country to provide people with internet access is no easy task and Google is learning this the hard way. Both Verizon and AT&T have in the recent past scaled back on building their fiber networks with the realization that *there are more cost effective means of connecting users.*”) (emphasis added).

⁵⁶ CenturyLink, *Company History: The 2010s* (last visited Sept. 6, 2016), available at <http://goo.gl/OIXzbV> (“On April 1, CenturyLink completed its acquisition of Qwest Communications in a tax free, stock-for-stock transaction, creating the third largest telecommunications provider — based on access lines — in the United States.”).

⁵⁷ See Sean Buckley, *CenturyLink: FTTP Deployment Costs Range from \$500–800 Per Home*, FIERCETELECOM (Aug. 17, 2016), available at <http://goo.gl/QKuyUZ>.

So the real cost-savings of *not* installing fiber to the home is likely greater than the 3.2–5x ratio represented by this comparison.

While it is true that cable providers currently hold the upper hand in the overall broadband market,⁵⁸ and continue to gain subscribers at the expense of telcos,⁵⁹ their advantage is hardly set in stone. And, if anything, recent telco subscriber losses illustrate *why* telcos have been so eager to invest in upgrading their legacy ADSL networks (<6 Mbps) to VDSL2 (25–75 Mbps).⁶⁰ This is a prime example of competition and market forces at work. Having had their early position of dominance (during the AOL days) usurped by cable ISPs, telcos are now fighting desperately to play catch-up and win back lucrative broadband subscribers, typically by mixing fiber and copper technologies to offer lesser speeds than cable ISPs are capable of offering, but at lower price points.

With a narrow lens, the FCC's annual 706(b) snapshot may view this market and see serious problems that need fixing. But the truth of the matter is that the broadband market is incredibly dynamic, and that changes in upgrade cycles or usage habits may shift the entire market landscape dramatically within the course of mere months or a year.⁶¹ The FCC is not as blind to these developments as an ostrich with its head in the sand, but it stubbornly refuses to take a holistic view of the market and appreciate the trees (yearly data-points on speeds, prices, etc.) for the forest (the overall state of the broadband market) they compose. However, this is not to say that all is well in the broadband market, and that there is no more room for improvement. In fact, there are multiple lingering challenges to broadband deployment, and the FCC can take concrete steps to address those going forward and facilitate future deployment.

⁵⁸ See, e.g., Press Release, Leichtman Research Grp., About 190,000 Added Broadband in 2Q 2016: Top Broadband Providers Had Fewer Net Adds in Q2 2016 Than in Any Quarter in Years (Aug. 16, 2016), available at <http://goo.gl/H9DfzK> (showing cable ISPs to currently have the upper hand over telco ISPs in terms of total subscribers and recent subscriber gains).

⁵⁹ See, e.g., Sean Buckley, *AT&T, CenturyLink, and Verizon Bled Broadband Subs in Q2, While Cable Took the Greater Share*, FIERCETELECOM (Aug. 17, 2016), available at <http://goo.gl/7hX3BA>.

⁶⁰ See, e.g., Buckley, *supra* note 53.

⁶¹ See, e.g., TechFreedom Comments, *supra* note 52, at 12–15 (describing the importance of upgrade cycles to the broadband market and why they make it so dynamic and hard to predict).

Lingering Challenges & Concrete Proposals to Facilitate Broadband Deployment Going Forward

ISPs continue to face many challenges in their efforts to deploy and upgrade broadband infrastructure. Moreover, unlike its effort to interpose itself between states and localities to promote government-owned municipal broadband networks,⁶² there is much the FCC can do to promote broadband deployment within its existing legal authority. We have already engaged with the FCC at multiple points during its recent efforts to transition USF programs to support broadband deployment and adoption,⁶³ and we will be happy to reengage when the FCC inevitably expands these tax-and-spend efforts in the hope of making them as effective and efficient as possible. However, aside from the four USF programs, there is much else the FCC could do to remove barriers to competition and promote broadband deployment. We have already offered these recommendations to the FCC — as of yet, to no avail. Rather than reformulate them here, we simply attach them as appendices hereto:

1. **Appendix A:** Our July 2015 written testimony, submitted to a hearing on “Promoting Broadband Infrastructure Investment” held by the Communications and Technology Subcommittee of the House Energy and Commerce Committee, itemizing a pro-deployment agenda for Federal policymakers, and a better approach for state and local policymakers. In particular, we call on Congress to request a GAO study on these issue, since the FCC seems uninterested in dirtying its hands with the hard work of analyzing how to make deployment easier – except, of course, for illegally trying to preempt state laws governing municipally owned networks.⁶⁴
2. **Appendix B:** Our April 2015 reply comments in the FCC’s last Section 706(b) inquiry, laying out a pro-deployment agenda for the FCC, including:

⁶² See *Tennessee v. FCC*, *supra* note 10.

⁶³ See, e.g., Lifeline and Link Up Reform and Modernization, *Comments of TechFreedom*, WC Docket No. 11-42 (Aug. 31, 2015), available at <http://goo.gl/nNTTMi>; Modernizing the E-rate Program for Schools and Libraries, *Reply Comments of Int’l Ctr. for Law & Econ. and TechFreedom*, WC Docket No. 13-184 (Sept. 16, 2013), available at <https://goo.gl/H7sjkI>.

⁶⁴ United States. Cong. House Energy and Commerce Committee. Hearings, July 22, 2015. 144th Cong. 1st sess. Hearing on Promoting Broadband Infrastructure Investment (statement of Berin Szóka, President, TechFreedom), available at <http://goo.gl/fRnmIZ>.

- a. **Updating the National Broadband Plan** to reflect current market realities and lessons learned, especially from massive VDSL2 upgrades and pioneering experiments in public-private partnerships like Google Fiber.
- b. **Revitalizing the FCC’s moribund Federal-State Advanced Services Joint Conference**, which could help to coordinate analysis of broadband barriers and recommendations for reforms with state PUCs. Further, converting the Conference into a Joint Board could allow a greater role for state regulators in the thorny questions raised by reclassification of broadband under Title II regarding the rates the FCC sets for pole attachments under Section 224(e).
- c. **Creating a Broadband Deployment Advisory Committee**, with a diverse array of participants to dialogue about barriers to broadband deployment and how to remove them – focusing on recommendations for best practices and policies, rather than FCC preemption.⁶⁵

Conclusion

The FCC has thoroughly embarrassed itself in the way it has conducted these inquiries since 2010 — or at least, it would have, if the agency had any shame left. We seriously doubt that. The FCC has wrapped itself in the mantle of better broadband and higher speeds — as if merely raising speed thresholds in the FCC’s definitions actually raised speeds for users. It’s “Let them eat cake!” meets broadband meets blatant statistical manipulation.

Others may hesitate to call the FCC out for its methodological shenanigans in this proceeding, its staggering creativity in finding new ways to continue making negative findings in the face of good news about broadband deployment, its relentless pursuit of a preconceived agenda, or its hypocritical talk of promoting broadband deployment while focusing on the “needs” of the most elite power

⁶⁵ 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, *Reply Comments of TechFreedom and Int’l Ctr. for Law & Econ.*, GN Docket No. 14-126 (Apr. 6th, 2015), available at <http://goo.gl/3uVhYQ>.

users, but we do not. We see the Emperor has no clothes — and are not afraid to say so.

The FCC may believe “it doesn’t matter” — but it does. The agency has degraded what ought to be its flagship analytical product — and missed countless opportunities to use this proceeding to actually identify, and help to remove real barriers to improving broadband service for all Americans. That is deeply sad.

Respectfully⁶⁶ Submitted,

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⁶⁶ We use “respectfully” as a purely *pro forma* idiom, of course. The FCC’s antics in this inquiry over the last six years have greatly eroded our respect for the agency and our estimation of its supposed expertise.