

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

In the Matter of)
)
Restoring Internet Freedom) WC Docket No. 17-108
)

REPLY COMMENTS OF COMCAST CORPORATION

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Comcast Corporation (“Comcast”) hereby replies to comments filed in response to the Notice of Proposed Rulemaking (“NPRM”) adopted on May 18, 2017 in the above-captioned proceeding.¹ The record developed in this proceeding powerfully confirms the core premise of the NPRM—that the best way to safeguard Internet openness while promoting continued broadband investment and innovation is to return to the Title I information service classification for broadband Internet access service (“BIAS”) that enjoyed bipartisan support and helped drive the Internet’s dynamism for nearly two decades. The Commission has all the legal and evidentiary support it needs to follow through on the NPRM’s proposals and eliminate the overhang caused by the common carrier treatment of BIAS under Title II, which has imposed well-documented harms on the Internet ecosystem and the economy more broadly.

INTRODUCTION AND SUMMARY

In this latest phase of the years-long wrangling over the classification of BIAS, consumers and industry stakeholders can be forgiven for feeling a bit like Bill Murray in “Groundhog Day,” with familiar characters weighing in yet again on the same legal and policy issues that the Commission has considered over and over. Fortunately, the substantial record in this proceeding demonstrates that a sensible resolution is in sight: The record strongly supports

¹ *Restoring Internet Freedom*, Notice of Proposed Rulemaking, 32 FCC Rcd. 4434 ¶ 1 (2017) (“NPRM”).

restoring the classification of BIAS as an information service and maintaining core open Internet protections through various possible options. Indeed, such a Title I framework is the only approach under current law that can provide appropriate incentives for investment and innovation while preserving open Internet protections. And, importantly, there is sufficient consensus regarding the substance of open Internet principles that bipartisan legislation can and should provide a permanent resolution to this back-and-forth and an escape from the endless Title II loop once and for all.

As a legal matter, there is no serious question as to the Commission's ability to restore an information service classification for BIAS. A wide array of commenters, including Internet service providers ("ISPs"), technologists, network specialists, and equipment providers, have made voluminous submissions detailing how the factual particulars of BIAS match the definition of "information service" in the Communications Act of 1934, as amended (the "Act").

Opponents' argument that an information service classification is impermissible runs headlong into the Supreme Court's decision in *Brand X*, which held that it is reasonable to classify BIAS as an information service, and the D.C. Circuit's decision in *USTelecom*, which specifically rejected the notion that BIAS is now locked into a telecommunications service classification. Moreover, opponents' efforts to portray BIAS as an offer of pure "transmission" rest largely on oversimplifications and mischaracterizations of the service, as various record submissions, including a recent online consumer survey, confirm.

The record also demonstrates that returning to an information service classification represents the best policy outcome. More than a dozen economists filed papers in the opening comment round detailing the various harms Title II inflicts on consumers and the marketplace; their studies, which reviewed the relevant economic literature and analyzed the available

statistical and factual evidence, leave no doubt that common carrier regulation has chilled (and will continue to chill) investment and innovation throughout the Internet economy. By contrast, opponents of the NPRM's proposal submitted only a single new quantitative economics study, yet that study is cursory and unreliable, as multiple economists explain—including Dr. Christian Dippon, whose further report is attached to this filing.

The comments filed in the opening round also confirm that the Internet will remain free and open without the continued imposition of Title II on BIAS. While some Title II proponents trot out long-discredited anecdotes that add nothing of substance to the debate, the simple truth is that ISPs have strong, market-based incentives to promote Internet openness, which is why all major ISPs and associations have broadly reaffirmed in the record their steadfast commitment to core open Internet principles. The record also reflects broad support for Congress to enact legislation that permanently codifies key open Internet protections. Until a permanent framework is in place, the Commission has multiple avenues for ensuring a durable regulatory backstop; numerous parties support the use of Section 706 to establish bright-line rules, and the alternative of relying on enforcement of ISPs' public commitments by the Federal Trade Commission ("FTC") also finds significant support, including from FTC leadership and staff. Commenters also have persuasively demonstrated what aspects of the *Title II Order* any future framework should *not* include—such as the ill-conceived general conduct standard, which has caused well-documented harms to innovation, and one-sided regulation of Internet interconnection and traffic exchange, which is entirely unnecessary given the competitive marketplace. And finally, the record underscores that the Commission can and should confirm the primacy of federal law with respect to BIAS and preempt state and local efforts to undermine the Commission's policy determinations in this proceeding.

I. THE RECORD STRONGLY SUPPORTS RESTORING AN INFORMATION SERVICE CLASSIFICATION FOR BIAS.

The opening comments filed in response to the NPRM provide strong support for reinstating an information service classification for BIAS. The record confirms that an information service classification represents the most faithful interpretation of the Communications Act and will best effectuate the Commission’s broadband policy goals.

A. The Record Confirms That BIAS Meets the Statutory Definition of an Information Service.

Numerous parties—not only ISPs,² but also technologists,³ network specialists,⁴ equipment providers,⁵ and many others—have described at length in their comments how BIAS, as a technical matter, includes each and every one of the information-processing capabilities identified in the Act’s “information service” definition.⁶ As network technology expert Peter Rysavy explains, “Subscribers of broadband [I]nternet access service make use of a variety of applications over their broadband connections, including social networking, instant messaging,

² See, e.g., Comments of AT&T Services, Inc., WC Docket No. 17-108, at 59-90 (July 17, 2017) (“AT&T Comments”); Comments of Verizon, WC Docket No. 17-108, at 35-42 (July 17, 2017) (“Verizon Comments”); Comments of CenturyLink, WC Docket No. 17-108, at 15-28 (July 17, 2017) (“CenturyLink Comments”); Comments of Charter Communications, Inc., WC Docket No. 17-108, at 13-17 (July 17, 2017) (“Charter Comments”); Comments of NCTA – The Internet & Television Ass’n, WC Docket No. 17-108, at 13-27 (July 17, 2017) (“NCTA Comments”).

³ See, e.g., Comments of Richard Bennett, WC Docket No. 17-108, at 6-26 (July 17, 2017) (“Bennett Comments”); Declaration of Peter Rysavy at 5-14, attached as Exhibit A to Comments of CTIA (“CTIA Comments”), WC Docket No. 17-108 (July 17, 2017) (“Rysavy Decl.”).

⁴ Declaration of Phillip Bronsdon, attached as Appendix 2 to CenturyLink Comments; Comments of the Information Tech. and Innovation Found., WC Docket No. 17-108, at 12-14 (July 17, 2017) (“ITIF Comments”); Comments of Sandvine, WC Docket No. 17-108, at 2-6 (July 17, 2017) (“Sandvine Comments”).

⁵ See, e.g., Comments of ADTRAN, Inc., WC Docket No. 17-108, at 3-17 (July 17, 2017); Comments of Ericsson, WC Docket No. 17-108, at 12-13 (July 17, 2017) (“Ericsson Comments”).

⁶ See 47 U.S.C. § 153(24) (defining “information service” as “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications”).

email, web browsing, and video streaming,” and “all” of these end-user activities enabled by BIAS entail “some combination of generating, acquiring, storing, transforming, processing, retrieving, utilizing, and making information available – the characteristics of an information service.”⁷ AT&T notes that all of the elements of the Act’s definition of “information service” boil down to describing a service that “offers the ‘capability’ of interacting with stored data”—which BIAS plainly does.⁸ In this respect, “[b]roadband Internet access is a classic ‘gateway’ service that qualified as an ‘enhanced service’ under the *Computer Inquiry* rules and an ‘information service’ under the antitrust consent decree that broke up the Bell system (‘the MFJ’), from which Congress pulled its statutory definition nearly verbatim.”⁹

Additionally, the record demonstrates that broadband providers make these capabilities available through a variety of functionally integrated information-processing components that are included in the offer of BIAS—such as Domain Name Service (“DNS”) functionalities; anti-spam features, Distributed Denial of Service (“DDoS”) protections, and other security functions; caching; IPv4-to-IPv6 conversion; email; storage; and various other capabilities.¹⁰ Technologist Richard Bennett identifies various additional but less visible information-processing functions inherent in the provision of BIAS—including by detailing how the complex process of routing of packets on ISPs’ networks entails all eight functionalities listed in the Act’s information service definition.¹¹ This evidence belies the notion that BIAS entails merely an offer of pure

⁷ Rysavy Decl. at 3.

⁸ AT&T Comments at 68.

⁹ *Id.* at 4.

¹⁰ *See, e.g.*, Bennett Comments at 10-22; NCTA Comments at 14-16; AT&T Comments at 73-82; Sandvine Comments at 2-6.

¹¹ *See* Bennett Comments at 18-20.

“transmission,” and strongly supports the NPRM’s proposal to restore the Title I information service classification that the Supreme Court upheld in *Brand X*.¹²

A recent consumer survey conducted by Market Strategies International (“MSI”) confirms that BIAS subscribers expect, utilize, and highly value the various information-processing capabilities inherent in the service. In particular, the MSI survey confirms that most consumers are aware of integrated service features offered by their BIAS provider—such as online storage, parental controls, and e-mail—and make use of such features, which entail various forms of information-processing.¹³ Moreover, the MSI survey demonstrates that consumers expect BIAS to offer the capabilities to “*acquire* information” from Internet websites; “*generate*,” “*make available*,” and “*store* information” on the Internet; “*retrieve* information” on the Internet; and otherwise “*process*,” “*transform*,” and “*utilize*” such information on the Internet.¹⁴ Not only do consumers expect their BIAS provider(s) to offer such capabilities over fast and reliable Internet connections, but a significant majority view the functions enabled by these capabilities—such as surfing the web, streaming media, or shopping online—as “very” important.¹⁵

Opponents of the Commission’s Title I classification proposal largely rehash the same misguided arguments as to why they believe the technical characteristics of BIAS *require* a telecommunications service classification and *preclude* the Commission from restoring an

¹² *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 986-89 (2005).

¹³ See Market Strategies International, *Broadband Internet Service Users*, at 4 (“MSI Survey Report”), submitted as Attachment A to Ex Parte Letter of USTelecom and NCTA, WC Docket No. 17-108 (Aug. 28, 2017).

¹⁴ *Id.* (emphasis added).

¹⁵ *Id.* at 5.

information service classification.¹⁶ These contentions are wrong in multiple respects. To start with, both *Brand X* and *USTelecom* foreclose the argument that the Commission is compelled to classify BIAS as a telecommunications service. The Supreme Court in *Brand X* held unequivocally that the Commission’s prior classification of BIAS as an information service “is a permissible reading of the Communications Act.”¹⁷ And the D.C. Circuit in *USTelecom* confirmed the Commission’s discretion to adopt an information service classification; as Comcast and others have noted, the court in *USTelecom* expressly rejected the argument that BIAS “is unambiguously a telecommunications service” and reiterated that *Brand X* “held that classification of broadband as an information service was permissible.”¹⁸

Moreover, the supposed “evidence” opponents cite does not come close to establishing that a telecommunications service classification is even a good fit for BIAS. For instance, opponents repeatedly assert—in a transparent attempt to avoid the holding of *Brand X*—that the offering of BIAS has changed materially over the past 15 years in a manner that undercuts an information service classification.¹⁹ But as noted above, the record evidence plainly shows that BIAS providers today still offer the DNS, caching, and other information-processing capabilities relied on by the Commission in the 2002 *Cable Modem Declaratory Ruling* and by the Supreme Court in *Brand X*. Indeed, opponents *themselves* admit elsewhere in their filings that ISPs

¹⁶ See, e.g., Comments of Free Press, WC Docket No. 17-108, at 61 (July 17, 2017) (“Free Press Comments”) (asserting that “it is clear that the product offered today by BIAS providers is and can only be considered a telecommunications service”); Comments of Public Knowledge, WC Docket No. 17-108, at 32 (July 17, 2017) (“Public Knowledge Comments”) (contending that a telecommunications service classification for BIAS reflects “the only reading that is logically consistent with the statutory text, judicial and Commission precedent, and the factual particulars of how broadband Internet service works and how it is offered”).

¹⁷ *Brand X*, 545 U.S. at 986; see also *id.* at 987-89.

¹⁸ *U.S. Telecom Ass’n v. FCC*, 825 F.3d 674, 704 (D.C. Cir. 2016).

¹⁹ See, e.g., Joint Comments of Internet Engineers *et al.*, WC Docket No. 17-108, at 12-18 (July 17, 2017) (“Joint Engineer Comments”); Free Press Comments at 29-31.

continue to offer these functionalities to consumers.²⁰ If anything, it is even *more* apparent today that BIAS is best classified as an information service, as broadband providers have *expanded* the functionally integrated, information-processing elements of BIAS beyond the capabilities discussed in the *Cable Modem Declaratory Ruling* and *Brand X*, by adding spam protection, pop-up blockers, parental controls, and the like.²¹ As noted above, the MSI survey shows that a high percentage of consumers not only are aware of these other features offered by ISPs²² (thus contradicting claims in the *Title II Order* that ISPs exclusively market, and consumers exclusively consider, speed and reliability),²³ but also *use* these ISP-provided features to a very significant degree.²⁴

Opponents also continue to press the misguided argument that the Commission should disregard these core information-processing elements because some consumers choose to rely on third parties for some of these functions.²⁵ As the Commission and the Supreme Court have explained, the availability and use of third-party alternatives is beside the point, as it ignores the

²⁰ See, e.g., Joint Engineer Comments at 23 (“[I]t is true that many broadband Internet users do still rely on DNS and email services from their ISP[.]”); *id.* at 27 (“ISPs provide caching and email services[.]”).

²¹ See Reply Comments of NCTA, GN Docket Nos. 14-28 & 10-127, at 20 (Sept. 15, 2014) (“In addition to the ‘protocol conversion, IP address number assignment, domain name resolution through a domain name system (DNS), network security, and caching’ functions identified in the *Cable Modem Order*, ISPs today have integrated new functionalities like ‘spam protection, pop-up blockers, [and] parental controls,’ along with ‘reputation systems for processing potentially harmful data’ and ‘cloud-based storage.’” (internal citations omitted)).

²² See MSI Survey Report at 6.

²³ See, e.g., *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd. 5601 ¶¶ 351-354 (2015) (“*Title II Order*”).

²⁴ See MSI Survey Report at 6.

²⁵ See, e.g., Public Knowledge Comments at 39-40; Joint Engineer Comments at 13-17.

central and dispositive question of what capabilities ISPs *offer* their customers.²⁶ As the Commission made clear in the *Wireline Broadband Order*, “[t]he information service classification applies regardless of whether subscribers use all of the functions and capabilities provided as part of the service (*e.g.*, e-mail or web-hosting),” and regardless of “whether every [ISP] offers each function and capability that could be included in that service.”²⁷ Thus, for instance, assertions that a somewhat greater number of consumers today use third-party DNS services are beside the point;²⁸ the fact remains that ISPs continue to *offer* DNS and other information-processing functions as integrated components of BIAS today. And in any event, it is indisputable—and indeed confirmed by the MSI survey results, as noted above—that the vast majority of broadband customers continue to rely on their ISPs for DNS and many other information services.²⁹

Additionally, it is incorrect to claim, as a group of “engineers” assert in a filing submitted by the Electronic Frontier Foundation, that ISPs merely offer the “capability to *connect* to a third-party service” in the same way a telephone network enables individuals to “connect” to a pizza parlor to order pizza, an airline enables passengers to view third-party content as in-flight entertainment, or the U.S. Postal Service allows individuals to receive magazines or other

²⁶ 47 U.S.C. § 153(24); *see, e.g., Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, Declaratory Ruling and Notice of Proposed Rulemaking*, 17 FCC Rcd. 4798 ¶¶ 25, 38 (2002); *Brand X*, 545 U.S. at 998-99.

²⁷ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14853 ¶ 15 (2005).

²⁸ *See* Joint Engineer Comments at 15-17.

²⁹ *See* MSI Survey Report at 6.

mailings from third parties.³⁰ Notably, many of the assertions made in that submission have already been debunked by Richard Bennett, a 30-year veteran in network engineering who has held leadership roles in key standards organizations in the industry.³¹ And their ends-oriented claims likewise ignore substantial record evidence submitted by numerous other parties.³² The claim above, however, reflects a particularly egregious mischaracterization of BIAS. As Mr. Bennett explains, “it is inaccurate to say” that an ISP does nothing more than “giv[e] an end user access to the Internet, as if the Internet were some far off and remote thing.”³³ Instead, “the ISP provisions Internet connectivity,” and “[e]very device and end user that has Internet connectivity is ‘on Net’ and is a part of the Internet.”³⁴ This connectivity, which enables a constant flow of computer-mediated communications between the end-user device and various servers and routers in order to facilitate the acquisition, retrieval, and use of online content,³⁵ is a far cry from placing a call to a pizza parlor using a basic telephone service. Indeed, the majority in *Brand X* expressly rejected a similar effort by Justice Scalia to equate BIAS with pizza delivery in his dissenting opinion—explaining that, while “[o]ne can pick up a pizza rather than having it delivered, . . . a consumer cannot purchase Internet service without also purchasing a connection to the Internet and the transmission always occurs in connection with information processing.”³⁶

³⁰ See Joint Engineer Comments at 18, 20.

³¹ See Richard Bennett, *EFF Engineers Letter Avoids Key Issues About Internet Regulation*, High Tech Forum (July 21, 2017), <http://hightechforum.org/effs-engineers-letter-avoids-key-issues-about-internet-regulation/>.

³² See, e.g., AT&T Comments at 59-90; Verizon Comments at 35-42; NCTA Comments at 13-27; Sandvine Comments at 2-6.

³³ Bennett Comments at 11 (internal quotation marks and citations omitted).

³⁴ *Id.* at 12 (internal quotation marks and citations omitted).

³⁵ See *id.* at 23-26.

³⁶ *Brand X*, 545 U.S. at 992.

And, of course, unlike the other examples cited by the group of engineers, ISPs *themselves* offer critical information-processing functions that enable end users to acquire, retrieve, and utilize third-party content,³⁷ and consumers use these functions; for example, 95 percent of Comcast’s residential broadband customers use the DNS included in Comcast’s BIAS offering.

Relatedly, the fact that ISPs and edge providers *together* enable end users to, for example, post on social media or translate text into a foreign language does not undermine the case for classifying BIAS as an information service.³⁸ Opponents’ argument on this score takes aim at a straw man, as neither the Commission nor any ISP has argued that ISPs *alone* are responsible for making Internet-related functions available to end users. In any event, opponents concede that ISPs *do* offer various information-processing capabilities that are at least *partially* responsible for these end-user functions.³⁹ That is sufficient under the statute, as the definition of “information service” nowhere requires that ISP capabilities be *solely* responsible for any end-user functionality; it requires only that ISPs “offer” an integrated “capability” beyond mere transmission,⁴⁰ which they unquestionably do.⁴¹

Nor does the NPRM’s interpretation of the term “information service”—which tracks the Supreme Court’s construction in *Brand X*—read any language out of the statutory definition, as some opponents maintain. Public Knowledge, for instance, claims that the NPRM’s reading (and

³⁷ See *supra* discussion at 4-6.

³⁸ Cf. Joint Engineer Comments at 19 (arguing that “[n]o BIAS provider offers the capabilities listed, like posting on social media, reading a newspaper’s website, storing a grocery list, translating text into a foreign language, *by itself*” (emphasis added)).

³⁹ See *supra* note 20 (quoting examples of such concessions).

⁴⁰ 47 U.S.C. § 153(24).

⁴¹ See Comments of Comcast Corp., WC Docket No. 17-108, at 15-19 (July 17, 2017) (“Comcast Comments”) (describing the information-processing functions of BIAS in the context of the statutory definition of “information service” and the dictionary meanings of key terms in that definition).

apparently the Supreme Court’s as well) “ignores the phrase ‘via telecommunications’” in the statutory definition.⁴² But the NPRM and numerous commenters supporting an information service-classification expressly *acknowledge* that BIAS providers make use of telecommunications when providing service to consumers and performing information-processing functions.⁴³ The point is that BIAS is not a standalone *offer* of pure transmission. Rather, as the Commission has ruled in the past, and as the NPRM reiterates, BIAS “inextricably combines the transmission of data with computer processing, information provision, and computer interactivity, for the purpose of enabling end users to run a variety of applications.”⁴⁴

B. The Record Also Demonstrates That Restoring the Information Service Classification Will Advance Important Policy Objectives.

The record contains numerous economic submissions that painstakingly document the various harms that the imposition of Title II on BIAS has already caused and would continue to inflict if left in place. In addition to the detailed economic studies on these issues that were submitted to the Commission in the prior proceeding (listed in Appendix B of Comcast’s comments),⁴⁵ more than a *dozen* economists filed new reports describing these harms in the opening round of this proceeding.

These new economist papers leave no doubt about the deleterious impact of Title II on broadband investment. As Comcast explained at length in its comments, the overhang of Title II

⁴² Public Knowledge Comments at 27-28.

⁴³ See NPRM ¶ 29; *see also, e.g.*, Bennett Comments at 21-22; Comments of Tech Knowledge, WC Docket No. 17-108, at 39-40 (July 17, 2017).

⁴⁴ NPRM ¶ 17 (quoting *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, 22 FCC Rcd. 5901 ¶ 26 (2007)).

⁴⁵ See Comcast Comments, App. B.

has generated tremendous regulatory uncertainty for BIAS providers,⁴⁶ and multiple economists filing in the opening round explain how such uncertainty directly undercuts incentives to innovate and invest in broadband networks, and can widen the digital divide.⁴⁷ In addition to Dr. Christian Dippon, who observes that “the choice to invest capital on the part of BIAS providers is now hostage . . . to regulatory uncertainty that flows directly from Title II reclassification,”⁴⁸ Dr. Bruce Owen concludes in his paper that “[i]t is difficult to imagine a more effective way to decrease infrastructure investment funding than the uncertain prospect of a new, undefined regulatory expropriation” under Title II.⁴⁹

The fact that greater uncertainty leads to diminished broadband investment is not controversial as an economic matter. As Drs. Andres Lerner and Janusz Ordover explain in their economic report, “investments in broadband Internet access networks, which inherently entail large initial sunk costs and long-term benefits (*i.e.*, expected revenue streams), are highly sensitive to increased risks,” and “[s]mall increases in risk can yield a significant reduction in the expected [rate of return] of a project.”⁵⁰ The application of Title II to BIAS accordingly

⁴⁶ See Comcast Comments at 9-10, 34-37, 68-73.

⁴⁷ See Comments of Technology Policy Institute at 8, WC Docket No. 17-108 (July 17, 2017) (citing Michelle Connolly, Clement Lee, and Renhao Tan, *The Digital Divide and Other Considerations for Network Neutrality*, 50 Rev. of Indus. Org. 537, 538 (Special Issue)).

⁴⁸ Christian M. Dippon, *Public Interest Repercussions in Repealing Utility-Style Title II Regulation and Reapplying Light-Touch Regulation to Internet Services*, at 21, attached as Appendix C to Comcast Comments, WC Docket No. 17-108 (July 17, 2017) (“Dippon Paper”).

⁴⁹ Bruce M. Owen, *Internet Service Providers as Common Carriers: Economic Policy Issues*, at 6-7, attached as Appendix A to NCTA Comments, WC Docket No. 17-108 (July 17, 2017) (“Owen Paper”).

⁵⁰ Andres V. Lerner & Janusz A. Ordover, *An Economic Analysis of Title II Regulation of Broadband Internet Access Providers*, at 9, attached as Exhibit A to Verizon Comments, WC Docket No. 17-108 (July 17, 2017) (“Lerner/Ordover Paper”); see also Dennis W. Carlton & Bryan Keating, *An Economic Framework for Evaluating the Effects of Regulation on Investment and Innovation in Internet-Related Services*, at 11, attached to Comments of CALinnovates, WC

“increases the return firms will require before undertaking investment,” Dr. Mark Israel points out, “due to the substantial increase in risk arising from uncertainty about the form that regulation will take going forward and the likelihood of *ex post* increase in regulation.”⁵¹

Dr. Dippon refers to this higher rate of return needed to offset increased regulatory risk and uncertainty as a “hurdle rate,” which “forms a barrier to investment” whenever “projects that would have been approved without regulatory uncertainty now may not have a high enough rate of return to meet the hurdle rate.”⁵² And basic economics teaches that where, as here, “fewer prospective investments . . . satisfy the firm’s investment criteria” (in light of these higher hurdle rates), “investment falls” overall.⁵³

The economists’ submissions also substantiate this analysis by pointing to recent studies providing persuasive empirical evidence of reduced investment following the classification of BIAS as a Title II service—much of which is recounted in Comcast’s opening comments⁵⁴ and in Dr. Dippon’s paper.⁵⁵ And several economists note that recent estimates showing forgone annual broadband investment on the order of several *billions* of dollars are commensurate with

Docket No. 17-108 (July 16, 2017) (“Carlton/Keating Paper”) (“In industries that require firms to invest continuously and adapt to ever-changing consumer demand—a description that can apply to both BIAS providers and edge providers—regulation can have detrimental effects on investment and innovation due to uncertainty regarding firms’ ability to recoup investment over the long run. Uncertainty about what business behaviors will be allowed or disallowed can have the effect of lowering the expected rate of return[.]”).

⁵¹ Declaration of Mark A. Israel *et al.*, at 53, attached to AT&T Comments, WC Docket No. 17-108 (July 17, 2017) (“Israel Paper”).

⁵² Dippon Paper at 20.

⁵³ Israel Paper at 51.

⁵⁴ *See* Comcast Comments at 29-30.

⁵⁵ *See* Dippon Paper at 32-34.

observed investment declines in analogous contexts.⁵⁶ For instance, Dr. John Mayo and more than a dozen other economists point out in a joint paper that “the application of Title II [to telephone network last mile transmission facilities from 1996 to 2005] slowed telephone company investment by roughly \$1 billion per year, a 5.5 percent decline relative to the companies’ 1996 capital expenditures.”⁵⁷ It is therefore entirely unsurprising to see the same chilling of investment playing out in the broadband context as a result of the *Title II Order*.

Additionally, various economists’ filings document the ways in which this diminished investment has led to measurable slowdowns in network improvements and expansions. Broadband speeds had been increasing at a dramatic clip over the past two decades—a period during which BIAS was classified as an information service for almost all of the relevant timeframe.⁵⁸ But there has been “a statistically significant decline in the rate of average broadband speed increases for the U.S.” since the adoption of the *Title II Order*, and one paper estimates that, “but for” the *Title II Order*, “U.S. broadband speeds would have been about 10% higher” on average.⁵⁹ Similarly, another paper shows that the imposition of Title II has all but halted the expansion of high-speed broadband networks into rural areas by small local

⁵⁶ See, e.g., John W. Mayo et al., *An Economic Perspective of Title II Regulation of the Internet*, at 8, attached to letter from Georgetown Center for Business & Public Policy, WC Docket No. 17-108 (July 17, 2017) (pointing to comparable declines in investment caused by the imposition of common-carrier regulation) (“Mayo Paper”); Robert Hahn, *How Economics Can Inform Telecommunications Policy: The FCC’s Proposed Action on Restoring Internet Freedom*, attached as Exhibit B to CTIA Comments, WC Docket No. 17-108, at 13 (July 17, 2017) (“Hahn Paper”) (noting that restrictive Title II obligations “applied to incumbent telcos” during that period “was responsible for slowing telco investment by roughly \$1 billion per year”) (internal quotation marks and citations omitted).

⁵⁷ Mayo Paper at 8.

⁵⁸ See, e.g., Israel Paper at 25 (finding that average speeds for fixed broadband services had “increased steadily, tripling between 2011 and 2014”); *id.* at 17-18 (documenting similar advances in broadband speed for mobile services).

⁵⁹ George S. Ford, *Broadband Speeds Post-Reclassification: An Empirical Approach* at 1, attached to Comments of Digital Policy Institute, WC Docket No. 17-108 (July 17, 2017).

providers—pointing to numerous public statements and filings from such providers announcing that they have “abandoned or postponed plans to expand broadband access services to underserved and/or rural areas as a result of the regulatory uncertainty generated by the Title II Order.”⁶⁰

Title II’s negative impact on innovation is equally well-documented in the record. Multiple economists observe that, “because of the significant ambiguity regarding what provider practices are permitted under Title II, such regulation is likely to inhibit innovative business models, arrangements, and services,” including those that “are likely to benefit consumers and content providers alike, and are generally output-enhancing.”⁶¹ As Drs. Dennis Carlton and Bryan Keating note in a paper submitted by CALinnovates, “The costs to society’s welfare from delayed innovation in rapidly changing industries that require on-going investment such as the Internet are likely to be especially high.”⁶² And the record is replete with examples of delayed or forgone innovations resulting from the regulatory uncertainty created by the *Title II Order*—including from ISPs both large⁶³ and small,⁶⁴ as well as from other participants in the Internet

⁶⁰ Hahn Paper at 22.

⁶¹ Lerner/Ordo Paper at 11; *see also, e.g.*, Carlton/Keating Paper at 20 (noting that “the 2015 *Order* means that BIAS providers must assess every pricing decision . . . and proposed product offerings to determine the legal risk that such decisions would be characterized as unreasonable or unjust,” and that “[s]uch a degree of regulatory oversight creates the risk that welfare-enhancing strategies could be delayed or deferred entirely due to regulatory concerns”); Declaration of Jeff Glover, CenturyLink, at 2, attached as Appendix 3 to CenturyLink Comments (noting that “150 [CenturyLink] employees in total contributed a total of approximately 2500 hours” to CenturyLink’s efforts to comply with the vague measures adopted in the *Title II Order*).

⁶² Carlton/Keating Paper at 4.

⁶³ *See, e.g.*, Charter Comments at 11 (noting that uncertainty under the *Title II Order* forced Charter, for example, to “put on hold a project to build out its out-of-home WiFi network” and to “delay and then move more slowly with plans to launch a wireless service”); Comments of Cox Communications, Inc., WC Docket No. 17-108, at 16 (July 17, 2017) (“Cox Comments”) (“The prospect of aggressive enforcement action based on poorly defined standards, as illustrated by

ecosystem.⁶⁵

By contrast, opponents' economic analysis of the relevant costs and benefits of Title II is scant, cursory, and unpersuasive. In fact, there was only *one* new paper submitted by an economist who supported Title II classification—a report by Dr. Christopher Hooton filed by the Internet Association.⁶⁶ Even that paper, by its terms, seeks to evaluate the economic effects of *open Internet regulations*—and *not* the broader regulatory overhang of Title II common carrier regulation.⁶⁷ And in all events, the paper's analysis of ISPs' network investments over the relevant time period is deeply flawed.

questionable allegations pursued by the prior Commission, also has forced Cox to approach the development and launch of new product and service features with greater caution, thereby impacting its ability to quickly meet the ongoing demands of its customers within a highly competitive marketplace.”).

⁶⁴ See, e.g., Comments of the American Cable Association, WC Docket No. 17-108, Appendices A-E (July 17, 2017) (“ACA Comments”) (attaching signed declarations from executives at several small ISPs describing decisions to delay or forgo innovative new services and features in light of the *Title II Order*, including over-the-top video offerings and traffic optimization protocols); Comments of the Wireless Internet Service Providers Ass’n, WC Docket No. 17-108, at 11-16 (July 17, 2017) (“WISPA Comments”) (detailing examples of delayed or forgone innovations from WISPs and other small ISPs).

⁶⁵ See, e.g., Ericsson Comments at 7 (noting that the uncertainty created by the *Title II Order* “puts . . . at risk” efforts to collaborate with ISPs on innovative services that depend on “network slicing” and other emerging capabilities); Comments of ACT – The App Association, WC Docket No. 17-108, at 3 (July 17, 2017) (“ACT Comments”) (explaining that the imposition of common carrier requirements through the general conduct standard “introduced significant legal uncertainties for service providers, as well as the edge providers that utilize free data plans to grow and support jobs”).

⁶⁶ See Christopher Hooton, *An Empirical Investigation of the Impacts of Net Neutrality*, attached to Comments of Internet Association (“Internet Association Comments”), WC Docket No. 17-108 (July 17, 2017) (“Hooton Paper”).

⁶⁷ See, e.g., *id.* at 3 (asserting that the goal of the paper is to evaluate whether there is “evidence of any harms as a result of *net neutrality rules*” (emphasis added)).

Indeed, Dr. Ford published two new papers after the opening comment round that detail several “fatal and sometimes shocking defects” in Dr. Hooton’s submission.⁶⁸ For one thing, “[r]ather than limit the analysis to actual investment data or use richer datasets, Dr. Hooton chooses instead to run some regressions to produce forecasts of investment for much of the treatment period”—which, as Dr. Ford explains, is tantamount to “simply ma[king] his data up.”⁶⁹ Indeed, when compared to other publicly available data regarding broadband investment, Dr. Hooton’s data appears to have been “corrupted in some way” by “carelessness” in his extrapolation techniques.⁷⁰ Dr. Hooton’s method, which even he “admits . . . is a ‘flawed approach,’” thus has “no prospect of meaningfully quantifying the investment effects” associated with Title II, “save by sheer coincidence.”⁷¹ Dr. Ford also notes that Dr. Hooton relies on “five separate data sources for his [statistical] analysis yet provides no clear description as to how the data is combined”—turning Dr. Hooton’s asserted attempt to provide an “apples-to-apples comparison” into what Dr. Ford calls “a mix of not only many fruits but some meats and cheeses too.”⁷² Additionally, Dr. Hooton’s conclusion that there has been “no measurable impact . . . on investment” is, as Dr. Ford explains, “nearly as bad as finding a negative effect.”⁷³ After all, the *Title II Order* was premised on the notion that it would lead to “‘expanded investments in

⁶⁸ See George S. Ford, *A Review of the Internet Association’s Empirical Study on Network Neutrality and Investment* at 1 (July 24, 2017), <http://www.phoenix-center.org/perspectives/Perspective17-09Final.pdf> (“Ford July 2017 Response”); George S. Ford, *A Further Review of the Internet Association’s Empirical Study of Network Neutrality and Investment*, at 1 (Aug. 14, 2017), <http://www.phoenix-center.org/perspectives/Perspective17-10Final.pdf> (“Ford Aug. 2017 Response”) (identifying additional errors that are “as severe [as], if not worse than,” those described in the Ford July 2017 Response).

⁶⁹ Ford July 2017 Response at 5-6.

⁷⁰ Ford Aug. 2017 Response at 3.

⁷¹ Ford July 2017 Response at 6 (quoting Hooton Paper at 10 n.16).

⁷² *Id.*

⁷³ *Id.* at 7.

broadband infrastructure,’ which Dr. Hooton’s analysis (among others) reveals is not the case.’⁷⁴

And in any event, Dr. Hooton’s finding of “no measurable impact” appears to be tainted by corrupted data, as noted above; according to Ford, once the necessary corrections are made, the model indicates that “investment is down 19% since [the prospect of] reclassification was first introduced in 2010[.]”⁷⁵

Dr. Dippon has likewise identified fundamental errors in Dr. Hooton’s analysis and in the informal economic discussions appearing in the comments of other Title II proponents, as set forth in his supplemental paper attached as Appendix A to these reply comments.⁷⁶

- *First*, Dr. Dippon thoroughly refutes various efforts by Dr. Hooton and other commenters to question the validity of Dr. Ford’s study. Dr. Dippon explains, among other things, that there are strong theoretical and empirical grounds for concluding that the other industries against which Dr. Ford evaluates broadband investment are appropriate comparators—and indeed are vastly superior to the comparators used by Dr. Hooton—and also that Dr. Hooton’s analysis actually *supports* rather than undermines Dr. Ford’s decision to examine the economic repercussions of Title II beginning in 2010 instead of 2015.⁷⁷
- *Second*, Dr. Dippon demonstrates that claims by Title II proponents about the growth of over-the-top (“OTT”) video services in the wake of the *Title II Order* “do[] not prove anything with respect to the investment impact of Title II on edge providers,” and that, to the contrary, “there are good theoretical reasons to suspect that at least some of these OTT investments may have been inhibited by Title II, as well.”⁷⁸
- *Third*, Dr. Dippon explains that certain existing economic studies cited by Dr. Hooton and other commenters “contribute little to the present discussion,” because they assess only “the economic repercussions of the [o]pen Internet rules” and “do not offer any insight into the repercussions of invoking Title II as a jurisdictional basis for enforcing

⁷⁴ *Id.* (quoting *Title II Order* ¶ 7) (emphasis added).

⁷⁵ Ford Aug. 2017 Response at 7.

⁷⁶ See Christian M. Dippon, *Reply Comments: Public Interest Benefits of Repealing Utility-Style Title II Regulation and Reapplying Light-Touch Regulation to Broadband Internet Services* (Aug. 30, 2017), attached hereto as Appendix A (“Dippon Reply Paper”).

⁷⁷ See *id.* at 5-17.

⁷⁸ See *id.* at 2, 17-19.

these rules.”⁷⁹

Accordingly, Dr. Dippon reiterates that, “in light of the demonstrated risk to investment and innovation caused by the extension of Title II to BIAS providers, the FCC must focus on whether a less intrusive and less harmful regulatory approach can achieve the same objectives”—and that, because “Title II regulation cannot achieve anything that a lighter-touch regime cannot also achieve,” eliminating the application of Title II to broadband is plainly “in the public interest.”⁸⁰

Finally, Title II advocates are fond of asserting that Comcast and other ISPs have not indicated to the investor community that Title II threatens investment and innovation, but these assertions are demonstrably false. In its Form 10-K filings in 2015, 2016, and 2017, Comcast specifically pointed to the Commission’s decision to classify BIAS as a Title II service as a material risk factor that could harm its business. In particular, the filings note that “the FCC reclassified broadband Internet access service as a ‘telecommunications service’ subject to . . . certain common carrier regulations under Title II of the Communications Act”; that these common carrier requirements “are subject to FCC enforcement and could give rise to third-party claims for damages or equitable relief”; that there was uncertainty as to “the manner in which the FCC [would] interpret[] and enforce[]” these requirements; and that “[t]hese requirements could adversely affect our business.”⁸¹ Comcast’s communications with investors thus have been

⁷⁹ *See id.* at 2-3, 19-21.

⁸⁰ *Id.* at 21-22; *see also* Keith N. Hylton, *Law, Social Welfare, and Net Neutrality*, 50 *Rev. of Indus. Org.* 417, 429 (Special Issue) (“For every potential social gain that might be provided by the neutrality policy, an alternative, narrower policy exists that would be at least as effective and less likely to have harmful side effects. Efficiency and equity considerations provide no support for the net neutrality norm.”); Scott Wallsten & Wallis G. Romzek, *Net Neutrality Special Issue: Law, Social Welfare, and Net Neutrality*, Technology Policy Institute Blog (June 14, 2017), <https://techpolicyinstitute.org/2017/06/14/law-social-welfare-and-net-neutrality/>.

⁸¹ *See* Comcast Corp., Annual Report (Form 10-K), at 17 (Feb. 3, 2017), <https://www.sec.gov/Archives/edgar/data/902739/000119312517030512/d290430d10k.htm>;

entirely consistent with its advocacy at the Commission on these issues—and by no means detract from the powerful policy justifications for restoring an information service classification for BIAS.

II. THE RECORD REAFFIRMS BROAD SUPPORT FOR BIPARTISAN CONGRESSIONAL LEGISLATION AND DEMONSTRATES THAT THE INTERNET WILL REMAIN OPEN IN THE MEANTIME WITHOUT TITLE II.

A. The Record Reflects Broad Support for New Legislation To Enshrine Core Open Internet Protections.

Although the Commission has ample tools at its disposal to preserve an open Internet, the record reflects broad support for Congress to enact bipartisan legislation that permanently codifies key open Internet protections. As Comcast stressed in its initial comments, putting an end to the incessant game of regulatory ping pong would be in the best interests of all stakeholders in the Internet ecosystem.⁸² Notably, a wide array of commenters on both sides of the classification question,⁸³ as well as Members of Congress on both sides of the aisle,⁸⁴ agree

Comcast Corp., Annual Report (Form 10-K), at 17 (Feb. 5, 2016), <https://www.sec.gov/Archives/edgar/data/902739/000119312516452423/d49239d10k.htm>; *see also* Comcast Corp., Annual Report (Form 10-K), at 19, 33 (Feb. 27, 2015), <https://www.sec.gov/Archives/edgar/data/902739/000119312515068526/d817352d10k.htm> (using slightly different language to express the same points).

⁸² *See* Comcast Comments at 51; *see also* David L. Cohen, *Comcast Supports Net Neutrality and Reversal of Title II Classification. Title II is Not Net Neutrality*, Comcast Voices Blog (Apr. 26, 2017), <http://corporate.comcast.com/comcast-voices/comcast-supports-net-neutrality-and-reversal-of-title-ii-classification-title-ii-is-not-net-neutrality>.

⁸³ *See, e.g.*, Internet Association Comments at 17 (expressing support for “legislative action codifying the existing net neutrality rules”); Comments of LGBT Tech. Partnership, WC Docket No. 17-108, at 2 (July 17, 2017) (“[T]he only way to ensure long-term legal consistency and prevent policy and rule changes based on which way the political pendulum is currently swinging at the FCC is for Congress to reach across the aisle and pass common sense legislation that works for today’s dynamic digital networks.”); Cox Comments at 3 (“The best way to safeguard Internet openness while promoting continued investment and innovation is for Congress to enact legislation that enshrines a narrowly tailored, light-touch regulatory framework for BIAS.”); Comments of Home Telephone Co., Inc., WC Docket No. 17-108, at 15 (July 17, 2017) (“encourag[ing] Congress to address forward-looking legislation that ensures network neutrality principles directly”); Comments of CompTIA, WC Docket No. 17-108, at 1

that new legislation is the most effective and durable way to establish enforceable open Internet requirements and eliminate regulatory uncertainty. Several of these commenters underscore the negative effects to consumers and the economy posed by the significant uncertainty over whether each shift in political control will result in a reversal of the previous Commission’s framework.⁸⁵ For example, ACT | The App Association (“ACT”) calls for congressional action because “[r]apid changes between titles create legal uncertainties that hurt investments and innovation, industry and consumers.”⁸⁶ Similarly, Ericsson observes that, “[w]ithout legislation, the current

(July 17, 2017) (“CompTIA has continued to support net neutrality legislation, even after the Commission released its 2015 Open Internet Order, to provide the necessary certainty for the industry.”); Ericsson Comments at 14 (“Ultimately, a congressional net neutrality framework may well be the surest path toward a framework that is reasonable, sustainable, and nationwide.”); Comments of National Multicultural Organizations, WC Docket No. 17-108, at 6-7 (July 17, 2017) (explaining that “a statutory solution has been supported on both sides of the political aisle”).

⁸⁴ See, e.g., *Investing in America’s Broadband Infrastructure: Exploring Ways to Reduce Barriers to Deployment*: Hearing Before the S. Comm. on Commerce, Sci., & Transp., 115th Cong. (May 3, 2017) (statement of Sen. Bill Nelson (D-FL)), https://www.commerce.senate.gov/public/index.cfm/hearings?Id=98C6FDC4-B916-41FA-A78A-80E6D513E652&Statement_id=BBA3590F-1604-4CE9-945A-F838762B2F91 (explaining that consumers “deserve certainty and finality when it comes to their essential right to a truly free and open internet protected by clear, enforceable net neutrality rules,” and that “lasting finality can only come from legislation, which is why I have been open to finding a true bipartisan solution on this issue”); Sen. John Thune (R-SD), *On This Day of Action, the Internet Needs a Law, Not a Regulation*, Recode, July 12, 2017, <https://www.recode.net/2017/7/12/15949778/net-neutrality-day-of-action-open-internet-bipartisan-law-fcc-regulation> (“What the internet needs to end regulatory uncertainty and recurring threats of litigation is an enduring, bipartisan law from Congress to protect internet freedom by codifying widely accepted net neutrality protections.”).

⁸⁵ See, e.g., Comments of Oracle Corporation, WC Docket No. 17-108, at 6 (July 17, 2017) (“To achieve a lasting solution to the issues at hand, and to prevent additional shifts in the regulatory framework that quell innovation and investment, Congress should enact legislation that establishes once and for all that broadband internet access is an integrated information service.”); Comments of Free State Foundation, WC Docket No. 17-108, at 63 (July 17, 2017) (“Free State Foundation Comments”) (“A significant degree of predictability and certainty in the legal regime are critical to promoting innovation and investment and also essential to maintaining the rule of law.”).

⁸⁶ ACT Comments at 16.

flux (or even risk of it) creates significant uncertainty about whether any regime currently in place will remain intact, and the prospect of toggling between opposing frameworks risks grinding innovation to a halt.”⁸⁷

Those who oppose calls for legislation—based on claims that the *Title II Order* is supposedly “working”⁸⁸—ignore the significant harms to consumers, ISPs, and the economy at large that the *Title II Order* has imposed, and that legislation could eliminate. They also overlook the lead role Congress should play in establishing national policy concerning potential regulation of the Internet, which is at the center of so much of our national economic activity and civic life. Arguing that Congress should defer to an administrative agency’s reliance on a common-carrier framework from 1934 is difficult to square with a forward-looking approach suitable to the 21st century, and suggests that those who wish to cling to Title II are doing so precisely for the reasons that it should be avoided, namely, the prospect of investment-killing price and conduct regulation borne solely by those who build and run BIAS networks.⁸⁹

B. Pending Congressional Action, ISPs Will Continue To Adhere to Open Internet Principles, and There Are Multiple Ways To Ensure They Do So.

For its part, Comcast will continue to support and adhere to open Internet principles regardless of the outcome of the legislative process or the approach the Commission chooses to take.⁹⁰ The record reflects that other ISPs are similarly committed to ensuring that the Internet

⁸⁷ Ericsson Comments at 14.

⁸⁸ See, e.g., Free Press Comments at 23, 89-90.

⁸⁹ See, e.g., Harold Feld, *Why We Need Title II and Strong Net Neutrality Rules; Or, Fool Me Twice, Shame On Me. Fool Me Every Time – I’m the FCC!*, Wetmachine (July 12, 2017), <http://www.wetmachine.com/tales-of-the-sausage-factory/why-we-need-title-ii-and-strong-net-neutrality-rules-or-fool-me-twice-shame-on-me-fool-me-ever-time-im-the-fcc/#more-5781> (arguing that Title II is necessary to prevent the cable industry from “cheerfully go[ing] back to doing wh[a]tever the heck they want and charging whatever the heck they want”).

⁹⁰ See Comcast Comments at 52-53.

remains free and open, allowing consumers to access and engage with the content and apps of their choosing.⁹¹

The record also demonstrates that the Commission has ample authority to maintain effective and legally defensible bright-line open Internet rules under a Title I classification. Numerous commenters—including not only ISPs, but also a variety of other stakeholders—support relying on Section 706 if the Commission decides to adopt revised rules.⁹² For example, the Wireless Internet Service Providers Association (“WISPA”) comments that “Section 706 is a better authority than Title II to underpin Commission regulation of broadband access” because “Section 706 is affirmatively intended to encourage broadband deployment,” whereas Title II regulation “has created harmful uncertainty that undermines both regulatory consistency and investor confidence, thereby impeding salutary innovation and competition.”⁹³ The Information Technology and Innovation Foundation similarly observes that “the *Verizon* decision has made clear that [S]ection 706 gives the . . . Commission . . . a defensible claim to an affirmative grant of authority to make rules more than sufficient to protect and promote the openness of the Internet.”⁹⁴ Likewise, Akamai states that “the Commission can and should use its [S]ection 706 authority to protect consumers, advance broadband, and ensure a free and open Internet.”⁹⁵

⁹¹ See ACA Comments at 67-68; AT&T Comments at 1, 101; Charter Comments at 2; Cox Comments at 1; Comments of Frontier Communications Corp., WC Docket No. 17-108, at 5-6 (July 17, 2017) (“Frontier Comments”); Comments of T-Mobile USA, Inc., WC Docket No. 17-108, at 3-4 (July 17, 2017) (“T-Mobile Comments”); Verizon Comments at 15.

⁹² See, e.g., Comments of Communications Workers of America and NAACP, WC Docket No. 17-108, at 12 (July 17, 2017); AT&T Comments at 101-06; ACA Comments at 72; Cox Comments at 4-5.

⁹³ WISPA Comments at 24.

⁹⁴ ITIF Comments at 4.

⁹⁵ Comments of Akamai, WC Docket No. 17-108, at 13 (July 17, 2017) (“Akamai Comments”).

A handful of commenters suggest that the D.C. Circuit’s holdings in *Verizon* severely curtail, if not eliminate, the Commission’s authority under Section 706 to adopt meaningful bright-line rules, but those commenters fundamentally misconstrue that decision.⁹⁶ These comments take an overly narrow view of the court’s analysis, based on the specious assumption that common-carrier regulation is necessary to achieve effective open Internet protections. The court reached no such conclusion. Even some commenters that support retaining the Title II classification of BIAS acknowledge that Section 706, as construed in *Verizon*, confers authority on the Commission to adopt open Internet rules. Public Knowledge and Common Cause recognize that the *Verizon* court “held unambiguously that Section 706 ‘furnishes the Commission with the requisite affirmative authority to adopt’ broadband regulations.”⁹⁷ As many commenters explain, although the *Verizon* court held that the Commission could not impose common carrier mandates on non-common carriage services, it clarified that the Commission may use Section 706 to adopt open Internet safeguards, and even went so far as to provide a blueprint on how such protections can readily be accomplished under a Section 706-based framework.⁹⁸ If the Commission decides to go in this direction, Section 706 represents a judicially validated path forward for establishing effective open Internet rules.

⁹⁶ See, e.g., Free Press Comments at 37-38; Comments of Electronic Frontier Foundation, WC Docket No 17-108, at 21-22 (July 17, 2017) (“EFF Comments”); Comments of Access Now, WC Docket No. 17-108, at 8 (July 17, 2017) (“Access Now Comments”).

⁹⁷ Public Knowledge Comments at 62 (citation omitted); see also Comments of Vimeo, WC Docket No. 17-108, at 32 (July 17, 2017) (“While we believe that Section 706 . . . does provide an independent source of authority for rules, that authority is necessarily constrained when BIAS is classified as an ‘information service.’”).

⁹⁸ See, e.g., Verizon Comments at 18; NCTA Comments at 7-8; Comcast Comments at 57-58.

In the alternative, an array of stakeholders confirmed that the Internet can be protected by relying on industry public commitments enforceable by the FTC.⁹⁹ Notably, the FTC’s current leadership and staff offer valuable insight as to why the FTC is well-positioned historically and legally to answer the call.¹⁰⁰ As Acting FTC Chairman Maureen Ohlhausen explains, “the limited number of non-neutral practices even before the 2015 Order suggest that ISPs are already accommodating consumer demands,” and as a result, “there may not be need for regulation.”¹⁰¹ She also suggests that the promises that many BIAS providers already have made “to adhere to net neutrality principles” are the “kinds of promises . . . enforceable by the FTC.”¹⁰² Additionally, as discussed below, claims that BIAS providers have, and will, engage in conduct that threatens the openness of the Internet absent rules or Title II protections are unfounded.¹⁰³ As the FTC Staff observes, the antitrust laws provide a proven framework for addressing various Internet business practices (including unilateral exclusionary conduct that overlaps with traditional open Internet concerns) and determining whether, on balance, they are

⁹⁹ *See, e.g.*, NCTA Comments at 54 (“One approach for ensuring the enforceability of open Internet principles is to rely on industry commitments to adhere to such principles— commitments that would then be subject to enforcement by the FTC.”); CenturyLink Comments at 34 (“[G]iven the voluntary pledges of providers to not engage in harmful blocking and the presence of antitrust constraints as an already-existing backstop against truly harmful provider behavior, there is no policy need for any of the bright line rules at this time.”); Cox Comments at 23-25; ITIF Comments at 15-16.

¹⁰⁰ *See* Comments of Acting FTC Chairman Maureen Ohlhausen, WC Docket No. 17-108, at 12-13 (July 17, 2017) (“Ohlhausen Comments”); Comments of FTC Staff, WC Docket No. 17-108, at 20-21 (July 17, 2017) (“FTC Staff Comments”) (explaining that the FTC’s “unfair and deceptive practices . . . standard has proven to be enforceable in the courts” and “has also proven adaptable to protecting consumers in a wide range of industries and situations, including online privacy and data security”).

¹⁰¹ Ohlhausen Comments at 10.

¹⁰² *Id.* at 11.

¹⁰³ *See infra* Section II.C.

anticompetitive or procompetitive.¹⁰⁴ The FTC Staff goes on to emphasize that, “[t]o grow output and foster innovation across the economy as a whole, firms must be subject to consistent antitrust enforcement—enforcement that holds firms accountable to protect consumers without placing undue restrictions on business practices that enable new technologies to flourish.”¹⁰⁵ Should the Commission choose to adopt an industry-commitment-based regime, there is thus ample record support—including from the FTC itself—for such an approach and its benefits to consumers and the Internet economy alike.¹⁰⁶

C. Claims That Title II Is Necessary To Protect an Open Internet Are Baseless.

With various pathways available to ensure strong, enforceable core open Internet protections—along with Comcast’s and other ISPs’ steadfast commitments to abide by such protections—there is no merit to the claim that Title II is necessary to guard against supposed threats to Internet openness. As an initial matter, proponents of heavy-handed regulation fail to substantiate claims that BIAS providers generally have the incentive to act contrary to principles of Internet openness, and several commenters leap to the unfounded conclusion that ISPs have a particular incentive to favor services or content with which they are affiliated.¹⁰⁷ But as Dr. Bruce Owen convincingly shows, the assumption that ISPs that are affiliated with multichannel video programming distributors or upstream content suppliers “will necessarily find it profitable

¹⁰⁴ See FTC Staff Comments at 23-29.

¹⁰⁵ *Id.* at 29.

¹⁰⁶ See, e.g., NCTA Comments at 56 (“One important advantage of an FTC-led approach is that *all* participants in the Internet ecosystem could be subject to oversight by a single agency.”); FTC Staff Comments at 21, 24 (explaining that the FTC’s approach “avoid[s] overly-prescriptive rules that may quickly become obsolete in a rapidly-changing industry” and “is able to protect consumers and the competitive process without placing undue burdens on industry”); Free State Foundation Comments at 38-45.

¹⁰⁷ See, e.g., Comments of Amazon, WC Docket No. 17-108, at 5-6 (July 17, 2017); Internet Association Comments at 19-25; Public Knowledge Comments at 105-07, 111-12.

to exclude content they do not own or control” is “dead wrong.”¹⁰⁸ Blocking or otherwise impairing the delivery of any lawful content—including unaffiliated content—would serve only to “reduce the value of [the ISP’s] service to customers” and cause customers to “switch to . . . alternative providers,” thus “reduc[ing] the ISP’s profits.”¹⁰⁹ All BIAS providers thus have strong business incentives to act in accordance with open Internet principles in order to meet their customers’ needs and expectations.¹¹⁰ The record confirms that conclusion.

For example, Verizon aptly notes that its “business depends on an open Internet.”¹¹¹ ISPs “have invested billions of dollars in businesses that rely on the open Internet, which [their] customers view as essential and which is therefore a critical ingredient to [their] success.”¹¹² As NCTA points out, “it would be irrational for ISPs to undermine the very openness that has long buoyed their businesses for some short-term gain.”¹¹³ Blocking or throttling Internet content would reduce the value of broadband service to customers and, ultimately, would not be a profitable enterprise for ISPs.¹¹⁴ As Dr. Dippon sums up: “BIAS providers have learned that providing excellent Internet access service is their comparative advantage—including ubiquitous access to third-party content and services. Further, the better they do it, the more money they

¹⁰⁸ Owen Paper at 2-3.

¹⁰⁹ *Id.* at 3.

¹¹⁰ *See id.*

¹¹¹ Verizon Comments at 5.

¹¹² *Id.* at 5-9; *see also* Frontier Comments at 6 (“Indeed the combination of competition in the broadband market and consumer expectations would significantly discipline any company that sought to micromanage a user’s content. The fundamental Internet freedoms will remain as strong as ever, whether or not they are backed by outdated Title II regulation.”); Comcast Comments at 50-51.

¹¹³ NCTA Comments at 51; *see id.* at 51-54.

¹¹⁴ *See* NCTA Comments at 51-54; Owen Paper at 3.

will make. It is for this reason that it is firmly in their interest to adhere to the Open Internet Rules[.]”¹¹⁵

Given this reality—borne out by two decades of incredible growth of edge providers and ubiquitous access to online content provided unfailingly by ISPs, and made possible through the massive network investments undertaken by ISPs over the years—it is not surprising that several familiar antagonists continue to resort to recycling a handful of discredited claims of alleged ISP misconduct, including assertions about Comcast.¹¹⁶ Their continued reliance on the same stale and long-discredited anecdotes only highlights the lack of any harm under a Title I regime (and, for that matter, under the pre-rules regime that spanned much of the Internet’s existence), when of course only a showing of substantial harm would justify maintaining heavy-handed, utility-style regulation of BIAS.¹¹⁷ The Commission should disregard these claims, which rest on blatant mischaracterizations and add nothing of substance to the debate.

For instance, Comcast did not, in fact, “block” BitTorrent in 2007, as various opponents assert.¹¹⁸ Rather, Comcast adopted network management practices to prevent bandwidth-intensive peer-to-peer (“P2P”) traffic from degrading the Internet experience of other customers. These practices were narrowly tailored, used in limited circumstances, and in no way targeted at specific types of applications (i.e., video, voice, etc.). After some groups raised concerns about the practice—some four months *prior* to the Commission’s decision—Comcast *voluntarily*

¹¹⁵ Dippon Paper at 17-18.

¹¹⁶ *See, e.g.*, Public Knowledge Comments at 111; Free Press Comments at 32-33, 37, 66-67; Internet Association Comments at 24; Comments of Writers Guild of America West, WC Docket No. 17-108, at 2-3, 8-12, 24 (July 17, 2017) (“WGAW Comments”).

¹¹⁷ *See, e.g.*, Internet Association Comments at 24; Comments of INCOMPAS, WC Docket No. 17-108, at 31-32, 70-71 (July 17, 2017) (“INCOMPAS Comments”); Public Knowledge Comments at 111.

¹¹⁸ *See, e.g.*, Public Knowledge Comments at 111; Free Press Comments at 32, 37, 67; Internet Association Comments at 24; INCOMPAS Comments at 70-71.

announced that it would change its approach and adopt a protocol-agnostic network management practice.¹¹⁹ Even one of Comcast’s perennial critics, and a supporter of Title II, acknowledged at the time that Comcast did not implement this traffic management for anticompetitive reasons.¹²⁰ Moreover, as AT&T observes, the fact that Comcast-BitTorrent and the other most-cited example, Madison River, involved alleged blocking and throttling only confirms that the core bright-line rules are sufficient to address potential net neutrality concerns, and “cannot support the adoption for any of the extra regulatory measures . . . that supposedly necessitate Title II classification.”¹²¹

Moreover, contrary to the ill-informed assertions of certain commenters, the circumstances surrounding Comcast’s direct interconnection arrangement with Netflix do not implicate core open Internet principles, much less justify the continuance of a Title II regime.¹²² As discussed further below, there is no legal or policy basis to perpetuate the *Title II Order*’s ill-advised approach to interconnection—a marketplace that has thrived in the absence of

¹¹⁹ Press Release, Comcast Corp., Comcast and BitTorrent Form Collaboration to Address Network Management, Network Architecture and Content Distribution (Mar. 27, 2008), <http://corporate.comcast.com/news-information/news-feed/comcast-and-bittorrent-form-collaboration-to-address-network-management-network-architecture-and-content-distribution>. As Richard Bennett of High Tech Forum explains, it later came to light that the effect of P2P on other applications was actually due to a router design issue known as “buffer bloat.” Bennett Comments at 7. Notably, BitTorrent subsequently modified its code to reduce its impact on other applications. *Id.*

¹²⁰ Harold Feld, *Evaluation of the Comcast/BitTorrent Filing — Really Excellent, Except For The Gapping Hole Around the Capacity Cap.*, Wetmachine (Sept. 22, 2008), <http://www.wetmachine.com/tales-of-the-sausage-factory/evaluation-of-the-comcastbittorrent-filing-really-excellent-except-for-the-gapping-hole-around-the-capacity-cap/> (“[I]t appears to me that Comcast did not block P2P for anticompetitive reasons.”).

¹²¹ AT&T Comments at 19-20.

¹²² Comments of AARP, WC Docket No. 17-108, at 17-18 (July 17, 2017); Access Now Comments at 16; Comments of New America’s Open Technology Institute, WC Docket No. 17-108, at 13, 48-49 (July 17, 2017) (“OTI Comments”); Comments of Engine, WC Docket No. 17-108, at 20 (July 17, 2017); WGAW Comments at 24.

government intervention. As for the open Internet rules themselves, it apparently bears repeating, given the multiple mischaracterizations in the record,¹²³ that Comcast never “throttled” the delivery of Netflix content over its network, and its interconnection agreement with Netflix and further business arrangements are not a form of “paid prioritization” over the last mile—Comcast does not prioritize any Internet traffic on its network. If anything, the process of sorting out the companies’ differences has resulted in a fruitful and deepened relationship, to the benefit of consumers. Indeed, Comcast has since *enhanced* customer access to Netflix by making it available on Comcast’s award-winning X1 platform,¹²⁴ and has announced plans to integrate other online video distributors (“OVDs”) like YouTube and Sling TV later this year as well.¹²⁵ This is hardly evidence of ISPs’ incentives to impair access to edge providers, but in fact demonstrates quite the opposite—ISPs like Comcast benefit from consumers enjoying all the content they want over the Internet.

For this reason, the fact that it sometimes can take time for large companies to resolve business matters is hardly representative of a widespread “problem” with the Internet economy, much less one that needs solving through Title II regulation. For example, Amazon and Apple reportedly have not seen eye-to-eye on various business issues, but no one is credibly calling for utility-style regulation of the Internet economy simply because Apple products were not

¹²³ See, e.g., Internet Association Comments at 24; Comments of American Civil Liberties Union, at 16 (July 14, 2017); Comments of Independent Film & Television Alliance, WC Docket No. 17-108, at 5-6 (July 17, 2017) (“IFTA Comments”).

¹²⁴ Press Release, Comcast Corp., Comcast to Launch Netflix on X1 to Customers Nationwide (Nov. 4, 2016), <http://corporate.comcast.com/news-information/news-feed/comcast-to-launch-netflix-on-x1-to-millions-of-customers-nationwide>.

¹²⁵ Press Release, Comcast Corp., Comcast To Launch YouTube on Xfinity X1 (Feb. 27, 2017), <http://corporate.comcast.com/news-information/news-feed/comcast-to-launch-youtube-on-xfinity-x1>; Press Release, Comcast Corp., Comcast Boosts Multicultural Programming with the Launch of Sling TV on X1 (Nov. 22, 2016), <http://corporate.comcast.com/news-information/news-feed/sling-tv-to-launch-on-comcast-x1-platform>.

available on Amazon for a time, or because Apple and Amazon only very recently reached an agreement to make the Amazon Prime Video app available on the Apple TV platform after years of holdout.¹²⁶ Arguments seeking to justify the continued imposition of Title II based on certain BIAS providers' and edge providers' occasional and (by contrast) relatively fleeting business issues are built on similarly flimsy "examples" and do not withstand scrutiny.¹²⁷

D. The Record Reflects Broad Support for Proposals To Ensure a Light-Touch Regulatory Framework.

1. *The General Conduct Standard Should Be Eliminated.*

There is widespread agreement in the record that the Commission, as it restores a truly light-touch regulatory framework for BIAS, should eliminate the ill-advised general conduct standard. ISPs of all sizes, along with various edge providers, economists, and others, confirm the chilling effect this vague standard has had on innovation, to the detriment of consumers.¹²⁸

Notably, ACA emphasizes the harms of the general conduct standard, especially for small ISPs:

[The *Title II Order*] establishes a standard that is "unknown and unknowable," [and] that is particularly burdensome for smaller ISPs. . . . The addition of retrospective and prospective regulatory compliance reviews under the Internet General Conduct standard increased ACA members' legal and consulting costs, diverting scarce resources from service and network improvements. In addition to the direct regulatory compliance costs, the rule imposed indirect costs, by causing smaller ISPs to forgo rolling out innovative new service features or pricing plans that would have benefited the ISPs and their customers alike.¹²⁹

¹²⁶ See Jason Del Rey, *It's Official: Amazon Prime Video Is Coming to Apple TV*, Recode (June 5, 2017), <https://www.recode.net/2017/6/5/15741048/amazon-prime-video-streaming-apple-tv-wwdc-2017>.

¹²⁷ See Richard Bennett, *Fact-Checking Free Press Net Neutrality Violations*, High Tech Forum (June 27, 2017), <http://hightechforum.org/fact-checking-net-neutrality-violations/>.

¹²⁸ See, e.g., AT&T Comments at 51-52; Israel Paper at 44-49; CenturyLink Comments at 32; Sprint Comments at 5-7, CTIA Comments at 9-12; ACT Comments at 3; Bennett Comments at 3; Carlton/Keating Paper at 20.

¹²⁹ ACA Comments at 60, 64.

ACT, which represents thousands of small and medium-sized app development companies, similarly notes that the Commission’s investigations into certain providers’ sponsored data offerings introduced significant legal uncertainty not only for ISPs, but for edge providers as well.¹³⁰ As Drs. Dennis Carlton and Bryan Keating conclude, consistent with the economic literature, such a degree of uncertainty under the general conduct standard “creates the risk that welfare-enhancing strategies could be delayed or deferred entirely due to regulatory concerns.”¹³¹ Even proponents of Title II acknowledge the public interest harms of this sweeping and amorphous prohibition.¹³² And numerous commenters also explain that the advisory opinion process established in the *Title II Order* is entirely unworkable and does nothing to eliminate this uncertainty.¹³³

Those who urge the Commission to retain the standard, even with some modifications, understate or willfully overlook these harms. Some freely admit that the rule is intended to be a flexible, and inherently uncertain, catch-all provision, yet they fail to recognize the economic

¹³⁰ ACT Comments at 3.

¹³¹ Carlton/Keating Paper at 20.

¹³² See, e.g., John Peha, *Light-Touch Regulation by Banning Unreasonable Discrimination* § 2.1, WC Docket No. 17-108, (July 17, 2017) (“In the absence of guidance [on what the general conduct standard is designed to prohibit], BIAS providers may be deterred from offering services that would not violate regulations and would benefit consumers, or they may not be deterred from offering services that are harmful to consumers. . . [I]t is clear that leaving the ‘Internet conduct standard’ in its current form is not the best option.”); EFF Comments at 28-29 (“[T]he Commission nevertheless has significant discretion to weigh these factors in every case. Accordingly, the burden on regulated providers in litigating such cases *ad hoc* could discourage innovation and impede the Internet’s continued growth as a platform for speech, commerce, and social activity.”).

¹³³ See, e.g., AT&T Comments at 51-52; CenturyLink Comments at 32-33; Comments of Sprint Corporation, WC Docket No. 17-108, at 6-7 (July 17, 2017).

damage inflicted by such a boundless regulatory mechanism.¹³⁴ Others contend that the general conduct standard and amorphous, non-exclusive factors somehow provide clear guidance for ISPs.¹³⁵ But as Comcast and several commenters note, the Commission’s months-long inquiry into nascent and pro-consumer streaming services like T-Mobile’s BingeOn, Verizon’s FreeBee, and AT&T’s Sponsored Data, as well as IP cable services such as Comcast’s Stream TV, undercut such assertions and provide clear evidence of the general conduct standard’s innovation-chilling effects.¹³⁶ To ignore these harms and retain this standard, particularly when there is no evidence that such a rule is remotely necessary, would be contrary to the public interest.

2. *The Commission Should Eschew Calls To Regulate Internet Interconnection.*

The record reaffirms that the Internet interconnection and traffic-exchange marketplace does not warrant intrusive regulatory oversight. As a preliminary matter, commenters note that “[c]lassification of [BIAS] as a ‘telecommunications service’ was the explicit and only legal basis for the *Title II Order*’s assertion of regulatory authority over the terms of interconnection agreements between IP networks.”¹³⁷ “[I]f the Title II classification of BIAS falls away,” as the NPRM proposes, “so too will the *Title II Order*’s asserted legal basis for overseeing Internet interconnection and traffic-exchange.”¹³⁸

¹³⁴ See, e.g., Free Press Comments at 65-66; Comments of Center for Democracy & Technology, WC Docket No. 17-108, at 18 (July 19, 2017); OTI Comments at 56-60.

¹³⁵ See, e.g., Access Now Comments at 12-13; Internet Association Comments at 29-30.

¹³⁶ See Dippon Paper at 23-26.

¹³⁷ AT&T Comments at 46; Comcast Comments at 73; NCTA Comments at 45-46.

¹³⁸ NCTA Comments at 45; see also Comcast Comments at 74; NPRM ¶ 42; cf. Free State Foundation Comments at 60 (“The *Title II Order*’s assertion of regulatory authority over network interconnection exceeded the Commission’s jurisdictional authority.”).

Beyond establishing that the Commission will lack a legal basis to regulate interconnection, the record highlights the competitive nature of the traffic-exchange marketplace—one that flourished strictly through private negotiations prior to the *Title II Order*—and demonstrates that such rules are entirely unnecessary.¹³⁹ Edge providers have a multitude of ways to route their traffic to last-mile networks—including settlement-free routes, CDNs, and transit arrangements—without the need to deal with ISPs directly.¹⁴⁰ With various ways to reach end users, these sophisticated market participants (and their agents) are fully capable of ensuring that their needs are met and negotiating favorable terms and conditions, as they have done for decades without regulatory intervention, and there is no reason to believe they are at a bargaining disadvantage.¹⁴¹ This is true not just for large edge providers like Netflix and other OVDs, but also for CDNs and transit providers, which pool large amounts of edge provider traffic and have significant negotiating leverage as a result.

In light of this reality, as AT&T and Dr. Mark Israel explain, the “gatekeeper” (or terminating access monopoly) rhetoric employed by proponents of Title II, and in particular the regulation of interconnection, is “incoherent in this context.”¹⁴² “No broadband ISP can ‘tariff’ the ‘service’ of providing access to its end users, and no backbone or other third-party network has any regulatory obligation to interconnect with any ISP, let alone pay whatever rates the ISP

¹³⁹ See NCTA Comments at 45-46; Comcast Comments at 74-76; AT&T Comments at 46-49.

¹⁴⁰ See AT&T Comments at 46-49; NCTA Comments at 46-47; Comcast Comments at 75-76.

¹⁴¹ See NCTA Comments at 48-49; Comcast Comments at 75-76.

¹⁴² AT&T Comments at 31-35; Israel Paper at 35-36; see also Jonathan E. Nuechterlein & Christopher S. Yoo, *A Market-Oriented Analysis of the “Terminating Access Monopoly” Concept*, 14 Colo. Tech. L.J. 21 (2015), http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=2613&context=faculty_scholarship (rebutting the notion that ISPs have a “terminating access monopoly” that they can leverage to extract inefficiently high rates from interconnection partners).

might wish to charge for access to its users.”¹⁴³ Dr. Owen reaches the same conclusion in his paper—rebutting the *Title II Order*’s “unsupported conclusion that ISPs are ‘gatekeepers’ or ‘terminating access monopolies’ warranting particularly invasive regulation.”¹⁴⁴

While some proponents of the *Title II Order* point to the purported congestion of Netflix traffic at points of interconnection with Comcast’s and other ISPs’ networks in late 2013/early 2014 as evidence of this “gatekeeper” power and need for Commission oversight,¹⁴⁵ these parties mischaracterize these events and misapprehend the nature of Internet traffic exchange.

Critically, it is edge providers like Netflix (or their agents) that decide how to route their traffic, and when congestion occurs, it is often attributable to those routing choices rather than to any ISP actions. In the case of Netflix, the Commission has received voluminous submissions showing that the congestion issues experienced by Comcast customers arose because of *Netflix*’s unilateral routing decisions, not because of actions taken by Comcast.¹⁴⁶

¹⁴³ AT&T Comments at 33. Comcast agrees with AT&T that the Commission should explicitly disavow any reliance on “gatekeeper” or “terminating access monopoly” power in the broadband context. *See id.* at 34.

¹⁴⁴ Owen Paper at 7; *see also* Lerner/Ordo Paper at 33-37 (“[T]he fundamental assumptions of the ‘gatekeeper’ or ‘terminating access monopoly’ theory do not apply to many broadband Internet access networks, in which subscribers can (and do) switch, online content and service providers ‘interact’ through the network directly with subscribers, and the value of the broadband network itself to subscribers is largely dependent on the availability of the content that can be accessed.”).

¹⁴⁵ *See, e.g.*, Internet Association Comments at 24, 28; Public Knowledge at 73-77, 82-84; Comments of Level 3 Communications, LLC, WC Docket No. 17-108, at 11-12 (July 17, 2017) (“Level 3 Comments”); INCOMPAS Comments at 28-32.

¹⁴⁶ *See, e.g.*, Comcast and Time Warner Cable Inc., Opposition to Petitions to Deny and Response to Comments, MB Docket No. 14-57, at 148-49, 209-11, Declaration of Kevin McElearney (Sept. 23, 2014). *See* Dan Rayburn, *Cogent Now Admits They Slowed Down Netflix’s Traffic, Creating a Fast Lane & Slow Lane*, StreamingMediaBlog.com (Nov. 5, 2014), <http://blog.streamingmedia.com/2014/11/cogent-now-admits-slowed-netflixs-traffic-creating-fast-lane-slow-lane.html>.

For similar reasons, the interconnection performance data and congestion episodes measured by M-Lab are not indicative of ISP misconduct, but may actually detect when a party is not purchasing sufficient capacity to carry all of its traffic.¹⁴⁷ Given that interconnection arrangements are bilateral in nature, it is inappropriate for M-Lab to suggest that the decline in congestion episodes since 2015 may be properly attributed to the *Title II Order* and the Commission’s newfound oversight over *ISPs’* interconnection practices.¹⁴⁸ In the case of Netflix, the congestion issues were remedied because Netflix ultimately concluded that reaching a direct interconnection agreement with Comcast would better meet its needs. This agreement was plainly reasonable and mutually beneficial.¹⁴⁹

A few parties nevertheless continue to urge the Commission to maintain the *Title II Order’s* intrusive and one-sided approach, allowing complaints challenging the “reasonableness” of only *ISPs’* interconnection practices.¹⁵⁰ But this request cannot be squared with the record evidence, which underscores that such an approach not only is unjustified, but also would be profoundly disruptive to this well-functioning marketplace if left in place. Regulatory oversight and interference in the interconnection marketplace puts a thumb on the scale in commercial negotiations between interconnecting parties, skews bargaining, and distorts economic

¹⁴⁷ See Comments of Measurement Lab, WC Docket No. 17-108, at 1-3 (July 12, 2017).

¹⁴⁸ See *id.* at 3-4. Notably, M-Lab omits in its comments that, just days after publishing its 2014 Interconnection Study, M-Lab published a research update linking the sharp congestion remediation to a change in *Cogent’s* traffic prioritization practices on *its* network. See Collin Anderson, *Research Updates: Beginning to Observe Network Management Practices as a Third Party*, M-Lab Blog (Oct. 31, 2014), https://www.measurementlab.net/blog/research_update1/.

¹⁴⁹ See *e.g.*, IFTA Comments at 6.

¹⁵⁰ See Comments of Cogent Communications Inc., WC Docket No. 17-108, at 25-26 (July 17, 2017); Level 3 Comments at 8-12; see also Akamai Comments at 6-10.

incentives, potentially shifting the costs to accommodate an ever-increasing amount of Internet traffic to ISPs and, ultimately, to their customers.¹⁵¹

3. *The Commission Should Preempt State and Local Actions That Countermand the Commission's Return to a Light-Touch BIAS Framework.*

Various commenters underscore the need for the Commission to state unequivocally that BIAS is an inherently interstate service, and that, as a result, states and localities have no jurisdiction or authority to impose conduct standards, public-utility regulation, or other economic regulation on BIAS providers.¹⁵² Such pronouncements are especially important insofar as certain parties, in their comments, signal the belief that state and local governments have authority over broadband facilities that is at least equal to, and may supersede, that of the Commission for certain purposes and suggest that the Commission would lack authority to

¹⁵¹ See AT&T Comments at 48-49 (“Because the *Title II Order* predicated its interconnection authority on Title II classification of *retail* broadband services, . . . it imposed radically asymmetrical regulatory obligations on only one party in most interconnection negotiations: the ISP, and never the network serving the edge provider. That asymmetry warps the negotiating process and has created an unreasonable double standard.”); NCTA Comments at 47 (“Regulation of such relationships is immensely costly and complex. And without perfect knowledge, continued regulation would only create opportunities for more gamesmanship, diminish incentives to efficiently share and minimize costs, and (consequently) increase the price of Internet access to end users, rather than improving on the arrangements a free market produces.”); see also Michael L. Katz, *Whither U.S. Net Neutrality Regulation?*, 50 *Rev. of Indus. Org.* 443, 448-49 (Special Issue) (discussing inefficiencies and increased costs to consumers of this approach); Scott Wallsten & Wallis G. Romzek, *Whither Net Neutrality Regulation? Net Neutrality Special Issue Blog #3*, Technology Policy Institute Blog (June 26, 2017), <https://techpolicyinstitute.org/2017/06/26/wither-net-neutrality-regulation-net-neutrality-special-issue-blog-3/>.

¹⁵² See, e.g., Cox Comments at 35-37; Verizon Comments at 21-22; NCTA Comments at 63-68. As Comcast notes in its comments, “certain generally applicable consumer protection authority [would] remain[] unaffected (e.g., state laws preventing fraudulent behavior)” under this approach. Comcast Comments at 79-80.

preempt state or local broadband regulation post-reclassification.¹⁵³ As T-Mobile rightly cautions, states have already “shown their propensity to regulate broadband, [and] it is virtually certain that they will try to do so again absent a definitive bar.”¹⁵⁴

As the record in this proceeding makes clear, the Commission can and should ensure that state and local regulations do not frustrate or undercut the Commission’s return to its prior light-touch regulatory approach.¹⁵⁵ Consistent with well-established judicial precedent, the Commission has exclusive jurisdiction over interstate information services and may preempt state and local regulation where it conflicts with or frustrates the purposes of affirmative or deregulatory federal policy or impedes the objectives of Congress.¹⁵⁶

CONCLUSION

The evidence in the record strongly supports the Commission’s proposal to eliminate the investment-stifling and innovation-chilling overhang of Title II, and offers important guidance to the Commission’s effort to take a fresh look at how best to maintain sensible open Internet protections going forward, even as Congress rightly pursues bipartisan legislation to codify these protections on a permanent basis going forward. The record also underscores the importance of ensuring that this light-touch approach is not undermined by state or local efforts to regulate BIAS in a manner than conflicts with or frustrates this uniform federal policy. Comcast stands ready to work with policymakers, legislators, and stakeholders to craft a durable and effective solution in this arena.

¹⁵³ *See, e.g.*, Comments of California Public Utilities Commission, WC Docket No. 17-108, at 5 (July 17, 2017); Comments of the City and County of San Francisco, WC Docket No. 17-108, at 9-10 (July 17, 2017).

¹⁵⁴ T-Mobile Comments at 27.

¹⁵⁵ *See* NCTA Comments at 63; CTIA Comments at 54-58; Verizon Comments at 21-22; Cox Comments at 35; Charter Comments at 11-12.

¹⁵⁶ *See* Comcast Comments at 80-81; CTIA Comments at 55-57.

Respectfully submitted,

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APPENDIX A

PUBLIC INTEREST BENEFITS OF REPEALING UTILITY-STYLE TITLE II REGULATION AND REAPPLYING LIGHT- TOUCH REGULATION TO BROADBAND INTERNET SERVICES



NERA
ECONOMIC CONSULTING

Reply Comments

by

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Prepared on Behalf of Comcast Corporation

August 30, 2017

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I. Introduction and Summary of Conclusions

Comcast asked me to supplement my White Paper previously filed in this proceeding in order to take into consideration other submitted comments that focus on economic issues.¹ I limit these reply comments to three principal areas: the investment gap by BIAS providers, the growth in Over-the-Top (OTT) video services, and other economists' comments.

First, in my review of the existing literature on the impact of Title II on telecommunications investment, I concluded that the study performed by George Ford is the most robust analysis of that topic and his estimate of an annual investment gap of \$30–\$40 billion is reasonable. The Ford study drew criticism, particularly in comments filed by Christopher Hooton on behalf of the Internet Association.² Hooton also submitted his own study that, although similar in approach, produced results that contradict the results of the Ford study. I have reviewed the Hooton study (see the discussion in Section II) and neither the criticisms leveled against the Ford study nor the alternative Hooton model cause me to change my conclusion that the continued imposition of Title II-based regulations on BIAS providers would yield vastly more harm than benefits to the public interest.

Interestingly, Ford and Hooton agree on a number of critical issues, including the general econometric technique, the need for a control group, and the fact that the relevant start date to measure the investment impact of potential Title II regulation is 2010 when asserting Title II

¹ See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Comments of Comcast Corporation (July 17, 2017), Appendix C [Christian M. Dippon, “Public Interest Repercussions in Repealing Utility-Style Title II Regulation and Reapplying Light-Touch Regulation to Internet Services: White Paper” (July 17, 2017)].

² See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Comments of Internet Association (July 17, 2017), Attachment [Christopher Hooton, Ph.D., “An Empirical Investigation Of The Impacts Of Net Neutrality” (July 17, 2017)].

jurisdiction over BIAS providers became a credible possibility (not 2015 when the most recent open Internet order was published). These commonalities further buttress the points made in my White Paper about the superiority of the Ford methodology over the other studies.

Second, although my White Paper did not make any quantitative estimates as to the investments by edge providers, some commenters argued in their comments that the growth of OTT video services since the threat of Title II reclassification shows a positive impact of reclassification. In Section III, I discuss why the alleged evidence for this point is incomplete and does not prove anything with respect to the investment impact of Title II on edge providers.

Finally, I reviewed the comments filed by other economists. Economic papers submitted by Andres Lerner and Janusz Ordoover;³ Mark Israel, Allan Shampine, and Thomas Stemwedel;⁴ and Bruce Owen all align with the conclusions I reached in my White Paper.⁵ A number of others submitted comments discussed the economic literature regarding the Open Internet Rules.⁶ I reviewed this literature in order to ascertain the value that it might add in resolving the questions raised in the FCC's NPRM. In Section IV, I explain why the studies cited by Nicholas Economides and a group called the Economic Scholars contribute little to the present discussion.⁷

³ See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Comments of Verizon (July 17, 2017), Exhibit A Andres Lerner and Janusz Ordoover, "An Economic Analysis of Title II Regulation of Broadband Internet Access Providers" (July 17, 2017), available at <https://ecfsapi.fcc.gov/file/10717390819816/2017%2007%2017%20Verizon%20comments%202017%20Open%20Internet%20Notice.pdf>.

⁴ See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Declaration of Mark A. Israel, Allan L. Shampine & Thomas A. Stemwedel (July 17, 2017), available at <https://ecfsapi.fcc.gov/file/10717906301564/Econ%20Declaration.pdf>.

⁵ See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Comments of NCTA – The Internet & Television Association (July 17, 2017), Appendix A (Bruce M. Owen, "Internet Service Providers as Common Carriers: Economic Policy Issues"), available at [https://ecfsapi.fcc.gov/file/10717113350969/NCTA%20NN%20Comments%20\(7-17-17\)%20-%20FINAL.pdf](https://ecfsapi.fcc.gov/file/10717113350969/NCTA%20NN%20Comments%20(7-17-17)%20-%20FINAL.pdf).

⁶ In my White Paper, I distinguish between the Open Internet Rules (no blocking, no throttling, no anticompetitive paid prioritization, and transparency) and the General Conduct Standard.

⁷ See In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Comments of Prof. Nicholas Economides, available at https://ecfsapi.fcc.gov/file/1071872177227/Economides_Nicholas_FCC_07172017.pdf;

Although many of the pieces cited are valuable contributions to the literature about the effects of the Open Internet Rules, they do not offer any insight into the repercussions of invoking Title II as a jurisdictional basis for enforcing these rules.

After evaluating the evidence submitted in the initial round of comments in this proceeding, I conclude that none of these submissions changes the results of my analysis regarding the harmful effects that Title II has on investment, innovation, jobs, and the public interest. Even if there were ambiguous evidence on the impact of Title II, the risk caused by the regulatory uncertainty produced by Title II remains undisputed. In light of the two-sided nature of the Internet market, the competitive market conditions, the voluntary commitments made by BIAS providers, and the historical success of light-touch regulation, there is no need to accept this risk.⁸ Consequently, the FCC should reconsider and abandon Title II classification of BIAS providers.

II. Econometric Evidence on the Investment Gap

Although the FCC received a great number of comments in response to its NPRM, the record contains little reliable new empirical evidence on the investment gap attributable to the threat and adoption of Title II reclassification to BIAS providers. In my White Paper, I cited George Ford's estimate of the investment gap as the best available estimate of the size of that gap. I also noted other studies besides Ford's that found drops in investment; however, their value is limited due to their lack of a control group.

see also In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, Economic Scholars' Summary of Economic Literature Regarding Title II Regulation of the Internet (July 15, 2017), available at <https://ecfsapi.fcc.gov/file/107150597330219/Economic%20Scholars'%20Literature%20Summary%20WC%20Docket%20No.%2017-108.pdf>.

⁸ In early-filed response comments, In the Matter of Restoring Internet Freedom, GN Docket No. 17-108, Reply Comments of AARP (August 16, 2017), AARP criticizes my first report for relying on Ford. My comments on the Ford study herein rebut that criticism. More important, however, the AARP Reply Comments nowhere address either the risks imposed by regulatory uncertainty (even ignoring the evidence on the investment gap) or the ability to achieve the benefits of the Open Internet Rules without Title II Reclassification.

Not surprisingly, the Ford study became the major focus of some commenters. In particular, Hooton (on behalf of the Internet Association) along with AARP criticized the Ford study.⁹ Hooton also introduced his own study with a result that contradicts Ford’s results. In order to understand the criticism leveled against Ford’s study and the contradictory results found by Hooton, it is necessary to discuss in detail the Ford study, the criticisms, and then to compare the Ford and Hooton studies.

A. The Ford Study

A central question raised in the NPRM is whether the threat of Title II reclassification and its adoption in the 2015 Open Internet Order has harmed investment.¹⁰ In my White Paper, I concluded that Title II has harmed investment and cited George Ford’s estimate of the investment gap as the best available estimate of the size of that gap. Ford’s methodology takes the Bureau of Economic Analysis (BEA) investment index series for the sector including broadband investments (telecommunications) and compares it to a series of investment indices for a number of other industries. Ford selected these comparator industries because they behaved similarly to the telecommunications sector before 2010. Using an econometric technique called “difference-in-differences,” Ford found that these same industries behaved differently from the telecommunications industry after 2010.¹¹ Ford attributes this difference in behavior, which is large and statistically significant, to Title II reclassification. Note that the series ends in 2015, so

⁹ See In the Matter of Restoring Internet Freedom, GN Docket No. 17-108, Comments of AARP (July 17, 2017).

¹⁰ See In the Matter of Protecting and Promoting the Open Internet, GN Docket No. 14-28, *Report and Order on Remand, Declaratory Ruling, and Order*, 30 FCC Rcd 5601 (2015).

¹¹ This technique is one of the most widely used econometric techniques for evaluating the effect of a policy change. See, for example, Joshua Angrist and Jörn-Steffen Pischke, *Mostly Harmless Econometrics*, Section 5.2, (Princeton University Press, 2009).

only the last year might plausibly have been affected by the 2015 Open Internet Order itself rather than the prospect of such an order.

1. Criticisms of the Ford Study

Hooton takes issue with Ford in four areas. Specifically, Hooton challenges the Ford estimate for the following reasons:

The former paper (Ford, 2017) includes no control terms for the numerous confounding factors that exist (e.g. interest rates) and approaches the experiment with a theoretically incoherent counterfactual strategy that uses inappropriate control groups such as “Plastic and Rubber Products Manufacturing” to gain insight on telecommunications infrastructure investment. He also includes no consideration of any other regulations, incentives, or business cycles that may be affecting his selected treatment group and controls. Finally, the author utilizes only 2010 as a treatment year; this is an issue because it provides an incomplete picture. At a minimum, it ignores the Title II 2015 ruling, which should also be tested in addition to the 2010 treatment date, and more broadly ignoring the fact that the author’s organization itself claims the 2015 Title II ruling was unexpected and caused a sudden shift in practice for ISPs (United States Telecom Association et al. v. Federal Communications Commission and United States of America, 2015).¹²

AARP reiterates the Hooton criticisms with respect to using the 2010 start date and the choice of control series. AARP then adds two more criticisms: first, the telecommunications series used as the treatment group is much broader than the broadband industry alone, and, second, Title II allegedly regulated much of the industry in the earlier period of the control measure.¹³

2. Evaluation of the Criticisms

Before examining the criticisms, it is important to note what was not criticized. Hooton in particular reiterates two points that are essential in determining the best estimate of the investment gap. First, he acknowledges that a difference-in-differences analysis is a proper methodology for estimating the investment gap because he uses this strategy himself as his

¹² Hooton, p. 6.

¹³ See AARP, Appendix: Evaluation of The *Ford Counterfactual Paper*, pp. 106-108.

preferred estimator. Second, although he criticizes Ford for failing to use a 2015 start date for the threat of Title II reclassification, he concurs that 2010 forms a better baseline.¹⁴ I agree with both of these points. This consensus among Ford, Hooton, and me provides the FCC with a key finding, namely the importance of a study using a control group to measure the potential impact of Title II on investment.¹⁵ Although both the Ford and Hooton studies of the investment impact use such a control group, they reach conflicting results. Before analyzing whether Ford or Hooton presented the superior study, I address the specific criticisms of the Ford study from both Hooton and AARP.

a) Response to Criticism #1: Hooton’s “interest rate” criticism is incorrect given the difference-in-differences methodology used by Ford.

Hooton’s claim that Ford fails to control for “numerous confounding factors” is incorrect to the extent that a difference-in-differences methodology is applicable. The advantage of a difference-in-differences methodology is that it automatically controls for all underlying drivers that (a) are present in both the treatment group (telecommunications including broadband) and the control group (other industries) and (b) have roughly the same quantitative effects in each. Simply put, the fact that Ford’s comparator industries track the investments in the sector prior to 2010 is evidence that differences in interest rates or other industry factors do not explain the deviation between the treatment group and the control group post-2010. In fact, with respect to interest

¹⁴ “As noted, the primary focus of the paper is the 2010 treatment year and impacts calculated from any study for 2015 impacts should be interpreted cautiously given the inherent lag of infrastructure investment decisions and policy reactions (since they are planned in advance).” (Hooton, n. 16.)

¹⁵ Note that, until Ford’s study was published, there were no studies with proper controls. Reliance on those studies before a proper controlled study was produced made sense at the time but no longer does. Even now, the Ford study can be augmented and interpreted through the lens of other empirical evidence. In addition, the *theoretical* foundation for an investment gap is well documented by many commenters, including my White Paper. Even if there were no empirical case for an investment shortfall (e.g., due to data issues), the theoretical threat of such a shortfall weighed against the purely theoretical benefits of the Open Internet Rules and General Conduct Standard would still suggest a rollback of Title II reclassification.

rates, the criticism is simply incorrect because all industries operate at all times with exactly the same contemporaneous interest rate and economic activity environment.

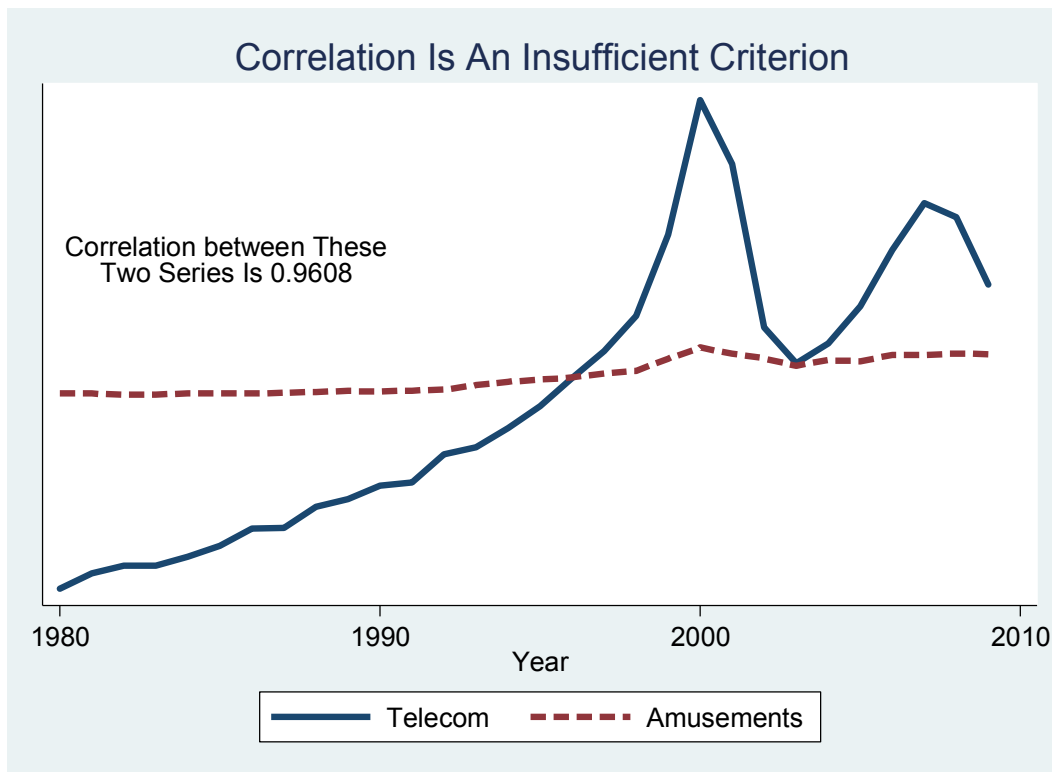
b) Response to Criticism #2: Ford's chosen control series is relevant and appropriate.

Ford uses four BEA series as comparators: (1) machinery manufacturing, (2) computer and electronic products manufacturing, (3) plastic and rubber products manufacturing, and (4) transportation and warehousing. There seems to be no disagreement regarding Ford's use of the computer and electronic products manufacturing investment series. Instead, the criticisms focus on Ford's use of the plastic and rubber products manufacturing and the transportation and warehousing investment series. Some of the commenters dismiss these series simply because of the superficial differences implied by the naming convention of these data series. However, there is strong theoretical support as to why these comparators are appropriate. Transporting and warehousing investments have increased with the advent of e-commerce. Similarly, rubber and machinery are capital-intensive industries that rise and fall with interest rates and the general state of the economy. Thus, even if one assumes that these industries do not outwardly resemble telecommunications, it does not mean that their investment series may not track closely with telecommunications. Most important, however, the empirical evidence demonstrates that these industries do track telecommunications investments over long periods (30 years), thus making them appropriate comparators. Moreover, Ford's original paper tested the elimination of one series at a time and found that his conclusion was robust to the elimination of any single series. AARP criticizes Ford for not selecting the sectors with the highest pairwise correlations with telecommunications and for only looking at correlations as an initial screen.¹⁶ This criticism is

¹⁶ See AARP, Appendix: Evaluation of The *Ford Counterfactual Paper*, pp. 108–111.

analytically incorrect because a series can be highly correlated without exhibiting similar movements. AARP notes that the third highest correlation was with Amusements, Gambling, and Recreation Industries, which suggests that perhaps that series should have been used. However, simply looking at that series (which was one of the tests Ford used after screening potential series with the correlation coefficient) shows that this criticism is simply not valid. The problem is that the Amusements series, although highly correlated with Telecommunications, is itself not highly variable, so that its variations would mean little in a difference-in-differences methodology. Using it would have made even typical movements in the Telecommunications series appear significant. Figure 1 graphs the Telecommunications series and the Amusements Series in the choice period: 1980-2009.

Figure 1: BEA Data In Two Industries: 1980-2009



Hence, Ford's use of an initial screen of correlations followed by a more in-depth review of the trends in the 1980–2009 period is appropriate.

c) *Response to Criticism #3: Examining the economic repercussions of Title II beginning in 2010 instead of 2015 is appropriate.*

AARP criticizes Ford for examining the economic repercussions of Title II beginning in 2010 instead of 2015 with the issuance of the Open Internet Order.¹⁷ However, as explained in my White Paper, it is not simply the Title II rules adopted in 2015 themselves that induce a reduction in investment. Rather, it is the regulatory uncertainty generated by the prospect of such rules whose specific implementation cannot be known in advance that induces an increase in hurdle rates. This, in turn, leads to a decline in investment. Furthermore, as noted, Hooton actually concurs with the use of 2010 as the date when the analysis should begin.

At the same time, it is certainly true that regulatory uncertainty further increased with the issuance of the 2015 Open Internet Order. This order reclassified broadband Internet access service as a utility-type service and introduced the General Conduct Standard that formed the basis for the FCC's launch of the zero-rating investigations (and other potential conduct and pricing regulation). Moreover, when the agency invoked regulatory forbearance, as welcome as that might have been in the short term, this added another layer of uncertainty to the regulatory process.¹⁸ However, all this simply means that Ford's estimate, stopping as it does in 2015, understates the impact. It also follows that Hooton's assertion that the Ford study contradicts USTelecom's position (that the 2015 Open Internet Order date was a source of surprise and

¹⁷ See AARP, pp. 102–103.

¹⁸ Indeed, immediately after the promulgation of the 2015 Open Internet Order, my colleague and I are on record as suggesting that regulatory uncertainty clearly increased with the order. See Dr. Christian Dippon and Jonathan Falk, "The Net Neutrality Order: It's Worse Than We Thought," *NERA Economic Consulting* (Mar. 16, 2015), available at http://www.nera.com/content/dam/nera/publications/2015/PUB_FCC_NN_Order_03_17_15.pdf.

altered the investment path) is mistaken—it is simply an indication that regulatory uncertainty was made worse by the 2015 Open Internet Order than it was before the order was released.¹⁹

d) Response to Criticism #4: Ford's chosen treatment group is appropriate even though telecommunications investments are broader than broadband.

AARP suggests that Ford's study is invalid because his chosen series as a treatment group, Broadcasting and Telecommunications, includes many categories that are not plausibly broadband related.²⁰ Although the observation about the mixture of categories is generally accurate, the effect in fact may be to *understate* the broadband gap estimated by Ford. Why is this? It is because the evidence of the effect on broadband investment is suppressed by the inclusion of additional categories for which no change is expected (unless, of course, by chance the declines in investment in all the categories occurred for unrelated reasons that happened starting in 2010). An investment gap in the aggregate series indicates that the affected series must have declined even more if one were able to isolate only those categories that are clearly broadband related.

e) Response to Criticism #5: AARP's claim that Title II affected telecommunications services prior to 2010 misses the repercussions of extending Title II to BIAS providers.

AARP also notes that, since the incumbent local exchange carriers or ILECs (traditional telephone companies classified as common carriers) were regulated under Title II for the bulk of the early period, the effects of Title II should have repressed investment in the early period as well; thus, there is really no change in the investment incentives.²¹ This criticism fundamentally misunderstands the Title II issue. Title II reclassification of BIAS providers does not negatively

¹⁹ See Hooton, p. 6.

²⁰ See AARP, pp. 108–111.

²¹ See AARP, p. 106.

impact investment simply because it is regulation. The negative investment impact of extending Title II to BIAS providers originates from the facts that Title II was not designed for BIAS providers operating in a competitive environment, does not resolve any particular market power problem, and is entirely vague in its application.²² This is in stark contrast to the ILEC case. Title II regulation was created for telecommunications common carriers with monopoly power. The impact of Title II on telecommunications common carrier investment and innovation was intended for this specific purpose. Importantly, it targeted a rate of return on total ILEC investment at a level sufficient to encourage additional investment. By contrast, with no guaranteed return and the regulatory uncertainty that accompanies Title II and the General Conduct Standard, investment incentives have changed dramatically.

B. The Hooton Study

In addition to examining the Ford study, Hooton also introduces an alternative empirical study that claims to demonstrate that there was no downturn in broadband investment post-2010.²³ I

²² Moreover, the AARP argument (at 106) that telephone company-offered BIAS was part of a 30-year “pre-treatment” period during which “all telephone company services (including broadband) were subject to Title II” is fundamentally misleading and incorrect. As various commenters point out, before 2015, BIAS of the type offered today by telephone and cable companies traditionally had been characterized as an “information service” that necessarily implies more than pure transmission, and it was *never* a service regulated as part of the Title II framework that otherwise applied to telecommunications services offered by CLECs or ILECs. See, e.g., Comments of AT&T Services, Inc., WC Docket No. 17-108 (July 17, 2017), p. 14 (noting that “regulatory history illustrates a simple point: the Title II rules that the pro-regulation advocates claim are essential to an open Internet were not even adopted until more than 16 years into the broadband era and have been in effect for only two years. Throughout that non-Title II era, the broadband ecosystem reached heights of unparalleled investment and innovation.”); Comments of Verizon, WC Docket No. 17-108 (July 17, 2017), p. 33 (“The *Title II Order* is a dramatic, results-oriented course reversal from longstanding and successful agency practice, declaring for the first time that broadband Internet access service is a pure ‘telecommunications service’ subject to Title II’s outmoded common-carrier regulations – and thus subject to maximum governmental control.”).

²³ See Hooton, p. 12.

examined the Hooton study and compared it to the Ford study in order to ascertain which of the two provides the more robust estimate of the investment impact of Title II.²⁴

As indicated earlier, Hooton uses the same econometric technique as Ford, concurs that the investment impact started in 2010, and agrees that a benchmark comparator must be used. The principal difference between the Ford and Hooton studies is the type of comparator. While Ford uses domestic data in other industries as a comparator, Hooton compares U.S. broadband investment to Organisation for Economic Co-operation and Development (OECD) members' broadband investment.²⁵ Hooton's stated rationale is that (a) USTelecom uses this comparator and (b) comparing telecom to telecom is inherently better than comparing telecom to non-telecom. The first reason is of course irrelevant to the quality of the study. I discuss the second issue next.

1. Which approach is better, Hooton's or Ford's?

In theory, is Ford's approach or Hooton's approach better? Superficially, comparing U.S. telecom to OECD telecom might seem more appealing than comparing U.S. telecom to U.S. non-telecom based on the simple fact that like sectors are compared. However, there is no theoretical

²⁴ Ford, in a pair of blog posts, has set out his own critique of the Hooton alternative focusing largely, but not entirely, on data issues. <http://www.phoenix-center.org/perspectives/Perspective17-09Final.pdf> (July 24, 2017) and <http://www.phoenix-center.org/perspectives/Perspective17-10Final.pdf> (August 14, 2017). Ford's attempts to correct Hooton's data lead him to assert that the conclusions that would be reached with Hooton's data, once corrected, are identical to Ford's. I have not independently investigated these claims. To the extent they are true, there is no controversy at all: both Ford's and Hooton's analysis would conclude that there was a substantial investment gap. Assuming for the moment, however, that Hooton's analysis does in fact support a conclusion that an investment gap cannot be statistically demonstrated, I analyze below which data source appears superior. My analysis is therefore parallel to, but independent of, Ford's claim that correcting the data removes the controversy.

²⁵ OECD is an intergovernmental economic organization founded in 1960, currently comprised of 35 member countries (mostly EU), that is intended to stimulate economic progress and world trade. Hooton presents a number of other calculations as well but describes them all as supporting measures of his central result. He calls these "corollary metrics." Because the corollary metrics are simply uncontrolled measures of change, as pointed out in my White Paper, they provide no evidence as to what changes would have occurred in the absence of the threat of Title II reclassification. In addition, one of the statistical analyses compares broadband investments with cable investments. Because cable is a far more mature industry, it is entirely unclear what the relevance is of citing relatively stable levels of cable investment.

reason to prefer one to the other. Both methods have advantages and disadvantages. Recall that the basic theory of the difference-in-differences methodology is that the underlying drivers of investment are the same for both the control group and the treatment group.²⁶ From this standpoint, neither U.S. non-telecom nor OECD telecom are perfect. U.S. non-telecom suffers from the fact that there could be idiosyncratic drivers of telecom investment in the United States, whereas OECD telecom investment suffers from the fact that there could be international differences in drivers. I discuss some of the pros and cons of each series below.

2. Institutional, historic, regulatory, and other country-specific factors

Telecommunications and Internet services are often heavily regulated businesses, and the specifics of this regulation vary from country to country and change from year to year in inconsistent ways. The superficial appeal of a U.S. to OECD comparison dims considerably when one thinks about the host of institutional, historic, and regulatory factors that make broadband service grow rapidly in one country and cause it to be constrained in another. Europe, for example, regulates edge providers more strictly than the United States.²⁷ Changes in privacy policy, including the “right to be forgotten” that is prominent in European law but entirely absent in U.S. law, would be expected to impede broadband investment in Europe and make lower U.S. investments as a result of Title II reclassification appear to be “normal” by comparison.²⁸ The inter-OECD differences create significant challenges to the Hooton study because countries are inherently difficult to compare given the many differences between them. The Ford study does not face this challenge as it employs U.S. comparators. While there are clearly differences

²⁶ “Treatment” in this case means the group for which we wish to measure the impact of the event.

²⁷ See, for example, Internet Association, “Position Paper on the Regulatory Environment for Platforms, Online Intermediaries, Data and Cloud Computing and the Collaborative Economy” (Dec. 2015), p. 8.

²⁸ Farhad Manjoo, “‘Right to Be Forgotten’ Online Could Spread,” *The New York Times* (Aug. 5, 2015).

among industries, these differences are not as pronounced as the differences between OECD countries.²⁹ For instance, as explained, all comparators in the Ford study operate under the same interest rate. By contrast, real interest rates across OECD member states vary dramatically.³⁰ Taking 2010 as a typical year, the mean real interest rate across OECD countries was 4.5% with a standard deviation of 3.3%; the U.S. rate was 2% while Germany was at 3%, the U.K. was at -1.0% and Poland was at 10%. It is Hooton's analysis which fails to control for these differences, not Ford's. Similarly, all U.S. industries are subject to the same macroeconomic forces and U.S.-based regulatory and legal regimes, which is clearly not the case between different countries. Thus, a closer examination of the comparators used in the Ford and Hooton studies clearly indicates that a U.S.-to-OECD comparison is inferior to a U.S telecom-to-U.S non-telecom comparison.

3. Data quality

One of the most appealing aspects of the methodology comparing U.S. telecom to other U.S. industries is that the BEA generated all of the series in a standard fashion. Thus, the series that Ford employs are designed to be comparable. By contrast, the aggregate OECD series employed by Hooton is explicitly not consistent.³¹ In fact, it does not even consist of a constant number of countries,³² and the reporting cannot be completely standardized because of the different data

²⁹ The OECD contains regulatory and institutional differences as wide as Germany and Turkey or Mexico and Japan. No amount of aggregation can make fundamentally dissimilar countries comparable. The degree to which broadband is subsidized by governments varies widely as well.

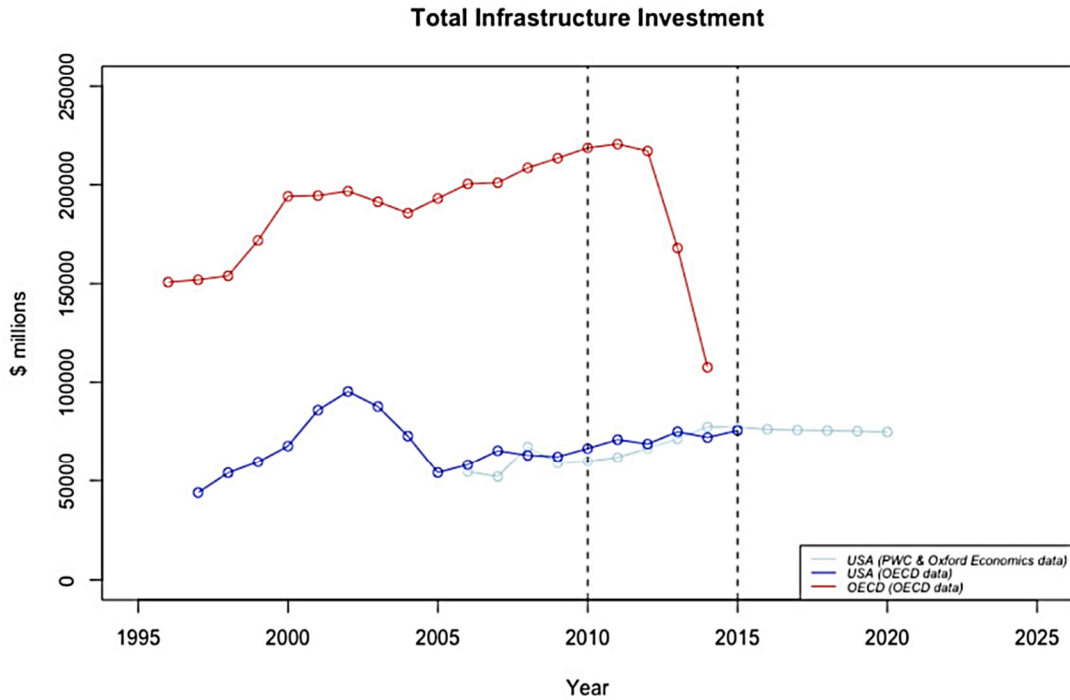
³⁰ Real interest rate data for OECD countries by year is available from the World Bank at <http://data.worldbank.org/indicator/FR.INR.RINR>.

³¹ Hooton is forced to use aggregate OECD countries instead of individual countries because the telecom data are not disaggregated after 2010.

³² OECD, "List of OECD Member countries – Ratification of the Convention on the OECD," OECD.org, available at <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm>. Israel, Slovakia, and Slovenia all joined the OECD during the period covered by Hooton's study.

collection methods used in the various OECD countries. Nowhere is this clearer than in Hooton’s Figure A1 for total infrastructure investment depicted below.

Figure 2: Hooton’s Total Infrastructure Investment



The sharp decline in total infrastructure investment in 2013–2014 is a pure data artifact that reflects nothing about telecom investment levels. As Hooton points out, if one really believed that these data were real, one would erroneously conclude that the post-2010 era showed a gigantic relative increase in U.S. infrastructure spending simply because U.S. spending did not collapse.³³

In addition, the OECD data series stops in 2013. Since this would yield only three years of post-2010 data, Hooton augments these values with forecasts of future activity based on simple extrapolations. Hooton admits that his method is flawed, but he offers it nevertheless as a

³³ Hooton, Appendix A, Figure A1.

robustness check.³⁴ The extrapolated data is not empirical but guesswork, and it assumes the answer to the key question. Hooton does not tell us what the results of his analysis would be with these made-up data points excluded, which is a serious limitation to the Hooton study that he largely overlooks.

In contrast, the BEA data present a consistent series as far back as 1980. The length of the time series alone could work in either direction. It might be argued that pre-1996 data (Hooton begins in 1996) are too old and reflective of such a different world that its inclusion would be an error. However, Ford's robustness checks show that the effect of the start date for his results is unimportant. More critical, the use of a long start-up period allows Ford to pick comparison series whose closeness to the telecom series is unlikely to be due to chance—the more years one considers, the more confident one becomes that parallel movements between series are not just chance but, in fact, represent common underlying drivers.

In using the OECD aggregated series, Hooton cannot select the series that exhibits a long history of similar behavior. Indeed, he has no analytical discretion at all because the data are aggregated, thus making it impossible to choose only those countries whose histories mirror the United States (assuming that any did). The risk that Ford takes in picking his series is overfitting, that is, choosing a series that happens to fit in the past by chance. Yet, because the underlying assumption of the difference-in-differences method is that the controls must behave similarly in the pre-treatment period, this in my view is a reasonable risk to take.

³⁴ Hooton, n. 16.

C. Conclusion on the Empirical Evidence

In my White Paper, I noted that Ford had the best estimate of the investment gap attending the imposition of Title II-based regulation on the Open Internet. Neither the criticisms of the Ford study nor the alternative study produced by Hooton cause me to change my mind or revise my initial conclusions. Estimation of the effect of the threat of Title II reclassification on broadband investment is inherently difficult, but it is still clear that Ford's study is superior and the most informative.

III. Other Quantitative Evidence

Both Free Press and AARP make much of the fact that OTT video services have grown rapidly in the 2010–2016 period.³⁵ OTT video services deliver film and television content over the Internet, possibly eliminating the need for cable or satellite service; however, users still need a broadband connection. Given that there is no comparison group, we have no idea of how much more or less rapidly these services would have grown in the absence of the threat (and eventuality) of Title II reclassification. In that sense, these metrics are no different from any of the other growth benchmarks cited by Title II advocates.

Increased speeds and the growth of OTT video services are addressed separately here because the argument that their rise connotes a success for Title II-based rules is different from the similar arguments used for BIAS investments. The BIAS investment argument posits (falsely) that Title II could not have constrained BIAS investments because investment has in fact grown nominally. By contrast, the OTT video service argument is that the threat of Title II

³⁵ See *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-108, Comments of Free Press (July 17, 2017), pp. 171–208; see also AARP, pp. 84–85.

reclassification reduced uncertainty for edge providers and therefore lowered the hurdle rate for these services. Although this is one possible interpretation, there are multiple alternative interpretations, rendering the argument of little help in examining the overall impact of subjecting BIAS to Title II.

First, OTT video services require higher bandwidths to avoid the buffering that makes them unattractive to subscribers. Since the period of regulatory uncertainty coincides with the increase of bandwidths supplied by BIAS providers to enable high quality streaming video and thus increased subscriber counts, it is conceptually not even possible to disentangle the cause for OTT increases. That is, it is simply impossible to tell whether OTT services have increased due to the imposition of Title II or whether the increased bandwidth (which was implemented by the BIAS providers to compete for retail subscribers as part of the competitive pressures in two-sided markets) has made more OTT services possible.

Moreover, there is reason to believe that regulatory uncertainty from the extension of Title II to BIAS providers has hampered the development of OTT video services in the same way it has chilled BIAS investment. As I explained in my White Paper, BIAS and OTT services are complements. Edge providers need to work in concert with BIAS providers to provide OTT video services. Content delivery networks and colocation of edge provider and BIAS network equipment place edge provider investments deeper and deeper into the BIAS provider networks. Their ability to do so is at least partly dependent on the assessment of the markets made by BIAS providers and the risks that regulation would disrupt the business models planned by OTT providers. A case in point is the prior FCC's Title II-based investigation of zero-rated services that may have stopped or delayed services whose financial viability required a zero-rating structure.

Consequently, the OTT video service growth is not evidence of the efficacy of Title II. There are no controls to estimate the “but-for” effect of no Title II reclassification, and, indeed, there are good theoretical reasons to suspect that at least some of these OTT investments may have been inhibited by Title II, as well.

IV. Other Comments Focused on Economic Issues

Despite the criticisms leveled by Hooton against the Ford study, Hooton and Ford agree on a number of important parameters with respect to the questions raised in the FCC NPRM. They agree that a control group must accompany an empirical analysis of the investment gap. They also agree that the economic repercussions of Title II must be examined from 2010 onward. Furthermore, economic papers submitted as part of the comments of AT&T, Verizon, and NCTA all align with the conclusions I reached in my White Paper. Specifically, much as explained in my White Paper, Andres Lerner and Janusz Ordovery, who filed a report on behalf of Verizon, conclude:

... while Title II regulation of broadband Internet access imposes significant costs on consumers and providers, it offers little (if any) competitive benefit. Such regulation would fail a cost-benefit analysis, and makes consumers of broadband access services worse off. The *Title II Order*, as well as proponents of Title II regulation, have failed to identify a market failure that would necessitate public utility-type regulation intended for natural monopolies, nor have they identified any benefits of Title II regulation that cannot be achieved by more reasonable, targeted rules.³⁶

Similarly, Mark Israel, Allan Shampine, and Thomas Stemwedel, who filed a report on behalf of AT&T, find:

any benefits from Title II classification are *de minimis* and largely speculative, while the likely costs of this regulation in terms of its impact on investment are

³⁶ Comments of Verizon, Exhibit A, ¶ 19.

enormous. Hence, we conclude that the costs of Title II regulation of broadband Internet access service exceed any potential benefits.³⁷

I also note that certain sections of Israel et al.'s analysis largely parallel my White Paper.³⁸

Commonalities with my White Paper and the studies by Lerner and Ordover and Israel et al. are also present in the work performed by Bruce Owen on behalf of NCTA. Owen concludes:

It is difficult to imagine a more effective way to decrease infrastructure investment funding than the uncertain prospect of a new, undefined regulatory expropriation, especially one unconstrained by economic analysis, evidence or rationality.³⁹

In addition to the studies filed by these nine economists (including myself), the record in this proceeding contains reports by Nicholas Economides and the group of Economic Scholars mentioned previously, as well as a prominent paper on Open Internet Rules in the economic literature cited by Hooton.⁴⁰ All of these other papers reach the same conclusion: the economic literature has no definitive theoretical conclusion as to whether net neutrality rules enhance or subtract from social welfare. The result in any particular case is the result of a host of empirical factors that might take the result in either direction.

Although this finding is correct, it completely misses the point. The published articles cited by Economides and the Economic Scholars as well as the study by Greenstein et al. all focus exclusively on the economic repercussions of the Open Internet Rules. They do not examine the type and manner of regulatory regime that would be imposed on the BIAS providers. Specifically, the issue is not the Open Internet Rules (aka the net neutrality protections) themselves but the use of Title II to implement them and the imposition of the General Conduct

³⁷ Israel et al., ¶ 24.

³⁸ Israel et al., ¶¶ 20–24, Sections IV and V.

³⁹ Comments of NCTA, Appendix A, pp. 6-7.

⁴⁰ See Shane Greenstein, Martin Peitz, and Tommaso Valletti, “Net Neutrality: A Fast Lane to Understanding the Trade-offs,” *Journal of Economic Perspectives* 30, no. 2 (Spring 2016): 127–150.

Standard that was never considered part of the Open Internet Rules. Hence, they completely sidestep the key questions raised in the FCC's investigation of a possible repeal of Title II for BIAS providers, because they do not consider the chilling effect of Title II and the General Conduct Standard, a standardless rule that stands as one of the chief investment killers. Finally, nowhere in the literature are forbore regulatory clauses that could be reinstated at any time discussed. The General Conduct Standard and the regulatory uncertainty caused by forbearance are unique to Title II reclassification and have nothing to do with the Open Internet Rules per se.

V. Conclusion: The Comments Confirm My Initial Findings

The most robust and credible empirical study of the investment impact of the application of Title II to BIAS providers remains the study performed by George Ford that estimates an annual investment gap of \$30–\$40 billion. In my initial White Paper the Ford results were combined with other economic literature to arrive at an employment impact of over 700,000 lost jobs as a result of extending Title II to BIAS providers. In these reply comments, I present my review of and response to the various criticisms of the Ford Study by Hooton and AARP and also to the economic papers submitted by Nicholas Economides, the Economic Scholars, AT&T, NCTA, Verizon, and others. My review confirms the same conclusions reached in my initial assessment of Title II.

Even if there were any ambiguity regarding the historical investment effects of Title II, as some economists argue, economists overwhelmingly agree that the FCC should not waste its time in determining whether Title II in the past has been harmful to U.S. broadband infrastructure investment and if so by how much. Rather, in light of the demonstrated risk to investment and innovation caused by the extension of Title II to BIAS providers, the FCC must focus on whether a less intrusive and less harmful regulatory approach can achieve the same objectives. The

evidence presented in my White Paper as well as in the comments of numerous other economists clearly demonstrates that Title II regulation cannot achieve anything that a lighter-touch regime cannot also achieve at a far lower cost to U.S. broadband investment, innovation, and U.S. jobs. Thus, reversing the Title II classification of BIAS providers and restoring their classification as Title I information service providers subject to light-touch regulation is in the public interest.