

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

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

REPLY COMMENTS OF INCOMPAS

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I. INTRODUCTION AND EXECUTIVE SUMMARY

As the dust settles from the first round of comments, one simple conclusion is clear: there is no factual basis for the Commission to conclude that the current open Internet rules cause any harm to anyone and plentiful evidence, confirmed by official decisions of the Commission and the Department of Justice, that large, fixed broadband providers have both the incentive and the ability to use their control of the traffic that passes over their networks to harm consumers and competition both as a matter of economics and, just as importantly, by curbing speech of users on the Internet. Given this state of affairs, a decision that values regulatory humility might well conclude that the best approach would be to leave well enough alone—and not to risk unforeseen harms in the future by destroying that which is working now to benefit consumers and the Internet economy.

Indeed, the only way that the current open Internet rules can be attacked is to ignore the facts—and that would render any Commission decision fatally invalid. It is to create a complete factual record that INCOMPAS seeks to place certain materials from past merger reviews into the record of this proceeding, fully covered by protective-order guarantees of confidentiality.¹ Similarly, a coalition of public-interest groups has called

¹ INCOMPAS has made three requests to the Commission to gather interested stakeholders and agree on a process for reviewing confidential and highly confidential information on

upon the Commission to release all of the consumer complaints relating to the 2015 rules that have been filed for the past two years in order to “allow the public time to fully assess the behavior of [Internet service providers] since June 2015”² Of course, personal privacy must be protected, but the Commission can scarcely proceed on the assumption that there was “virtually no quantifiable evidence of consumer harm”³ while failing to allow this proceeding to consider important evidence of what consumers believe the broadband providers have really been up to.

Not that their actions have been entirely shielded from public view. A recent investigation by the New York State Attorney General found evidence that at least two fixed broadband providers engaged in degradation strategies as part of their bargaining with edge providers.⁴

In other words, the evidence from past merger reviews, from the 2015 proceeding and perhaps from thousands of consumer complaints, demonstrates that broadband

which the Commission based its prior determinations while maintaining the confidentiality of that material. *See* Motion of INCOMPAS to Modify Protective Order, WC Docket No. 17-108 (July 17, 2017); Response to Oppositions to Motion of INCOMPAS to Modify Protective Orders, WC Docket No. 17-108 (Aug. 3, 2017); Response to Verizon’s Opposition to Motion of INCOMPAS to Modify Protective Orders, WC Docket No. 17-108 (Aug. 15, 2017). We urge again that the Commission convene a meeting of counsel to discuss the practical means by which this could be accomplished in order to protect needed confidentiality.

² *See* Letter from 18MillionRising.org, American Civil Liberties Union, et al., to Ajit Pai, Chairman, FCC, WC Docket No. 17-108 (Aug. 21, 2017). It has been reported that some consumer complaints have been released. *See* Li Zhou, *What’s Next on Net Neutrality*, Politico (Aug. 25, 2017), www.politico.com/tipsheets/morning-tech/2017/08/25/whats-next-on-net-neutrality-222071.

³ Restoring Internet Freedom, *Notice of Proposed Rulemaking*, 32 FCC Rcd. 4434, 4460 ¶ 76 (2017) (“NPRM”).

⁴ *See* People of the State of New York Comments on the May 23, 2017 Notice of Proposed Rulemaking, WC Docket No. 17-108, 1-2 (July 17, 2017).

gatekeepers are incented, and left to guard themselves can be expected, to engage in behavior that is contrary to the Open Internet and harms consumers.

In these reply comments, INCOMPAS demonstrates again that the *NPRM* has traced a path to failure. First, the broadband providers urge conclusions that ignore prior findings and established facts, including Commission rejection of the very same claims when they were presented by broadband providers in past merger proceedings.⁵ Second, AT&T wrongly argues that Section 706 is concerned only with infrastructure investment by broadband providers. Third, the Commission has no basis to apply any cost-benefit test before adopting an approach that is itself subject to a round of public comment. Fourth, as the attached study authored by Dr. David Evans demonstrates,⁶ facts relied upon by the Commission and the Department of Justice, and the official conclusions that flowed from those, demonstrate convincingly that large, fixed broadband providers are gatekeepers with the incentive and the ability to harm consumers by unfairly interfering with Internet traffic.

⁵ INCOMPAS has gathered some examples of large fixed broadband providers' statements in recent transactions on their ability to harm competition and what the Commission and Department of Justice have concluded. See Exhibit A. This is a non-exhaustive list.

⁶ David S. Evans, *Economic Findings Concerning the State of Competition for Wired Broadband Provision to U.S. Households and Edge Providers* (Aug. 29, 2017), attached as Exhibit B ("Evans White Paper"), <http://www.competitioninstitute.org/Portals/0/Evans%20White%20Paper%20on%20Economics%20of%20Wired%20Broadband%2029Aug2017%20Final%20for%20Publication%20%28002%29.pdf>.

II. WITHOUT A COMPLETE FACTUAL RECORD, ANY COMMISSION ORDER WILL BE INVALID

The bedrock of agency decision-making is the Administrative Procedure Act (“APA”).⁷ The APA and related precedent establish a clear path for the Commission. Diverting from that path risks what Chairman Pai warned against in the *2014 Open Internet NPRM*: “embroiling everyone, from the FCC to industry to the average American consumer, in yet another years-long legal waiting game.”⁸ Yet this is where the *NPRM* is headed. To avoid that outcome, the Commission must follow the APA and court guidance, as set out below.

A. The Commission Must Address Prior Commission Findings

Failure to address prior findings violates the APA. As the D.C. Circuit stated, “[t]he APA’s requirement of reasoned decision-making ordinarily demands that an agency acknowledge and explain the reasons for a changed interpretation.’ ‘An agency may not, for example, depart from a prior policy *sub silentio* or simply disregard rules that are still on the books.’”⁹ Further, “an agency changing its course by rescinding a rule is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance.”¹⁰ While not every policy reversal need receive heightened scrutiny, “sometimes it must—when, for example, its new policy rests upon

⁷ 5 U.S.C. § 500 *et seq.*

⁸ Protecting and Promoting the Open Internet, *Notice of Proposed Rulemaking*, 29 FCC Rcd. 5561, 5657 (2014) (Pai, A., dissenting).

⁹ *United States Telecom Ass’n v. FCC*, 825 F.3d 674, 706-07 (D.C. Cir. 2016) (“*USTelecom*”), rehearing *en banc denied*, 855 F.3d 381 (D.C. Cir. 2017) (citations omitted).

¹⁰ *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) (“*State Farm*”).

factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be taken into account. It would be arbitrary or capricious to ignore such matters.”¹¹ That change must also be “justified by the rulemaking record.”¹² The D.C. Circuit has repeatedly upheld that an agency must address the factual record that informed its previous policy when it decides to change that policy.¹³ Finally, as the Court recently held, “a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy.”¹⁴ In *Fox*, the Court identified two circumstances where heightened scrutiny is appropriate, including when “its new policy rests upon factual findings that contradict those which underlay its prior policy.”¹⁵

¹¹ *FCC v. Fox Television Stations Inc.*, 556 U.S. 502, 515 (2009) (“*Fox*”) (citations omitted).

¹² *See American Petroleum Institute v. EPA*, 862 F.3d 50, 66 (2017) (citing *State Farm*, 463 U.S. at 42).

¹³ *See Mingo Logan Coal Co. v. EPA*, 829 F.3d 710, 719 (D.C. Cir. 2016); *see also Investment Co. Institute v. CFTC*, 891 F. Supp. 2d 162, 187 (D.D.C. 2012), *as amended* (Jan. 2, 2013), *aff’d* by 720 F.3d 370 (D.C. Cir. 2013).

¹⁴ *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2126 (2016) (citing *Fox*, 556 U.S. at 515-16).

¹⁵ *Fox*, 556 U.S. at 515; *see also id.* at 537 (Kennedy, J., concurring) (“Where there is a policy change the record may be much more developed because the agency based its prior policy on factual findings. In that instance, an agency’s decision to change course may be arbitrary and capricious if the agency ignores or countermands its earlier factual findings without reasoned explanation for doing so. *An agency cannot simply disregard contrary or inconvenient factual determinations that it made in the past*, any more than it can ignore inconvenient facts when it writes on a blank slate.”) (emphasis added). Verizon argues that the change of administrations by itself justifies reversal of the Title II classification and repeal of the rules. Verizon Comments, WC Docket No. 17-108, at 60 (July 17, 2017). But a change in administrations does not mean there has been a change in the facts. *See Fox*, 556 U.S. at 537-38 (Kennedy, J., concurring) (“Following a change in Presidential administration, however, the agency reversed course and rescinded the regulation. In doing so, the agency did not address its prior finding that airbags save lives. Indeed, ‘[n]ot one sentence’ of the agency’s ‘rulemaking statement’ in support of rescinding the

These requirements apply in full force here, where even if policy choices can be debated, the facts are undisputed: the Commission has repeatedly found that broadband providers have the power and incentive to harm edge providers and consumers. The *NPRM* recognizes this *sub silentio* by still proposing to keep some of the bright-line rules in some form.

Yet the *NPRM* ignores prior Commission determinations. It instead focuses too narrowly on alleged harm to broadband providers' infrastructure investment. The studies it relies upon are based on limited data and unproven economic models.¹⁶ The D.C. Circuit has warned agencies that they can rely upon economic models "provided there is a conscientious effort to take into account what is known as to past experience and what is reasonably predictable about the future."¹⁷ The Commission has failed to articulate exactly why its earlier prediction that investment would decrease is wrong and, to satisfy *Fox*, it would also need to demonstrate that any alleged short-term decrease in investment is a long-term issue that adversely affects the public interest.¹⁸

regulation discussed the benefits of airbags. This Court found the agency's rescission arbitrary and capricious because the agency did not address its prior factual findings.") (citations omitted).

¹⁶ *NPRM* ¶¶ 45-48.

¹⁷ *American Public Gas Association v. Fed. Power Commission*, 567 F.2d 1016, 1037 (D.C. Cir. 1977).

¹⁸ See Protecting and Promoting the Open Internet, *Report and Order on Remand, Declaratory Ruling, and Order*, 30 FCC Rcd. 5601, 5791 ¶ 410 (2015) ("2015 Open Internet Order") ("Although we appreciate carriers' concerns that our reclassification decision could create investment-chilling regulatory burdens and uncertainty, we believe that any effects are likely to be short term and will dissipate over time as the marketplace internalizes our Title II approach"), *aff'd sub nom. United States Telecom Ass'n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016).

Moreover, reliance interests also demand heightened scrutiny. Billions of dollars of investment have flowed into investment at the edge in reliance on the existence of the 2015 rules.¹⁹ Those reliance interests must (as explained further below) be respected through maintenance of the 2015 rules.

The Commission's failure to consider prior Commission findings and to address the effects of reclassification to the Internet ecosystem would violate the APA.

B. The Commission Must Make the Necessary Factual Findings before Issuing a Decision

The Commission must make an independent review of the record and cannot rely on a handful of broadband-provider comments to make a decision. Failing to perform an independent review would expose the Commission to a determination that it acted in an arbitrary and capricious manner, thus violating the APA.

To satisfy the "arbitrary and capricious" standard, the APA requires that "the agency [] examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'"²⁰

¹⁹ See, e.g., S. Derek Turner, *It's Working: How the Internet Access and Online Video Markets are Thriving in a Title II Era*, at 45 (May 2017), <https://www.freepress.net/sites/default/files/resources/internet-access-and-online-video-markets-are-thriving-in-title-II-era.pdf> ("The 'data processing, hosting, and related Services' sector (which includes app hosting services like Amazon Web Services ('AWS') and video streaming services like Netflix) saw tremendous growth in capital investment: a \$3.5 billion one-year increase (26 percent) following the FCC's 2015 Open Internet vote.") (citing US Census Bureau data); Angel Gonzalez & Matt Day, *Amazon, Microsoft Invest Billions as Computing Shifts to Cloud*, *Seattle Times* (Apr. 27, 2017), <http://www.seattletimes.com/business/technology/amazon-microsoft-invest-billions-as-computing-shifts-to-cloud/> (reporting on Amazon, Apple, Google, and Microsoft spending billions on data centers to build out cloud computing infrastructure).

²⁰ *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)).

A unanimous panel of the D.C. Circuit recently held that an agency's failure to examine adequately the underlying record fails the reasoned decision-making required by the APA. In *Susquehanna v. SEC*, the court held the SEC had abdicated its responsibility by relying on the representations of the regulated party on the record instead of conducting its independent examination.²¹ As the court stated, instead of the agency critically reviewing the regulated party's analysis or performing its own analysis, it "took [the regulated entity]'s word for it."²²

A final Commission determination that relies on self-interested commenters and disputed studies from just one side—as the *NPRM* does—without examining these claims or conducting its own fact-finding will fail the APA. For example, the *NPRM* claims that the 2015 rules “has resulted in negative consequences for American consumers—including depressed broadband investment and reduced innovation because of increased regulatory burdens and regulatory uncertainty stemming from the rules adopted under Title II”; that “the threat of regulatory enforcement of vague rules and standards has dampened providers’ incentive to invest and innovate”; and that “[r]estoring broadband Internet access service to its previous status as an information service subject to Title I is in the public interest because it will alleviate the harms caused by Title II reclassification.”²³ It bases its conclusions on comments by self-interested parties and studies that are disputed, and it ignores a significant part of the Internet economy—the edge, including consumers as

²¹ *Susquehanna Int’l Group, LLP v. SEC*, No. 16-1061, 2017 WL 3389269, at *3–4 (D.C. Cir. Aug. 8, 2017).

²² *Id.* at *4.

²³ *NPRM* at 4448 ¶ 44.

edge providers and users.²⁴ A final Commission determination should abstain from following the *NPRM*'s example and instead meet APA requirements by conducting a careful examination of all the underlying facts, including broadband providers' infrastructure investment and other factors affecting deployment, including the availability of edge content and services enabled by an open Internet.

III. BROADBAND PROVIDERS' INFRASTRUCTURE INVESTMENT IS NOT THE ONLY MEASURE FOR APPLICATION OF SECTION 706

Commenters opposing the 2015 open Internet rules erroneously focus only on how these rules have impacted broadband providers' infrastructure investment to argue that the rules should be overturned. But broadband providers' infrastructure investment is not the only factor to be measured. Section 706 goes beyond the narrow scope of investment in infrastructure by broadband providers. And the Commission cannot simply ignore the broader public interest, which is the common thread running through section after section of the Communications Act.

AT&T misreads the authority that section 706 affords the Commission. Section 706(a) directs the Commission to take actions that "shall encourage the *deployment* on a reasonable and timely basis of advanced telecommunications capability to all Americans."²⁵ AT&T claims that "Section 706 addresses only regulatory measures taken to promote 'infrastructure investment' in 'advanced telecommunications capability,' not to promote any other goal, such as the interests of edge providers."²⁶ AT&T's carefully culled quotes

²⁴ *Id.* ¶¶ 45-48.

²⁵ 47 U.S.C. § 1302(a) (emphasis added).

²⁶ Comments of AT&T Services, Inc., WC Docket No. 17-108, 104 (July 17, 2017) ("AT&T Comments").

fail to inform the Commission that the core goal of Section 706 is “deployment” and, of course, current deployment is not the same as current investment.²⁷

The Commission determined, and the D.C. Circuit upheld, that the virtuous circle incentivizes deployment.²⁸ Indeed, the *Verizon* court concluded that the “finding that Internet openness fosters . . . edge-provider innovation . . . was . . . reasonable and grounded in substantial evidence” and that the Commission had “more than adequately supported and explained its conclusion that edge-provider innovation leads to the expansion and improvement of broadband infrastructure.”²⁹ The *USTelecom* decision affirmed *Verizon*’s finding, holding that “we fully adopt here our findings and analysis in *Verizon* concerning the existence and permissible scope of the Commission’s section 706 authority, including

²⁷ Two simple examples will suffice. As software-enabled networks become more prevalent, the cost of broadband deployment decreases. *See, e.g.*, Christian Bartosch, et al., *Telecom’s Twin Peaks: Software-Defined and Virtualized Networks*, bcg.perspectives (June 30, 2016), <https://www.bcgperspectives.com/content/articles/telecommunications-cost-efficiency-asset-optimization-telecom-twin-peaks-software-defined-virtualized-networks/> (“Software-defined networking (SDN) and network function virtualization (NFV) have already started to change the way that telecom networks are designed, deployed, and operated. Together, these two technologies can not only reduce networks’ capital and operating costs but also improve their flexibility and scalability.”); Sean Buckley, *AT&T Enables 34% of Network with Software Capabilities*, FierceTelecom (Jan. 4, 2017), <http://www.fiercetelecom.com/telecom/at-t-enables-34-network-software-capabilities> (“AT&T is seeing the fruits of its software labor take shape in terms of reducing costs and efficiency in its network”). Thus current investment dollars (especially if not adjusted for inflation) do not justify the conclusion that there is less deployment. Second, past dollars can be the foundation for current and future deployment. The buildout of fiber into a community last year may easily support direct connections to households that are built this year or next. In that circumstance, of course, the costs of the new deployment is a blend of past and current expenditures, again rendering a myopic focus on calendar-year investment to be a wholly unreliable guide to deployment.

²⁸ *USTelecom*, 825 F.3d at 707 (2016) (citing *2015 Open Internet Order*).

²⁹ *Verizon v. FCC*, 740 F.3d 623, 644 (D.C. Cir. 2014).

our conclusion that the Commission’s virtuous cycle theory provides reasonable grounds for the exercise of that authority.”³⁰

The Commission’s primary consideration must be the public interest, not the investment plans or revenue goals of a handful of very large companies. The Communications Act mentions the “public interest” over 100 times,³¹ including that the “Commission may prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this chapter.”³² One of the few times the *NPRM* mentions this notion, it falsely equates infrastructure investment with the public interest.³³ This is important because the AT&T interpretation would require that the Commission ignore the impact of its decisions on innovation and investment from the edge. But application of the “virtuous circle,” twice affirmed by the D.C. Circuit, requires it and thus provides a better foundation for reasoned decision-making. Indeed, other entities in the Internet ecosystem have invested and continue to invest in the Internet ecosystem—investments that facilitate consumers’ access to the Internet.³⁴

AT&T’s argument is wrong not only on legal grounds, but also wrong on factual grounds. Claims about reduced investment incentives from Title II reclassification are belied by broadband providers’ own statements. The discrepancy between some

³⁰ *USTelecom*, 825 F.3d at 734.

³¹ 47 U.S.C. § 151 *et seq.*

³² *Id.* § 201(b).

³³ *NPRM* at 4448 ¶ 44 (claiming that “[r]estoring broadband Internet access service to its previous status as an information service subject to Title I is in the public interest because it will alleviate the harms caused by Title II reclassification” while alleging that these harms are “depressed broadband investment and reduced innovation”).

³⁴ *See supra* note 19.

commenters' arguments and their businesses' actions extends to the hotly-debated issue of whether the 2015 open Internet rules caused a reduction in broadband investment. But there is a public source that can put this debate to rest: broadband providers' own statements to their investors. A review of those statements concludes that investment has been unaffected by Title II regulation.

Executives at AT&T, Charter and Comcast have told their investors that reclassification has not affected them. Here is Charter's CEO: "Title II . . . hasn't hurt us . . ."³⁵ And here is what AT&T's CEO responded to whether the 2015 open Internet rules was an impediment to investment: "[n]o, we don't think so . . . everything we are planning on doing fits within those rules."³⁶ Finally, here is Comcast's CFO: "[t]he broadband business just is a fantastic business . . . we've been investing, again, heavily . . ."³⁷ In fact, investment has kept apace across the industry.³⁸

Thus, it is not surprising that the only econometric analysis that the *NPRM* cites as support that infrastructure investment has decreased, states plainly that it is

³⁵ Comments of Tom Rutledge, Chairman and CEO, Charter Communications, Inc. at the UBS Global Media and Communications Conference, Fair Disclosure Wire (Dec. 6, 2016).

³⁶ Comments of Randall Stephenson, Chairman and CEO, AT&T Inc. at UBS Global Media and Communications Conference, Seeking Alpha (Dec. 8, 2015), <https://seekingalpha.com/article/3741746-ts-t-ceo-randall-stephenson-presents-ubs-global-media-communications-brokers-conference?page=7> (registration required).

³⁷ Comments of Mike Cavanagh, Senior EVP & CFO, Comcast Corp., at the UBS Global Media and Communications Conference, Seeking Alpha (Dec. 7, 2016), <https://seekingalpha.com/article/4028984-comcasts-cmcsa-management-presents-ubs-global-media-communications-conference-transcript>.

³⁸ Jon Brodtkin, *Title II Hasn't Hurt Network Investment, According to the ISPs Themselves*, Ars Technica (May 16, 2017), <https://arstechnica.com/information-technology/2017/05/title-ii-hasnt-hurt-network-investment-according-to-the-isps-themselves/> (citing significant increases in capital expenditures on broadband deployment by Comcast, Charter and Verizon following the 2015 rules).

“inappropriate [to] use [] investment as a policy objective,” and “a tit-for-tat accounting of quarterly or annual changes in capital expenditures of broadband providers over some arbitrarily chosen time-frames [is] a largely uninformative effort.”³⁹ Instead, the Commission must consider all aspects of the Internet ecosystem in determining the public interest and the benefits and costs of reclassification to consumers.

IV. COST-BENEFIT ANALYSIS REQUIRES A SEPARATE NOTICE AND COMMENT

The few comments on the Commission’s potential application of a cost-benefit analysis (“CBA”) demonstrate that it requires more guidance than what the current *NPRM* provides. Three commenters that focus on this issue create baselines from wholly-inadequate premises that do not even purport to reflect the public interest, only the narrow interests of broadband providers. And the remaining commenters fail to address how the Commission should apply a CBA. At minimum, such lack of commentary evidences the need for the Commission to issue another *NPRM* before it can issue an order.

AT&T’s proposal for a CBA baseline is flawed from the starting gate. The analysis begins by assuming that the bright line “no-blocking, no-throttling, and transparency rules will continue to be in place” even though Title II classification will not.⁴⁰ But it does not convincingly explain how that is possible.⁴¹ After all, the D.C. Circuit has rejected exactly

³⁹ See George S. Ford, *Net Neutrality, Reclassification and Investment: A Counterfactual Analysis*, Phoenix Center for Advanced Legal & Economic Public Policy Studies, Perspectives 17-02, at 2-3 (Apr. 25, 2017), <http://www.phoenix-center.org/perspectives/Perspective17-02Final.pdf>.

⁴⁰ Declaration of Mark A. Israel, et al., attached to AT&T Comments, WC Docket No. 17-108, ¶ 11 (July 17, 2017) (“AT&T Economic Decl.”).

⁴¹ Nor does it explain why that fictitious baseline is needed. As AT&T’s CEO has stated, “everything we are planning on doing fits within [the 2015 *Open Internet*] rules.” See *supra*

what the analysis assumes as a baseline.⁴² The only explanation is that this view represents “industry consensus” by which AT&T clearly means the interest of broadband providers. But “industry consensus” is not the same as the “public interest” and it cannot trump legal requirements of the Communications Act.

The factual assumptions of the AT&T baseline are equally deficient. It defines the broadband market as at least 10 Mbps.⁴³ This is an anachronistic definition of the market, as demonstrated both by the Commission’s prior rulings⁴⁴ and the evidence of consumer preference for cable and fiber connections over slower and less reliable DSL.⁴⁵ Even AT&T seems to acknowledge this fact by advertising 50 Mbps as its minimum speed offering.⁴⁶

note 36. It is unclear why AT&T’s economic declaration forgoes the rules currently in place as its baseline.

⁴² *Verizon v. FCC*, 740 F.3d 623, 628 (2014) (“Given that the Commission has chosen to classify broadband providers in a manner that exempts them from treatment as common carriers, the Communications Act expressly prohibits the Commission from nonetheless regulating them as such. Because the Commission has failed to establish that the anti-discrimination and anti-blocking rules do not impose *per se* common carrier obligations, we vacate those portions of the *Open Internet Order*.”). AT&T’s assertion that the no-blocking and no-throttling rules can remain in place absent Title II is unavailing. *See* AT&T Comments at 102-06. The Commission has crafted no-blocking and no-throttling rules consistent with *Verizon* and upheld by *USTelecom*. AT&T’s speculations as to what the D.C. Circuit *may* approve are inconsistent with what it *did* approve—the 2015 *Open Internet Order*.

⁴³ AT&T Economic Decl. ¶ 46.

⁴⁴ For fixed services, the Commission defines broadband at a starting “speed benchmark of 25 Mbps download/3 Mbps upload.” *See* Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Septs to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, 2016 *Broadband Progress Report*, 31 FCC Rcd. 699, 701 ¶ 3 (2016).

⁴⁵ *See* Evans White Paper at 3 n.4.

⁴⁶ *See* AT&T, <https://www.att.com/internet/dsl.html> (last visited Aug. 30, 2017). AT&T does not appear to even advertise DSL offerings on its website, stating instead that “AT&T

The analysis is equally fraught with error on the cost side. There, it focuses on the impact of regulation on broadband providers' investment only,⁴⁷ which, as explained above, captures only one part of the Internet ecosystem even if there were some basis to believe it had been affected.

Verizon also proposes an inadequate baseline for conducting a CBA. It argues that a "CBA should focus on the impact of Title II regulation on competition and investment,"⁴⁸ and concludes that "[t]he costs of Title II regulation are clear. By reclassifying broadband internet services as telecommunications services, the *Title II Order* will reduce investment and adversely affect innovation."⁴⁹

As INCOMPAS explained in its Comments, focusing on broadband providers' investment in infrastructure and potential harms to that investment is an incorrect baseline.⁵⁰ Both Comcast and Verizon economists focus on the economics of a CBA, but conveniently examine only one side of the economics equation. Neither focuses on the impact of the open Internet rules on investment at the edge—innovation free from the threat of blocking, throttling or paid prioritization. They also fail to focus on the public interest, arguing instead that more investment in infrastructure is the only public interest

high-speed Internet offers a fast and reliable online connection. However, if you prefer DSL Internet service, call the number below for ordering information." *Id.*

⁴⁷ AT&T Economic Decl. ¶¶ 20-24.

⁴⁸ Comments of Verizon, WC Docket No. 17-108, Exhibit A at ¶ 22 (July 17, 2017) ("Verizon Economic Decl.").

⁴⁹ *Id.* ¶ 24.

⁵⁰ INCOMPAS Comments, WC Docket No. 17-108, at 92-94 (July 17, 2017) ("INCOMPAS Comments").

factor the Commission must consider.⁵¹ The baselines that these commenters use are not only inaccurate, but unrealistic. The Internet ecosystem is comprised of many entities, some of which are broadband providers.

Any CBA must account for the entire Internet ecosystem, not just a subset of those that provide access to the Internet. That means quantifying as much as possible all of the costs and benefits, including, but not limited to, infrastructure investment, losses from innovation on the edge, decreased consumer surplus, and increased uncertainty from venture capitalists. To limit the CBA to infrastructure investment would render it invalid, also because it would ignore important non-economic interests, including diversity of speech.

Free State's CBA submission follows the same misguided path, but also manages to trip over its own reasoning.⁵² Drawn to the beacon of allegedly depressed investment by broadband providers, Free State argues that the Commission "is correct to focus much of its cost analysis on how broadband capital investment is being adversely affected."⁵³ But it also advocates following Section E of the OMB Circular A-4,⁵⁴ which would lead to the opposite conclusion—that it should not focus much of its cost analysis on that. Instead, as

⁵¹ Verizon Economic Decl. ¶ 22 ("Because enhancing competition and stimulating investment is fundamental to enhancing consumer welfare, such a CBA focused on competition and investment is consistent with the Commission's public-interest standard.").

⁵² Theodore R. Bolema, *Perspectives from FSF Scholars: An Assessment of the FCC's Proposal to Conduct a Cost-Benefit Analysis*, Free State Foundation (July 14, 2017), http://www.freestatefoundation.org/images/An_Assessment_of_the_FCC_s_Proposal_to_Conduct_a_Cost-Benefit_Analysis_071417.pdf.

⁵³ *Id.* at 11.

⁵⁴ *Id.* at 8.

the Circular dictates, the “analysis should focus on benefits and costs that accrue to citizens and residents of the United States.”⁵⁵ Free State appears to have omitted this part of the Circular in its analysis and focused solely on infrastructure investment. That narrow scope would fail the Circular’s test.

Most other commenters opposing the current rules have failed to address the CBA section of the *NPRM*. For the very few that have, their word economy is noticeable, and limited to simply supporting the need for a CBA.⁵⁶ These statements lack any guidance required to inform the Commission of if and how it should apply a CBA.

The misleading or insubstantial commentary on the need of a CBA further evidences the need for the Commission to issue an *NPRM* detailing any cost-benefit test before proceeding to apply it. As INCOMPAS has previously explained, such an *NPRM* should at minimum ask targeted questions about a potential CBA application; put parties on notice as to what factors the Commission will consider in its CBA; and incentivize transparency of the CBA’s methodologies or assumptions.⁵⁷

⁵⁵ OMB Circular A-4(E)(1).

⁵⁶ See, e.g., Comments of American Cable Association, WC Docket No. 17-108, at 58-59 (“The Commission’s proposed approach . . . is appropriate, and exactly the approach the Commission should have taken prior to adopting economic regulation in its 2015 Open Internet Order.”); Comments of CTIA, WC Docket No. 17-108, Exhibit B, Hahn Decl. ¶ 39 (July 17, 2017) (“It is for this reason that I support the Restoring Internet Freedom’s *NPRM*’s interest in using benefit-cost analysis in this and related matters that come before the FCC.”).

⁵⁷ INCOMPAS Comments at 83-89.

V. ECONOMIC ANALYSIS SUPPORTS THAT FIXED BROADBAND PROVIDERS HAVE THE INCENTIVE AND ABILITY TO HARM EDGE PROVIDERS AND CONSUMERS

A. Two Significant Market Failures Exist in the Fixed Broadband Access Marketplace that Harm Edge Providers and Consumers

In a report commissioned by the Competition and Innovation Institute, Dr. David Evans identifies two significant market failures in the fixed broadband access industry supported by Commission and DOJ findings. First, large broadband providers are bottlenecks between edge providers and consumers, which enable them to exert significant market power over edge providers. Second, the ownership of large linear programming providers by broadband providers incentivizes them to harm edge providers with whom they compete in providing programming. These market failures therefore create the incentive and ability for broadband providers to harm edge providers and consumers.⁵⁸ As Dr. Evans states, “the markets by which American households, by and large, obtain [broadband access] services and linear video competition are dysfunctional as a result of the lack of horizontal competition in [broadband] provision and the cross-ownership of MVPDs by [those] providers.”⁵⁹ Commenters opposing the current rules filed economists’ declarations that attempt to support the opposite conclusions—that broadband providers are not bottlenecks and that there is no vertical market failures. But these conclusions are based on inaccurate data, circumstantial evidence and inadequate hypotheses. So their

⁵⁸ As Dr. Evans explains, the broadband providers’ economic declarations “mainly ignore economic findings, including extensive findings of fact, in recent FCC and DOJ investigations of wired BIAS providers and MVPDs. They do not offer any empirical evidence that would cast doubt on the FCC findings and that hasn’t already been reviewed and rejected by the FCC. Nor do they offer rebuttals of the FCC’s grounds for rejecting their previously submitted analyses.” Evans White Paper at 7 n.9.

⁵⁹ *Id.* at 64.

probative value cannot be compared to the Commission and DOJ findings, which are official conclusions based on actual data from broadband providers and remain uncontested.

1. *Bottleneck Market Failure*

The largest broadband providers serve most connected households, and they can use their control over access to those subscribers to impose fees on edge providers, which leads to less competition and harms consumers.

The four largest fixed broadband providers account for almost 72 percent of subscribers.⁶⁰ In other words, Comcast, Charter, AT&T and Verizon—the leading opponents of the *2015 Open Internet Order*—dominate the broadband access market. That domination enables them to have significant bargaining leverage over edge providers, whose only pathway to subscribers is through broadband providers. Without one of those broadband providers, for example, an OVD—whose market is decidedly nationwide⁶¹—faces the threat of foreclosure from a large portion of available subscribers. That would spell financial doom for that OVD.

Broadband providers know this, and they have used that ability to impose terminating access fees on edge providers. Indeed, three of those broadband providers (Comcast, AT&T and Verizon), which account for around 51 percent of subscribers, had imposed access fees on some edge providers as of 2016 1Q. The remaining largest provider—Charter (with about 21 percent of subscribers)—is absent because the

⁶⁰ *Id.* at 9.

⁶¹ Competitive Impact Statement, *United States v. Charter Communications, et al.*, No. 1:16-cv-00759, 7 (May 10, 2016) (“However, because OVDs typically offer services nationwide, the Complaint alleges that anticompetitive effects of the proposed merger likely extend to the entire United States.”).

Commission prohibited it from imposing interconnection fees in the Charter-TWC Order. The Commission's reason for that prohibition? It determined that Charter-TWC was capable of blocking edge provider traffic because of its peering relationships and lack of dependence on transit providers.⁶²

Yet commenters like AT&T and Comcast continue to incorrectly state that broadband providers are not “terminating access monopolies” or “competitive bottlenecks” between edge providers and end users.⁶³ They claim that broadband providers are technically incapable of blocking edge-provider traffic.⁶⁴ Of course, as Dr. Evans demonstrates, such assertions fly in the face of factual determinations by the Commission and DOJ based on reviews of commenters' internal documents.⁶⁵

Dr. Evans attributes five factors explaining the bargaining leverage of those large broadband providers:

- They have the ability to degrade edge providers' connections to subscribers because they control the ports that an edge provider requires to reach those subscribers.⁶⁶

⁶² Applications of Charter Communications, Inc., Time Warner Cable, Inc. and Advance/Newhouse Partnership For Consent to Assign or Transfer Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 31 FCC Rcd. 6327, 6383 ¶¶116-17 (2016). See Evans White Paper at 20 n.43.

⁶³ AT&T Economic Decl. ¶¶ 65-70; Comments of Comcast Corp., Restoring Internet Freedom, WC Docket No. 17-108, Appendix C at 15-16 (July 17, 2017) (“Comcast Economic Decl.”).

⁶⁴ AT&T Economic Decl. ¶69.

⁶⁵ Evans White Paper at 20 n.43.

⁶⁶ *Id.* at 39-41.

- Some edge providers like OVDs require large-scale distribution to recover their significant fixed costs (such as programming).⁶⁷
- Large broadband providers are the only pathways to the majority of subscribers.⁶⁸
- Subscribers are unaware of who caused degradation of their content, thus hesitant to switch to another broadband provider.⁶⁹
- Even if subscribers want to switch, there are few alternatives and the switching costs are high.⁷⁰

Broadband providers can and have used their bottleneck power as bargaining leverage. As noted above, a recent investigation by the New York State Attorney General found evidence that at least two broadband providers engaged in degradation strategies as part of their bargaining with edge providers.⁷¹ Netflix has also been a well-publicized target of degradation strategies.⁷² DOJ also examined broadband providers' bottleneck power during the Comcast-TWC merger proceeding.⁷³ It concluded that there is a positive

⁶⁷ *Id.* at 41-42.

⁶⁸ *Id.* at 42-43.

⁶⁹ *Id.* at 43.

⁷⁰ *Id.* at 44-45.

⁷¹ *Id.* at 46-47. *See supra* note 4.

⁷² Evans White Paper at 47-48.

⁷³ *See* Nicholas Hill, Nancy L. Rose, & Tor Winston, *Economics at the Antitrust Division 2014-2015*, 47 R. Indus. Org. 425, 427-28 (2015) ("Rose Study")(discussing the DOJ staff's empirical study of interconnection contracts between ISPs and content providers).

correlation between size and fees—the more subscribers a broadband provider has, the higher the interconnection fees it can demand.⁷⁴

Contrary to Opposing Economists' statements⁷⁵ that subscribers know the source of throttling, Dr. Evans demonstrates that it is unlikely for a household to know that source.⁷⁶ AT&T argues that “[n]o ISP engages in blocking or throttling without a reasonable network-management justification because no ISP sees any commercial upside in depriving its customers of access to the complementary applications they value.”⁷⁷ It further states that “clear rules prohibiting blocking and throttling of Internet content and applications, subject to appropriately flexible standards of reasonable network-management . . . are uncontroversial precisely because no broadband [provider] has any interest in violating them, and they are thus nearly cost-free because they do not interfere with efficient private ordering.”⁷⁸ But that is exactly what Comcast did, as Dr. Evans demonstrates. Continued denial of the facts does not make them go away.

Dr. Evan's conclusions, supported by Commission and DOJ findings, demonstrate that broadband providers act as bottlenecks.

⁷⁴ Evans White Paper at 48-49 (citing Rose Study).

⁷⁵ See Verizon Economic Decl. ¶¶ 85-89.

⁷⁶ Evans White Paper at 43.

⁷⁷ AT&T Comments at 2-3.

⁷⁸ *Id.* at 10-11.

2. *Vertical Market Failure*

In addition to being bottlenecks, large broadband providers are also large MVPDs, and earn substantial profits from the provision of linear programming. That incentivizes them to harm edge providers like OVDs that compete with their MVPD business.⁷⁹

Dr. Evans demonstrates that the largest broadband providers are also the largest MVPDs. Specifically, the top three broadband providers serve 64.6 percent of all broadband access subscribers and 66.3 percent of all MVPD subscribers.⁸⁰

Broadband providers earn substantial profits from their MVPD business. Dr. Evans calculates that Comcast's MVPD business generated 65 percent more revenue than its broadband provider business in 2016, and that its MVPD profits were comparable to its broadband access revenues.⁸¹ Charter's 2016 revenue exhibited similar trends: its MVPD revenue was 29 percent greater than its broadband provider revenue, and its MVPD profits were comparable to its broadband provider revenue.⁸²

Edge providers like OVDs pose long-term competitive threats to those significant MVPD profits. Reviews of broadband providers' internal documents led the Commission and DOJ to conclude that OVDs pose a competitive threat to MVPDs and that broadband providers who are also MVPDs perceive OVDs as a threat.⁸³

Dr. Evans demonstrates that fixed broadband providers can use a variety of methods to stifle that competition. They can increase access fees for an OVD to reach the

⁷⁹ See Evans White Paper at 50-52.

⁸⁰ *Id.* at 22.

⁸¹ *Id.* at 55.

⁸² *Id.*

⁸³ *Id.* at 52-57.

broadband provider's subscribers.⁸⁴ They can also degrade the quality of the connection between OVDs and subscribers.⁸⁵ And they can impose data caps or other measured service plans to broadband subscribers, which increase the cost of consuming OVD content.⁸⁶

Broadband providers therefore have the incentive and ability to restrict subscriber access to competing OVDs. As Dr. Evans demonstrates in his review of Commission and DOJ precedent, broadband providers can be expected to act on those incentives.⁸⁷

B. These Market Failures Are Compounded by Lack of Competition and Alternatives

1. *There is little to no competition in fixed broadband access*

Dr. Evans examines broadband providers' subscriber numbers and concludes that consumers have limited access to other broadband providers.⁸⁸ Specifically, he calculates that around 32 percent of the U.S. population has access to only one broadband provider and around 44 percent has access to only two broadband providers.⁸⁹

As Dr. Evans states, subscribers of the two largest broadband providers, Comcast and Charter, account for almost 50 percent of connected consumers, who "generally do not have an equal or faster alternative."⁹⁰ Further, AT&T and Verizon subscribers, who account for 23 percent of connected consumers (not including their mobile broadband

⁸⁴ *Id.* at 58.

⁸⁵ *Id.*

⁸⁶ *Id.* at 59.

⁸⁷ *Id.* at 59-61.

⁸⁸ *See supra* note 44. Unless otherwise stated, references to broadband providers are to fixed service broadband providers with offerings that meet the Commission's 25/3 Mbps benchmark.

⁸⁹ Evans White Paper at 10-11.

⁹⁰ *Id.* at 44.

subscribers), “generally have access to one equal or faster alternative.”⁹¹ These findings demonstrate the lack of competition in the fixed broadband market.

Opposing economists’ assertions that there is competition in the broadband market are based on anachronistic facts and tunnel-vision determinations.⁹² They choose their slower speeds—10 Mbps—as their baseline for judging competition,⁹³ alleging that slower speeds are sufficient for consumers. For support, Comcast cites Internet speed requirements from Hulu, an OVD affiliated with Comcast.⁹⁴ But they conveniently ignore that a household typically has more than one user and several devices accessing edge provider content simultaneously, which means that the speeds required for a single user to access a single service are not representative of household requirements.⁹⁵

⁹¹ *Id.* at 44-45.

⁹² *See, e.g.*, AT&T Economic Decl. ¶¶ 31-33, 39-43, 65-70; Verizon Economic Decl. ¶¶ 71-78; Comcast Economic Decl. at 9-16.

⁹³ *See, e.g.*, AT&T Economic Decl. ¶ 46; Comcast Economic Decl. at 10.

⁹⁴ Comcast Economic Decl. at 10.

⁹⁵ Evans White Paper at 13-14 (noting that download speeds smaller than 25 Mbps are insufficient to reliably support high quality video, voice and other Internet services); Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, *2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment*, 30 FCC Rcd. 1375, 1377 ¶ 3 (2015) (“Congress directed us to evaluate annually ‘whether *advanced* telecommunications capability is being deployed to *all* Americans in a reasonable and timely fashion.’ For a service to be considered advanced, it must enable Americans ‘to originate and receive high-quality voice, data, graphics, and video telecommunications.’ We can no longer conclude that broadband at speeds of 4 megabits per second (Mbps) download and 1 Mbps upload (4 Mbps/1 Mbps)—a benchmark established in 2010 and relied on in the last three Reports—supports the ‘advanced’ functions Congress identified.”). The Commission found that more broadband capacity is needed for multiple Internet devices running simultaneously, and that the majority of American households used broadband service from multiple devices simultaneously. *Id.* at 1400-01 ¶ 38-41. *See also Sharing Speed with Multiple Connected*

2. *Consumers do not switch broadband providers easily*

Lack of competition is compounded by high switching costs. As the Commission has concluded, broadband provider subscribers “infrequently switch their service to another local competitor.”⁹⁶

This is not surprising, as Dr. Evans demonstrates.⁹⁷ Indeed, switching providers first requires a service call to disconnect from the subscriber’s current provider. That is often met with refusal to disconnect or use of aggressive win-back tactics. If that hurdle is surpassed, the next step requires the subscriber to return the current broadband provider’s equipment to a location that is often far away from that subscriber’s location. Then the subscriber must schedule a service visit to install the new service, which often requires someone to be in the location for a significant period of time. And once these steps conclude, the subscriber still faces uncertainty over the quality of service the new broadband provider will offer. Moreover, the fact that consumers tend to prefer buying bundles that contain both broadband access and video programming also increases the switching costs.⁹⁸

Devices, Verizon, 3, <https://www.verizon.com/cs/groups/public/documents/adacct/bandwith-and-multiple-device.pdf> (last visited August 30, 2017) (informing customers that multiple devices running simultaneously will slow down Internet bandwidth, and that one device alone may take up over 25 Mbps).

⁹⁶ Evans White Paper at 12 n.18.

⁹⁷ *Id.* at 11-12.

⁹⁸ Indeed, this was a fundamental tenet of AT&T’s explanation as to why it would be a more effective broadband provider were it allowed to acquire DIRECTV. *See Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations, Description of Transaction, Public Interest Showing, and Related Demonstrations*, MB Docket No. 14-90, 2-4 (June 11, 2014) (explaining that “a high percentage of consumers now purchase MVPD service in a bundle with broadband

Opposing economists are unconvincing in their arguments that consumers switch often. Verizon cites a 2014 study that has been debunked.⁹⁹ AT&T provides circumstantial evidence showing its alleged emphasis on retaining customers.¹⁰⁰ And Comcast cites an FCC report on broadband wireless competition as its primary support, a different market than fixed broadband services.¹⁰¹

Consumers' disdain for large, fixed broadband providers and inability to switch is also evidenced by consumers' decided lack of satisfaction with them. A 2016 American

connections to obtain greater convenience at a lower price," and that, "[a]t its core, then, the rationale for this transaction is simply stated . . . a compelling bundle of video and broadband services").

⁹⁹ See Verizon Economic Decl. ¶ 27. As Dr. Evans explained in the Comcast-TWC proceeding, the fatal flaw of GSG's study is that it is based on theoretical churn rather than actual churn. Netflix Ex Parte Submission, David S. Evans Declaration, MB Docket No. 14-57, 4 n.7 (Apr. 6, 2015) ("Netflix Ex Parte"). Indeed, the study admits that "opinion research reflects what people say they might do in a hypothetical situation which may deviate in substantial ways from what happens in real-world situations." Comcast Ex Parte Submission, Global Strategy Group Memorandum, MB Docket No. 14-57, 1 (Feb. 19, 2015). GSG's hypothetical study is "flatly inconsistent with [the] lack of such switching when Comcast did degrade the quality of Netflix streaming." Netflix Ex Parte at 4 n.7. This inconsistency cannot be explained away by GSG's rationale that AT&T and Verizon were also degrading the quality of Netflix at the same time. "There were many regions in which Comcast does not compete with AT&T or Verizon, and the vast majority of Comcast broadband subscribers did not abandon Comcast in those regions, so that is wrong to ascribe the lack of switching to the degradation by AT&T and Verizon." *Id.*

¹⁰⁰ AT&T Economic Decl. ¶¶ 49-51.

¹⁰¹ Comcast Economic Decl. at 16. Even Comcast acknowledges that "there is certainly some customer inertia" in switching broadband providers, although it fails to specify whether it is discussing fixed broadband, mobile broadband, or both. *Id.* It also references a 2010 survey by the FCC reporting that "36 percent of customers had switched broadband providers within the prior three years," *id.* (citation omitted), but omits an equally important finding in that survey—almost half of those customers had moved residences. See *Decisions: What Drives Consumers to Switch – or Stick with – their Broadband Internet Provider*, FCC Working Paper, 2 (Dec. 2010), https://apps.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf. So the decision to switch may have been outside the control of almost half of these consumers, especially given Comcast's claim that in 2010 the market was "presumably [] less competitive" at the time. Comcast Economic Decl. at 16.

Customer Satisfaction Index survey found that MVPDs—which are largely owned by large, fixed broadband providers—had the second-worst customer satisfaction ratings. The worst rated companies? The large, fixed broadband providers themselves.¹⁰²

3. *Mobile broadband, satellite and DSL are not substitutes for fixed broadband access*

Opposing economists inaccurately claim that wireless could be a substitute for fixed broadband access. As Dr. Evans demonstrates, mobile broadband, satellite and DSL access are not substitutes for broadband access.

First, mobile broadband access has important limiting factors. Mobile broadband plans are subject to usage limitations, even where mobile providers offer “unlimited” plans.¹⁰³ Specifically, users of some unlimited data plans may have their traffic deprioritized after using 22-23GB of data in a month. Some users will find that only 10GB can be used on a “tethered” connection—i.e., shared with another device. Assuming no other data usage, a mobile broadband subscriber can use 10GB by streaming about 3 hours of HD video a month. Contrast these usage limitations to the Commission’s determinations that the average household uses 57GB a month with their fixed broadband service.¹⁰⁴ Dr. Evans finds that “[m]ost households that have a [fixed broadband provider subscription] . . . have one or more household members that have a [] mobile subscription with a broadband data plan.”¹⁰⁵ That demonstrates that consumers do not view mobile broadband as a substitute.

¹⁰² Evans White Paper at 62 n.133 (citing ACSI website and describing various carriers’ plans).

¹⁰³ *Id.* at 15.

¹⁰⁴ *Id.* at 15-16 n.30.

¹⁰⁵ *Id.* at 16.

If it were so, subscribers would choose (and pay for) fixed or mobile, not both. Even future wireless technologies cannot be viewed as substitutes yet—indeed, one NTCA study reveals, “wireless technologies should [continue to] be viewed as a complement . . . rather than a viable widespread substitute for [fixed] broadband networks”¹⁰⁶ because of the increased demands for broadband capabilities.

The prevalence of mobile devices does not support opposing economists’ arguments that fixed and wireless are close substitutes.

As Dr. Evans states, “about 42 percent of smartphone traffic and 90 percent of tablet traffic use Wi-Fi instead.”¹⁰⁷ Even mobile devices depend heavily on fixed broadband access.

Satellite and DSL cannot be considered substitutes. Satellite Internet access has usage limitations, high costs, low speed and suffers from latency issues.¹⁰⁸ DSL similarly suffers from low speeds and is not a substitute for fixed broadband access.¹⁰⁹

¹⁰⁶ Larry Thompson & Warren VandeStadt, *Evaluating 5G Wireless Technology as a Complement or Substitute for Wireline Broadband*, Vantage Point, 5 (Feb. 2017), https://www.ntca.org/images/stories/Documents/Press_Center/2017_Releases/02.13.17%20fcc%20ex%20parte-ntca%20letter%20submitting%202017%20technical%20paper%20wc%2010-90.pdf.

¹⁰⁷ Evans White Paper at 16 (citing data from The Economist).

¹⁰⁸ *Id.* at 12-13.

¹⁰⁹ *Id.* at 13-14.

VI. CONCLUSION

For the reasons stated herein and INCOMPAS's original comments, the current open Internet rules, and their jurisdictional bases, should be maintained.

Respectfully submitted,

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EXHIBIT A

**CHART OF BROABAND PROVIDER STATEMENTS
AND FCC/DOJ CONCLUSIONS**

**CHART OF BROABAND PROVIDER STATEMENTS
AND FCC/DOJ CONCLUSIONS**

	Broadband Providers' Statements as Contained in their Merger Applications and in this Proceeding	Commission and DOJ Conclusions
<i>Comcast</i>	<ul style="list-style-type: none"> • “The combined company will not have the ability or incentive to benefit its distribution businesses by discriminating against rival online video distributors.” Application of Comcast/NBCU at 122, MB Docket No. 10-56. • “As Comcast explained in its 2014 comments, ‘[i]f a provider were to block or degrade Internet applications or content, the provider would incur substantial subscriber losses and reputational harm.’” Comcast Comments at 63, WC Docket No. 17-108. 	<ul style="list-style-type: none"> • “[E]ven today OVDs may provide some competition for Comcast and affect the prices it charges consumers. For example, an OVD that rents or sells movies competes against Comcast’s pay-per-view movie service and, hence, competes with Comcast for revenue. [REDACTED] Comcast therefore has an incentive to deny that OVD access to NBCU content, including movies distributed by Universal Studios. If consumers have a choice for some of Comcast’s services at a lower price, Comcast may be forced to lower its price in order to keep those customers.” Applications of Comcast Corp., General Electric Co., and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licenses, <i>Memorandum Opinion and Order</i>, 26 FCC Rcd. 4238, 4270 ¶ 81 (2011) (citing redacted information in footnotes 177 and 178). • “Comcast has an incentive to encumber, through its control of the JV, the development of nascent distribution technologies and the business models that underlie them by denying OVDs access to NBCU content or substantially increasing the cost of obtaining such content. . . . Comcast’s incentives and ability to raise the cost of or deny NBCU programming to its distribution rivals, especially OVDs, will lessen competition in video programming distribution.” Complaint, <i>United States v. Comcast Corp., et al.</i>, Case No. 1:11-cv-00106, 21-22 ¶ 54 (D.D.C. Jan. 18, 2011).

	Broadband Providers' Statements as Contained in their Merger Applications and in this Proceeding	Commission and DOJ Conclusions
<i>AT&T</i>	<ul style="list-style-type: none"> • “In addition to improving broadband access for millions of Americans, the broadband expansion also will benefit OTT providers like Netflix, Amazon, Google, and Hulu, which depend on consumers having access to quality broadband connections.” Application of AT&T at 40, MB Docket No. 14-90. • “Because the Title II Order could cite no credible evidence of any relevant market failure, it resorted to abstract economic speculation about market conditions that might theoretically imperil Internet openness someday.” AT&T Comments at 21, WC Docket No. 17-108. 	<ul style="list-style-type: none"> • “We find that as the combined entity expands its online offerings, it will have an increased incentive to limit subscriber demand for competitors’ online video content, including through data caps that discriminate against third-party content by exempting its own content from the data cap. Indeed, AT&T’s internal documents indicate that [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]” Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations, Memorandum Opinion and Order, 30 FCC Rcd. 9131, 9210 ¶ 210 (2015).

	Broadband Providers’ Statements as Contained in their Merger Applications and in this Proceeding	Commission and DOJ Conclusions
<i>Charter</i>	<ul style="list-style-type: none"> • “New Charter will lack the ability to adversely impact OVDs’ abilities to compete . . . as well as the incentive to do so.” Application of Charter at 44, MB Docket No. 15-149. • “Consistent with Charter’s pro-customer and pro-broadband approach, we have long put the principles of an open internet into practice in our own business. We do not block, throttle, or otherwise interfere with the online activity of our customers, and we are transparent with our customers regarding the performance of our service.” Charter Comments at 2, WC Docket No. 17-108. 	<ul style="list-style-type: none"> • “Many [internal] documents indicate that, despite some instances of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], New Charter would have an incentive to harm OVDs that could serve as substitutes for some or all of its video products. For instance, the record indicates that the Applicants have taken steps to [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.].” Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, <i>Memorandum Opinion and Order</i>, 31 FCC Rcd. 6327, 6344 ¶ 42 (2016). • “In numerous internal documents, Defendants show a keen awareness of the competitive threat that OVDs pose. In fact, a TWC presentation from February 2014 illustrated the threat posed by such emerging online competitors as a meteor speeding towards earth.” Complaint, <i>United States v. Charter Communications, et al.</i>, Case No. 1-16-cv-00759-RCL, 11-12 ¶ 27 (D.D.C. Apr. 25, 2016).

EXHIBIT B

DAVID EVANS WHITE PAPER

ECONOMIC FINDINGS CONCERNING THE STATE OF COMPETITION FOR WIRED BROADBAND PROVISION TO U.S. HOUSEHOLDS AND EDGE PROVIDERS

David S. Evans*

August 29, 2017

Abstract

The Federal Communications Commission and the U.S. Department of Justice, in the course of considering mergers and acquisitions as well as other policy matters, have conducted detailed investigations of the wired broadband business, and the intertwined business of providing linear programming. This paper summarizes the economic findings reached by the FCC and the Justice Department and their implications for public policy. These authorities have identified two significant market failures based on empirical studies, reviews of company documents, and other evidence. The first market failure results from the fact that large wired broadband providers are bottlenecks between edge providers and households and therefore able to exercise significant market power over edge providers by restricting access to households. The second market failure results from the fact that the large wired broadband providers also own large linear programming providers. The evidence shows that the companies that have common ownership over these related services have the incentives and abilities to harm edge providers that compete with their linear programming businesses. To prevent making these market failures from worsening, the FCC and Justice Department have blocked mergers or imposed conditions on the merging parties. The FCC and Justice Department findings are relevant for considering public policy towards the provision of wired broadband services to households and edge providers.

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I. Introduction

The Federal Communications Commission (FCC) and the Antitrust Division of the U.S. Department of Justice (DOJ) have had the opportunity in the course of several merger reviews, as well as other regulatory proceedings, to conduct detailed economic analyses of the provision of wired broadband to subscribers and the online companies those subscribers want to connect with. Their work provides insights into the state of competition for the provision of wired broadband and the extent to which the companies that provide wired broadband to households have the abilities and incentives to harm online competition and consumers.¹ The findings of these agencies provide relevant background for discussions concerning public policies regarding the provision of wired broadband and video programming, including current discussions concerning net neutrality in the United States.

This paper reviews the FCC's and DOJ's economic findings.² For the purposes of this paper we use the following terminology: an "edge provider" refers to a business that provides its products or services over the Internet. End users typically consume digital products or online services using a desktop or mobile web browser or a mobile app. A broadband internet access service ("BIAS") provider enables households to connect to the Internet. The paper focuses on high-speed wired BIAS providers—ones that offer download speeds of at least 25 Mbps and upload speeds of at least 3 Mbps—which, as of now, is what most households require to use

¹ The main FCC and DOJ findings, and related documents, relied upon in this paper are listed in Appendix A.

² In some cases, this paper relies on material that is not part of the public record from the FCC or DOJ but provides empirical support to the conclusions reached by these agencies. In particular, this paper relies on economic analyses I submitted to the FCC or DOJ in their reviews that support the conclusions reached by these agencies. I rely on the publicly available versions of these submissions and not on any confidential information.

high-quality voice, data, graphics, and video applications.³ The paper would reach similar conclusions using broader definitions of wired broadband speed.⁴ Households obtain linear programming using a Multichannel Video Programming Distributor (MVPD), which delivers programming over its local network and not over the Internet. Most households have access to a wired BIAS provider, which is typically offered by a cable or telco company, and that company usually has an MVPD service that offers linear programming.

The paper is organized as follows. Section II presents empirical background on the wired broadband choices available to households and the implications of local competition for edge providers. Section III summarizes the ownership relationships between wired BIAS providers, MVPDs, and video programmers. Section IV examines the extent to which there are barriers to entry, or expansion, for wired BIAS providers given political barriers to entry and the extent of integration into MVPDs. Section V summarizes the FCC and DOJ findings concerning the degree to which wired BIAS providers can exercise significant horizontal market power over access fees to edge providers. Section VI reviews the findings of these agencies concerning the extent to which vertically integrated firms, that operate wired BIAS

³ In its 2015 Broadband Progress Report, the FCC concluded that in order for a service to qualify as an “advanced telecommunications service,” it would need download speeds of at least 25 Mbps and upload speeds of at least 3 Mbps. This was a change from its previous benchmark of 4 Mbps downloads and 1 Mbps uploads. For a discussion of the rationale for this benchmark, see Federal Communications Commission, “2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment,” GN Docket No. 14-126, February 4, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-10A1.pdf (“FCC 2015 Broadband Progress Report”), at ¶¶ 19-62. This benchmark threshold remains the same through the current FCC Broadband Progress Report. Federal Communications Commission, “2016 Broadband Progress Report,” GN Docket N. 15-191, January 29, 2016, https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf (“FCC 2016 Broadband Progress Report”), at ¶ 19.

⁴ When given the choice, households predominantly use high-speed broadband providers which indicates that slower-speed providers do not impose significant competitive constraints. DSL, satellite, fixed wireless, and other wireline technologies (excluding cable, fiber, and AT&T’s hybrid U-Verse technology) accounted for just 15.7 percent of broadband connections as of June 30, 2016, compared to the 84.3 percent for cable, fiber-to-the-premises, and AT&T’s hybrid U-Verse technology. This 15.7 percent is only modestly larger than the 7 percent of the US population which lacks access to any provider of high-speed broadband.

providers, MVPDs, and video programmers, have the incentives and abilities to inflict competitive harm on online video distributors (OVDs), and potentially other edge providers, and thereby harm consumers. Section VII examines the implications of the FCC and DOJ findings for considering the benefits and costs of policies towards wired BIAS providers.

The FCC and DOJ have reached several key findings, which the remainder of this Introduction summarizes, concerning the state of competition for wired broadband service and the business strategies adopted by the large firms that have common ownership over wired BIAS providers and MVPDs. Their conclusions are based on extensive economic analyses, including empirical studies prepared by staff and parties before them, as well as the review of internal documents from these parties.⁵ Many of these findings were reached based on the state of competition as recently as 2015. They remain relevant because the fundamental market conditions have not changed significantly since then, as shown below.

It is useful to group the FCC and DOJ findings into two categories: those that relate to a horizontal market failure arising from the lack of competition among two-sided platforms for households and edge providers; and findings that relate to a vertical market failure arising from the fact that companies that own large wired BIAS providers also own large MVPDs.

A. Horizontal Market Failure

1. There is little competition in the supply of high-speed wired BIAS to households. Households typically have only one or two choices for high-speed wired BIAS and there are high switching costs when there is another choice available. There are significant barriers to entry into local markets including political barriers, some of which have resulted from lobbying efforts by large cable and telco providers of high-speed wired BIAS. Slower-speed wired broadband providers, when available, do not

⁵ Many of their findings are consistent with the conclusions of empirical studies and other economic analyses I have conducted related to the issues discussed in this paper and presented to the FCC and DOJ. I reference the public version of relevant submissions I have made below.

impose significant competitive constraints on high-speed providers. Wireless, and fixed satellite also do not impose significant competitive constraints. This finding, concerning lack of competition at the local level, is fundamental to the other conclusions reached by the FCC and DOJ. This paper presents an empirical study that confirms that this lack of choice remains true today.

2. Several large wired BIAS providers, which together account for 71.7 percent of households, have significant bargaining leverage over edge providers, particularly those that provide long-form streaming video, online gaming, and download services, which households consume at home over wired BIAS connections and typically not on mobile devices. The substantial bargaining leverage results from these large BIAS providers being able to block edge providers from reaching a significant fraction of households, thereby preventing those edge providers from realizing various economies of scale.
3. Large wired BIAS providers can use their control over access to households, together with other technical features involving interconnection, to impose termination fees on edge providers. They have done this by degrading the quality of the connection between the targeted edge provider and their households. They do not face penalties from lost subscribers because households have limited choices and do not necessarily know that their wired BIAS provider was degrading their service. Most wired BIAS providers, which are smaller, cannot and do not impose access fees.

B. Vertical Market Failure

1. Large wired BIAS providers also own large MVPDs and earn significant profits from the supply of linear video programming to household subscribers. Edge providers, in particular OVDs and Over-the-Top (OTT) distributors, pose a long-term competitive threat to those profits.
2. Large wired BIAS providers have the incentives to harm OVDs and OTT distributors to protect their MVPD profits. That finding is based on economic theory, empirical studies and internal documents from these companies.
3. The large wired BIAS providers have the ability to impose harm for two related reasons. They can use their control over the supply of high-speed BIAS to households to raise the costs to OVDs and OTT distributors, increase the cost to their subscribers of using those services, or reduce the quality of these competing services. They can also use their position as large MVPDs to impose vertical restraints on video programmers to reduce the supply of video programming to competing streaming video providers.

C. Policy Implications

The DOJ and FCC have taken these market failures into account in their review of proposed mergers of cable and telco systems starting with the review of AT&T's proposed

consolidation of wired broadband suppliers in 2000. In some cases, such as Comcast's proposed Time Warner Cable acquisition in 2015, the FCC, DOJ, or both agencies have effectively prevented those acquisitions from proceeding.⁶ In other cases, such as Charter's acquisition of Time Warner Cable in 2016, the FCC and DOJ have imposed conditions on the merging parties to prevent the consolidation from exacerbating the market failures identified above.⁷

Public policy, including cost-benefit analyses, concerning high-speed wired BIAS, and the intertwined supply of linear video programming, should, as an economic matter, account for these market failures as well.⁸ That includes developing economic models and empirical studies that recognize the realities of competition for these businesses.⁹

⁶ Devika Krishna Kumar, "Comcast Drops Time Warner Cable Bid After Antitrust Pressure," Reuters, April 23, 2015, <http://www.reuters.com/article/us-comcast-timewarnercable-idUSKBN0NE2D220150424>.

⁷ Federal Communications Commission, Memorandum Opinion and Order in the Matter of Applications of Charter Communications Inc., Time Warner Cable, Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, May 10, 2016, https://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0510/FCC-16-59A1.pdf ("FCC Charter-TWC Merger Order"), at Appendix B; US v. Charter Communications Inc. et al, 1:16-CV-00759, Final Judgment, September 9, 2016, <https://www.justice.gov/atr/file/891506/download>; Time Warner Cable, "Charter, Time Warner Cable and Bright House Networks Receive Final Regulatory Approval for Transactions," May 12, 2016, <http://ir.timewarnercable.com/investor-relations/investor-news/financial-release-details/2016/Charter-Time-Warner-Cable-and-Bright-House-Networks-Receive-Final-Regulatory-Approval-for-Transactions/default.aspx>; Time Warner Cable, "Charter Communications, Time Warner Cable and Bright House Networks Complete Transactions," May 18, 2016, <http://ir.timewarnercable.com/investor-relations/investor-news/financial-release-details/2016/Charter-Communications-Time-Warner-Cable-and-Bright-House-Networks-Complete-Transactions/default.aspx>.

⁸ Of course, these findings are reached at a particular point in time and public policy should also account for changes in market conditions, including changes facilitated by regulatory policy. This paper shows, however, that the fundamental lack of competition for household broadband service is likely to persist as a result of barriers to entry.

⁹ Several economists have made submissions on behalf of the incumbent cable and telco companies in the Restoring Internet Freedom matter, Federal Communications Commission (Wireline Competition Bureau), "Wireline Competition Bureau Opens WC Docket No. 17-108," April 27, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DA-17-396A1_Rcd.pdf. See Mark A. Israel, Allan L. Shampine, and Thomas A. Stemwedel, "Declaration before the Federal Communications Commission," In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, July 17, 2017, <https://ecfsapi.fcc.gov/file/10717906301564/Econ%20Declaration.pdf> ("Israel et al Declaration"); Andres V. Lerner and Janusz A. Ordover, "An Economic Analysis of Title II Regulation of Broadband Internet Access

II. Wired BIAS Market Structure

A wired BIAS provider—usually a cable company or a telco—extends a wire into the home that provides a connection to the Internet. Those households can then connect devices directly to their broadband service or set up a Wi-Fi network in their home and use devices wirelessly. A wired BIAS provider also makes connections to the Internet through relationships with one or more entities that connect to the Internet backbone. Millions of edge providers distribute their content over the Internet and that content reaches the wired BIAS provider through the entities that it connects to.

Wired BIAS providers are two-sided platforms that connect consumers and edge providers.¹⁰ On one side, wired BIAS providers serve consumers in local areas where those providers have laid networks. They typically charge households a monthly fee for service, which may be bundled in with other services offered by the BIAS provider. On the other side, wired BIAS providers serve edge providers that want to reach consumers in these households. A few large wired BIAS providers charge edge providers to reach households, but most wired BIAS providers do not, as discussed below.

Providers,” In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, July 17, 2017, <https://ecfsapi.fcc.gov/file/10717390819816/2017%2007%2017%20Verizon%20comments%202017%20Open%20Internet%20Notice.pdf> (“Lerner and Ordoover Declaration”); Christian M. Dippon, “Public Interest Repercussions in Repealing Utility-Style Title II Regulation and Reapplying Light-Touch Regulation to Internet Services,” in the Matter of Restoring Internet Freedom, WC Docket 17-108, July 17, 2017, <https://ecfsapi.fcc.gov/file/107171777114654/2017-07-17%20AS-FILED%20Comcast%202017%20Open%20Internet%20Comments%20and%20Appendices.pdf> (“Dippon Declaration”). As I discuss below, they mainly ignore economic findings, including extensive findings of fact, in recent FCC and DOJ investigations of wired BIAS providers and MVPDs. They do not offer any empirical evidence that would cast doubt on the FCC findings and that hasn’t already been reviewed and rejected by the FCC. Nor do they offer rebuttals of the FCC’s grounds for rejecting their previously submitted analyses.

¹⁰ For a non-technical introduction to multisided platforms see David S. Evans and Richard Schmalensee (2016), *Matchmakers: The New Economics of Multisided Platforms*, (Boston: Harvard Business Review Press).

The FCC has found that most American customers have access to a small number of high-speed wired BIAS providers that supply adequate speeds for active Internet users.¹¹ This paper reports a recent analysis of the state of competition that shows that the average household has access to two high-speed wired BIAS providers. Mobile wireless connections are not good substitutes for wired BIAS for households. They are less reliable in delivering the speeds needed for active Internet users. Moreover, the usage limitations in place, even on so-called “unlimited” plans, make them inadequate for household use.

Based on current information, four wired BIAS providers account for 71.7 percent of households with individual shares ranging from 7.1 percent (Verizon) to 25.4 percent (Comcast).¹² By using their ability to limit access to a sizable fraction of households, large wired BIAS providers have bargaining power over edge providers and have been able to charge access fees, according to the findings reached by the FCC and DOJ.¹³

¹¹ FCC Charter-TWC Merger Order, at ¶ 50; FCC 2016 Broadband Progress Report, at ¶ 86.

¹² Share calculations are based on subscribers as of March 31, 2017. The number of subscribers for each ISP is from Leichtman Research Group, “About 960,000 Added Broadband in 1Q 2017,” May 19, 2017, <http://www.leichtmanresearch.com/press/051917release.html>. The total number of wired Internet connections is based on the same source, which states that the subscribers of the covered providers account for approximately 95 percent of all wired broadband subscribers. Note that in past periods, the total number of US wired broadband subscribers derived from Leichtman Research Group have been slightly lower than those reported by the FCC. Compare Leichtman Research Group, “About 190,000 Added Broadband in 2016 Q2,” August 16, 2016, <http://www.leichtmanresearch.com/press/081616release.html> (91.9 million); Federal Communications Commission (Industry Analysis and Technology Division, Wireline Competition Bureau), “Internet Access Services: Status as of June 30, 2016,” April 2017, https://apps.fcc.gov/edocs_public/attachmatch/DOC-344499A1.pdf, at 2 (104.0 million). The discrepancy is possibly due to differences in the speed threshold. The FCC counted all residential wired Internet connections over 200 Kbps in at least one direction, and the Leichtman Research Group may have used a more demanding standard. The FCC data on the number of broadband subscribers has not been released for periods more recent than 2016 Q2, so I have not used it here.

¹³ As discussed below the ability to deny access also depends upon having significant control over the Internet pipes coming into the system. The large BIAS providers have peering connections which enable them to congest traffic coming from specific content providers flowing through their networks to the household.

A. Household Subscribers

There are several types of wired BIAS providers, including cable companies, telcos, and, in limited areas, overbuilders.¹⁴ Since laying cable is expensive, and often requires governmental approvals, these wired BIAS providers are usually available only in particular neighborhoods. A household can only use those wired BIAS providers that have extended their networks very close to the home. That determines, as the FCC has recognized, the available competitive choices.

1. Availability of Wired BIAS Providers to Households

Wired BIAS providers operate systems that serve households in many different geographic areas. Often a company has a franchise for a city, or significant parts of a city, and builds its network out to some, or all, of that area. Large companies have many franchises. Table 1 shows the number of household subscribers for 13 of the largest wired BIAS providers. They account for 90.1 percent of U.S. subscribers and the largest four account for 71.7 percent. Some of the companies compete head-to-head for households in the same geographic area.

¹⁴ In this context, an overbuilder is a cable company, telco, or fiber provider that offers broadband service to households already served by incumbent cable and telco providers. For example, an overbuilder like RCN is a company that offers wired BIAS via coaxial cable to households in areas already served by an incumbent cable provider.

Table 1: Subscribers and Shares for Largest BIAS Providers, March 31, 2017

	Broadband Subscribers	Share of all Broadband Subscribers
Comcast	25,131,000	25.4%
Charter	23,051,000	23.3%
AT&T	15,695,000	15.9%
Verizon	7,011,000	7.1%
CenturyLink	5,945,000	6.0%
Frontier	4,164,000	4.2%
Altice	4,002,000	4.0%
Mediacom	1,179,000	1.2%
Windstream	1,047,600	1.1%
WideOpenWest (WOW)	729,000	0.7%
Cable ONE	523,327	0.5%
Cincinnati Bell	307,400	0.3%
FairPoint	305,353	0.3%
Total (These Providers)	89,090,680	90.1%
Total (All Providers)	98,863,874	100.0%

Source: Leichtman Research Group, “About 960,000 Added Broadband in 1Q 2017,” May 19, 2017, <http://www.leichtmanresearch.com/press/051917release.html>.

Note: This list omits Cox, who subscriber count is more difficult to estimate from public data, but is probably in the range of 1 to 5 percent.

Although precise data on household choices are not available, it is possible to get a good approximation from data on the availability of wired BIAS providers at the census block level. A census block is a small area that usually consists of up to 100 households, although some very dense census blocks can have nearly 20,000 residents. Table 2 shows the percent of the population that have access to various numbers of high-speed wired BIAS providers as of June 30, 2016. About 7.0 percent of the population do not have access to a high-speed wired BIAS provider. Of those who have at least one option, the average person had two high-speed wired BIAS provider choices. The most common situation, accounting for 40.8 percent of people, is two high-speed wired BIAS choices. Of people who have at least one high-speed wired BIAS provider, about 31.9 percent only have one alternative and 75.8 percent have one

or two. These figures are generally consistent with findings the FCC has reached using earlier and similar data.¹⁵

Table 2: Subscribers and Shares for the Largest Wired BIAS Providers, June 30 2016

Number of High-Speed Wired BIAS Providers in Census Block	Share of Population	Share of Population with at Least One High-Speed Wired BIAS Provider
0	7.0%	-
1	29.7%	31.9%
2	40.8%	43.8%
3	19.0%	20.4%
4	3.1%	3.3%
5	0.4%	0.5%
6+	0.1%	0.1%
Weighted Average Number of Providers	1.83	1.97

Source: Federal Communications Commission (2017), “Fixed Broadband Deployment Data from FCC Form 477: Data as of June 30, 2016 (Version 2),” <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477> (“FCC Form 477 Data”); US Census.

The typical household has access to one cable company and one telco provider. The cable companies generally offer fast broadband with download speeds of 150 Mbps or more. The telcos provide fiber optic cable with similar speeds in some areas and DSL with relatively low download speeds, about 20 Mbps, in others.

The FCC has found that consumers face significant costs in switching from their current wired BIAS provider.¹⁶ Switching generally requires scheduling a service call to install new

¹⁵ FCC 2016 Broadband Progress Report, at ¶ 86; Federal Communications Commission, Report and Order In the Matter of Preserving the Open Internet Broadband Industry Practices, GN Docket No. 09-191 and WC Docket No. 07-52, December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf (“FCC 2010 Open Internet Order”), at ¶ 32.

¹⁶ Tom Wheeler (FCC Chairman), “The Facts and Future of Broadband Competition,” September 4, 2014, https://apps.fcc.gov/edocs_public/attachmatch/DOC-329161A1.pdf (“Once consumers choose a broadband provider, they face high switching costs that include early-termination fees, and equipment rental fees. And, if those disincentives to competition weren’t enough, the media is full of stories of consumers’ struggles to get ISPs to allow them to drop service.”); FCC 2010 Open Internet Order, at ¶ 34 (“In addition, customers may incur significant costs in switching broadband providers because of early termination fees; the inconvenience of ordering, installation, and set-up, and associated deposits or fees; possible difficulty returning the earlier broadband provider’s equipment and the cost of replacing incompatible customer-owned equipment; the risk of

service, and provide a new cable box, which requires that someone be at home for a significant block of time. Since most wired BIAS customers obtain MVPD services from the same provider they need to switch both services and associated equipment. Some wired BIAS providers also place obstacles for their customers to switch providers, including service reps that sometimes refuse disconnection requests or employ aggressive win-back techniques, and often require the subscriber to return the set-top box or modems to a remote location.¹⁷ Moreover, consumers face uncertainty over the quality of service they will receive from a new provider. As a result, the FCC has found that “BIAS subscribers infrequently switch their service to another local competitor.”¹⁸

2. Satellite, Mobile Wireless, and DSL Alternatives

Fixed satellite providers also offer BIAS services. The FCC has found, however, that consumers do not view fixed satellite as a good substitute for a wired BIAS provider. The satellite providers, partly as a result of their technical limitations, have monthly usage allowances that wired BIAS providers usually do not have. They generally have lower download speeds—between 5 and 15 Mbps—than high-speed wired BIAS providers. Table 3, which reports the median sustained download and upload speeds by technology as measured by the FCC in September 2015, shows satellite broadband was much slower than cable and fiber.

temporarily losing service; the risk of problems learning how to use the new service; and the possible loss of a provider-specific email address or website.”) (internal footnotes omitted); Federal Communications Commission, “Broadband decisions: What drives consumers to switch - or stick with - their broadband Internet provider,” Working Paper, December 2010, https://apps.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf.

¹⁷ See Section V.A.5 below.

¹⁸ FCC Charter-TWC Merger Order, at ¶ 111; FCC 2010 Open Internet Order, at ¶ 34. For further discussion concerning switching costs and the frequency of switching see David S. Evans, “Economic Analysis of the Impact of the Comcast/Time Warner Cable Transaction on Internet Access to Online Video Distributors: Response to Opposition to Petitions to Deny and Response to Comments,” MB Docket No. 14-57, December 23, 2014, <https://ecfsapi.fcc.gov/file/60001011066.pdf> (“Evans Comcast Declaration II”), at ¶¶ 240-258 and FCC Charter-TWC Merger Order, at ¶ 43.

Moreover, satellite broadband “suffers from latency issues, making it an impractical service for uses such as real-time gaming.”¹⁹ As of June 30, 2016, only about 3.1 percent of residential BIAS subscribers used a satellite or fixed wireless provider.²⁰

Table 3: Median Sustained Download and Speeds by Technology, September 2015

	Median Sustained Download Speed (Mbps)	Median Sustained Upload Speed (Mbps)
Cable	52.30	7.08
Fiber	52.22	54.61
DSL	11.40	1.30
Satellite	10.73	2.92

Source: Federal Communications Commission, Office of Engineering and Technology and Office of Strategic Planning and Policy Analysis, 2016 Measuring Broadband America: Fixed Broadband Report, December 1, 2016, <https://www.fcc.gov/reports-research/reports/measuring-broadband-america/charts-measuring-broadband-america-2016#block-menu-block-4>, Charts 12.1 and 12.2.

Note: Speeds are measured during peak times (Monday to Friday, 7 pm to 11 pm).

DSL and other wireline technologies (excluding cable and fiber) are typically quite slow as well. An analysis by the FCC found that the speed of DSL connections was a much smaller fraction of maximum advertised speeds than was the case for cable and fiber subscribers.²¹ As of June 30, 2016, less than 5 percent of all residential connections using DSL or other slow wireline technologies were high speed (at least 25 Mbps down and 3 Mbps up), compared to over 81 percent for cable and 78 percent for fiber. Table 3 shows that the average upload and download speeds for DSL were much lower than for cable and fiber. The FCC has concluded, these speeds are insufficient for households that wish to use high-quality online services, such as high-quality voice, data, graphics, video, home security, VoIP, and smart phones using Wi-

¹⁹ FCC Charter-TWC Merger Order, at ¶ 55.

²⁰ Federal Communications Commission, Internet Access Services: Status as of June 30, 2016, April 2017, https://apps.fcc.gov/edocs_public/attachmatch/DOC-344499A1.pdf, at 17.

²¹ Federal Communications Commission, *2014 Measuring Broadband America Fixed Broadband Report*, Chart 7 (2014), available at <https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-broadband-america-2014>.

Fi.²² DSL and other slow wireline technologies accounted for 2.2 percent of residential high speed connections, compared to 83.5 percent for cable and 14.2 percent for fiber.²³

Consumers seldom choose DSL, satellite, fixed wireless, and other wireline technologies (excluding cable, fiber, and AT&T's hybrid U-Verse technology) when they have better alternatives. These technologies, taken together, accounted for just 15.7 percent of broadband connections as of June 30, 2016, compared to the 84.3 percent accounted for by cable, fiber-to-the-premises, and AT&T's hybrid U-Verse technology.²⁴ This 15.7 percent is only modestly larger than the 7 percent of the US population which lacks access to any provider of high-speed broadband.²⁵

Consumers can also access edge providers through mobile wireless plans that provide Internet connections over 3G/4G/LTE networks. Mobile wireless providers are not close substitutes to wired BIAS providers. The plans offered by mobile wireless providers offer substantially less data usage than those offered by wired BIAS providers. As the FCC noted, “[f]ixed broadband services generally do not face the same limitations regarding capacity and congestion that affect mobile broadband networks and, some fixed broadband providers offer

²² FCC, 2015 Broadband Progress Report, at ¶¶ 47, 50.

²³ Federal Communications Commission (Industry Analysis and Technology Division, Wireline Competition Bureau), “Internet Access Services: Status as of June 30, 2016,” April 2017, https://apps.fcc.gov/edocs_public/attachmatch/DOC-344499A1.pdf, at 17, 22.

²⁴ FCC (2017), Internet Access Services: Status as of June 30, 2016, https://apps.fcc.gov/edocs_public/attachmatch/DOC-344499A1.pdf, at Figure 13. This data includes AT&T's U-Verse with other, slower forms of asymmetric DSL. The number of DSL subscribers attributable to U-Verse was taken from AT&T, 10-Q for the Quarter Ending June 30, 2016, at 28.

²⁵ Calculation based on FCC (2017), “Fixed Broadband Deployment Data from FCC Form 477: Data as of June 30, 2016 (Version 2),” <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>.

consumers unlimited data usage plans at a given connection speed for a flat monthly fee.”²⁶ By contrast, many mobile wireless plans are subject to monthly data caps of less than 10 GB.²⁷

Even mobile wireless plans that are advertised as “unlimited” are subject to usage “limitations”—at 22-23 GB in total for most unlimited plans, of which only 10 GB of usage can be used on a “tethered” connection on a smartphone to share with other device.²⁸ The 10 GB limitation on mobile tethering is, for example, only enough for about 3 hours of HD streaming for the entire month for devices other than the subscriber’s smartphone assuming no other data usage.²⁹ These usage limitations, which may result in the deprioritizing of a user’s traffic, are not close to being sufficient for the estimated average household usage of 57 GB a

²⁶ FCC 2016 Broadband Progress Report, at ¶ 32.

²⁷ Verizon, “Unlimited Data Plans for Talk & Text,” <https://www.verizonwireless.com/plans/verizon-plan/>; AT&T, “Mobile Share Plans Configurator,” <https://www.att.com/shop/wireless/plans/planconfigurator.html>.

²⁸ The “limitations” are not absolute caps, rather mobile networks set a usage limit above which subscriber traffic may be handled differently from that of other users. The two largest mobile network operators, Verizon and AT&T, begin this process at 22 GB for total traffic (based on Verizon’s higher tier “Beyond Unlimited” plan). AT&T has a 10 GB limitation on mobile tethering usage and Verizon has a 15GB limitation. Verizon also limits video streaming on smartphones to 720p quality. Sprint has a 23 GB limitation for total traffic and the same 10 GB limitation for mobile tethering usage. T-Mobile has a 32 GB limitation for total traffic and restricts mobile tethering usage to 3G speeds. Subscriber usage above the total plan limitation is subject to de-prioritizing, where the subscriber’s connection will receive lower priority than other users who have not exceeded their usage limitations in periods of congestion. For Verizon, AT&T and Sprint, mobile tethering usage above the usage limitation is limited to 2G speeds or below. Verizon, “Unlimited Data Plans for Talk & Text,” <https://www.verizonwireless.com/plans/verizon-plan/>; Verizon, “Beyond Unlimited FAQs,” <https://www.verizonwireless.com/support/beyond-unlimited-faqs/>; AT&T, “Mobile Share Plans Configurator,” <https://www.att.com/shop/wireless/plans/planconfigurator.html>; T-Mobile, “Cell Phone Plans,” <https://www.t-mobile.com/cell-phone-plans>; Sprint, “Unlimited Data Plans,” <https://www.sprint.com/en/shop/plans/unlimited-cell-phone-plan.html>. In cases where wired BIAS providers have experimented with data caps, the caps have been set at between 250 GB and 600 GB, an order of magnitude above the usage limitations described here. FCC 2016 Broadband Progress Report, at fn. 98.

²⁹ Netflix, “How Can I Control How Much Data Netflix Uses?” <https://help.netflix.com/en/node/87>.

month the FCC reported (which is exclusive of mobile wireless usage).³⁰ About 42 percent of smartphone traffic and 90 percent of tablet traffic use Wi-Fi instead.³¹

Moreover, mobile wireless connections are less reliable than wired connections and depend on how many subscribers are trying to access the same cell tower and other factors. As the FCC has found, “[m]obile transmissions are subject to environmental factors that fixed line transmissions do not encounter and, thus, cannot achieve the same kinds of consistent speeds at the current level of technology.”³²

The evidence on the way mobile wireless plans are used confirms that consumers do not view them as close substitutes for wired BIAS providers. About 77 percent of U.S. adults have mobile smartphones.³³ Mobile smartphones usually have a mobile data plan that covers Internet connectivity. About 51 percent of U.S. adults have a tablet, and some of those consumers also have separate mobile broadband plans for their tablets.³⁴ Most households that have a wired BIAS provider, which costs an average \$69.93 a month, have one or more household members that have a smart mobile subscription with a broadband data plan.³⁵ They therefore do not act as if mobile broadband is a substitute.

³⁰ FCC 2016 Broadband Progress Report, at ¶ 37, citing Sandvine (2014), “Global Internet Phenomena,” <https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/2h-2014-global-internet-phenomena-report.pdf>, at 5.

³¹ The Economist, “When Wireless Worlds Collide,” November 17, 2014, <https://www.economist.com/news/science-and-technology/21632739-wi-fi-hotspots-become-ubiquitous-who-needs-cellular-wireless-when-wireless-worlds>.

³² FCC 2016 Broadband Progress Report, at ¶ 29.

³³ Pew Research Center, “Mobile Fact Sheet,” January 12, 2017, <http://www.pewinternet.org/fact-sheet/mobile/>.

³⁴ Pew Research Center, “Mobile Fact Sheet,” January 12, 2017, <http://www.pewinternet.org/fact-sheet/mobile/>.

³⁵ The average monthly price of stand-alone wired Internet service for the United States is taken from Federal Communications Commission, Fifth Report in the Matter of International Comparison Requirements Pursuant to the Broadband Data Improvement Act (International Broadband Data Report), GN Docket No. 15-191, January 29, 2016, https://apps.fcc.gov/edocs_public/attachmatch/DA-16-97A1.pdf, at 22.

Moreover, the devices sold by major US mobile operators and used by subscribers are mobile smartphones and, to a much lesser extent, mobile hotspots. If mobile wireless data plans were marketed and used as substitutes for wired broadband at home, we would see much broader use of fixed wireless modems/routers designed for home use and offer wired ports that provide a broadband connection for a home's WiFi network. The four major US operators do not offer such home cellular devices.³⁶

B. Edge Providers

Edge providers offer their content online, using servers in the cloud. Consumers interact with edge providers by downloading and uploading data to those servers over their BIAS connections. A consumer might send a request to Netflix to stream a movie on their television, or stream a Facebook Live video using their smart mobile phone, both while connected to the home wireless network. Various entities handle such requests by the consumer and help move the data between the consumer and the edge provider. Large edge providers often use Content Delivery Networks (CDNs) which host copies of their content in close proximity to households to speed up delivery and some operate their own CDNs.

The request for edge provider content initially goes from the consumer to a switch at the household's wired BIAS provider. The wired BIAS provider sends the consumer request

³⁶ For examples of such home cellular devices, see Netgear "LB2120," <https://www.netgear.com/home/products/mobile-broadband/lte-modems/LB2120.aspx>; TP-Link, "300 Mbps Wireless N 4G LTE Router," http://www.tp-link.com/la/products/details/cat-4691_TL-MR6400.html. Such devices do not appear to be offered by Verizon, AT&T, Sprint or T-Mobile. Verizon, "Mobile Hotspots," <https://www.verizonwireless.com/internet-devices/>; AT&T, "AT&T Mobile Broadband Computers, Tablets, Modems, Hotspots from AT&T," <https://www.att.com/shop/wireless/devices/internetdevices.html>; Sprint, "Data Card and Wi-Fi Hotspot," http://shop.sprint.com/mysprint/shop/phone_wall.jsp?flow=&tabId=dt_mbc&INTNAV=TopNav:Shop:Hotspots More; T-Mobile, "Mobile Hotspots," <https://www.t-mobile.com/landing/mobile-hotspots-and-connected-devices.html>.

through entities it has relationships with, as discussed in more detail below. That request eventually reaches the edge provider or its CDN. The edge provider then downloads the content requested by the consumer. Of course, from the consumer's perspective this process usually happens in what appears to be real time and ideally involves a seamless experience using a website.

Up until roughly 2014, wired BIAS providers charged subscribers but did not generally charge edge providers.³⁷ This business model—free to one side, paid to the other side—is common for two-sided platforms.³⁸ In fact, it is the business model that many edge providers themselves have; many provide content to users for free and make money from advertisers. Starting around 2013, some large wired BIAS providers decided to secure payment from select edge providers by degrading the quality of the connection that households received when they tried to one of these edge providers.

These wired BIAS providers had two features that enabled them to insist on payments. They had the ability to limit the reliability of the connection between the subscriber and certain large edge providers who relied on transit providers or CDNs to deliver content requested by households while continuing to get most of the edge provider traffic through peering relationships they had. Smaller BIAS providers do not have the ability to target large edge

³⁷ The approximate date when wired BIAS providers began charging edge providers is based on the experience of Netflix. David S. Evans, "Economic Analysis of the Impact of the Comcast/Time Warner Cable Transaction on Internet Access to Online Video Distributors," MB Docket No. 14-57, August 25, 2014, <https://ecfsapi.fcc.gov/file/7521819696.pdf> ("Evans Comcast Declaration I"), at ¶¶ 142-145.

³⁸ David S. Evans and Richard Schmalensee (2016), *Matchmakers: The New Economics of Multisided Platforms*, (Boston: Harvard Business Review Press). Some multisided platforms charge prices to both sides that exceed marginal costs. Economic theory shows that multisided platforms may set privately profit-maximizing prices to each side above or below marginal cost although the price to at least one side has to be above marginal cost to generate profit.

providers.³⁹ The large wired BIAS providers also control such a large share of households that edge providers could face severe financial problems if they lost access to these households, as discussed in more detail below.⁴⁰

Table 4 identifies the wired BIAS providers that based on public records charged for access, and gives their shares of subscribers immediately prior to the closing of the Charter-TWC merger. As of that time, five BIAS providers, accounting for 71.2 percent of all subscribers, had imposed access fees on some edge providers. The hundreds of smaller BIAS providers do not impose access fees. Since the Charter-TWC merger, the combined entity has stopped charging for access, as a result of a merger condition imposed by the FCC.⁴¹

Table 4: Share of U.S. Broadband Subscribers for BIAS Providers Charging for Access as of 2016Q1

	Subscriber Share, 2016 Q1
Comcast	24.7%
AT&T	16.4%
Time Warner Cable	14.2%
Verizon	9.6%
CenturyLink	6.3%
Total (These Providers)	71.2%

Sources: Leichtman Research Group, “Nearly 1.1 Million Added Broadband in 1Q 2016,” May 16, 2016, <http://www.leichtmanresearch.com/press/051616release.html>.

³⁹ FCC Charter-TWC Merger Order, at ¶¶ 116-117.

⁴⁰ FCC Charter-TWC Merger Order, at ¶ 115; Nicholas Hill, Nancy L. Rose, and Tor Winston (2015), “Economics at the Antitrust Division 2014-2015: Comcast/Time Warner Cable and Applied Materials/Tokyo Electron,” Review of Industrial Organization, 47:425-435 (“DOJ Economists Comcast-TWC Paper”), at 428.

⁴¹ In its public interest statement, Charter announced an interconnection policy under which it wouldn’t charge edge providers. In the FCC merger order, the FCC imposed a version of settlement-free interconnection on Charter (FCC Charter-TWC Merger Order, Appendix B, Section III), which was very similar to the policy that Charter had preemptively announced.

C. Summary of Market Structure for Wired BIAS Providers

The market for high-speed wired BIAS services is not very competitive based on the analyses conducted by the FCC and DOJ and the recent data presented above.⁴² Consumers have few choices—two on average—with 75.8 percent of households having just one or two. Edge providers have one choice for reaching a particular subscriber, since that subscriber is unlikely to switch providers, at least in any relevant time period. Large wired BIAS providers can insist on access fees for making that connection and some have done so for certain edge providers.⁴³ The FCC and DOJ have found, as discussed in Section IV below, that entry barriers and switching costs decrease the competitive pressure on the small number of wired BIAS providers available to households.

⁴² Israel et al, Lerner and Ordovery, and Dippon have made submissions in the Restoring Internet Freedom matter which addresses the extent of competition for wireless carriers and wired BIAS providers. They report economic evidence concerning wireless, where there are at least four national carriers competing in almost all markets, and wired BIAS. They provide substantial economic evidence of competition in cellular wireless including evidence on price competition and switching. By comparison they offer little evidence on competition in wired BIAS provision and much of the evidence they point to, such as on the ease and frequency of switching, has been considered and rejected by the FCC and DOJ as discussed below.

⁴³ Israel et al. and Dippon, in their submission to the Restoring Internet Freedom matter, argue the wired BIAS providers are not gatekeepers—or equivalently “terminating access monopolies” or “competitive bottlenecks”—between edge providers and end users. They repeat claims that they, or others, have previously made to the FCC that the wired BIAS providers do not have the ability and incentive to block edge providers. The FCC and DOJ have found based on their investigations, including the review of internal documents, that the large wired BIAS providers have both the ability and incentive to block edge providers. These economists do not respond to the arguments and evidence presented by the FCC and DOJ for rejecting previous articulations of their claims. For example, they assert that large wired BIAS providers are technically incapable of blocking edge provider traffic. See Israel et al. Declaration, at ¶ 69. The FCC specifically found in its Charter order that they were capable of doing so because of their peering relationships and lack of dependence on transit providers. FCC Charter-TWC Merger Order, at ¶¶ 116-117. These economists also claim that wired BIAS providers lack incentives to block edge providers because subscribers would switch to another provider and that switching is frequent. Israel Declaration, at ¶ 67; Lerner and Ordovery Declaration, at ¶¶ 83-91; Dippon Declaration, at ¶¶ 15-16. In their investigations, the FCC and DOJ found to the contrary. FCC Charter-TWC Merger Order, at ¶ 111; DOJ Economists Comcast-TWC Paper. Finally, these economists do not respond to evidence that consumers face uncertainty over the cause for degradation of service and that this asymmetric information reduces the likelihood of consumer switching. It does not appear that these economists have offered any new evidence or arguments that were not considered in previous FCC and DOJ investigations.

III. Wired Broadband and Vertical Integration into Video Distribution and Programming

An MVPD is a two-sided platform that connects video programmers with households. The MVPD negotiates licensing deals with video programmers, which ordinarily involves per-subscriber payments, and then licenses bundles of channels to households for monthly subscription fees. Many wired BIAS providers are owned by companies that also own an MVPD.

Cable companies almost always operate as an MVPD as well as a wired BIAS provider. Large telcos, such as AT&T and Verizon operate MVPDs, and smaller companies sometimes do so as well, either through their own service, or through a partnership with a DBS provider. In these cases, the wire coming into the home provides both wired broadband and MVPD services and these are installed with one service call.

Consumers can also choose between two satellite-based MVPDs. Direct TV, which is owned by AT&T, and DISH Network. AT&T also bundles Direct TV linear programming into its wired service. Satellite-based MVPDs are available more or less nationally.

Some of the large companies that own MVPDs also own video programmers. Comcast owns NBC-Universal. Charter owns a variety of regional sports networks, local news channels, and lifestyle community channels.⁴⁴ AT&T is seeking approval to purchase Time Warner.

The FCC and DOJ have found that wired BIAS providers have incentives to harm OVDs as a result of their profit interest in MVPDs and from the prospect that OVDs could compete with MVPDs at least in the long run.

⁴⁴ CCO Holdings (New Charter), 10-K for the Year Ended December 31, 2016, <http://ir.charter.com/phoenix.zhtml?c=112298&p=irol-sec>, at 8.

A. Households

As with wired BIAS providers, households can only use wired MVPDs that operate in their neighborhoods and can extend a wire to their house. Many households can also use a DBS service so long as their home has a direct line of sight and local zoning laws allow it. Therefore, roughly speaking, households have, on average, access to two wired MVPDs and two DBS providers.⁴⁵

The most important difference between MVPDs, however, concerns bundling. Cable and telco providers typically bundle broadband service, video programming, and telephone service together, and consumers have a preference to purchase these services from a single provider. The cable and telco providers usually establish pricing schedules that give households significant financial incentives—discounts off of the stand-alone prices—to purchase the bundle of services. One reason for doing so is that consumers are more sticky—that is, less likely to change providers—when they subscribe to the bundle.⁴⁶

As with wired BIAS providers, cable and telco firms operate MVPDs in a number of local markets. Table 5 shows the number and share of households for nine large MVPDs that account for 90.6 percent of all MVPD subscribers in 2017Q1. For each MVPD, the table also reports the share that the MVPD owner has of BIAS subscribers. The top three MVPDs account for 66.3 percent of MVPD subscribers and 64.6 percent of wired BIAS provider subscribers.

⁴⁵ FCC 2010 Open Internet Order, at ¶ 22; Federal Communications Commission, Eighteenth Report in the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, January 17, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DA-17-71A1_Rcd.pdf, at ¶ 21.

⁴⁶ Federal Communications Commission, Eighteenth Report in the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, January 17, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DA-17-71A1_Rcd.pdf, at ¶¶ 51-52.

Table 5: Subscribers and Shares for the Largest MVPD Providers, 2017Q1

	MVPD Subscribers	Share of U.S. MVPD Subscribers	Share of U.S. Wired BIAS Subscribers
AT&T-DirecTV (Inc. NOW)	24,435,000	25.9%	15.9%
Comcast	22,549,000	23.0%	25.4%
Charter	17,147,000	17.5%	23.3%
DISH (Inc. Sling TV)	13,528,000	13.8%	*
Verizon	4,681,000	4.8%	7.1%
Altice	3,500,000	3.6%	4.0%
Frontier	1,065,000	1.1%	4.2%
Mediacom	832,000	0.8%	1.2%
Cable ONE	307,187	0.3%	0.5%

Sources: Leichtman Research Group, “Major Pay-TV Providers Lost About 410,000 Subscribers in 1Q 2017,” May 18, 2017, <http://www.leichtmanresearch.com/press/051817release.html>; Leichtman Research Group, “About 960,000 Added Broadband in 1Q 2017,” May 19, 2017, <http://www.leichtmanresearch.com/press/051917release.html>.

Note: This list omits Cox, who subscriber count is more difficult to estimate from public data, but is probably in the range of 1 to 5 percent. DISH is also a BIAS provider (under its dishNET brand), but it has only a small number of subscribers.

B. Video Programmers

MVPDs mainly bundle television channels that have linear programming for which shows appear at fixed time slots. Some of these channels are provided specifically for MVPDs. Others consist of local broadcast station programming, which typically include network programming, such as from ABC, as well as local programming. In addition, MVPDs often have a video-on-demand service, which makes movies and reruns of television series available to subscribers at the time of their own choosing. Some of these offerings are included in the price of their subscriptions.

Video programmers, including local broadcast stations, want to distribute their content to households. They typically charge licensing fees to MVPDs, which recover those fees from their household subscription fees, and they also sell advertising. Generally, the only way they can reach a household is through the MVPD that services that household. Only 17 percent of

US households watch television through over-the-air broadcasting; those households tend to be poorer and younger than households that pay for access.⁴⁷

The FCC and DOJ have found that large MVPDs have significant bargaining power over video programmers. The threat by MVPDs to pull programming deprives the video programmer of access to customers, which results in a loss of license fees as well as advertising revenue. However, the MVPD may lose subscribers, particularly to competing MVPDs, when it blocks programming. Overall, however, larger MVPDs pay significantly lower per subscriber licensing fees to video programmers as a result of their greater bargaining power relative to smaller MVPDs.

In late 2015, Comcast, the largest MVPD at that time, paid 28 percent less than Cablevision, a mid-size MVPD. Time Warner Cable paid 20 percent less and Charter 8 percent less than Cablevision.⁴⁸ In the Charter-Time Warner Cable merger, I submitted a regression analysis that showed that differences in size are a substantial and statistically significant determinant of differences in programming costs, and that analysis was cited by the FCC in its order in that matter.⁴⁹ Staff economists at the DOJ reached the same conclusion, controlling for more factors in their regressions.⁵⁰ The FCC has concluded that large MVPDs benefit from

⁴⁷ Deborah D. McAdams, “Survey: 17 Percent of U.S. Households Are OTA-Only,” TV Technology, July 13, 2016, <http://www.tvtechnology.com/news/0002/17-percent-of-us-households-are-otaonly/278987>.

⁴⁸ David S. Evans, “Economic Analysis of the Impact of the Proposed Merger of Charter, Time Warner Cable, and Bright House Networks on Video Programming Prices and Broadband Entry and Competition,” Declaration in the Matter of Applications of Charter Communications Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, January 15, 2016, <https://ecfsapi.fcc.gov/file/60001406054.pdf> (“Evans Charter Declaration I”), at ¶ 59, citing data from SNL Kagan.

⁴⁹ Evans Charter Declaration I, at ¶¶ 57-58; FCC Charter-TWC Merger Order, at ¶ 215.

⁵⁰ Robert Aarons and Alexander Raskovich (2016), “Do Bigger Firms Get Better Terms? Evidence from Pay TV,” Working Paper, https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=IIOC2016&paper_id=465.

increased negotiating strength with programming providers, resulting in volume discounts that are unavailable to smaller MVPDs.⁵¹ That differential places smaller MVPDs that compete with them at a competitive disadvantage and poses barriers to entry by smaller MVPDs, a topic that is discussed in more detail below.

C. Vertical Integration into Video Programming

Several large cable and telco providers have also acquired video programmers. The FCC and DOJ have reviewed these acquisitions. In all cases the FCC, the DOJ, or both expressed concerns over the possibility that these companies would use their control over video programming to disadvantage smaller MVPD rivals, or OVDs, and imposed conditions on those firms.

The FCC has identified four cable and telco providers that own substantial video programming assets: AT&T, Charter, Comcast/NBC Universal, and Cox.⁵² When AT&T acquired DirecTV in 2015, the FCC required that it not discriminate in favor of its own video programming services, and that it disclose details of its interconnection agreements.⁵³ When Charter acquired Time Warner Cable, the FCC required that it offer settlement-free interconnection agreements, and that it not impose data caps or usage-based pricing for mass

⁵¹ Federal Communications Commission, Eighteenth Report in the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, January 17, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DA-17-71A1_Rcd.pdf, at ¶ 32.

⁵² Federal Communications Commission, Eighteenth Report in the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, January 17, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DA-17-71A1_Rcd.pdf, at Table B-1. Note that since the FCC published this table, Cox has divested its interest in the Travel Channel, one of its cable networks. Scripps Networks, “Scripps Networks Interactive Takes Full Ownership of Travel Channel,” February 25, 2016, <http://www.scrippsnetworksinteractive.com/newsroom/company-news/Scripps-Networks-Interactive-Takes-Full-Ownership-of-Travel-Channel/>.

⁵³ Federal Communications Commission, Memorandum and Opinion and Order in the Matter of Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses or Authorizations, MB Docket No. 14-90, July 8, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-94A1_Rcd.pdf, at Appendix B.

market customers.⁵⁴ When Comcast acquired NBC Universal, the FCC mandated commercial arbitration for carriage disputes, the offering of a standalone BIAS at reasonable market-based prices, and the continued provision of content to Hulu. It also forbade or restricted discrimination against non-affiliated video programming vendors, exclusivity/windowed of video programming distributed through OVDs, and the offering of a specialized BIAS with just Comcast-NBCU content.⁵⁵

D. Summary

The companies that own wired BIAS providers typically also own MVPDs. All of the eight largest wired BIAS providers, accounting for 87.2 percent of residential BIAS subscribers, also operate MVPDs as of 2017 Q1. The MVPDs owned by these eight wired BIAS providers accounted for 76.6 percent of residential MVPD subscribers and 85.0 percent excluding DBS subscribers as of 2017 Q1. Four large BIAS providers, accounting for 64.6 percent of broadband subscribers and 66.3 percent of MVPD subscribers, own video programmers. The FCC and DOJ have found that the common ownership of wired BIAS providers and MVPDs can result in incentives to harm OVDs.

⁵⁴ Federal Communications Commission, Memorandum Opinion and Order in the Matter of the Applications of Charter Communications, Time Warner Cable, and Advance/Newhouse for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, May 10, 2016 (“FCC Charter Order”), at Appendix B.

⁵⁵ Federal Communications Commission, Memorandum Opinion and Order in the Matter of Applications of Comcast Corp., General Electric Company and NBC Universal Inc. for Consent to Assign Licenses and Transfer Control of Licenses, MB Docket No. 10-56, January 20, 2011, https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-4A1.pdf at Appendix A.

IV. Barriers to Entry and Expansion for BIAS and MVPD Providers

The typical American adult, 18 years and older, spends 4.9 hours per day watching television and 1.0 hours per day online using a desktop or laptop.⁵⁶ These two activities account for 38.7 percent of the time Americans adults aren't sleeping and 50.0 percent of the time they aren't sleeping or working.⁵⁷ Across all American adults this amounts to 530.1 billion hours a year.

Households prefer to get wired broadband (BIAS) and linear programming (MVPD) services from the same company. As shown above, however, they have limited choices when it comes to getting wired Internet service at fast enough broadband speeds. Almost a third of households only have one high-speed broadband alternative and another 44 percent have just two alternatives.

These limited choices for American households are likely to continue as a result of barriers to entry into local markets, as the FCC has recognized.⁵⁸ New entrants typically have to obtain an approval from a local authority. There are regulatory, political, and other barriers to obtaining that authorization. Getting approval is often contentious and sometimes not successful. The costs of laying a physical network are substantial, upfront, and are sunk. The entrant faces risks in securing a return on this investment. A significant problem is that firms need to offer both wired broadband and linear programming to attract most consumers who want both. Large MVPD competitors, however, have secured video programming at much

⁵⁶ Nielsen, "The Nielsen Total Audience Report, Q4 2016," April 3, 2017, <http://www.nielsen.com/us/en/insights/reports/2017/the-nielsen-total-audience-report-q4-2016.html>, at 10.

⁵⁷ Time spent sleeping and working is from US Bureau of Labor Statistics, 2016 American Time Use Survey, June 2017, <https://data.bls.gov/cgi-bin/srgate>, Series TUU10101AA01017866 (A) (Avg hrs per day - Sleeping, 18 yrs and over) and Series TUU10101AA01019222 (Avg hrs per day - Working, 18 yrs and over).

⁵⁸ FCC Charter-TWC Merger Order, Appendix C (Economic Appendix), at ¶ 63.

lower costs than is available to a new entrant. As a result, the entrant faces a significant cost disadvantage, which can prevent it from operating profitably. These problems deter significant entry into the provision of local wired broadband services.

A. Political and Regulatory Barriers to Entry

Installing a physical network, such as coaxial cable or fiber, generally requires using public rights-of-way, such as digging up the streets in urban areas or installing poles and wires in non-urban areas. Companies often need to secure permission to dig up streets from local governments. Typically, deploying a network requires obtaining space on existing utility poles as a result zoning restrictions, environmental regulations, and start-up costs.⁵⁹ This process is often complex as there is no one set of regulations that new entrants may rely upon—it often varies based on geographic area and whether federal, state, and/or local rules apply. It also requires securing the cooperation of pole owners, and other providers, some of which may be competing systems, as well as possibly local authorities.

These requirements set up the opportunity for incumbents to use political rent seeking to deter or slow entry or to raise the costs of entry to competitors.⁶⁰ According to William Baer, speaking as head of the DOJ’s Antitrust Division at the time,

Sometimes the concern with undue restrictions on competition stems from incumbents seeking laws and regulations that would impede opportunities for rivals to challenge their control over the pipeline. We see that debate playing out in efforts by some

⁵⁹ See *Gulf Power Co. v. FCC*, 208 F.3d 1263 (11th Cir. 2000) (“[C]able television industry has attached its cables to the utility poles of power and telephone companies. . . .because factors such as zoning restrictions, environmental regulations, and start-up costs have rendered other options infeasible. . . .[Additionally,] utility poles afforded [telecommunications providers] the only feasible means for stringing their wires.’); See also S. Rep. No. 580, 95th Congress, 1st Sess. at 13 (1977) (1977 Senate Report), *reprinted in* 1978 U.S.C.C.A.N. 109.

⁶⁰ FCC NC-TN Preemption Order.

internet service providers to seek state laws precluding local communities from encouraging alternatives to local broadband monopolies.⁶¹

In the case of the state restrictions that prevented the municipal provider in Wilson, NC from expanding its operations, the FCC found that those regulations were “largely sponsored and lobbied for by incumbent providers.”⁶² These laws had the effect of raising the economic cost of operating new systems and imposed delays in securing approvals for these systems.⁶³

New entrants also must seek access to multiple dwelling units (“MDUs”) which often requires negotiating with property owners and/or managers. About 30 percent of U.S. households live in MDUs.⁶⁴ However, arrangements with incumbent providers, including for example, exclusive marketing agreements, graduated revenue sharing arrangements, and

⁶¹ Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), “Video Competition: Opportunities and Challenges,” Remarks as Prepared for the Duke Law Center for Innovation Policy, Fall Conference on the Future of Video Competition and Regulation, Washington DC, October 9, 2015, <https://www.justice.gov/opa/file/782401/download>.

⁶² FCC NC-TN Preemption Order, at ¶ 37. The FCC further cited an industry report finding that “many of the states with laws restricting or barring the ability of municipalities to build broadband networks passed similar laws between 2004 and 2006 ‘under pressure from national cable companies, telephone companies, and the American Legislative Exchange Council (ALEC)’” and that the membership of ALEC included Time Warner Cable and AT&T.

⁶³ FCC NC-TN Preemption Order. The North Carolina statute, for example, limited the ability of the municipal system from engaging in price competition, by imposing restrictions that tend to raise retail prices, and increasing the costs of doing business. The FCC found that removing these state restrictions would “promote competition by bringing additional choices to the marketplace so that consumers are served with more choices, lower prices, and higher quality. Statement of Chairman Tom Wheeler, Re: City of Wilson, North Carolina Petition for Preemption of North Carolina General Statute Sections 160-240 et seq., WC Docket No. 14-115, The Electric Power Board of Chattanooga, Tennessee Petition for Preemption of a Portion of Tennessee Code Annotated Section 7-52-601, WC Docket No. 14-116, March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-25A2.pdf, at ¶ 7. The FCC’s order was overturned by the Sixth Circuit on the grounds that the FCC had exceeded its statutory authority. The court noted, however, that its finding was “limited” and that it did not “question the public benefits that the FCC identifies in permitting municipalities to expand Gigabit Internet.” *Tennessee and North Carolina v. Federal Communications Commission*, Case No. 15-3291/35555 (6th Cir., August 10, 2016), <http://www.opn.ca6.uscourts.gov/opinions.pdf/16a0189p-06.pdf>.

⁶⁴ See table from the U.S. Census Bureau’s 2010-2014 American Community Survey 5-Year Estimates, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_B25024&prodType=table (“American Community Survey”) (showing that thirty percent of American homes are in multifamily buildings).

exclusive wiring arrangements in MDUs may impact the ability of new entrants to gain access to buildings to provide broadband service, limiting their reach to consumers.⁶⁵

The web of federal, state and local rules also provides incumbents with the opportunity to use litigation to prevent, or delay, competition. When cities or states have adopted pro-competitive policies to facilitate pole or MDU access they have typically faced litigation or regulatory challenges from incumbent cable and telco companies, or their representatives, that result in slowing the adoption of these policies.⁶⁶ Nashville, for example, passed an ordinance to accelerate the deployment of new broadband entrants deploying fiber.⁶⁷ AT&T and Comcast, which are incumbents operating in Nashville, both sued to block it shortly after the ordinance was passed in September 2016.⁶⁸ The case is still pending in the courts. Similarly, San Francisco passed a local ordinance that enables new entrants to gain access to MDUs where tenants have requested alternative services. That ordinance is now being challenged at the FCC by an entity whose membership includes incumbent providers.⁶⁹

The provision of wired broadband and linear programming is therefore well removed from the competitive markets that prevail in most parts of the economy. State and local laws,

⁶⁵ See, e.g., Comments and Reply Comments of INCOMPAS, GN Docket No. 17-142 (July 24, 2018 & Aug. 22, 2018), available at <http://www.incompas.org/files/INCOMPAS%20Comments%20on%20MTE%20NOI.pdf> and at <http://www.incompas.org/files/INCOMPAS%20Reply%20Comment%20GN%2017-142.pdf>.

⁶⁶ *BellSouth Telecommunications, LLC v. Louisville/Jefferson Cty. Metro Gov't*, No. 3:16cv00124 (W.D. Ky. Oct. 31, 2016); *Comcast of Nashville I, LLC, v. Metro. Gov't of Nashville & Davidson Cty., Tenn.*, No. 3:16cv2794 (M.D. Tenn. Oct. 25, 2016).

⁶⁷ *Mayor Barry Statement on One Touch Make Ready Ordinance*, NASHVILLE.GOV, Sep. 20, 2016, <https://www.nashville.gov/News-Media/News-Article/ID/5686/Mayor-Barry-Statement-on-One-Touch-Make-Ready-Ordinance.aspx>.

⁶⁸ Jamie McGee and Joey Garrison, "Comcast Sues Nashville over Google Fiber-Backed Pole Ordinance," *The Tennessean*, October 25, 2016, <http://www.tennessean.com/story/news/local/2016/10/25/comcast-sues-metro-over-google-fiber-backed-pole-otmr-ordinance/92748490/>.

⁶⁹ Media Bureau Seeks Comment on Petition for Preemption of Article 52 of the San Francisco Police Code Filed By the Multifamily Broadband Council, Public Notice, FCC 17-149 (rel. Apr. 4, 2017).

lobbying by the incumbent carriers, and political rent seeking restrict entry, expansion, and competition.

B. Simultaneous Entry and Video Programming

At least in the current environment American households prefer to use the same company for their wired BIAS provider and their wired MVPD service.⁷⁰ In reviewing the AT&T/DirecTV acquisition, the FCC found that “bundles of broadband and video are more attractive to consumers”, citing evidence that “78 percent of basic cable video subscribers purchase a bundle of services” and that “more than 97 percent of AT&T’s 5.7 million video customers subscribe to bundled services.”⁷¹ Almost all wired MVPDs also provide wired broadband services and almost all wired BIAS providers also provide a linear programming option.⁷² Generally, companies offer bundles of these services and consumers take the services together.

To have a viable offering for consumers, companies that want to enter into the provision of wired broadband have to offer linear video programming as well. That means that, in addition to laying down wires in a local market, they have to enter into licensing deals with video programmers to have competitive offering.

⁷⁰ DOJ Economists Comcast-TWC Paper, at 430.

⁷¹ Federal Communications Commission, Memorandum Opinion and Order in the Matter of the Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-90, July 28, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-94A1_Rcd.pdf (“FCC AT&T-DirecTV Merger Order”), at ¶ 157. The FCC also found that DirecTV was at a competitive disadvantage because it could not provide a bundled offering, other than by partnering with broadband providers to offer a “synthetic” bundle, which was viewed significantly less successful. FCC AT&T-DirecTV Merger Order, at ¶ 156.

⁷² This is the case for all major providers. A review of small BIAS providers found that almost all offered linear video programming. Evans Charter Declaration I, at fn. 79.

This presents a competitive obstacle to them. As noted above large MVPDs have the bargaining power, resulting from their control of access to large shares of households, to negotiate relatively low rates from video programmers. Entrants, including companies like Google Fiber, lack that bargaining power and have to pay much higher rates.

That cost wedge puts the entrants at a significant disadvantage when they compete head-to-head with a local system operated by a very large MVPD. The entrant has to meet, at least roughly, the bundled prices offered by the competition. It may not be able to do that profitably though.

The FCC recognized the competitive disadvantage that AT&T faced as an MVPD in its review of AT&T's acquisition of DirecTV. AT&T was a smaller MVPD, even though it had nearly 6 million MVPD subscribers, well in excess of the subscriber base a new entrant would have.⁷³ Moreover, the large MVPD can lower its price, and still earn a profit, to compete with the entrant given their cost advantage on video programming.

Justice Department economists pointed to the need for simultaneous entry and the cost wedge as a serious barrier to entry.⁷⁴

Overbuilders, however, have a problem: many consumers want to purchase both video and broadband service. This may require overbuilders to offer both video and broadband service in a discounted bundle if they wish to compete with the incumbent cable companies—but providing video service is more expensive for overbuilders than for the large, incumbent cable companies because the former typically pay higher programming costs. The high cost of video service, indeed, has likely slowed the expansion of overbuilders, limiting the introduction of their beneficial broadband competition mostly to densely populated, high-income areas. Some traditional telephone providers may have limited the footprints for their highspeed Internet offerings for the same reason.

⁷³ FCC AT&T-DirecTV Merger Order, at ¶ 3.

⁷⁴ DOJ Economists Comcast-TWC Paper, at 421.

C. Sunk Capital Investment Costs

It is expensive to lay physical networks. The costs include purchasing the pipes (co-axial cable or fiber) and the labor of installing the infrastructure often in densely populated areas. In principle, this just requires money and access to capital markets. However, the investment in laying a physical network is a sunk, upfront cost. The returns take place over time. This investment is risky.

For a local entrant that doesn't plan to grow into a national provider the video programming cost differential creates uncertainty. The entrant's success depends on whether its wired BIAS offering is sufficiently better than the competition to support prices that are sufficient to offset the video programming cost disadvantage. Further the entrant faces risk that the incumbent systems, if owned by large providers, will selectively lower their prices in regions where they face competition from entrants, which they are able to do given their video programming cost advantage. Incumbents have done so as discussed below when faced with competition. The ability of incumbents to selectively target regions with new entry significantly limits the profitability of entry even when prevailing prices are significantly above competitive levels. These risks tend to dissuade entrants from making the capital investment.

National entrants would face less risk if they could expect to secure a large enough base of subscribers to secure similar concessions on video programming prices. Because of the political barriers to entry, and the time it takes to lay a physical network, it would take

considerable time to develop a national competitor from scratch and securing the necessary approvals would create uncertainty.⁷⁵

The experience of Google Fiber demonstrates that even a very well capitalized, and seemingly motivated firm, finds that the risks are great. Google announced efforts to enter the provision of high-speed broadband in March 2011.⁷⁶ It launched its first system in November 2012 in Kansas City, MO and has since established service in Atlanta, GA; Austin, TX; Charlotte, NC; Huntsville, AL; Kansas City, KS; Nashville, TN; Orange County, CA; Provo,

⁷⁵ Israel et al. claim that, “Economics teaches that in markets such as broadband Internet access, the presence of two competitors is likely to result in effective competition. In particular, the presence of high sunk costs in this industry means that competition is likely to be intense, even with only two providers.” Israel Declaration, at ¶ 53. Their claim is not consistent with the facts found by both the FCC and DOJ. If there was such intense competition we would expect to observe significant switching between large BIAS providers, which we don’t, and we would not expect to see cable and telco providers ranked at the bottom of companies in terms of consumer service, which we do (Section VII.A). Moreover, we would not expect to see significant price reductions and improvements of quality in the rare instances in which incumbent high-speed wired BIAS providers face an additional competitor as discussed below. As noted above, while Israel et al. offer significant evidence of intense competition for cellular providers they offer little for wired BIAS providers and much of what they offer has been rejected by the FCC in previous investigations.

In support of his claim that two firms is sufficient to ensure competitive outcomes, Israel et al. cites to an earlier filing (Mark Israel, Daniel Rubinfeld, and Glenn Woroch, “Analysis of the Regressions and Other Data Relied Upon in the Business Data Services FNPRM And a Proposed Competitive Market Test,” Competitive Analysis of the FCC’s Special Access Data Collection,” August 9, 2016, WC Docket No. 05-25, at 2), in which Israel and his co-authors cited three FCC decisions as support. None of those three decisions actually support their claim. Two of them simply note that exclusionary tactics are likely to be ineffective against a firm with significant sunk investments. FCC (1999), “Fifth Report & Order & Further Notice of Proposed Rulemaking, Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers,” 14 FCC Rcd. 14221, 14264, ¶ 80; WorldCom, Inc. v. FCC, 238 F.3d 449, 458-59. The third is a merger consent decree in which the FCC allowed the merging parties to not divest business in buildings where a) the merger would reduce the number of providers from two to one, but b) there was another provider in an adjacent building that could easily enter. FCC (2007), “Memorandum Opinion & Order,” AT&T Inc. & BellSouth Corp., Application for Transfer of Control, 22 FCC Rcd. 5662, 5682-83, ¶¶ 41-42. All three of these decisions fall far short of supporting a general proposition that, with substantial sunk costs, two firms are sufficient to ensure competitive outcomes.

Economic theory does not, in fact, support their claim, as a general matter, that two firms with sunk costs is enough for effective competition. Economic theory shows that this depends on a number of factors. Jean Tirole (1988), *Theory of Industrial Organization* (Cambridge, MA: MIT Press), at 314-336. This section of the classic *Industrial Organization* textbook starts by presenting a model in which sunk costs deter entry by committing the incumbent to aggressive competition in the case of entry. It then proceeds to generalize the example, showing that sunk investments can either raise or lower the aggressiveness of the incumbent in the event of entry, depending on how sunk investments shift its reaction curve.

⁷⁶ Google, “Ultra High-Speed Broadband Is Coming to Kansas City, Kansas,” Google Official Blog, March 30, 2011, <https://googleblog.blogspot.no/2011/03/ultra-high-speed-broadband-is-coming-to.html>.

UT; Raleigh-Durham, NC; and Salt Lake City, UT.⁷⁷ This entry was extremely time consuming and costly. For example, it took Google Fiber almost twenty months to lay enough fiber to pass (but not connect) 149,000 households in Kansas City.⁷⁸ Industry estimates placed the cost of entry in each city at more than \$1 billion.⁷⁹ In October 2016, Google Fiber announced that it was going to stop upcoming rollouts that had been planned.

D. Competitive Benefits of Entry and the Threat of Entry

In the rare instances in which high-speed broadband has taken place, incumbents have responded with lower prices and improved service. That demonstrates that the incumbent providers had significant market power before entry occurred. It also shows the extent to which barriers to entry, many of which arise from political rent seeking, protect their market power.

High-speed broadband entry has taken place in several cities as a result of Google Fiber, municipal electric companies, and others. In one decision, the FCC found that in both municipalities it considered, the municipal provider had spurred competitive responses from incumbents. Time Warner Cable had raised rates for almost all of its services in areas around Wilson, NC, but held them steady in Wilson.⁸⁰ Time Warner Cable also increased the top broadband speed tier in Wilson, NC and attributed the change to the competitive environment.

⁷⁷ Google Fiber, “Google Fiber Cities & Locations,” <https://fiber.google.com/newcities/>.

⁷⁸ “Will Google Fiber Waste \$28 Billion?,” *Forbes* Aug. 21, 2012 (available at <http://www.forbes.com/sites/petercohan/2012/08/21/will-google-fiber-waste-28-billion/>); TechCrunch, “Analyst: Google Will Spend \$84M Building Out KC’s Fiber Network to 149K Homes; \$11B If It Went Nationwide,” April 8, 2013 (available at <http://techcrunch.com/2013/04/08/google-fiber-cost-estimate>).

⁷⁹ Mark Bergen, “Google Fiber Is the Most Audacious Part of the Whole Alphabet,” *Re/Code*, May 11, 2016, <https://www.recode.net/2016/5/11/11613308/google-fiber-alphabet>.

⁸⁰ FCC NC-TN Preemption Order, at ¶ 52.

Similarly, the FCC found that entry of the municipal provider in Chattanooga, TN led Comcast to improve its broadband speed offerings and to limit its rate increases.⁸¹

The evidence from Google Fiber's entry provides further evidence of competitive benefits for consumers from competition among BIAS providers. In Kansas City, AT&T responded by matching Google Fiber's gigabit speed and pricing and Time Warner Cable tripled its broadband speeds without increasing prices.⁸² Similarly in Austin and in Raleigh-Durham, Time Warner Cable increased its broadband speeds by up to three times and six times respectively without increasing its prices.⁸³ AT&T announced and began building fiber to the home in Austin. More generally, AT&T offers its gigabit service at \$70 in regions where Google Fiber is present, matching its pricing, versus \$110 elsewhere.⁸⁴

This benefits of competition are further confirmed by an econometric analysis undertaken by the FCC in reviewing the Charter-Time Warner Cable transaction based on data

⁸¹ FCC NC-TN Preemption Order, at ¶¶ 50-51.

⁸² Jacob Davidson, "Google Fiber Has Internet Providers Scrambling to Improve Their Service," Time, April 13, 2015, <http://time.com/money/3820109/google-fiber-has-internet-providers-scrambling-to-improve-their-service/>.

⁸³ Jon Brodtkin, "Google Fiber Plans Expansion, Then TWC Makes Speeds Six Times Faster," Ars Technica, April 13, 2015, <https://arstechnica.com/information-technology/2015/04/google-fiber-plans-expansion-then-twc-makes-speeds-six-times-faster/>; Time Warner Cable, "Time Warner Cable Begins Major Internet Speed Increases in Austin and Surrounding Communities," May 21, 2014, <https://www.timewarnercable.com/en/about-us/press/twc-begins-major-internet-speed-increase.html>; Time Warner Cable, "Time Warner Cable Takes Next Step to Transform TV and Internet Experience in the Charlotte Area," April 8, 2015, <https://www.timewarnercable.com/content/twc/en/about-us/press/twc-to-transform-tv-internet-in-charlotte-area.html>.

⁸⁴ Jon Brodtkin, "Google Fiber Plans Expansion, Then TWC Makes Speeds Six Times Faster," Ars Technica, April 13, 2015, <https://arstechnica.com/information-technology/2015/04/google-fiber-plans-expansion-then-twc-makes-speeds-six-times-faster/>.

submitted by the parties. The FCC found that there were significant competitive responses by BIAS incumbents when faced with competition from high speed alternatives:⁸⁵

Evidence in the record confirms that fiber, FTTP, and FTTN are reasonable substitutes for cable BIAS, while other technologies are not. The evidence shows that the Applicants alter their pricing and product offerings materially in response to FTTP and FTTN offerings from companies like Google (Google Fiber), Verizon (FiOS), and AT&T (U-Verse) but not in response to other technologies. As described in the attached Economic Appendix, the Applicants' predicted pricing behavior is most affected when the companies are in competition with providers that are able to match or exceed the download speeds of the Applicants' BIAS product offerings.

In most local markets, new high-speed broadband providers have not entered and there is no credible threat that they will. The empirical evidence illustrates how consumers are harmed from the current lack of competition. The incumbent cable and telco providers do not offer the same level of high-speed BIAS options, and charge higher prices, than they would if they faced entry or the threat of it. This situation results in part from state and local entry restrictions some of which have been promoted by the very large cable and telco systems.

E. Summary

Households have limited choices for wired BIAS providers and for ones that also operate MVPDs. That situation does not appear likely to change as a result of barriers to entry. Significant barriers arise, not just from fundamental economic factors such as scale, but from political rent seeking at the local and state level. The large cable and telco companies, which account for a large share of households nationally, have thwarted entry through lobbying and litigation.

⁸⁵ FCC Charter-TWC Merger Order, at ¶ 57. The competitors considered in the data analyzed by the FCC included fiber and DSL competitors but did not appear to include competition from cable overbuilders.

V. ISP Market Structure, Access Prices, and Bargaining Leverage

The FCC and DOJ, in the course of their investigations into proposed mergers, have found that the largest wired BIAS providers have considerable leverage over edge providers and have used that leverage to impose interconnection fees on them.⁸⁶ This leverage results from several interrelated factors.⁸⁷

- First, the largest wired BIAS providers have the technical ability to degrade the quality of the connection between an edge provider and end user subscribers and, in the extreme, to prevent the edge provider from reaching its customers.
- Second, many edge providers achieve economies from widespread distribution as a result of indirect network effects, higher advertising prices for achieving wider reach, fixed costs of programming, and other demand-side and cost-side scale effects.
- Third, the largest wired BIAS providers are the only feasible ways for edge providers to reach a significant fraction of consumers who are using smart televisions, gaming consoles, desktops, and other devices at home to consume content and can therefore prevent edge providers from securing a critical mass of customers.
- Fourth, when wired, BIAS providers degrade the quality of connection it is not clear to the consumer whether the problem is caused by the BIAS provider or by the edge provider or some other cause; as a result, wired BIAS providers can limit customer churn resulting from degradation strategies.
- Fifth, many households have no, or a poorer alternative, to the large wired BIAS engaging in this strategy, which further limits possible churn. In the Census blocks served by AT&T, Charter, Comcast, and Verizon, 43.2 percent of the population has no alternative high-speed wired broadband provider with greater or equal download speeds. And an additional 46.4 percent of the population lives in Census blocks with only one alternative high-speed wired broadband provider.

⁸⁶ William P. Rogerson, “Economic Theories of Harm Underlying Regulatory Concerns with the Proposed Comcast/TWC Transaction,” 8th Annual FTC Microeconomics Conference. November 12-23, 2015, Washington D.C., https://www.ftc.gov/system/files/documents/public_events/633601/rogerson_keynote.pdf (“Rogerson (FCC) Comcast-TWC Speech”); DOJ Economists Comcast-TWC Paper, FCC Charter-TWC Merger Order.

⁸⁷ Israel et al., Lerner and Ordover, and Dippon reject the existence of one or more of these factors. They do not, however, provide any arguments or evidence to rebut the findings by the FCC and DOJ that these factors are economically important.

These factors indicate the larger the wired BIAS provider the larger the interconnection fee it can impose. Empirical studies conducted by the FCC and DOJ have confirmed that relationship.

This section describes these factors in more detail and their implication for access pricing. These same factors, however, enable large wired BIAS providers to engage in vertical foreclosure strategies against OVDs, and other edge providers, which is the subject of the next section.

A. The Five Factors Behind the Bargaining Leverage by Large Wired BIAS Providers

1. Technical Ability to Degrade Connections

An edge provider that distributes significant amounts of content typically uses a CDN. The CDN maintains content for edge providers in geographically dispersed locations. That provides greater latency—that is less time between the request for content and the delivery of content—and allows the CDN to balance traffic across multiple server locations. Some large edge providers, such as Netflix, may effectively operate their own CDNs and deliver content to BIAS providers directly when they have a peering agreement or through a transit provider.

The CDN delivers the content requested by a subscriber to the subscriber's BIAS provider directly if it has a peering agreement with the BIAS provider to exchange traffic, which is common for large BIAS providers. For BIAS providers for which the CDN does not have a peering agreement, the CDN will use a transit provider to deliver the content requested by the BIAS provider's subscriber. Transit providers are the in the business of connecting parties without direct peering agreements. In either case, when content is delivered to the BIAS provider, the provider then moves the content across its network to the household.

Large wired BIAS providers have peering relationships with each other, with third-party and edge provider-operated CDNs, and with transit providers. Only a small portion of a large BIAS provider's traffic comes from any given CDN or transit provider. By contrast, medium sized and smaller BIAS providers commonly rely on a transit provider to exchange much of their Internet traffic.

The quality of connection between the switching facility and the household depends in large part upon whether there is enough port capacity at the switching facility to handle the traffic. Wired BIAS providers typically expand ports, which are not very expensive, to ensure there is enough capacity to handle the downloads requested by their subscribers. Wired BIAS providers that rely mainly on transit providers to handle traffic would find that households would have difficulty accessing all Internet traffic if they didn't expand their port capacity enough. Most BIAS providers have therefore expanded port capacity in line with the expansion of traffic requested by their households.

Large wired BIAS providers hold significant bargaining power with respect to a given CDN or transit provider. If the BIAS provider made too little port capacity available to a given CDN or transit provider, the BIAS provider's households would not experience significant problems in consuming most content, which would still come over its other uncongested peering relationships. For medium sized or smaller BIAS providers, if they did not provide enough port capacity, a large portion of their subscribers' content would be affected.

The FCC recognized this phenomenon in its review of Charter's proposed acquisition of Time Warner Cable.⁸⁸ Charter relied on transit providers to exchange much more of its Internet

⁸⁸ FCC Charter-TWC Merger Order, at ¶117.

traffic than Time Warner Cable, which had extensive peering relationships with other BIAS providers and with CDNs, as well as with transit providers. The FCC concluded that the combined company would have more bargaining leverage over edge providers because Charter would gain access to the peering relationships which would reduce the impact of congesting a particular transit provider.

2. Demand-Side and Cost-Side Scale Economies for Edge Providers

Edge providers typically benefit from demand-side and cost-side scale economies. According to economists at the DOJ, based on the agency's investigation on the proposed acquisition of Time Warner Cable by Comcast, "[c]ontent providers need access to customers. The more end users that a content provider can reach, the easier it is to monetize investments (e.g., in programming), cover fixed costs, and permeate the national consciousness." The FCC concluded, in its review of Charter's acquisition of Time Warner Cable, that "edge providers would need access to New Charter subscribers," which would account for a fifth of wired broadband households, "to remain viable as a business."⁸⁹

On the demand-side, edge providers typically have direct or indirect network effects so that each user realizes more value the more other users there are. Edge providers that connect users (people or businesses) benefit from ubiquity so that users can connect with other users no matter where they live. Many edge providers are ad supported; advertisers pay higher per-impression advertising prices to edge providers that reach more people. It is particularly important that ad-supported edge providers reach major urban areas such as New York and Los Angeles.

⁸⁹ FCC Charter-TWC Merger Order, at ¶114.

On the supply side, edge providers typically have high fixed costs and low marginal costs. For many edge providers, the main costs involve software design and programming. Marginal costs of adding users are typically low and they realize profits from amortizing these fixed across a large base. OVDs sometimes incur significant fixed costs to procure programming; most of Netflix’s cost of programming, for example is fixed.⁹⁰ They require large-scale distribution to recover these costs.

Importantly, edge providers are generally competing with other edge providers that have ubiquitous distribution and benefit from these demand-side and cost-side scale effects.

3. Large BIAS Providers and Access to Households

As a result of these scale effects, the decision by a large BIAS provider to block an edge provider from reaching its subscribers could ruin the edge provider’s business. The edge provider would lose a significant amount of scale and would face competition from other edge providers that have not been blocked.

The FCC and Justice Department recognize that, by serving as gatekeepers to such large portions of households, these large BIAS providers have significant bargaining leverage over edge providers. The FCC imposed conditions on Charter’s acquisition of Time Warner Cable because of its concern that the new company would be the “gatekeeper for 20% of the national market.”⁹¹ Similar concerns were one of the bases for the DOJ to oppose Comcast’s acquisition of Time Warner Cable.⁹²

⁹⁰ Evans Comcast Declaration I, at ¶¶ 129-130.

⁹¹ FCC Charter-TWC Merger Order, at ¶113.

⁹² DOJ Economists Comcast-TWC Paper, at 427-428; Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), “Video Competition: Opportunities and Challenges,” Remarks as Prepared for the Duke Law Center

The edge provider would have more bargaining leverage if the BIAS provider lost significant numbers of subscribers as a result of degrading service or blocking the edge provider altogether. As a result of the next two factors, very large BIAS providers are not likely to face much risk.

4. Lack of Transparency Over Reasons for Degradation

When a large BIAS provider degrades the quality of connection to an edge provider, its subscribers may not know that the BIAS provider has taken actions that result in increased buffering, latency, or reductions in the quality of their connection. The household might think that it is possible that the edge provider was responsible for the reduction in the quality of the connection or that it is caused by computer issues, especially because most of her other Internet content is not affected by the congestion of a particular CDN or transit provider. As a result, consumers may lack confidence that the situation would improve if they switched wired broadband providers.⁹³

The situation is unlike blackouts of programming that occur in negotiations between MVPDs and video programmers. In those cases, it is widely publicized that either MVPD or video programmer has blocked the channel. Households also can have confidence that if they switch to an MVPD that carries the channel they will then have access to it.

for Innovation Policy, Fall Conference on the Future of Video Competition and Regulation, Washington DC, October 9, 2015, <https://www.justice.gov/opa/file/782401/download>, at 6-7.

⁹³ Federal Communications Commission, Report and Order on Remand, Declaratory Ruling, and Order in the Matter of Protecting and Promoting the Open Internet, GN Docket 14-28, March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf (“FCC 2015 Open Internet Order”), at ¶81.

5. Limited Switching

Subscribers of very large wired BIAS providers have few alternative providers of high-speed broadband. Table 7 reports the average number of alternative high-speed broadband providers for each of the large wired BIAS providers. Across the combined footprint of all four large wired BIAS providers, 25.8 percent of households had no alternative to their current provider, 46.9 percent had 1, and the average household had 1.07. Households could switch to a few additional slow broadband providers, but would then have to weigh the cost of having a lower speed for all of the Internet consumption in order to avoid the poor quality they are getting for a particular edge provider.

Table 6: Percentage of Population of Counts of High-Speed BIAS Alternatives to Major BIAS Providers, June 30, 2016

	Comcast	Charter	AT&T	Verizon	Combined
0	25.6%	29.7%	1.3%	0.1%	25.8%
1	50.0%	39.5%	44.0%	83.7%	46.9%
2	20.3%	25.1%	45.2%	13.8%	22.7%
3	3.6%	4.8%	7.9%	1.6%	3.9%
4	0.4%	0.8%	1.4%	0.1%	0.6%
5+	0.1%	0.1%	0.2%	0.0%	0.1%
Population-Weighted Average	1.03	1.08	1.65	1.16	1.07

Source: FCC Form 477 Data; US Census.

Even those people who have access to an alternative high-speed wired BIAS provider have only a limited selection. Table 7 shows, for each of the four largest wired BIAS providers and for their combined footprint, the percentage of the U.S. population in the providers' service area that has access to an alternative provider offering equal or greater download speeds. Most Comcast and Charter subscribers, who together account for 48.7 percent of subscribers, generally do not have an equal or faster alternative while most AT&T and Verizon subscribers,

who together account of 23.0 percent of subscribers, generally have access to one equal or faster alternative.

Table 7: Distribution of Population of Counts of High-Speed BIAS Alternatives to Major BIAS Providers, Equal or Greater Download Speed, June 30, 2016

	Comcast	Charter	AT&T	Verizon	Combined
0	86.9%	65.2%	11.2%	3.5%	43.2%
1	12.1%	29.5%	73.4%	85.3%	46.4%
2	0.9%	5.0%	13.4%	9.7%	8.1%
3	0.0%	0.2%	1.7%	1.4%	1.3%
4	0.0%	0.0%	0.2%	0.0%	0.8%
5+	0.0%	0.0%	0.0%	0.0%	0.1%
Population-Weighted Average	0.14	0.40	1.06	1.09	0.71

Source: FCC Form 477 Data; US Census.

Furthermore, as discussed above, switching wired broadband providers costs households time and inconvenience. The FCC, in its 2015 Open Internet Order concluded that “broadband Internet access providers have the ability to use terms of interconnection to disadvantage edge providers and that consumers’ ability to respond to unjust or unreasonable BIAS provider practices are limited by switching costs.”⁹⁴ As we discuss below, large BIAS providers found that the risk of losing subscribers was not serious enough to deter them from degrading connections for popular edge providers, such as Netflix, for many weeks.

B. Empirical Evidence on Degradation Strategies

Large BIAS providers started demanding access payments from large edge providers in around 2009 and in earnest in 2013, and ultimately entered into a series of contracts with several of them. One large edge provider, Netflix, asserted that the large BIAS providers degraded the quality of its connections to their subscribers as part of a bargaining strategy to

⁹⁴ FCC 2015 Open Internet Order, at ¶ 205.

force this OVD to agree to pay access fees. The company claimed that Comcast forced several transit providers to stop carrying Netflix traffic and then caused significant congestion on the remaining transit providers by failing to provide enough port capacity for the traffic. Comcast and Time Warner Cable denied they had done anything to degrade Netflix's signal to their households.⁹⁵

An investigation by the New York State Attorney General (NYAG), however, found evidence that Time Warner Cable and another unidentified wired broadband provider that operates in New York State engaged in degradation strategies as part of their bargaining with edge providers.⁹⁶ The NYAG found that “from at least 2013 to 2015, major BIAS providers made the *deliberate business decision* to let their networks’ interconnection points become congested with Internet traffic and used that congestion as leverage to extract payments from backbone providers and edge providers, despite knowing that this practice lowered the quality of their customers’ Internet service.” (emphasis in original).⁹⁷

⁹⁵ Comcast Corp., Letter to FCC, MB Docket 14-57, November 26, 2014, <https://ecfsapi.fcc.gov/file/60000988775.pdf>, at Response to Question No. 3, p. 8 (“It was Netflix, not Comcast, that deliberately created congestion issues that degraded the performance of Netflix for Comcast customers (and customers of other ISPs) in an effort to force Comcast (and others) to provide Netflix with free interconnection services”); Jennifer Khoury (Comcast SVP of Corporate and Digital Communications in Public Policy), “Comcast Response to Netflix,” Comcast Voices, April 24, 2014, <http://corporate.comcast.com/comcast-voices/comcast-response-to-netflix> (“As at least one independent commentator has pointed out, it was not Comcast that was creating viewability issues for Netflix customers, it was Netflix’s commercial transit decisions that created these issues”). I made several submissions on this topic before the FCC during its consideration to Comcast’s acquisition of Time Warner Cable. I concluded based on information from the record, and from Netflix, that Comcast’s claims that it had not deliberately congested the interconnection points were implausible. Evans Comcast Declaration II, at ¶¶ 90-100.

⁹⁶ People of the State of New York, Comments on the May 23, 2017 Notice of Proposed Rulemaking in the Matter of Restoring Internet Freedom, WC Docket No. 17-108, July 16, 2017; FCC Form 477 Data.

⁹⁷ Id. at 1. The New York Attorney General does not identify the other BIAS provider by name but the main providers in New York State during 2010-2015 were Verizon, Cablevision (now Altice), and Frontier, in addition to Time Warner Cable (now Charter).

According to the NYAG investigation, the interconnection points became severely congested. A survey conducted by the company, and obtained by the NYAG, found that "... more than a quarter of customers that responded to a survey [Time Warner Cable] conducted in 2015 reported experienced 'interruptions[s] in Internet service,' 'buffering problem[s] or '[i]ssues with streaming video content' in the prior 30 days."⁹⁸ Once Netflix agreed to pay access fees, the Netflix speed jumped 28 percent. The NYAG concluded that the other major BIAS provider engaged in similar practices, but has redacted the details since these practices were uncovered in an investigation of unrelated issues.

C. Empirical Relationship between Access Fees, Bargaining Leverage and Size

The Netflix interactions with the large BIAS providers provide further empirical insight evidence on the five factors described above and the extent to which degradation is a viable strategy for exercising bargaining leverage. Netflix was a highly successful OVD during the 2013-2015 period. It had around 31.7 million paid subscribers in the U.S. at the end of 2013, who paid roughly \$9 per month for streaming movies and television shows.⁹⁹ It accounted for 34.2 percent of peak-period North American Internet traffic in the first half of 2014.¹⁰⁰ Many of its subscribers were hooked on its service. It therefore had much more bargaining leverage than most edge providers because blocking its service would matter to many of a BIAS provider's

⁹⁸ Id. at 8.

⁹⁹ Netflix, 10-K for Year Ended December 31, 2013, <http://files.shareholder.com/downloads/NFLX/4887182540x0xS1065280-14-6/1065280/filing.pdf>, at 19.

¹⁰⁰ Sandvine, "Global Internet Phenomena Report 1H 2014," May 15, 2014, <https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/1h-2014-global-internet-phenomena-report.pdf>, at 5.

subscribers and could, in principle, lead to switching, or price resistance, that could harm the BIAS provider's profits.

The large BIAS providers nevertheless made business decisions to degrade the quality of the service that their subscribers were getting, for extended periods of time, to press Netflix to pay access fees. They determined that the profits lost from their subscribers switching to another provider, or having lower demand for packages, were smaller than the profits gained from securing access fees. Netflix, which has vociferously resisted paying access fees, ultimately caved in to the demands of each of the very large BIAS providers from the smallest, Verizon with a 9.8 percent share, to the largest, Comcast with a 22.9 percent share of wired broadband subscribers.¹⁰¹ That provides significant empirical evidence that the large BIAS providers had the ability to degrade access to their subscribers and that household switching was not material enough to alter their profit incentives to do so.

The economic analysis of the role of the five factors in relative bargaining leverage, and similar analyses conducted by the FCC and Justice Department in several matters, implies that larger BIAS providers should be able to extract higher payments from edge providers. Economists at the Justice Department, during the course of its investigation of Comcast-Time Warner Cable merger, tested this theory. They collected data on the various contracts that large BIAS providers had negotiated with edge providers. They then used econometric methods to estimate the relationship between BIAS provider size and access fees while controlling for

¹⁰¹ These share calculations are based on data for the end of 2014 Q1, approximately the time frame in which these agreements were being negotiated and signed. Leichtman Research Group, "Nearly 1.2 Million Add Broadband in the First Quarter of 2014," May 20, 2014, <http://www.leichtmanresearch.com/press/052014release.html>.

other differences between providers, including quality. DOJ economists, including the Antitrust Division's chief economist, concluded that,¹⁰²

...Under a wide range of specifications, the relationship between size and fees was found to be positive, statistically significant, and economically meaningful. While such a finding could also be due to larger [BIAS providers] offering higher-quality interconnection, staff was able to test and reject this possibility empirically by controlling directly for the quality of the interconnection.

Their conclusion was similar to that reached by the FCC in the subsequent Charter-Time Warner Cable merger.¹⁰³

Our economic analysis suggests that the ability of a BIAS provider to charge for access to subscribers increases with the number of subscribers; the great[er] the number of subscribers, the more the BIAS provider can charge on a per-subscriber basis.

The empirical evidence available to, and examined by, the FCC and DOJ pertained to OVDs. Large wired broadband providers have the same incentives and ability to raise prices to other edge providers.

D. Summary

Up until recently the wired broadband providers had a conventional two-sided pricing model. They charged subscribers for access to their platforms and enabled edge providers to access those subscribers at no cost. That pricing model still prevails for the many small wired broadband providers in this country.

Starting in earnest in 2013, several large wired BIAS providers decided to impose access fees on at least some edge providers. These large BIAS providers secured access prices in a way that is at least disturbing. They intentionally degraded the quality of the connections

¹⁰² DOJ Economists Comcast-TWC Paper.

¹⁰³ FCC Charter-TWC Merger Order, at ¶115.

between their subscribers, who had paid for unlimited access to the Internet, and the targeted edge providers. They did not let their subscribers know they were doing this, and in fact, have denied doing so.¹⁰⁴ Their bargaining leverage ultimately comes down to the fact that they control access to large numbers of households and those households have little, if any, practical alternative if they want high-speed BIAS.¹⁰⁵

VI. ISP Market Structure, Vertical Integration, and Vertical Foreclosure

The FCC and the DOJ, following investigations of several cable mergers in 2014-2016, have concluded that large cable companies have the incentive and the ability to restrain OVDs, and other OTT providers, from competing with their MVPD businesses. They have also found evidence that large cable companies have implemented strategies to reduce the quality or raise the cost for OVDs. These conclusions are based on detailed studies, including empirical

¹⁰⁴ Comcast Corp., Letter to FCC, MB Docket 14-57, November 26, 2014, <https://ecfsapi.fcc.gov/file/60000988775.pdf>, at Response to Question No. 3, p. 8 (“It was Netflix, not Comcast, that deliberately created congestion issues that degraded the performance of Netflix for Comcast customers (and customers of other ISPs) in an effort to force Comcast (and others) to provide Netflix with free interconnection services”); Jennifer Khoury (Comcast SVP of Corporate and Digital Communications in Public Policy), “Comcast Response to Netflix,” Comcast Voices, April 24, 2014, <http://corporate.comcast.com/comcast-voices/comcast-response-to-netflix> (“As at least one independent commentator has pointed out, it was not Comcast that was creating viewability issues for Netflix customers, it was Netflix’s commercial transit decisions that created these issues”); David Young (Verizon), “Why Is Netflix Buffering? Dispelling the Congestion Myth,” Verizon Blog, July 10, 2014, <http://www.verizon.com/about/news/why-is-netflix-buffering-dispelling-the-congestion-myth> (“Netflix sends out an unprecedented amount of traffic... For whatever reason (perhaps to cut costs and improve its profitability), Netflix did not make arrangements to deliver this massive amount of traffic through connections that can handle it”).

¹⁰⁵ Nuechterlein and Yoo observe, correctly, that the existence of a terminating access monopoly—sometimes referred to as a competitive bottleneck—“is highly contingent on other market facts.” Jonathan E. Nuechterlein and Christopher S. Yoo (2015), “A Market-Oriented Analysis of the ‘Terminating Access Monopoly’ Concept,” *Colorado Technology Law Journal* 14(1): 21-36, at 35. As shown above, however, the FCC and DOJ have found based on detailed analyses of market fact, that the large wired BIAS providers have significant bargaining leverage over OVDs partly as a result of their being able to effectively deny these edge providers access to a significant number of customers. As noted above the NYAG found evidence that Time Warner Cable intentionally degraded the connection between large edge providers and its subscribers, to secure access fees, and that the possibility of its subscribers switching to a competing system did not discipline this behavior.

analyses, as well as internal documents from the cable companies that have adopted these strategies.

The authorities found that the large cable companies have the ability to foreclose OVDs from two key inputs. As BIAS providers, they can make it difficult for OVDs to access households. As MVPDs, they can use their bargaining leverage over video programmers to impose contractual constraints on those programmers that makes it difficult for them to supply OVDs.

The FCC and DOJ also found that large cable companies have the incentives to foreclose OVDs from these inputs because doing so protects their significant MVPD profits from competition from OVDs. They have found that the profits gained from the MVPD business by pursuing these strategies exceed the costs to the BIAS businesses. That is because customers face significant switching costs and seldom switch even in the face of deteriorating service. These authorities also uncovered evidence that large cable providers have acted on these incentives or have expressed an interest in doing so because of the long-term threat they face from OVDs.

The DOJ's economists noted that the OVDs represented "a significant potential threat" to MVPDs.¹⁰⁶ They found that the proposed Comcast-Time Warner Cable merger would likely have led to higher fees for OVDs to access households and would likely have "reduced competition from a class of innovative firms in the consumer video market, resulting in lower-quality products or higher prices."¹⁰⁷

¹⁰⁶ DOJ Economists Comcast-TWC Paper, at 429.

¹⁰⁷ DOJ Economists Comcast-TWC Paper, at 429.

These conclusions resulted in both agencies objecting to Comcast’s acquisition of Time Warner Cable and the imposition of conditions to deter harmful behavior in the cases of several other mergers. As the former head of the Antitrust Division put it:

So many consumers’ only option for high-speed internet service is the cable company—the same cable company that derives revenues from its cable television business. This means that as online video distribution increases the cable companies have both the incentives and means to use their gatekeeper power to slow innovation to protect their video profits. In this way, the high-speed internet market and the video distribution market are inextricably intertwined.¹⁰⁸

A. Competitive Threat to MVPDs

Consumers can stream video content over the Internet from a variety of sources. They include OVDs, such as Amazon, that provide diverse programming including original content; video programmers, such as CBS, that make their content available “over-the-top” (OTT) in addition to, or instead of, through MVPDs; and edge providers, such as YouTube, Facebook Live, and Vimeo that provide a mix of user-generated and professional content. Streaming video content likely substitutes for MVPD programming to various degrees.

There is little question at this point that MVPDs compete with streaming video for consumer attention. It is widely acknowledged that MVPDs are losing subscriber revenue as a result of consumers reducing how much they spend on cable bundles (“cord-shavers”); consumers dropping their MVPD service (“cord-cutters”); and, particularly younger consumers, not getting an MVPD service (“cord-nevers”). Analysts have published studies on

¹⁰⁸ Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), “Video Competition: Opportunities and Challenges,” Remarks as Prepared for the Duke Law Center for Innovation Policy, Fall Conference on the Future of Video Competition and Regulation, Washington DC, October 9, 2015, <https://www.justice.gov/opa/file/782401/download>.

this phenomenon.¹⁰⁹ Video programmers and MVPDs have noted the challenge this is presenting them.¹¹⁰

The FCC and DOJ have concluded that OVDs pose a competitive threat to MVPDs from investigations partly based on internal documents from the companies discussing this competition from MVPDs that were subject to those investigations.¹¹¹ In the context of Charter's proposed acquisition of Time Warner Cable, the Justice Department noted, "Numerous internal documents reflect Defendants assessment that OVDs are growing quickly and pose a competitive threat to traditional forms of video programming distribution."¹¹²

As the online streaming video industry grows it is possible that it could pose an existential threat to MVPDs. Video programmers can bypass MVPDs by going directly to consumers, which could reduce their cost of distribution. OVDs, such as Netflix and Amazon,

¹⁰⁹ David Lieberman, "Pay TV Cord Cutting Poised To Accelerate Based on 2016 Data, Analyst Says," *Deadline*, March 29, 2017, <http://deadline.com/2017/03/pay-tv-cord-cutting-accelerate-snl-kagan-forecast-1202054979/>; Fast Company, "Cord-Cutting Spikes Fivefold in Cable TV's Worst Quarter Ever," May 3, 2017, <https://news.fastcompany.com/cord-cutting-spikes-fivefold-in-cable-tvs-worst-quarter-ever-4036578>; Jon Lafayette, "Analyst Sees 31M Homes Cutting Cord in Decade," *Broadcasting & Cable*, July 24, 2017, <https://www.broadcastingcable.com/news/currency/analyst-sees-31m-homes-cutting-cord-decade/167378>.

¹¹⁰ Bob Fernandez, "Comcast CEO Roberts: Cord-Cutting Is 'Happening,'" *Philly.com*, June 14, 2017, <http://www.philly.com/philly/business/comcast/comcast-ceo-roberts-cord-cutting-is-happening-20170614.html>; Paul Bond, "Charter CEO Talks Cord-Cutting, Merging with Time Warner Cable," May 17, 2017, <http://www.hollywoodreporter.com/news/charter-ceo-talks-cord-cutting-merging-time-warner-cable-1004622>; Greg Sandoval, "Verizon CEO: Cord Cutting Is Real," *CNET*, September 23, 2010, <https://www.cnet.com/news/verizon-ceo-cord-cutting-is-real/>; Zach Epstein, "Verizon Exec in Charge of FiOS TV Confesses that She Cut the Cord," *BGR*, December 9, 2015, <http://bgr.com/2015/12/09/cord-cutting-options-fios-exec-admission/>; CNBC, "AT&T CEO: Cord Cutting Is No Surprise," May 4, 2017, <https://www.cnbc.com/video/2017/05/04/att-ceo-cord-cutting-is-no-surprise.html>.

¹¹¹ DOJ Economists Comcast-TWC Paper, at 429; Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), "Assistant Attorney General Bill Baer Delivers Remarks at the Chatham House Annual Antitrust Conference," June 18, 2015, <https://www.justice.gov/opa/speech/assistant-attorney-general-bill-baer-delivers-remarks-chatham-house-annual-antitrust> ("The merged entity would have had a strengthened "ability to block the adoption of innovative products, including 'over-the-top' video services that threaten the traditional cable business model."

¹¹² *US v. Charter Communications Inc. et al*, 1:16-CV-00759 (RCL), Competitive Impact Statement, May 10, 2016, <https://www.justice.gov/atr/file/850161/download> ("DOJ Charter-TWC Competitive Impact Statement"), at 10.

have moved quickly from distributing old movies and television series, to developing original content including award-winning television shows and movies. In principle, OVDs could displace MVPDs as the means by which consumers obtain video programming.

B. Economic Impact of Common Ownership

For most households, the company that provides them with a high-speed broadband connection that enables them to stream video content is also the company that provides them with their MVPD service. As the head of the Antitrust Division at DOJ put it, "... the high-speed internet market and the video distribution market are inextricably intertwined."¹¹³

Economists have examined whether a market failure could arise when a company that supplies both a product (call it A) and a key input (call it B) into that product. It turns out that firms do not necessarily have an incentive to harm a rival by restricting their access to the input. The reason is simple. The firm makes profit from supplying both the product and the input. The firm therefore has to balance the increased profits it would earn from product A by restricting the supply of input B against the decreased profits it would earn from selling input B.

Even if a firm has an incentive to restrict competitors it may or may not have the market power to do so. If there are other suppliers of the input, for example, then the competitor could just turn to them. Therefore, for a market failure to arise, the company has to have both the incentive to engage in input foreclosure strategies as well as the ability to do so.

¹¹³ Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), "Video Competition: Opportunities and Challenges," Remarks as Prepared for the Duke Law Center for Innovation Policy, Fall Conference on the Future of Video Competition and Regulation, Washington DC, October 9, 2015, <https://www.justice.gov/opa/file/782401/download>.

Thus, as a matter of economics, it is not possible to assume that just because a company supplies an input to a competitor it could, or would, use that input to harm that competitor. The FCC and the Justice Department have therefore conducted in-depth factual inquiries into whether the large cable companies have both the incentives and the ability to engage in input foreclosure strategies and whether they in fact have done so.

C. Incentives and Ability to Foreclose OVDs from Access to Households

1. Incentives to Engage in Access-Restriction Strategies Against OVDs

Large cable companies earn significant profit margins from their MVPD businesses. In 2016, for example, Comcast had \$22.4 billion of revenue from residential video, more than 65 percent greater than its \$13.5 billion of revenue from residential Internet. Its gross residential video profits, net of \$11.6 billion in programming costs, were \$10.8 billion, which are comparable to its Internet revenues.¹¹⁴ Similarly, in 2016 Charter had \$12.0 billion of revenue from residential video, more than 29 percent greater than its \$9.3 billion of residential Internet revenue. Its gross residential video profits, net of \$4.4 billion in programming costs, were \$7.6 billion, which are comparable to its Internet revenues.¹¹⁵

As DOJ staff economists have concluded, the substantial revenue cable companies earn from their video operations makes online video distributors a significant threat.¹¹⁶ Large cable

¹¹⁴ Comcast Corp., 10-K for the Year Ending December 31, 2016, <http://files.shareholder.com/downloads/CMCSA/4886859002x0xS1193125-17-30512/1166691/filing.pdf>, at 48.

¹¹⁵ CCO Holdings, LLC (Charter), 10-K for the Year Ending December 31, 2016, <http://ir.charter.com/phoenix.zhtml?c=112298&p=irol-sec>, at 40, 43.

¹¹⁶ DOJ Economists Comcast-TWC Paper, at 429 (“Online video distributors give households the option of cancelling video service and purchasing only broadband service from cable or telephone companies (‘cutting the cord’) or reducing their use of video services like on-demand video (‘cord shaving’). This represent a significant potential threat to traditional video providers: according to public reports, in 2014 Comcast earned \$20 billion in revenue selling video while Time Warner Cable earned \$10 billion.”).

companies earn significant margins on their MVPD businesses, in part because their control over access to significant numbers of subscribers, enables them to pay much less for video programming than smaller MVPDs.

The DOJ and FCC found from their review of internal documents that large cable companies have been concerned about the impact of OVD and OTT providers on their MVPD businesses. DOJ's antitrust chief at the time of the proposed acquisition by Comcast of Time Warner Cable referred to "Comcast's understandable incentive to reduce the competitive threat posed by over-the-top programmers or streaming services."¹¹⁷ The FCC found internal documents detailing Charter's anxiety concerning OTT substitutes for MVPD services.¹¹⁸

Large cable companies also earn profits from their wired BIAS businesses. The revenues from these businesses are growing as a result of the increased demand for wired broadband. Large cable companies would need to balance their incentives to protect their MVPD profits against possible losses to their BIAS profits. Strategies that interfere with the consumption of OVDs over the cable company's BIAS—by degrading the quality of the connection—could result in subscribers switching wired broadband providers thereby resulting in a loss of revenue and profit. The FCC found that large cable companies would not experience significant switching because most households do not have a good alternative and they would be uncertain whether the cable company is responsible for the problem as discussed

¹¹⁷ Bill Baer (Assistant Attorney General, Antitrust Division, US DOJ), "Video Competition: Opportunities and Challenges," Remarks as Prepared for the Duke Law Center for Innovation Policy, Fall Conference on the Future of Video Competition and Regulation, Washington DC, October 9, 2015, <https://www.justice.gov/opa/file/782401/download>.

¹¹⁸ FCC Charter-TWC Merger Order, at ¶ 80.

above.¹¹⁹ It also pointed to evidence that Time Warner Cable did not lose significant numbers of subscribers during the period of time it degraded Netflix's connection.

Larger cable companies have greater incentives to engage in strategies that would foreclose OVDs from providing video programming competition in the long term. When a cable company invests in a strategy to harm an OVD other large MVPDs capture part of the benefits. The foreclosure strategy generates positive externalities for other large MVPDs. As cable companies become larger, however, it captures a greater portion of these benefits; that is, it internalizes more of the externality. Therefore, larger cable companies are more likely to invest in strategies to hobble OVDs.

Smaller cable and telco providers lack these incentives to harm OVDs.¹²⁰ They make little, if any, profit from their MVPD businesses as a result of paying much higher video programming fees than larger systems. They operate MVPDs because they need to offer households a video-programming package to sign them up for their wired broadband service. In fact, they benefit from the development of OVDs and OTT services because it enables their households to obtain video programming over their wired broadband connections and limits their need to license video programming directly.

¹¹⁹ FCC Charter-TWC Merger Order, at ¶ 43.

¹²⁰ In reviewing the AT&T acquisition of DirecTV, the FCC noted the post transaction the merged entity would have an increased incentive to disadvantage unaffiliated OVDs. FCC AT&T-DirecTV Merger Order, at ¶ 205. Similarly, in the Charter-Time Warner Cable transaction, the complaint filed by DOJ noted that the combined company would have an increased ability and incentive to disadvantage competing OVDs. *US v. Charter Communications Inc. et al*, 1:16-CV-00759, Complaint, April 25, 2016, <https://www.justice.gov/atr/file/844831/download>, at ¶¶ 30-31.

2. Ability to Engage in Access-Restriction Strategies Against OVDs

The FCC and the Justice Department have also found that large cable companies have the ability to engage in foreclosure strategies to weaken competition by OVDs and other OTT providers. Their power comes ultimately from being able to prevent streaming video providers from securing access to a large fraction of households. They can do this in at least three ways.¹²¹

First, they can increase the access fees for reaching the cable system's households. A large BIAS provider operating as a stand-alone business would impose access fees on OVDs to maximize its BIAS profits.¹²² A company that owns both a BIAS provider and an MVPD could impose even higher access fees to account for the increased profits its MVPD would derive from reducing competition with OVDs.

Second, they can degrade the quality of the connections between OVDs and households.¹²³ They can engage in this strategy not to seek access fees but simply to reduce the demand for OVDs. Degrading quality can impose significant harm on the OVD if households come to believe that their problems are the result of the OVD rather than their BIAS provider.

¹²¹ Rogerson (FCC) Comcast-TWC Speech, at 16.

¹²² DOJ Economists Comcast-TWC Paper, at 427-428; FCC 2015 Open Internet Order, at ¶ 205 (“...broadband Internet access providers have the ability to use terms of interconnection to disadvantage edge providers and that consumers’ ability to respond to unjust or unreasonable broadband provider practices are limited by switching costs”).

¹²³ FCC Charter-TWC Merger Order, at ¶ 128 (“The record suggests that Time Warner Cable may have used this strategy [of congesting its interconnections with Netflix] in 2014 to pressure Netflix into a paid peering arrangement, demonstrating its ability to use interconnection to harm OVDs”).

Third, they can impose data caps or measured service plans that raise the subscriber's cost of using OVD, and other OTT, services.¹²⁴ This strategy increases the relative cost of consuming content using an OVD, which is subject to the caps, and the MVPD, which is not subject to similar limitations.

D. Incentives and Ability to Restrict OVD Access to Video Programming

The FCC and the Justice Department have also determined that the large MVPDs have the ability to restrict the supply of video programming content to OVDs. Large MVPDs have significant bargaining leverage over video programmers because they can prevent these programmers from reaching a significant portion of the national audience. The FCC and Justice Department have concluded from empirical analyses that larger MVPDs pay significantly less for video programming.¹²⁵

Large MVPDs can use that bargaining leverage to impose restrictions that limit the ability of video programmers to make their content available to OVDs.¹²⁶ The FCC and DOJ have focused on two particular kinds of restrictions. Alternative Distribution Method (ADM) clauses limit the ability of a video programmer to provide their content to OVDs. Cherry-picking—or unconditional—MFNs require video programmers to give the same price terms

¹²⁴ “BIAS providers such as New Charter can hinder third-party online video competition through practices such as data caps, usage-based pricing (UBP), and discriminatory stand-alone residential BIAS pricing.” FCC Charter-TWC Merger Order, at ¶ 48; “Further, the Company will have an increased incentive to limit subscriber demand for competitors’ online video content, including through discriminatory usage-based allowances, commonly known as ‘data caps.’” FCC AT&T-DirecTV Merger Order, at 160.

¹²⁵ DOJ Economists Comcast-TWC Paper, at 428-429; Robert Aarons and Alexander Raskovich (2016), “Do Bigger Firms Get Better Terms? Evidence from Pay TV,” Working Paper, https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=IIOC2016&paper_id=465, at 17 (“A finding by Division staff that the merging parties would likely have gained bargaining leverage over program suppliers played a significant role in the Division’s investigation.”); Evans Charter Declaration at ¶¶ 56-59.

¹²⁶ FCC Charter-TWC Merger Order, at ¶ 219.

that an OVD has received without paying additional consideration that an OVD paid for those terms.

Their incentive to use bargaining leverage to impose restrictions balances two considerations. By limiting the success of OVDs the restrictions can increase MVPD profits for the reasons discussed above. However, the cable system may have to give other benefits up in its deal with video programmers in return for their agreement to these concessions, such as lower subscriber fees.

The FCC and the Justice Department found evidence that large cable systems had acted on these incentives. The FCC reports that, “Time Warner Inc. alleges that Charter representatives have made statements, both in the course of programming negotiations and in public forums, indicating a willingness to retaliate against programmers that pursue over-the-top distribution.”¹²⁷ Sling TV informed the FCC that it “has frequently been informed that certain programmers’ agreements with certain cable operators prohibit them from, or restrict them in, granting such rights.”¹²⁸

The DOJ concluded that Time Warner Cable, which was the second largest cable system at the time of the investigation, was very aggressive in imposing ADM restrictions on video programmers.

The Department’s review of hundreds of programming contracts and ordinary course business documents revealed that TWC has obtained numerous ADM [alternative distribution means clauses] that limit distribution to paid OVDs. ... TWC’s success in seeking and obtaining ADMs is likely attributable in part to its bargaining leverage over video programmers; although such programmers might disfavor such restrictions because they require the programmer to forsake

¹²⁷ FCC Charter-TWC Merger Order, at ¶ 210.

¹²⁸ FCC Charter-TWC Merger Order, at ¶ 210.

opportunities to earn revenues from OVDs, they are more likely to agree to a large MVPD such as TWC's demand to include them because they do not want to lose access to TWC's millions of cable subscribers.¹²⁹

The Justice Department also found that cable operators were using cherry-picking MFNs.

Although MFN provisions are ubiquitous in the industry – for example, many MVPDs use MFN provisions entitling the MVPD to the lowest license fee that the programmer offers to any other MVPD – the Department's investigation revealed that some MVPDs were utilizing certain provisions that, while referred to as "MFNs," actually require much more than equal treatment. Specifically, some provisions, commonly referred to as "unconditional MFNs" or "cherry-picking MFNs," require that a programmer provide an MVPD the most favorable term the programmer has offered to any other distributor, even if that other distributor agreed to additional payment or other conditions in exchange for receiving that term. As a result of an unconditional MFN, the programmer may be reluctant to license the additional content to the other distributor in the first place."¹³⁰

The DOJ was concerned that the combination of Charter and Time Warner Cable would increase the ability and incentive of these companies to impose ADMs and cherry-picking MFNs to reduce competition with OVDs.¹³¹ The FCC had similar worries. "With its larger scale, New Charter would see more benefit flow back to it from provisions that go beyond protecting its investment and programming and instead seek to disadvantage its online rivals, making it more likely that Charter would seek such provisions."¹³² As a condition of not challenging the merger, the Justice Department prohibited the new company from using the ADM or cherry picking MFNs for a period of 7 years as a condition of not challenging the merger.

¹²⁹ DOJ Charter-TWC Competitive Impact Statement, at 12.

¹³⁰ DOJ Charter-TWC Competitive Impact Statement, at 16.

¹³¹ DOJ Charter-TWC Competitive Impact Statement, at 16-17. The FCC had similar concerns. See FCC Charter-TWC Merger Order, at ¶ 221.

¹³² FCC Charter-TWC Merger Order, at ¶ 221.

E. Summary

American households that want both high-speed broadband service and linear video programming from the same provider have limited choices. They can typically turn to a cable company or, in some cases, a telco that has invested in fiber optics. Not surprisingly, that lack of competition has resulted in consumers paying high prices, getting notoriously poor customer service, and experienced less innovation that they see in many other parts of their lives.

Unfortunately, as investigations by the FCC and DOJ have uncovered, this market structure also gives the large systems the ability, and the incentives, to limit competition by OVDs, OTTs, and other edge providers that offer households substitutes for linear programming. As the large systems move into the provision of other services, such as home security, it is possible that they will have incentives to limit competition with other edge providers have offerings that are, or could become, substitutes.¹³³

VII. Policy Implications

Since 2000, in evaluating proposed mergers and acquisitions for companies that operate BIAS providers and MVPDs, as well as other public policies towards these firms, the FCC and DOJ have conducted detailed empirical analyses of the market structure and performance of these industries. As part of these analyses they have examined the extent to which cable and telco providers of these services have the incentive and ability to harm competition and consumers. That work has provided the foundation for decisions to block mergers, to impose conditions, and to pursue other public policies involving the provision of broadband and video programming.

¹³³ As always, in the case of vertical restraints, whether they would in fact have an incentive to do so is an empirical question, the answer to which could vary depending upon the particular service being considered.

The FCC and DOJ have identified two significant market failures concerning BIAS and MVPD providers. The first market failure results from the fact that large BIAS providers, which account for more 71.7 percent of residential subscribers, are bottlenecks between edge providers and households, and thereby able to exert market power over both.¹³⁴ The second market failure results from the fact that the large BIAS providers also own large MVPDs which gives them incentives to use these bottlenecks to harm edge providers that compete with their MVPDs. In blocking mergers, or imposing conditions, these authorities have tried to prevent making these market failures worse.

As an economic matter, public policy involving the provision of wired BIAS services to households and edge providers, as well as cost-benefit analyses of proposed policies, needs to account for these market failures as well. First-best policies, of course, would eliminate them. The structural and ownership relationships that give rise to these market failures, together with local and state barriers to entry, however, are not easily remedied. The evaluation of public policies therefore has to take them as given. That means choosing among imperfect—what economists refer to as second-best—alternatives. Doing so requires careful evidence-based cost-benefit analysis grounded in economic theory that accounts for the market realities of wired BIAS and video programming provision in the U.S.

A. Market Failures

Society can generally count on competition to promote economic efficiency and welfare. Technically, economists refer to situations in which markets do not do this as “market

¹³⁴ The share of residential broadband subscribers accounted for by the very large BIAS providers (Comcast, Charter, AT&T, and Verizon) is calculated based on data from Leichtman Research Group, “About 960,000 Added Broadband in 1Q 2017,” May 19, 2017, <http://www.leichtmanresearch.com/press/051917release.html>.

failures”. Common market failures arise from externalities, such as pollution and monopolies protected by entry barriers. In practice, few markets look perfect in the ways economists describe in textbooks, yet they work pretty well, often as a result of dynamic competition. Economists, therefore, focus on situations in which market failures are severe and there is some confidence that fixing the failure would improve economic welfare.

Unfortunately, the markets by which American households, by and large, obtain wired BIAS services and linear video programming are dysfunctional as a result of the lack of horizontal competition in BIAS provision and the cross-ownership of MVPDs by BIAS providers. The dysfunction is seen, in part, from the disdain that American households have for their cable or telco providers. In 2016, the American Customer Satisfaction Index reported that, of the 43 industries it covered, subscription television service had the second-worst customer satisfaction ratings, and internet service providers had the worst.¹³⁵

1. The Lack of Horizontal Competition Among BIAS Providers

The FCC and DOJ have found that most households lack a good alternative to their provider of high-speed BIAS. As we saw earlier, based on the most recent data, 31.9 percent of people with access to an incumbent residential high-speed BIAS provider only have one choice and 75.8 percent only have one or two. Switching, when there is another choice, is costly, inconvenient, and sometimes annoying.

Limited competition is partly natural because of the high cost of laying cable and fiber and the resulting economies of density. More competition, that would lower prices and improve

¹³⁵ American Customer Satisfaction Index, Benchmarks by Industry (All Industries), http://www.theacsi.org/index.php?option=com_content&view=article&id=147&catid=&Itemid=212&i=all&sort=Y2016.

service, could occur, however, were it not for political barriers to entry. Large incumbent cable and telcos have lobbied for laws and regulations that prevent or raise the cost of entry.

Wired broadband is important to households for online activities that take up a considerable part of their time and involve downloading large amounts of data. That includes streaming video, playing online games, and video chats. Engaging in these activities using a mobile plan on a mobile device is not a good option because of the relatively low cost of data plans, the limitation of consuming content on smartphones or tablets, usage limitations that may apply to users on mobile wireless plans, even on “unlimited” plans, and the relative lack of reliability of mobile connections.

This situation results in the large BIAS providers, which provide high-speed broadband to most households, acting as bottlenecks. They stand between households and edge providers. Households do not have a good alternative for getting Internet content, and many edge providers do not have a good alternative to reaching these households. The FCC, Justice Department, and New York Attorney General’s office have all reached this conclusion. The best evidence of the strength of these bottlenecks is that when large BIAS providers degraded the quality of Netflix’s connections subscribers did not drop their BIAS provider, and Netflix had to agree to make access payments after vehemently opposing these payments for several years.

By themselves these bottlenecks result in households and edge providers paying higher prices, getting poorer service, and less innovation than they would with more competition. While hardly inconsequential, those are routine harms from lack of horizontal competition.

2. Common Ownership Over MVPDs and Incentives to Harm Competing Edge Providers

The more troubling market failure results from the fact that the large BIAS providers also own large MPVDs. Economists have shown that the mere fact of common ownership, and generally a vertical relationship, does not necessarily result in a market failure. However, investigations by the FCC and DOJ have found that the common ownership of large BIAS providers and MVPDs gives these companies the incentive and ability to harm competitors to their MVPD businesses.

As shown above, MVPDs see the distribution of video programming by OVDs and OTT as a long-term competitive threat. The benefits from protecting their MVPD businesses outweigh adverse effects to their BIAS businesses. By controlling the access of edge providers through their BIAS providers and the access of video programmers through their MVPD to their household subscribers, they have a set of tools for limiting competition by OVDs and OTT providers. Those tools could be applied to other services these companies provide, such as home security, that compete with services offered by edge providers.

B. Policy Analysis

Sound policy analysis should, as an economic matter, take these market realities into account. One should not underestimate the challenge in doing that. To begin with, there are no apparent market or technological forces that will, by themselves, eliminate these market failures in the foreseeable future. Google Fiber's effort to introduce high-speed broadband competition provided some hope that there would be national competitive pressure on large BIAS providers. But in the end, Google Fiber faced too many challenges including political barriers to entry. There is no reason to believe that the common ownership of BIAS providers

and MVPDs will cease to be a fundamental feature of the American model for providing these services. The continued consolidation of this sector is likely to increase these market failures once conditions for approving mergers expire.

In evaluating policies, economic analyses therefore need to take these market failures as given.¹³⁶ As a starting point, economic models of firm behavior should account for market realities including, most importantly, the common ownership of large wired BIAS providers, which are bottleneck facilities, and MVPDs, which may also have considerable market power over access to households. Then, empirical evidence needs to be considered in light of these market realities as well. While one might disagree with their analyses on some points, the FCC and DOJ have adhered to these principles in their investigations related to wired broadband and video programming for many years. Doing so is essential for evaluating the prospective impact of public policies on consumer welfare, economic efficiency, and innovation.

¹³⁶ Economic analysis also needs to account BIAS providers and MVPDs are two-sided platforms as Greensetin et al. observe. See Shane Greenstein, Martin Peitz, and Tommaso Valletti (2016), “Net Neutrality: A Fast Lane to Understanding the Trade-offs,” *Journal of Economic Perspectives*, 30(2): 127-150. The fact that some multi-sided platforms charge prices in excess of marginal cost to both sides of the platform cannot by itself settle the policy debate over whether a change in pricing policy would increase or decrease social welfare. The assessment of socially optimal pricing in the case of multi-sided platforms is complex and involves both setting the pricing levels as well as the structure of prices for both sides. See David S. Evans and Richard Schmalensee (2014), “The Antitrust Analysis of Multisided Platform Businesses,” in Roger D. Blair and Daniel Sokol (eds.), *Oxford Handbook of International Antitrust Economics*, Vol. 1, 404-448, at 411-414.

Appendix A: FCC and DOJ Documents Relied Upon

Federal Communications Commission, Memorandum Opinion and Order in the Matter of the Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorization from MediaOne Group Inc., Transferor, to AT&T Corp, Transferee, CS Docket No. 99-251, June 6, 2000, <https://transition.fcc.gov/Bureaus/Cable/Orders/2000/fcc00202.pdf> (“FCC AT&T-MediaOne Merger Order”).

Federal Communications Commission, Report and Order In the Matter of Preserving the Open Internet Broadband Industry Practices, GN Docket No. 09-191 and WC Docket No. 07-52, December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf (“FCC 2010 Open Internet Order”).

Federal Communications Commission, Memorandum Opinion and Order in the Matter of Applications of Comcast Corp., General Electric Co. and NBD Universal Inc. for Consent to Assign Licenses and Transfer Control of Licenses, MB Docket No. 10-56, January 20, 2011, https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-4A1.pdf (“FCC Comcast-NBC Universal Merger Order”).

Federal Communications Commission, “2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment,” GN Docket No. 14-126, February 4, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-10A1.pdf (“FCC 2015 Broadband Progress Report”).

Federal Communications Commission, Report and Order on Remand, Declaratory Ruling, and Order in the Matter of Protecting and Promoting the Open Internet, GN Docket 14-28, March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf (“FCC 2015 Open Internet Order”).

Federal Communications Commission, Memorandum Opinion and Order in the Matter of the Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-90, July 28, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-94A1_Rcd.pdf (“FCC AT&T-DirecTV Merger Order”).

Federal Communications Commission, “2016 Broadband Progress Report,” GN Docket N. 15-191, January 29, 2016, https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf (“FCC 2016 Broadband Progress Report”).

Federal Communications Commission, Memorandum Opinion and Order in the Matter of Applications of Charter Communications Inc., Time Warner Cable, Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, May 10, 2016, https://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0510/FCC-16-59A1.pdf (“FCC Charter-TWC Merger Order”).

Federal Communications Commission (Industry Analysis and Technology Division, Wireline Competition Bureau), “Internet Access Services: Status as of June 30, 2016,” April 2017, https://apps.fcc.gov/edocs_public/attachmatch/DOC-344499A1.pdf (“FCC IAS Report”).

Federal Communications Commission (2017), “Fixed Broadband Deployment Data from FCC Form 477: Data as of June 30, 2016 (Version 2),” <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477> (“FCC Form 477 Data”).

Nicholas Hill, Nancy L. Rose, and Tor Winston (2015), “Economics at the Antitrust Division 2014-2015: Comcast/Time Warner Cable and Applied Materials/Tokyo Electron,” Review of Industrial Organization, 47:425-435 (“DOJ Economists Comcast-TWC Paper”).

William P. Rogerson, “Economic Theories of Harm Underlying Regulatory Concerns with the Proposed Comcast/TWC Transaction,” 8th Annual FTC Microeconomics Conference. November 12-23, 2015, Washington D.C., https://www.ftc.gov/system/files/documents/public_events/633601/rogerson_keynote.pdf (“Rogerson (FCC) Comcast-TWC Speech”).

US v. AT&T Corp. and MediaOne Group Inc., 1:00-CV-01176, Competitive Impact Statement, May 25, 2000, <https://www.justice.gov/atr/case-document/file/487331/download> (“DOJ AT&T-MediaOne Competitive Impact Statement”).

US et al c. Comcast Corp. et al, 1:11-CV-00106, Competitive Impact Statement, January 18, 2011, <https://www.justice.gov/atr/case-document/file/492251/download> (“DOJ Comcast-NBC Universal Competitive Impact Statement”).

US v. Charter Communications Inc. et al, 1:16-CV-00759 (RCL), Competitive Impact Statement, May 10, 2016, <https://www.justice.gov/atr/file/850161/download> (“DOJ Charter-TWC Competitive Impact Statement”).