

NET NEUTRALITY: ECONOMIC EVALUATION OF MARKET DEVELOPMENTS

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ABSTRACT

On February 26, 2015, the Federal Communications Commission (FCC) issued new regulations for the Internet. A significant stated motivation for these regulations is the protection and promotion of the quality of Internet service. This paper provides information about the evolution of the quality of Internet service, providing context for this central stated motivation of Internet regulation, including the merits of rules restricting payments by content providers for priority treatment of certain Internet traffic. The history of the FCC's Internet regulations (or lack thereof) is reviewed, the main arguments for and against imposing *ex ante* price regulation on Internet Service Providers (ISPs) are outlined, and data on industry performance, particularly subscribership levels in general and at substantially increasing speeds in particular, are described. This experience indicates that apparent insufficiencies in competitive alternatives at the fastest available speeds have been ameliorated in fairly short order by new offerings by multiple ISPs. These findings strongly suggest that basing new restrictions on a putative dearth of competition for recently available service levels and transmission speeds is likely to be overtaken by technological and market developments, rendering such *ex ante* rules superfluous, at best, and counterproductive to competition and innovation, at worst.

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I. INTRODUCTION

Among the most contentious, and perhaps *the* most contentious, of the economic issues in the Federal Communication Commission's (FCC) consideration of the need for regulating Internet Service Providers (ISPs) is whether or not charging content providers for higher quality/speed transmission to end use subscribers, e.g., charging Netflix for faster transmission of its video content, should be prohibited. Indeed, the FCC's 2010 open Internet rules, which were overturned by the United States Court of Appeals for the D.C. Circuit,¹ considered such "pay-for-priority" arrangements as likely violations of the no unreasonable discrimination rule.² The effect of a ban on pay-for-priority is tantamount to imposing a uniform price of zero on a particular type of transaction. Significantly, the requirement of a uniform price of zero applied to other industries would preclude arrangements widely used by businesses and accepted by consumers. For example, passengers can pay for higher quality and/or faster service on airlines and Amtrak and shippers can pay more to have their packages delivered in one day. Similarly, in so-called two-sided markets, providers can charge non-uniform, non-zero prices to both sides of the market, e.g., newspapers raise revenues from both subscribers and advertisers.

Opposition to pay-for-priority appears to be driven by two primary concerns.³ First, *if* there is insufficient competition among ISPs, under certain conditions, there may be the incentive and ability to discriminate anticompetitively in favor of or against particular content providers, e.g., an affiliate that competes with other content providers.⁴ Second, there appears to be a concern that pay-for-priority would unduly inhibit the emergence and growth of new Internet enterprises—the proverbial start-ups emerging from garages and dorm rooms.⁵

The FCC's decision whether or not to impose Internet-specific economic regulation, and the widely-expected legal challenges to any rules so established,⁶ have taken place in an environment in which the volumes and applications carried by the Internet and the speed and quality of these transmissions have increased substantially since the early years of the new millennium, when the FCC first considered, but rejected, imposing regulation on ISPs. Section 2 describes the FCC's basis for imposing more stringent regulation in its 2010 and 2015 Open Internet Orders, the latter of which for the first time applies certain common carrier regulations to broadband access services. Section 3 discusses how the substantial growth in demand and competitive alternatives demonstrate that apparent insufficiencies in competitive alternatives at the latest available speeds have been ameliorated in fairly short order by new offerings by multiple ISPs. Section 4 describes how these findings strongly suggest that basing new restrictions on a putative dearth of competition for recently available service levels and transmission speeds is likely to be overtaken by technological and market developments, rendering such *ex ante* rules superfluous, at best, and counterproductive to competition and innovation, at worst.

¹ *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

² Federal Communications Commission, *Preserving the Open Internet*, GN Docket No. 09-191, *Broadband Industry Practices*, WC Docket No. 07-52, Report and Order, December 23, 2010, ¶ 76 ("2010 Open Internet Order").

³ Proponents have been making these and similar arguments ever since net neutrality became an issue. Comprehensive analyses of earlier arguments for net neutrality appear in J. Gregory Sidak, "A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet," *Journal of Competition Law and Economics*, Vol. 2, 2006, pp. 349-474 and J. Gregory Sidak and David J. Teece, "Innovation Spillovers and the 'Dirt Road' Fallacy: The Intellectual Bankruptcy of Banning Optional Transactions for Enhanced Delivery over the Internet," *Journal of Competition Law and Economics*, Vol. 6, 2010, pp. 521-594.

⁴ "Were there sufficient competition among and between various broadband networks, Google's concerns about the future of the Internet would largely be allayed." Statement of Vinton Cerf, Hearing before the Committee on Commerce, Science, and Transportation, United States Senate, February 7, 2006, Transcript, p. 11.

⁵ See, for example, the statements of Professors Jonathan Baker and Nicholas Economides at the FCC's October 2, 2014 Open Internet Roundtable – Economics (video available at <https://www.youtube.com/watch?v=SF21CICsBR8&app=desktop>). During the workshop, Professor Thomas Hazlett described how during its start-up period, Google paid AOL to be the default search engine, demonstrating that (1) non-neutral arrangements have always existed in various parts of the Internet and (2) payments for priority do not necessarily stifle the development of innovative content providers. Similarly, content providers obtain higher quality service from arrangements with content delivery networks (CDN). See, for example, Sidak and Teece, *op. cit.*, p. 528. Further, not only would small start-ups benefit from a mandated zero price for content providers, some very large companies advocate and would benefit from such a mandate. A mandated price of zero for content providers can be viewed as an infant industry subsidy, which does not go away even when the start-ups have grown into large companies.

⁶ The first law suits were filed on March 23, 2015—11 days after the release the order. "FCC Net Neutrality Rules Face First Court Challenges," Law360, March 23, 2015. USTelecom filed a suit three weeks later. "Telecom Industry Group Sues FCC Over Net Neutrality," Law360, April 13, 2015.

II. THE FCC’S RATIONALE FOR REGULATING BROADBAND ACCESS SERVICES

A. 2010 Open Internet Order

The DC Circuit upheld the FCC’s rationale for its 2010 Open Internet rules.⁷ That rationale had three essential elements: (1) that pursuant to Section 706 of the Communications Act, deployment of broadband services was not reasonable and timely, (2) the 2010 rules were designed to facilitate the development of new applications by “edge” (content) providers, resulting in a “virtuous cycle”⁸ in which broadband access providers would upgrade their networks to accommodate these new uses, and (3) competition was not sufficiently strong to discipline the incentives and ability for anticompetitive acts by broadband providers, e.g., favoring affiliated edge providers and/or engaging in anticompetitive price discrimination.

The FCC concluded that broadband progress was insufficient several months before releasing the 2010 Open Internet order.⁹ That determination was based on (1) a redefinition of broadband to require downstream speeds of 4 Megabits per second (Mbps) and upstream speeds of 1 Mbps—an increase from the previous requirement of 0.2 Mbps in both directions, (2) the observation that between 4.5 percent and 7.8 percent of Americans lacked access to broadband,¹⁰ and (3) its conclusion that competition among broadband providers was insufficient, e.g., the FCC reported to the Court that as of December 2009, almost 70 percent of households lived in census tracts with only one or two providers of wireline or fixed wireless broadband service.¹¹

The DC Circuit upheld the FCC’s rationale on the grounds that the Commission’s interpretation of Section 706, the available facts, and the FCC’s “virtuous cycle” theory manifested reasonable predictive judgment about the effects of the 2010 Open Access rules¹² and consequently “offered a rational connection between the facts found and the choice made.”¹³

B. 2015 Open Internet Order

The DC Circuit’s upholding of the FCC’s “virtuous cycle” theory was an important component of Chairman Wheeler’s proposal to “replace, strengthen, and supplement” the 2010 Open Internet rules by, among other provisions, defining Internet access service as a telecommunications service, subject to the common carrier provision of Title II.¹⁴ In adopting Chairman Wheeler’s proposal,¹⁵ the majority relied on the latest broadband progress report,¹⁶ which (1) again redefined broadband to now require downstream speeds of at least 25 Mbps and upstream speeds of 3 Mbps, (2) observed that 17 percent of Americans lack access to broadband as newly defined, and (3) concluded that broadband is not being deployed in a reasonable and timely fashion.¹⁷ In essence, while the “virtuous cycle,” coupled with purportedly insufficient competition framework of the 2010 Open Internet Order remains as the FCC’s rationale, the FCC substantially increased the metric for assessing the adequacy of competition.

⁷ *Verizon v. FCC*. Although the Court upheld the FCC’s reasoning for regulating broadband Internet access services, it overturned the specific rules on the grounds that they imposed common carrier regulation on a service that it had previously determined was not a common carrier service.

⁸ The 2010 Open Internet Order generally uses the term “virtuous circle,” while the 2015 order uses the term “virtuous cycle” (except when quoting the comments of filing parties). The latter term is used throughout this paper.

⁹ Federal Communications Commission, *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*, GN Docket No. 09-137, *A National Broadband Plan for Our Future*, GN Docket No. 09-51, Sixth Broadband Deployment Report, July 20, 2010. The determination that deployment was not reasonable and timely reversed the determination in five previous reports over a span of a decade that such deployment was reasonable and timely.

¹⁰ The Sixth Report (¶ 1) reports that between 14 million and 24 million Americans lacked access to broadband. According to Appendix B of that report, the US population was 308.4 million.

¹¹ *Verizon v. FCC*, p. 40. The data the FCC was describing appear in Figure 6 below.

¹² *Verizon v. FCC*, p. 34.

¹³ *Verizon v. FCC*, p. 44.

¹⁴ “Fact Sheet: Chairman Wheeler Proposes New Rules for Protecting the Open Internet,” February 5, 2015, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0204/DOC-331869A1.pdf.

¹⁵ Federal Communications Commission, *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order, March 12, 2015, (“2015 Open Internet Order”).

¹⁶ See, for example, *Id.*, ¶ 81.

¹⁷ Federal Communications Commission, *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*, GN Docket No. 14-126, 2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment, February 4, 2015. The press release for this action was titled “FCC Finds Broadband Deployment Not Keeping Pace,” January 29, 2015, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0129/DOC-331760A1.pdf.

The FCC's 2015 Open Internet Order is based on its predictive judgment¹⁸ that certain restrictions on ISPs are necessary to maintain a "virtuous cycle,"¹⁹ within which the provisions of services by content (or edge) providers and the demand by end-use consumers provide incentives for the ISPs to continue to invest and expand their services. The restrictions go beyond those included in the 2010 Open Internet Order. Among the most notable additions from an economic perspective are (1) the outright prohibition on paid prioritization—charging certain content providers for superior service,²⁰ (2) redefining both fixed and mobile broadband services as telecommunications services,²¹ thereby subjecting them (among other things) to the just and reasonable and dispute resolution provisions of Title II of the Communications Act,²² (3) subjecting the exchange of traffic between ISPs and edge providers (or other entities)²³—which heretofore had been completely unregulated and established through commercial negotiations—to the just and reasonable and dispute resolution provisions of Title II, and (4) adding a provision that prohibits certain as yet defined future conduct that unreasonably interferes with or disadvantages end-users or edge providers.²⁴

The 2015 Open Internet Order increases economic regulation, in particular, by (1) its outright prohibition of paid prioritization—a practice that routinely occurs throughout the rest of the economy and (2) by expanding the scope of potential disputes. With regard to the latter point, although the 2015 Open Internet Order characterizes the new rules as "bright-line," the new conduct standard has the potential to be anything but. In contrast to enforcement actions on other matters related to broadband policy, e.g., pole attachments, for which explicit guidance on issues such as rates is provided,²⁵ the 2015 Open Internet Order provides no guidance, stating instead that disputes would be resolved on a case by case basis. Among the potential issues that could arise are current industry practices, such as data caps, "zero-rated" mobile broadband option—an offering in which downloads from particular content providers, e.g., a music service, do not count against monthly data allowances,²⁶ and heretofore privately negotiated interconnection arrangements. While mentioning these issues as possible candidates for dispute resolution, rather than provide bright lines and/or definitive guidance, the 2015 Open Internet Order instead describes the debate over whether or not such practices are pro-competitive and otherwise just and reasonable and concludes with the observation that: "Given the unresolved debate concerning the benefits and drawbacks of data allowances and usage-based pricing plans, we decline to make blanket findings about these practices and will address concerns under the no-unreasonable interference/disadvantage on a case-by case basis."²⁷ Such uncertainty with respect to offerings that consumers currently use (let alone offerings that providers, possibly in partnership with content providers, might offer in the future) reduces incentives to innovate by threatening such offerings with the time, expense, and uncertainty associated with litigating disputes.²⁸

In light of the FCC's use of the facts in its 2010 broadband report to support the predictive judgment underlying its pessimistic assessment of the strength of broadband competition in the 2010 Open Internet Order and its release of the 2015 broadband report that continues to view broadband competition pessimistically, it is informative to evaluate how broadband access services have developed historically, both in general and since the FCC rendered its predictive judgment in formulating the 2010 Open Access rules.

¹⁸ The term "predictive judgment" appears 28 times in the Order.

¹⁹ The term "virtuous cycle" appears 57 times in the Order.

²⁰ 2015 Open Internet Order, ¶ 125.

²¹ *Id.*, ¶ 336. Appendix A, § 8.2 defines Broadband Internet Access Service ("BIAS") as including both fixed and mobile.

²² *Id.*, ¶ 434.

²³ *Id.*, ¶ 195.

²⁴ *Id.*, ¶ 136.

²⁵ In the case of pole attachment disputes, explicit formulas guide the maximum rates that pole owners can charge for attachments to their poles. *Id.*, ¶ 484.

²⁶ *Id.*, ¶ 151.

²⁷ 2015 Open Internet Order, ¶ 153.

²⁸ The 2015 Open Internet Order declined to establish time limits for resolving disputes. 2015 Open Internet Order, ¶ 153. Enforcement Bureau disputes can take a substantial amount of time to conclude. For example, from December 2013 through June 2014, incumbent telephone companies filed six pole attachment complaints with the Enforcement Bureau (see <http://transition.fcc.gov/eb/mdrd/compl.html>, visited March 24, 2015), pursuant to the FCC's 2011 pole attachment order. Federal Communications Commission, *Implementation of Section 224 of the Act*, WC Docket No.07-245, *A National Broadband Plan for Our Future*, GN Docket No. 09-51, Report and Order and Order on Reconsideration, April 7, 2010. Only two of these matters have ended. For one of these, the Enforcement Bureau denied the complaint without prejudice and allowed the complainant to refile with newly required information that had not been specified in the 2011 order. Federal Communications Commission, Enforcement Bureau, *Verizon Florida LLC, Complainant v. Florida Power and Light Company, Respondent*, Docket No. 14-126, File No. EB-14-MD-003, Memorandum Opinion and Order, February 11, 2015, ¶ 26. The same type of information was also requested for the four pending matters.

III. MARKET DEVELOPMENTS UNDER INFORMATION SERVICE CLASSIFICATION

Even if increasing regulation of broadband Internet access by classifying it as Title II services ultimately withstands legal challenges, the more fundamental question is whether the benefits imposed by the imposition of common carrier regulation would justify the associated costs.²⁹ Market developments subsequent to the FCC’s first decision in 2002 to classify broadband Internet as an information service and after the 2010 Open Internet Order are informative in this regard.³⁰ In particular, has the performance of broadband providers suggested the need for more vigorous regulation?

A. Broadband Demand Growth

Indeed, since the FCC first classified broadband access as an information service, there have been major changes in broadband market characteristics. Table 1 lists the changes in a number of these conditions between 2001 (just before the FCC’s Cable Modem Order) and 2013 (the most recent year for which FCC broadband data are available).

Table 1: Growth in Internet Access Connections: 2001 to 2013

	2001		2013	
	Number (1000s)	% of Connections	Number (1000s)	% of Connections
Households	108,209		122,459	
Internet connections	54,646	100.0%	250,471	100.0%
Dial-up	42,743	78.2%	3,674	1.5%
Cable	8,094	14.8%	50,709	20.2%
Telco	3,452	6.3%	34,485	13.8%
Other Fixed	357	0.7%	2,406	1.0%
Satellite	NA		1,643	0.7%
Fixed Wireless	NA		763	0.3%
Total Fixed	54,646	100.0%	91,274	36.4%
Fixed broadband	11,903	21.8%	87,600	35.0%
Mobile Wireless	NA	NA	159,197	63.6%

Sources: Households: US Census
 2001 Statistics: Calculated from households and percentages listed in Cable Modem Order, par. 9.
 2013 Broadband Statistics: FCC, Internet Access Services: Status as of December 31, 2013, October 2014, Table 11.
 2013 dial-up connections: Joanna Brenner, 3% of Americans Use Dial-Up at Home, Pew Research Center, August 21, 2013.

As of 2001, almost 55 million U.S households (50.5 percent of households) had connections to the Internet, with close to 80 percent of these being dial-up access. Of the broadband connections (cable modem, telephone company digital subscriber line (DSL), and other (radio based)), there were about 8 million cable modem connections and 3.5 million DSL connections.

By 2013, while dial-up broadband access had become a mere vestige of its earlier dominant position (less than 10 percent of 2011 volume, accounting for only 1.5 percent of all residential Internet connections), fixed broadband connections (predominantly cable modem, DSL, and fiber to the premises provided by telephone companies) had increased eight-fold, to a level at which about 70 percent of US households subscribed to fixed broadband access

²⁹ “No government market intervention can be justified unless the expected benefits of such intervention exceed the expected costs, appropriately defined.” Dennis L. Weisman, “A ‘Principled’ Approach to the Design of Telecommunications Policy,” *Journal of Competition Law and Economics*, Vol. 6, 2010, p. 932.

³⁰ Federal Communications Commission, *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, GN Docket No. 00-185, *Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-52, Declaratory Ruling and Notice of Proposed Rulemaking, March 15, 2002 (“Cable Modem Order”).

services.³¹ Even more striking are the 159 million broadband connections via mobile wireless devices, which account for more than three out of every five Internet connections. Clearly, there has been substantial growth in broadband Internet access during the period in which the FCC’s classification of such services as information services has been in effect.

B. Growth in Competitive Alternatives

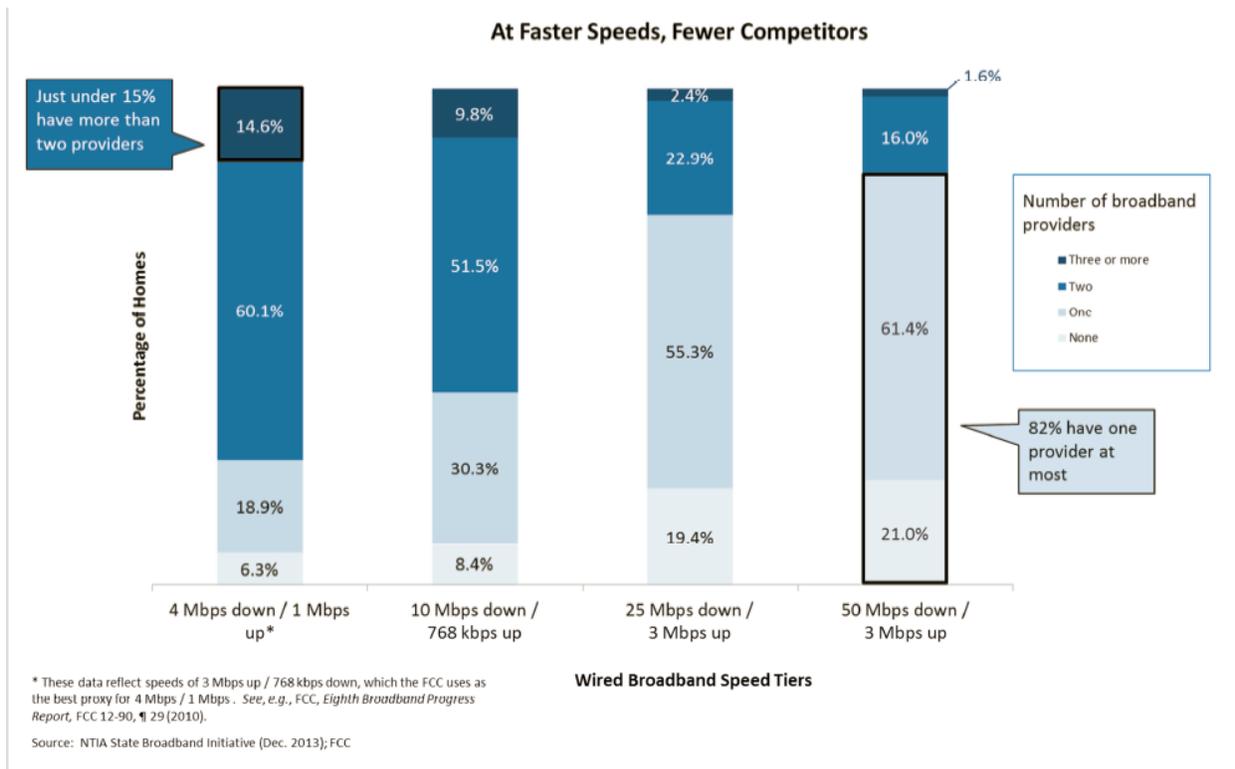
Also relevant is the issue of whether there is a sufficient number of competitive alternatives to discipline potential anticompetitive actions on the part of broadband access providers. It appears that publicly available data sources are not necessarily completely consistent in this regard. For example, FCC Chairman Tom Wheeler’s prominent September 4, 2014 “1776 speech” appears to be based on the same data used in the FCC’s 2015 broadband report.³² Chairman Wheeler’s speech presented a figure (reproduced as Figure 1 below) that shows that at downstream speeds of 10 Mbps almost 10 percent of homes have no available providers, 30 percent have only one available provider, about one-half have two available providers, but fewer than 10 percent have three or more available providers of fixed broadband service.³³

³¹ 87,600,000 fixed broadband connections/122,459,000 households.

³² In particular, the “25 Mbps” bar from Chairman Wheeler’s speech, reproduced in Figure 1, matches the data reported in footnote 314 of the 2015 broadband report. The results of the FCC’s calculations appear to be quite sensitive to how available alternatives are defined. In particular, for 25 Mbps downstream/3 Mbps upstream, Chart 2 of the 2015 broadband report shows 16 percent of US households with no alternatives, 45 percent with one alternative, 27 percent with two alternatives, and 12 percent with three or more (compared to the corresponding percentages of 19 percent, 55 percent, 23 percent, and 2 percent from Chairman Wheeler’s speech). Other suggestions of possible problems with these data are (1) the fact that they are voluntary (2015 broadband report, ¶ 68) and (2) the anomalous result in Table 11 in which the broadband availability for the quartile with *highest* availability quartile (e.g., the top income quartile) is *lower* than the average availability.

³³ Tom Wheeler, “The Facts and Future of Broadband Competition,” 1776 Headquarters, Washington, D.C., September 4, 2014, p. 2, second from left bar (“1776 Speech”). Chairman Wheeler’s figure identifies NTIA as the source for the availability data. NTIA collects broadband data at the census block level (<http://www.broadbandmap.gov/about/technical-overview/assembling-the-data>), suggesting that the availability measures are the percentage of households in census blocks with zero, one, two, or three or more broadband providers with service in the census block. Everything else being equal, the presence and number of alternatives available to households will be smaller at the census block level than at the census tract level (Figures 2 through 6). This effect may be offset to some extent by the fact that the NTIA data are voluntary (previous footnote). Further, because (as the FCC has previously recognized), alternatives need not be present everywhere in a geographic area in order to impose competitive discipline, the competitive presence at the census tract level shown in Figures 2 through 6 are informative indicators of the extent and progress of competition. Federal Communications Commission, *In the Matter of SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, Memorandum Opinion and Order, Released November 17, 2005, ¶¶ 87 and 90. Finally, and most important, competitive measures at the census tract level clearly illustrate the rapid development of alternative providers at increasingly higher levels of service. Indeed, the FCC itself relied on these census tract measures in defending the 2010 Open Internet Order (note 11 *supra*) and in the Notice of Proposed Rulemaking that culminated in the 2015 Open Internet Order (Figure 5 below).

Figure 1: December 2013 Fixed Broadband Availability: Chairman Wheeler’s “1776” Speech

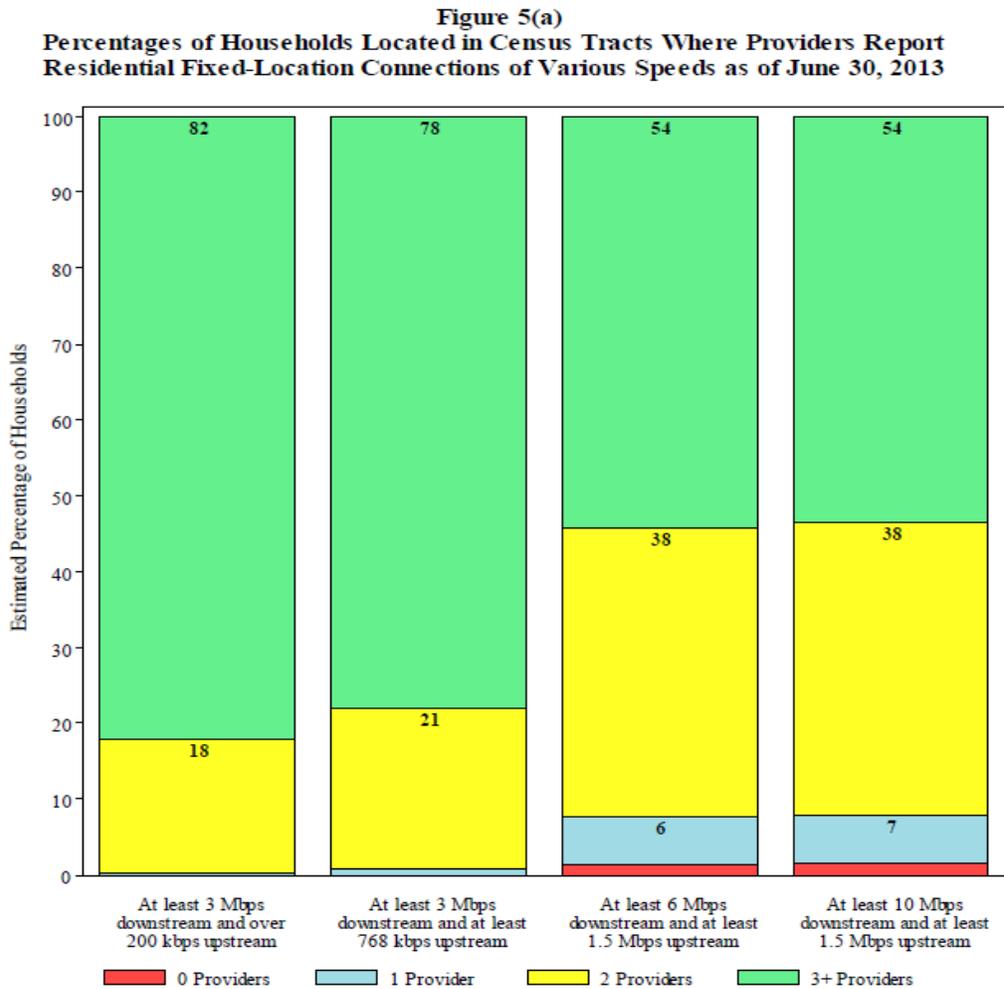


In stark contrast, data released by the FCC itself three months before Chairman Wheeler’s speech suggest much higher levels of availability when measured at the census tract level.³⁴ In particular, Figure 2 below, which is a reproduction of Figure 5(a) of the FCC’s report, shows that at speeds of *at least* 10 megabits per second³⁵ virtually every residence has at least one available provider of fixed broadband services and more than half have three or more providers.

³⁴ Federal Communications Commission, “Internet Access Services: Status as of June 30, 2013,” Industry Analysis and Technology Division, Wireline Competition Bureau, June 2014, Figure 5(a).

³⁵ The rightmost bar would combine the 10 megabit per second category on Chairman Wheeler’s figure with all higher categories. Also note that the rightmost bar of Figure 2 has a superior upload speed (1.5 Mbps versus 0.768 Mbps per second) compared to the 10 Mbps bar in Figure 1.

Figure 2: June 2013 Fixed Broadband Availability: FCC’s June 2014 Internet Access Services Report



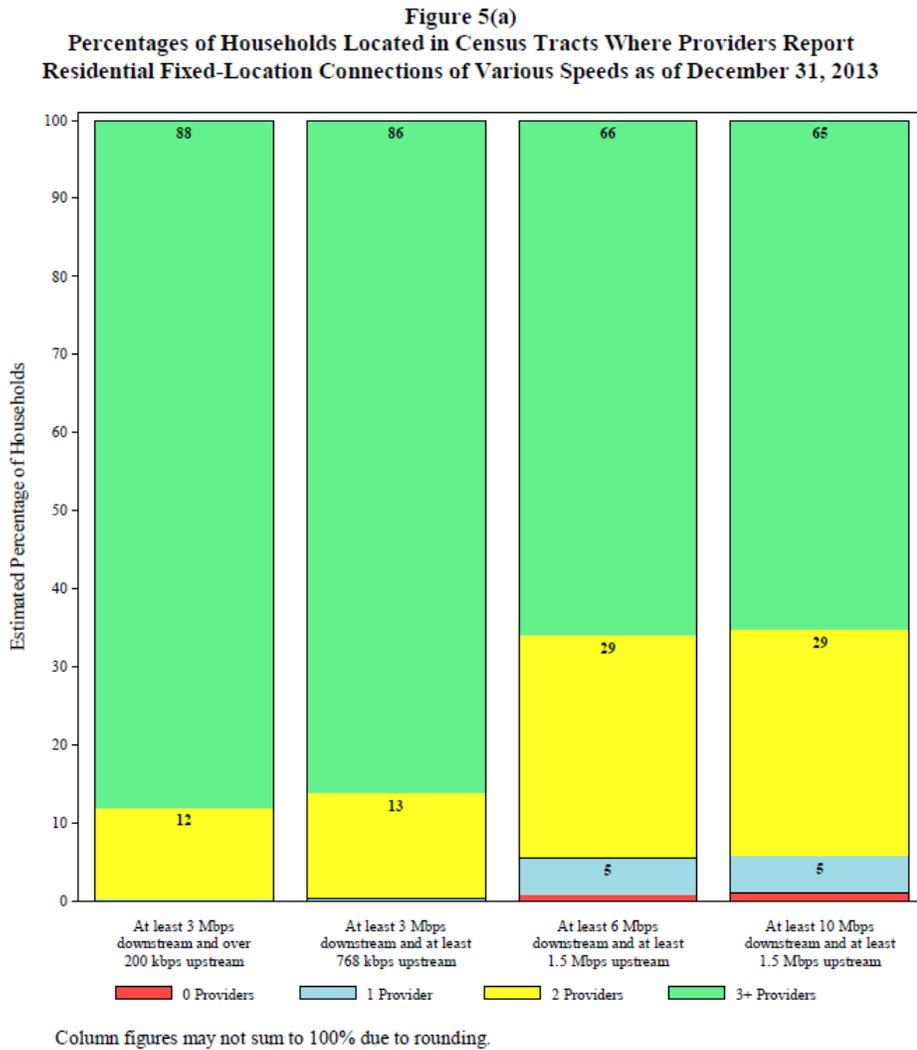
Column figures may not sum to 100% due to rounding.

Perhaps more importantly, the FCC’s data show rather rapid growth in the availability of alternative broadband providers, as demonstrated by the FCC’s latest Internet access report released a few weeks after Chairman Wheeler’s speech.³⁶ Comparing Figures 2 and 3 shows that from June to December of 2013, the percentage of households living in census tracts with three or more fixed broadband providers offering services at downstream speeds of at least 10 megabits per second increased from 54 percent to 65 percent and the percentage with two or more available providers increased from 92 percent to 94 percent.³⁷

³⁶ Federal Communications Commission, “Internet Access Services: Status as of December 31, 2013, Industry Analysis and Technology Division, Wireline Competition Bureau, October 2014, Figure 5(a) (“October 2014 Internet Access Report”).

³⁷ Figures 2 and 3 show about one percent of households live in census tracts with no available provider.

Figure 3: December 2013 Fixed Broadband Availability: FCC’s October 2014 Internet Access Services Report

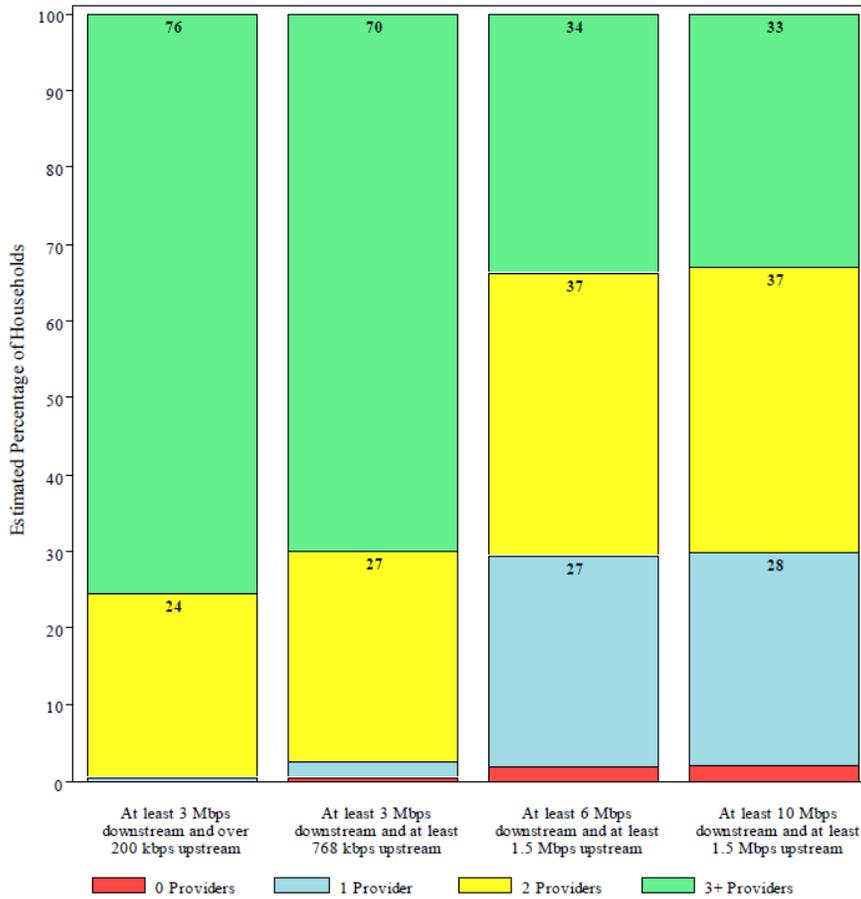


Similarly, the FCC’s May 15, 2014 Notice that culminated in the 2015 Open Internet Order cited the December 2013 version of Internet Access Report for the proposition that broadband competition may be limited, observing that the percentage of households in census blocks with three or more alternative fixed providers offering speeds of 6 Mbps downstream and 1.5 Mbps upstream was “a mere 34 percent”³⁸ as shown in Figure 4. A comparison of Figures 3 and 4 demonstrates that the FCC’s Internet Access Reports show that the percentage had almost doubled from 34 percent to 66 percent from December 2012 to December 2013.

³⁸ Federal Communications Commission, *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Notice of Proposed Rulemaking, May 15, 2014, ¶ 48.

Figure 4: December 2012 Fixed Broadband Availability: FCC’s December 2013 Internet Access Services Report

**Figure 5(a)
Percentages of Households Located in Census Tracts Where Providers Report Residential Fixed-Location Connections of Various Speeds as of December 31, 2012**

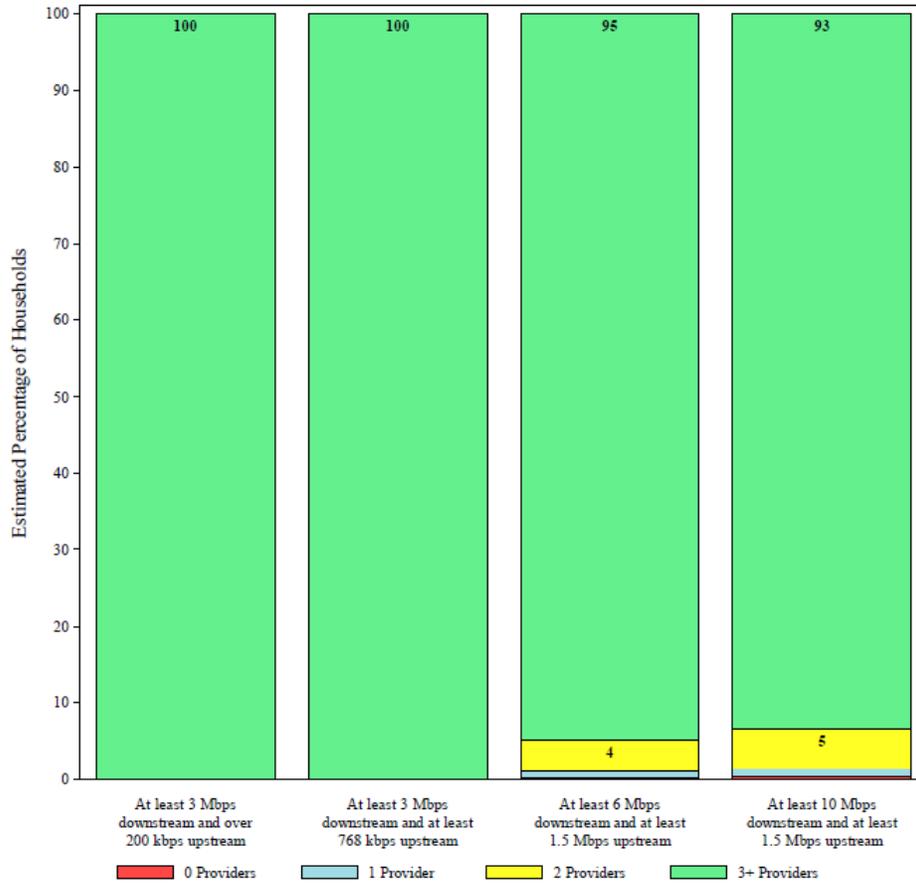


Figures may not sum to 100% due to rounding.

When broadband mobile wireless is included, Figure 5 shows that more than 90 percent of households live in census tracts with three or more fixed broadband providers offering services at downstream speeds of at least 10 megabits per second.

Figure 5: December 2013 Fixed and Mobile Wireless Broadband Availability: FCC’s October 2014 Internet Access Services Report

**Figure 5(b)
Percentages of Households Located in Census Tracts Where Providers Report Residential Fixed-Location Connections of Various Speeds or Operate a Mobile Wireless Network Capable of Delivering Service of Various Speeds as of December 31, 2013**



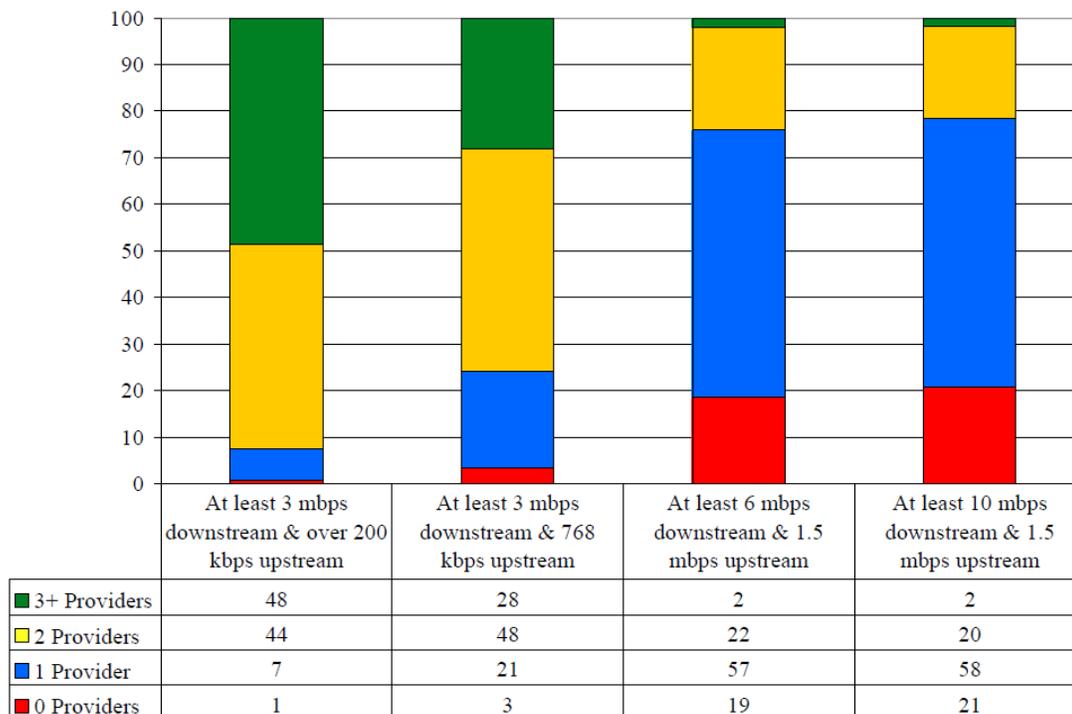
Column figures may not sum to 100% due to rounding.

Finally, the growth in available alternatives over longer periods has also been rapid. For example, Figure 6 displays fixed broadband availability as of December 2009 (just before the release of the FCC’s National Broadband Plan in March 2010).³⁹ By December 2013 (four years later), the percentage of households living in census tracts with three or more fixed broadband providers offering services at downstream speeds of at least 10 megabits per second increased from 2 percent (Figure 6) to 65 percent (Figure 3) and the percentage with more than one available provider increased from 22 percent to 94 percent. Similarly, the percentage with no available alternatives decreased from 21 percent to 1 percent.

³⁹ Federal Communications Commission, “Internet Access Services: Status as of December 31, 2009”, Industry Analysis and Technology Division, Wireline Competition Bureau, December 2010, Figure 3(a).

Figure 6: December 2009 Fixed Broadband Availability: FCC’s December 2010 Internet Access Services Report

**Figure 3(a)
Percentages of Households Located in Census Tracts Where Providers Report Residential Fixed-Location Connections of Various Speeds as of December 31, 2009**



Figures may not sum to 100% due to rounding.

C. Competition at Higher Speeds

While the FCC’s data show growth in both broadband demand and competitive alternatives at increasing speeds, FCC Chairman Wheeler appears to have a somewhat different focus—whether competition is sufficient at very high speeds:⁴⁰

But even 10 Mbps doesn’t fully capture the increasing demand for better wired broadband, of which downstream speed is, of course, only one component. It’s not uncommon for a U.S. Internet connected household to have six or more connected devices – including televisions, desktops, laptops, tablets, and smartphones. When these devices are used at the same time, as they often are in the evenings, it’s not hard to overwhelm 10 Mbps of bandwidth...

That’s why our focus cannot be on the left half of the chart. A 25 Mbps connection is fast becoming “table stakes” in 21st century communications. Today about 80 percent of American homes have access to a broadband connection that delivers 25 Mbps or better...

At the low end of throughput, 4 Mbps and 10 Mbps, the majority of Americans have a choice of only two providers. That is what economists call a “duopoly”, a marketplace that is typically characterized by less than vibrant competition...⁴¹

⁴⁰ 1776 Speech, pp. 2-4.

⁴¹ Comparing Figure 1 reproduced from Chairman Wheeler’s speech with Figures 2 through 6 reproduced from the FCC’s Internet access reports suggests that Chairman Wheeler may well have been overly pessimistic about the extent of competition. Even if his depiction is accurate, the Department of Justice’s 2010 caution against imposing price regulation on broadband services is instructive:

The Department recommends that the Commission monitor carefully those areas in which only a single provider offers—or even two providers offer—broadband service. Although enacting some form of regulation to prevent certain providers from exercising market power may be tempting with regard to such areas, care must be taken to avoid stifling the

Focus on the chart again. At 25 Mbps, there is simply no competitive choice for most Americans. Stop and let that sink in...three-quarters of American homes have no competitive choice for the essential infrastructure for 21st century economics and democracy. Included in that is almost 20 percent who have no service at all!⁴²

Again, as a threshold matter, the data Chairman Wheeler displayed show substantially less competition than the FCC’s Internet access reports, where by the end of 2013, almost two-thirds of households lived in census tracts with three or more fixed broadband alternatives with downstream speeds of *at least* 10 megabits per second. Even if this discrepancy is ignored, it is far from obvious that the level of competition at higher speeds today justifies the increased regulation that net neutrality proponents advocate. In fact, Table 2 shows that the level of competition for fixed broadband services at 25 Mbps displayed on Chairman Wheeler’s chart is remarkably similar to the level measured by the FCC’s Internet access reports at the end of 2009 for fixed broadband services at speeds of at least 10Mbps.

Table 2: Fixed Broadband Availability at 10+ Mbps in 2009 (FCC December 2010 Internet Access Report) was Virtually Identical to Availability at 25 Mbps in 2013 (Chairman Wheeler’s “1776” Speech)

Providers	FCC December 2009 Data (10+ Mbps)	Chairman Wheeler December 2013 Data (25 Mbps)
3+	2%	2.4%
2	20%	22.9%
1	58%	55.3%
0	21%	19.4%

In particular, both columns in Table 2 show approximately one-fifth of households with no providers, approximately 80 percent of households with at best one alternative provider, and only about 2 percent of households with more than two alternatives. The fact that only four years later, two-thirds of households have now have three or more alternative providers of fixed services with downstream speeds 10 Mbps or higher (Figure 3) and 93 percent have 3 or more fixed or mobile wireless alternatives (Figure 5) suggests that a decision to impose substantially greater regulation on broadband in 2010 based on dissatisfaction with the development of competition for services with downstream speeds of 10 Mbps or higher would have very likely imposed costs that greatly exceeded any possible benefits from such regulation. Indeed, the dissatisfaction with competition at speeds of 3 Mbps/0.768 Mbps, which was the basis for the FCC’s concluding that broadband deployment was not keeping pace in 2010, should be substantially ameliorated by market developments since then: the percentage with no alternatives is now *de minimis* (Figure 3) and the percentage with only one or two alternatives decreased from almost 70 percent in 2009 (Figure 6) to less than 15 percent in 2013 (Figure 3).

The rapid development of broadband alternatives is also demonstrated by the increase in the percentages of households in census tracts with three or more providers (the highest level recorded in the FCC’s Internet Access Services Reports) and the corresponding decrease in the percentages with zero or one alternative, i.e., households

infrastructure investments needed to expand broadband access. In particular, price regulation would be appropriate only where necessary to protect consumers from the exercise of monopoly power and where such regulation would not stifle incentives to invest in infrastructure deployment.

Ex Parte Submission of the United States Department of Justice, Before the Federal Communications Commission, *In the Matter of Economic Issues in Broadband Competition: A National Broadband Plan for Our Future*, GN Docket No. 09-51, January 4, 2010, p. 28.

⁴² Chairman Wheeler made essentially the same point several days after the FCC announced the redefinition of broadband to require higher speeds and his proposal to regulate broadband under Title II:

Increasing the standard for broadband to 25 Mbps also clarifies one of the biggest challenges facing our broadband future: the lack of meaningful competition. It’s bad enough that 17 percent of Americans have no access to 25 megabit service. But at those speeds, about 75 percent of U.S. households can choose from only one provider. Where there is no choice the market cannot work.

Remarks of Chairman Tom Wheeler, Silicon Flatirons Center, Boulder, Colorado, February 9, 2015, p. 2 (available at <http://www.fcc.gov/document/chairman-wheeler-silicon-flatirons-center-boulder-colorado>). A not unreasonable translation of this explanation is that the Chairman Wheeler’s conclusion that there is insufficient competition—which from an economic perspective is generally a necessary (but not necessarily sufficient) requirement for increasing regulation—is the result of raising the standard. Further, the purported lack of meaningful competition is a rationale for increasing regulation across-the-board, and not just for very high-speed, *fixed* services. In particular, under Chairman Wheeler’s proposal:

For the first time open Internet protections would apply equally to both wired and wireless networks. Wireless networks account for 55 percent of Internet usage. For those to whom much is given, much is also expected – especially including an open network.

with no choice. Table 3 displays these trends. The left side of the table shows the trends for fixed services at two speeds: at least 3 Mbps downstream and 768 Kbps upstream, which corresponds to the FCC’s definition of broadband from 2010 to 2015 and at least 10 Mbps downstream and 1.5 Mbps upstream, which is the highest reported speed. For the lower of these speeds, while fewer than 30 percent of households were in census tracts with three or more providers at the beginning of the period, 86 percent were in census tracts with three or more providers only four years later. Conversely, the percentage of households in census tracts with no or only one provider decreased from 24 percent to one percent over the four years. For the higher of these speeds, while a mere 2 percent of households were in census tracts with three or more providers at the beginning of the period, 65 percent were in census tracts with three or more providers only four years later. The increase in availability was especially rapid after the middle of 2012, during which time the percentage of households increased from nine percent in June 2012 to 65 percent eighteen months later. Conversely, the percentage of households in census tracts with no or only one provider decreased from 79 percent to six percent over the four years.

Table 3: 2009 to 2013 Growth in Alternative Broadband Providers: at least 3 least Mbps downstream and 768 Kbps upstream and at least 10 Mbps downstream and 1.5 Mbps upstream⁴³

	Fixed				Fixed or Mobile			
	At least 3 Mbps downstream & 768 Kbps upstream		At least 10 Mbps downstream & 1.5 Mbps upstream		At least 3 Mbps downstream & 768 Kbps upstream		At least 10 Mbps downstream & 1.5 Mbps upstream	
	3 or more alternatives	0 or 1 alternative	3 or more alternatives	0 or 1 alternative	3 or more alternatives	0 or 1 alternative	3 or more alternatives	0 or 1 alternative
Dec-09	28%	24%	2%	79%	40%	20%	2%	79%
Jun-10	27%	26%	2%	76%	57%	15%	2%	76%
Dec-10	29%	21%	3%	72%	72%	11%	3%	72%
Jun-11	34%	16%	3%	69%	77%	8%	3%	69%
Dec-11	35%	13%	3%	68%	79%	7%	16%	52%
Jun-12	52%	3%	9%	49%	92%	1%	23%	39%
Dec-12	70%	3%	33%	30%	97%	1%	48%	20%
Jun-13	78%	1%	54%	8%	99%	0%	91%	2%
Dec-13	86%	1%	65%	6%	100%	0%	93%	2%

The right side of the table includes mobile broadband services at the two speed levels. At the lower speeds, including mobile services substantially increased availability throughout the four years, with every household having three or more alternative providers at what the FCC defined as broadband until the beginning of 2015. At the higher speed, mobile broadband substantially increased the percentage with three or more providers starting with the December 2011 results to a point where by the end of the period, 93 percent of households were in census tracts

⁴³ Sources: Federal Communications Commission, “Internet Access Services: Status as of December 31, 2009”, Industry Analysis and Technology Division, Wireline Competition Bureau, December 2010, Figure 3(a) and 3(b); Federal Communications Commission, “Internet Access Services: Status as of June 30, 2010”, Industry Analysis and Technology Division, Wireline Competition Bureau, March 2011, Figure 3(a) and 3(b); Federal Communications Commission, “Internet Access Services: Status as of December 31, 2010”, Industry Analysis and Technology Division, Wireline Competition Bureau, October 2011, Figure 3(a) and 3(b); Federal Communications Commission, “Internet Access Services: Status as of June 30, 2011”, Industry Analysis and Technology Division, Wireline Competition Bureau, June 2012, Figure 3(a) and 3(b); Federal Communications Commission, “Internet Access Services: Status as of December 31, 2011”, Industry Analysis and Technology Division, Wireline Competition Bureau, February 2013, Figure 5(a) and 5(b); Federal Communications Commission, “Internet Access Services: Status as of June 30, 2012”, Industry Analysis and Technology Division, Wireline Competition Bureau, May 2013, Figure 5(a) and 5(b); Federal Communications Commission, “Internet Access Services: Status as of December 31, 2012”, Industry Analysis and Technology Division, Wireline Competition Bureau, December 2013, Figure 5(a) and 5(b); Federal Communications Commission, “Internet Access Services: Status as of June 30, 2013”, Industry Analysis and Technology Division, Wireline Competition Bureau, June 2014, Figure 5(a) and 5(b); Federal Communications Commission, “Internet Access Services: Status as of December 31, 2013”, Industry Analysis and Technology Division, Wireline Competition Bureau, October 2014, Figure 5(a) and 5(b).

with three or more providers and only two percent of households were in tracts with only zero or one providers. In short, at both speed levels, broadband availability had moved well beyond duopoly.⁴⁴

IV. REGULATION BASED ON THE EVIDENCE

Perhaps somewhat ironically, despite its recent conclusion that broadband deployment is not keeping pace, the FCC nonetheless credits its “virtuous cycle” framework for “the remarkable increases in investment and innovation seen in recent years.”⁴⁵ Investment and innovation *have* been remarkable, as the FCC itself has documented. For example, fixed and mobile broadband providers continue to invest at increasing rates, with annual investment reaching \$75 billion in 2013.⁴⁶ This investment has provided consumers with competitive alternatives at ever increasing speed.⁴⁷

A. Have Market Developments Vindicated the FCC’s Predictive Judgments?

An evaluation of the FCC’s “virtuous cycle” rationale for imposing more regulation on the Internet raises a number of issues: (1) what was the economic basis for imposing more regulation of the Internet, (2) to what extent were the “predictive judgments” supported by evidence and sound theory, and (3) in light of the fact that the predictive judgment rendered in the 2015 Order was based on the same “virtuous cycle” rationale that underlay the 2010 Order, how well did that predictive judgement perform in the intervening years.

In general, the 2015 Open Internet Order is deficient both in the empirical and economic analysis supporting the FCC’s framework and in testing the predictive judgments underlying that framework against market developments in recent years. Turning to the framework itself, in explaining its flat prohibition on paid prioritization, the 2015 Order stated: “Although there are arguments that some forms of paid prioritization could be beneficial, the practical difficulty is this: the threat of harm is overwhelming...”⁴⁸

The FCC’s conclusion is almost completely based on *potential* harmful outcomes, not harms that have actually occurred. Other than mentioning a handful of complaints, none of which resulted in enforcement action, the 2015 Order cited only two examples from the last decade: (1) a 2005 Enforcement Bureau action against Madison River Communications, a small rural North Carolina incumbent telephone company for blocking voice over Internet protocol (VoIP) traffic⁴⁹ and (2) a 2008 FCC order—later overturned by the D.C. Circuit—concluding that Comcast had violated the Commission’s Internet Policy Statement and the Communications Act by suppressing its customers’ use of BitTorrent.⁵⁰

In a similar vein, the 2015 Open Internet Order claims: “The Commission’s conclusion [paid prioritization ban] is supported by a well-established body of economic literature, including Commission staff working papers.”⁵¹ The “well-established body” predates the rapidly developing two-sided market literature, which the FCC admits

⁴⁴ Bresnahan and Reiss’ findings are instructive here:

Our empirical results suggest that competitive conduct changes quickly as market size and the number of incumbents increase. In markets with five or fewer incumbents, almost all variation in competitive conduct occurs with the entry of the second and third firms.

Timothy F. Bresnahan and Peter C. Reiss, “Entry and Competition in Concentrated Markets,” *Journal of Political Economy*, Vol. 99, No. 5, 1991, p. 978.

⁴⁵ 2015 Open Internet Order, ¶ 76.

⁴⁶ 2015 Broadband Progress Report, p. 9.

⁴⁷ For example, in December 2009, fewer than 30 percent of households lived in census tracts with broadband speeds of at least 3 Mbps downstream and 768 Kbps upstream, with fewer than seven percent of connections at that speed being mobile wireless (December 2010 Internet Access Report, Figure 3 (a) and Table 2). Just four years later, 93 percent of households lived in census tracts with speeds of at least 10 Mbps downstream and 1.5 Mbps upstream, with mobile wireless accounting for 45 percent of connections (October 2014 Internet Access Report, Figure 5(b) and Table 11).

⁴⁸ 2015 Open Internet Order, ¶ 19. In support of this assertion, the Order quotes a single net neutrality advocate. In general, in its discussion of economic issues, the order tends to cite the positions of advocates rather than economic analyses and/or literature. For example, the order (¶ 107) states: “Third, we respond to the deluge of public comment expressing deep concern about paid prioritization.” The deluge was presumably part of the nearly four million commenters. 2015 Open Internet Order, ¶ 6. Interestingly, as of March 23, 2015, the FCC’s Electronic Comment Filing System (ECFS) lists fewer than 2.1 million comments for the Open Internet proceeding. The number of commenters would be less, because some parties posted multiple comments. Further, the comments are not a representative sample. For example, following the July 1, 2014 commentary on net neutrality by HBO talk show host John Oliver, the FCC received 45,000 comments the following day. “How John Oliver Transformed the Net Neutrality Debate Once and for All,” *Bloomberg*, February 26, 2015, available at <http://www.bloomberg.com/politics/articles/2015-02-26/how-john-oliver-transformed-the-net-neutrality-debate-once-and-for-all>.

⁴⁹ See, Sidak, *op. cit.*, pp. 415-422 for more details on the Madison River matter.

⁵⁰ 2015 Open Internet Order, ¶ 65. See also Dissenting Statement of Commissioner Ajit Pai, p. 333 and Jonathan E. Nuechterlein and Philip J. Weiser, *Digital Crossroads*, Second Edition, Cambridge, The MIT Press, 2013, p. 199.

⁵¹ 2015 Open Internet Order, ¶ 126, citing three 1980s publications by Professor Michael Katz, a 2000 *American Economic Review* article, a 1986 FCC staff paper on universal service, and a 2000 staff paper on intercarrier compensation.

characterizes the Internet.⁵² Interestingly, while citing Professor Katz's (a former FCC Chief Economist) articles from three decades ago, the order completely ignored his advice in this proceeding.⁵³

Yet, such pricing has been opposed by some in the case of Internet access platforms. As I will now demonstrate, two-sided pricing can be an innovative and valuable component of edge providers' competitive strategies and can benefit consumers. The Commission should not intentionally or unintentionally create barriers to such pricing by leaving it under a cloud of regulatory uncertainty. Instead, the Commission should declare two-sided pricing to be presumptively reasonable. Moreover, this presumption should be rebuttable only if the challenging party can prove concrete harm to competition from the specific practice being challenged.

The fundamental rationale for a presumption of reasonableness is that an edge provider's decision to pay all or part of end users' costs of gaining access to its services improves the value of its services and does not degrade or reduce the value of the services offered by rival edge providers. In other words, it is competition on the merits.⁵⁴

In summary, like its 2010 Open Internet Order, the FCC's 2015 Order combines its regulatory determination that broadband competition at a contemporary very high level of service is not sufficient with a theory that *potential* harms are likely to support the imposition of new regulations on the Internet, even though there have been heretofore been no serious *actual* harms. In essence, although market performance has produced high levels of investment, product improvements, and demand growth, the words supporting more regulation have not changed.⁵⁵

Turning to the implications of the "remarkable growth in investment and innovation," these undisputed successes both call into question some elements of its previous judgement, and more important, challenge the wisdom of the substantial burdens now being imposed on ISPs.

The fact that the FCC did not impose the full range of the 2010 rules on wireless providers undermines the FCC's claim that the success of the Internet demonstrates the efficacy of those rules. In particular, if such rules had been necessary to preserve the "virtuous cycle," one might have expected that successes would be diminished for mobile services and/or specific instances of harm had occurred. The 2015 Order presents virtually no such concrete evidence.⁵⁶ Indeed, in the 2015 Broadband Report, the FCC singled out the performance of mobile services.⁵⁷

⁵² 2015 Open Internet Order, ¶ 338. Theoretical models based on two-sided markets do not support the FCC's assertion that economic literature supports a ban on paid prioritization. Instead, these models are generally quite sensitive to the simplifying assumptions typically necessary to produce a tractable model. For example, Bourreau, et al. model a duopoly with two ISPs and conclude that paid prioritization would improve network performance, lead to more innovation by content providers, and increase total welfare, relative to mandating a zero price be charged to content providers. Marc Bourreau, Frago Kourandi, and Tommaso Valletti, "Net Neutrality with Competing Internet Platforms," *The Journal of Industrial Economics*, Vol. 63, 2015, pp. 30-73. In contrast, Economides and Hermalin's model, in which the network capacities of ISPs are assumed to be fixed, produces a conclusion that allowing paid prioritization could reduce total welfare, i.e., although ISP's profits might increase, consumers would be worse off by an even greater amount, because of reduced content being available. However, when the model is enhanced to account for the fact that ISPs routinely invest to increase the capacities of their networks, Economides and Hermalin concluded that when ISPs are able to charge different prices to different content providers, instead of being subject to net neutrality restrictions, they invest more to expand their networks. Nicholas Economides and Benjamin E. Hermalin, "The Economics of Network Neutrality," *RAND Journal of Economics*, Vol. 43, No. 4, 2012, pp. 602-629. In light of the fact that such theoretical models are quite sensitive to assumptions that may or may not align well with reality, Sidak and Teece's observation on an earlier theoretical model is instructive: "Until empirical evidence is presented that network providers, in fact, have a substantial—and not merely theoretical—incentive to foreclose competing content and applications and that this incentive is likely to outweigh *countervailing* incentives, we believe that the proposed justification for the nondiscrimination rule is overstated and that appropriate support for such regulation is lacking." Sidak and Teece, *op. cit.*, pp. 571-572 (emphasis in original).

⁵³ "Protecting and Promoting Consumer Benefits Derived from the Internet," Declaration of Michael L. Katz, Exhibit 1 to the Comments of Verizon and Verizon Wireless, July 15, 2014, ¶ 55-56.

⁵⁴ That the viewpoints of net neutrality advocates fall far short of an "overwhelming" demonstration of potential harm and/or a consensus of the economic literature that paid prioritization should be banned is echoed in the prominent book of Jonathan Nuechterlein (currently General Counsel of the Federal Trade Commission) and Philip Weiser (Dean of the University of Colorado Law School): "[R]easonable people can disagree how strong this concern [creating a "slow lane" that effectively forces all providers to pay]. To the extent that the concern is valid, however, one potential policy response is to scrutinize any actions by broadband ISPs that cause the quality of their best-effort Internet services to drop below industry norms." Nuechterlein and Weiser, *op. cit.*, p. 211. Similarly, in the proceeding that resulted in the 2010 Open Internet Order, a number of prominent economists, including a Nobel laureate, and three former FCC Chief Economists, opposed net neutrality regulation. Sidak and Teece, *op. cit.*, pp. 524-525. Finally, despite sponsoring a roundtable of economists, which included both proponents and opponents of paid prioritization, and for which the then Chief Economist indicated it would not have been possible to assemble a better panel (see note 5 *supra*), the 2015 Open Internet Order cites none of them.

⁵⁵ As two earlier articles thoroughly demonstrate, this pattern of the same or similar arguments in support of net neutrality being made, even though demand and competition had increased substantially in the meantime is not new. In particular, the analysis in this article is similar to Sidak's economic evaluation of arguments in favor of net neutrality, including banning paid prioritization, being made in the middle of the last decade (Sidak, *op. cit.*), and to Sidak and Teece's evaluation of the arguments made by net neutrality proponents in the proceeding that resulted in the 2010 Open Internet Order (Sidak and Teece, *op. cit.*).

⁵⁶ The 2015 Open Internet Order. ¶ 96 lists several consumer complaints, with one of them resulting in a voluntary settlement of \$1.25 million (a drop in the bucket relative to investment levels and revenues).

⁵⁷ 2015 Broadband Progress Report, p. 9.

Wireless investment is particularly notable. In recent years, mobile wireless has become one of the most important segments of the national economy. Mobile providers invest billions of dollars in their networks annually to support this burgeoning demand. One estimate indicates that “U.S. wireless providers handled more than 3.2 trillion megabytes (MB) of data in 2013” and to keep up with this “consumer usage in 2013, wireless carriers invested a record breaking \$33.1 billion in capital expenditures, approximately \$101 per subscriber, excluding the cost of spectrum.” Wireless providers in the U.S. have spent more than \$134 billion in capital investments during the past five years, and incremental capital investment by wireless providers rose by more than 10 percent from 2012 to 2013 to \$33.1 billion.

Further, the FCC’s conclusion that its new rules will not harm ISPs is inconsistent with its assertion that left unchecked, the ISPs have “overwhelming” incentives to disrupt the “virtuous cycle.” In particular, the 2015 Open Internet Order concludes that: “Without rules in place to protect the open Internet, the overwhelming incentives broadband providers have to act in ways that are harmful to investment and innovation threaten both broadband networks and edge content.”⁵⁸ Yet, in dismissing the ISP’s concerns that the new rules will create a “takings” problem by diminishing the value of their assets, the Order’s predictive judgment is: “Indeed, rather than reducing the value of broadband provider property, today’s rules likely serve to enhance the value of broadband networks by promoting innovation on the edge of the network, thereby driving consumer demand for broadband Internet access and increasing the networks’ value.”⁵⁹ If the “virtuous cycle” increased the value of ISP’s networks, as the FCC predicts in its analysis of “takings,” incentives for harmful conduct faced by rational ISPs are clearly *not* overwhelming.

B. When (if ever) do you Increase Regulation?

Viewing the development of broadband services and the availability of competitive alternatives during the first decade and a half of 21st century provides a much different perspective than the snapshot of a moment in time in the FCC’s broadband reports that resulted in a conclusion that broadband has not been deployed in a reasonable and timely manner and that more regulation is needed as a result. In particular, history suggests that to the extent that competition for the newest most advanced services is less than ideal, broadband providers have rapidly invested to expand service and choice. Indeed, despite its recent determination that broadband deployment has not been reasonable and timely (based on its redefinition of broadband to require speeds that only 29 percent of consumers choose),⁶⁰ the FCC acknowledges that large amounts of investment *have* been forthcoming.⁶¹

While at times the 2015 Open Internet Order downplays the new rules as not departing very much from the *status quo*,⁶² they *are* a significant departure from the deregulatory approach articulated in the 1996 Telecommunications Act and in the Commission’s early determinations that broadband services are information services not subject to the regulatory provisions the 2015 Order imposes. In particular, the 1996 Act observed: “The Congress finds [that]: The Internet and other interactive computer services have flourished, to the benefit of all Americans, with a minimum of government regulation.”⁶³ And when it classified broadband services offered by cable companies as information services, the FCC noted that⁶⁴

[W]e believe “broadband services should exist in a minimal regulatory environment that promotes investment and innovation in a competitive market.” In this regard, we seek to remove regulatory uncertainty that in itself may discourage investment and innovation. And we consider how best to limit unnecessary and unduly burdensome regulatory costs.

The movement in the new rules *away* from the “minimum of government regulation” the Congress observed in 1996 or the “minimal regulatory environment” the FCC championed in 2002 raises the fundamental issue of when

⁵⁸ 2015 Open Internet Order ¶ 103.

⁵⁹ *Id.*, ¶ 571.

⁶⁰ 2015 Broadband Progress Report, Table 3.

⁶¹ Chairman Wheeler’s statement attached to the 2015 Broadband Progress Report observed:

First, the good news. Private industry continues to invest billions of dollars to expand America’s broadband -- \$75 billion a year by one analysis. Both fixed and mobile providers continue to improve broadband speeds, and current and new entrants to the market are investing and expanding broadband availability to many Americans with speeds in some locations exceeding 1 gigabit per second (Gbps).

⁶² See, for example, 2015 Open Internet Order, ¶ 360. “Finally, the forbearance relief we grant in the accompanying order in conjunction with our reclassification decision *keeps the scope of our proposed regulatory oversight within the same general boundaries that the Commission earlier anticipated drawing under its Title I authority.* (emphasis added)

⁶³ Telecommunications Act of 1996, § 230(a)(4).

⁶⁴ Cable Modem Order, ¶ 5.

does it make economic and public policy sense to impose regulation on particular sectors of the economy.⁶⁵ In his seminal treatise on economic regulation, Professor Alfred Kahn laid out the conditions: (1) the service (or industry) in question is large, both in its own right and as a supplier of essential inputs into other sectors of the economy and (2) competition does not work well.⁶⁶ On first glance, Chairman Wheeler's concerns about the sufficiency of competition seem to address these twin pillars: Internet access at higher and higher speeds, e.g., 25 Mbps may be becoming increasingly essential and in Chairman Wheeler's opinion competitive alternatives at these higher speeds may not be sufficient.

To the extent that Chairman Wheeler's static "snapshot" observations about the number of ISPs providing 25 Mbps service had merit and whether they justify increased regulation should also be viewed through the prism of dynamic efficiency. As Professor Weisman explains:⁶⁷

The optimal regulatory policy should recognize the tradeoffs between static and dynamic efficiency and its implications for consumer welfare. Static efficiency entails both allocative and productive (technical) efficiency. Allocative efficiency refers to the relationship between the price of the service and the underlying marginal (incremental) cost of the service at any given point in time. Productive (technical) efficiency is concerned with production at the lowest possible cost. Optimal investment over time in capital formation, cost-reducing innovation, and product innovation is the province of dynamic efficiency. Dynamic efficiency is particularly critical in infrastructure industries that serve as key drivers of economic growth.

Chairman Wheeler's apparent focus on the number of competitors for a particular level of broadband access at a particular point in time addresses static efficiency, but overlooks dynamic efficiency.⁶⁸ The history of broadband availability and customer demand suggests that any transitory shortfalls in static efficiency may be ameliorated in fairly short order as ISPs invest to make broadband services increasingly available and at greater speeds. Narrowly focusing on how many alternatives might now be available at the highest speeds, which only a minority of current users now avail themselves of,⁶⁹ to justify the "strongest open internet protections ever"⁷⁰ would ignore the lesson that sufficient competitive alternatives at speeds that previously had been deemed adequate for broadband has heretofore been forthcoming.⁷¹ Further, basing more rigorous regulation on the newest of services for which demand growth is in its initial stages would be a major departure from the deregulatory environment for new services since the dawn of broadband service, as the FCC explained in its 2002 Cable Modem Order⁷² and in the 2010 Open Internet Order, when the FCC did not apply the nondiscrimination rule to mobile wireless on the ground that it was in an earlier stage of development.⁷³

Market developments since then have (1) been consistent with FCC's predictive judgment at the time of the Cable Modem Order and (2) tended to undermine the FCC's predictive judgment in the 2010 Open Internet Order. Based on the historical growth pattern of provision of broadband services to date, imposing even greater common carrier

⁶⁵ The Federal Trade Commission expressed similar caution concerning regulatory intervention:

Two aspects of the broadband Internet access industry heighten the concerns raised by regulation generally. First, the broadband industry is relatively young and dynamic, and, as noted above, there are indications that it is moving in the direction of more competition. Second, to date we are unaware of any significant market failure or demonstrated consumer harm from conduct by broadband providers. Policy makers should be wary of enacting regulation solely to prevent prospective harm to consumer welfare, particularly given the indeterminate effects that potential conduct by broadband providers may have on such welfare.

Federal Trade Commission, *Broadband Connectivity Competition Policy*, FTC Staff Report, June 2007, p. 11. The market developments described in Section III above are consistent with FTC's statement that the industry was moving towards more competition.

⁶⁶ Alfred E. Kahn, *The Economics of Regulation*, Cambridge: The MIT Press, 1988, p. 1-17.

⁶⁷ Weisman, *op. cit.*, p. 934.

⁶⁸ The 2015 Open Internet Order's rationale for banning paid prioritization of avoiding "slow lanes" for non-prioritized traffic also reveals an overly static perspective. See, for example, 2015 Open Internet Order, ¶ 126. Again, this theoretical concern has continued to be raised, even as transmission speeds have increased substantially, as shown in Table 3 above. See, also Sidak and Teece, *op. cit.*, p. 577-578.

⁶⁹ According to the latest FCC Internet access report, 13.5 percent of fixed and mobile broadband connections are at speeds of 25 Mbps or higher. The corresponding percentage for fixed services is 32.5 percent. October 2014 Internet Access Report, Table 10.

⁷⁰ "FCC Chairman Tom Wheeler: This is How We Will Ensure Net Neutrality," *Wired*, February 4, 2015 (available at <http://www.wired.com/2015/02/fcc-chairman-wheeler-net-neutrality/>).

⁷¹ For example, Atkinson and Weiser's "third way" proposal specified that broadband providers with market power be required to offer "best efforts," e.g., service without paid prioritization at a particular service level, with that level defined as downstream speeds of 2 Mbps. Robert D. Atkinson and Philip J. Weiser, "A 'Third Way' on Network Neutrality," The Information Technology and Innovation Foundation, May 30, 2006. Since 1996 when the proposal was made, it is clear that providers now lack market power at much higher levels of service, e.g., as described earlier, almost two-thirds of households reside in census tracts with three or more fixed broadband providers. When mobile broadband is included the corresponding percentage is over 90 percent.

⁷² Cable Modem Order, ¶ 5.

⁷³ 2010 Open Internet Order, ¶ 94.

regulation would be unnecessary at best and at worst counterproductive to facilitating broadband access providers' investments as integral players in the "virtuous cycle" the FCC aspires to facilitate.