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The following exhibits to the Comcast and TWC Opposition to Petitions to Deny and Response to Comments were made available on Comcast's website:

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Economic Analysis of the Effect of the Comcast-TWC Transaction on Broadband: Reply to Commenters

Mark A. Israel

September 22, 2014

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I. INTRODUCTION AND EXECUTIVE SUMMARY

A. Background

1. Comcast Corporation ("Comcast") and Time Warner Cable ("TWC") propose to transfer control of the licenses and authorizations held by TWC and its wholly owned and controlled subsidiaries to Comcast.[1] In addition, Comcast and Charter Communications, Inc. ("Charter") propose a series of divestiture transactions whereby, contingent on approval of the proposed Comcast-TWC transaction, Comcast will divest systems resulting in a net reduction of approximately 3.9 million residential video customers.[2] I refer to these transactions collectively as "the proposed transaction" or just "the transaction."

2. At the request of counsel for Comcast, I have already filed one declaration on this matter.[3] My main conclusion in that declaration was that "[g]iven (i) the lack of any valid competitive concerns and (ii) the substantial consumer benefits, the proposed

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1 Comcast Corporation and Time Warner Cable Inc., Description of Transaction, Public Interest Showing, and Related Demonstrations, April 8, 2014.

2 Public Interest Statement, In the Matter of Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, MB Docket No. 14-57, June 5, 2014, available at http://apps.fcc.gov/ecfs/document/view?id=7521215151, site visited September 17, 2014.

3 Declaration of Mark A. Israel, "Implications of the Comcast/Time Warner Cable Transaction for Broadband Competition," Attachment to Comcast Corporation and Time Warner Cable Inc., Description of Transaction, Public Interest Showing, and Related Demonstrations, April 8, 2014 (hereinafter, Israel Declaration). This initial declaration provides my qualifications.

transaction—as it relates to the provision of broadband services in particular—is pro-consumer, pro-competitive, and in the public interest."4

3. Based on the analyses presented in my initial declaration and supplemented in this reply declaration, my main conclusion continues to hold: The largely unquestioned consumer benefits from the proposed transaction easily swamp the largely unsupported claims of harms to competition and consumers.

B. Assignment

4. For this declaration, counsel for Comcast asked me to review the broadband-related arguments made by economists in the Comments and Petitions to Deny filed in this proceeding, in order to determine whether those arguments provide a basis for amending or reversing the conclusions in my initial declaration.5 In addition, counsel has asked me to assess whether the economists identify any likely sources of competitive harm other than those examined in my initial declaration. The analysis, presented in this declaration, is based on my review of the Comments and Petitions to Deny, including the

4 Israel Declaration, ¶ 12.

5 I focus on arguments related to the provision of broadband data services in the following reports by economists: Declaration of David S. Evans, "Economic Analysis of the Impact of the Comcast/Time Warner Cable Transaction on Internet Access to Online Video Distributors," Attachment to Petition to Deny of Netflix Inc., August 25, 2014 (hereinafter, Evans Declaration); Declaration of Joseph Farrell, Attachment to Petition to Deny of Cogent Communications Group, August 25, 2014 (hereinafter, Farrell Declaration); Declaration of David Sappington, "The Anticompetitive Effects of the Proposed Merger of Comcast and Time Warner Cable," Attachment to Petition to Deny of DISH Network, August 25, 2014 (hereinafter, Sappington Declaration).

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economic reports associated with those Comments and Petitions to Deny, review of relevant documents, and discussions with industry personnel, as well as my review of the relevant economic literature, application of relevant economic theory, and analysis of relevant empirical evidence.

5. As in my initial declaration, I focus on the effect of the transaction in the broadband segment. I do not qualify all of my conclusions about competitive effects and benefits from the transaction with the words "broadband' or "broadband-related," but unless otherwise explicitly noted, all statements and conclusions should be taken as referring to effects on broadband.

C. Primary Conclusion

6. My primary conclusion remains that the proposed transaction is pro-competitive, pro-consumer, and in the public interest. Despite hundreds of pages of argument from economists in this matter—and my own very detailed response in the rest of this report—the key points are actually quite straightforward. First, commenters advance no serious arguments to refute the substantial efficiencies and associated consumer benefits from the transaction, as detailed in my initial declaration and the declarations by Drs. Rosston and Topper.6 Hence, any claimed harms must be weighed

6 Israel Declaration, §§ III-IV; Declaration of Gregory L. Rosston and Michael D. Topper, "An Economic Analysis of the Proposed Comcast – Time Warner Cable Transaction," Attachment to Comcast Corporation and Time Warner Cable Inc., Description of Transaction, Public Interest Showing, and Related Demonstrations, April 8, 2014

against these substantial consumer benefits. Second, commenters offer no horizontal theory of harm to broadband customers and, in particular, no evidence that Comcast and TWC compete with or constrain one another in any market today. Third, the vertical theory advanced by some commenters—that the transaction would enable Comcast to foreclose OVDs—does not hold together as a matter of economic theory. Comcast lacks the incentive to stifle the complementary OVD industry, which makes best use of the high speed broadband network in which Comcast has invested tens of billions of dollars, and Comcast lacks the ability to thwart the rapidly growing OVD business, which already includes many of the giants of the high technology and entertainment industries. More importantly, this vertical theory is belied by the facts: Comcast has agreed with Netflix to a long-term contract, which imposes minimal incremental costs on Netflix and has not harmed Netflix's market performance. Fourth, the remaining "big is bad" argument that the transaction will give Comcast excessive bargaining power is theoretically ambiguous, empirically unsupported, and, in all events, completely swamped by the consumer benefits from the transaction. Perhaps most tellingly, commenters spend dozens of pages alleging that Comcast has substantial market power today, and yet the Comcast

(hereinafter, Rosston-Topper Declaration I), § IV; Declaration of Gregory L. Rosston and Michael D. Topper, "An Economic Analysis of the Proposed Comcast Divestiture Transactions with Charter," Attachment to Comcast Corporation and Time Warner Cable, Inc., Public Interest Statement, June 4, 2014 (hereinafter, Rosston-Topper Declaration II), § III.

interconnection charges that lie at the heart of their theories of harm are tiny overall and literally zero for more than 40 "settlement-free" paths into the Comcast network.

D. Executive Summary

7. Although the logic supporting my primary conclusion is straightforward even without wading through the intricacies of interconnection terms or bargaining economics, in this executive summary and the body of the declaration, I explain my findings in more detail. My main points are all presented in the executive summary, including references to the sections/paragraphs in the remainder of the declaration that further develop each point in more detail for those who are interested.

8. Despite the substantial attention paid by commenters to the combined firm's share of nationwide broadband customers, commenters have not established the existence of a national broadband market in which the change in national broadband share is an indicator of horizontal competitive effects from the transaction, nor any market in which Comcast and TWC place relevant competitive constraints on one another today:

- Despite repeated appeals to national share statistics, commenters fail to provide a coherent basis to conclude that there is a national broadband market in which such a share calculation is a relevant indicator of horizontal competitive effects. The Horizontal Merger Guidelines are clear that product markets are defined to include "a group of substitute products," meaning "products that are reasonably

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interchangeable with a product sold by one of the merging firms."7 Applying this logic to geographic market definition, the Guidelines are clear that the market may be "geographically bounded if geography limits some customers' willingness or ability to substitute to some products, or some suppliers' willingness or ability to serve some customers."8 In the present case, the market is clearly geographically bounded, as broadband providers cannot serve broadband customers outside the boundaries of their geographically limited footprints. Adding edge providers into the mix does not change this fact; Comcast and TWC each offer broadband platforms to connect edge providers to only those consumers within their distinct footprints, meaning that the Comcast and TWC platforms are not substitutes for the distribution of content to any consumer. Even if an edge provider's goal is to achieve national distribution, the Comcast and TWC networks serve different areas and are not substitutes for one another: Rather, relevant substitutes for each include the third-party CDNs and transit providers that sell interconnection services into both networks and mean that an edge provider need not negotiate directly with either Comcast or TWC if it chooses not to. Analogies to nationwide markets for cable networks have no substantive effect on this conclusion: At

7 U.S. Department of Justice and the Federal Trade Commission, "Horizontal Merger Guidelines," August 19, 2010 (hereinafter, Horizontal Merger Guidelines), 7-9.

8 Id., 8, 13.

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most, such an approach would generate a national market in which there is no diversion between the merging parties and thus no transaction-related effect on the ability of customers to divert to a competitor should their ISP degrade their access to edge providers. Finally, although one could potentially define a national Internet backbone market, including the transport of traffic across Internet backbones and associated interconnection services, no commenter has alleged harm in such a market, with competition in backbone services widely acknowledged to be intense. (See Section II.A, ¶¶ 17-26, for more detail.)

- Given the lack of relevance of national broadband shares, potential revisions to the minimum speed required to distinguish broadband from non-broadband Internet access have no bearing on analysis of the transaction's effects. Along with the focus on national broadband shares has come a focus on the minimum speed required for a particular Internet access service to qualify as broadband. Given that the change in national broadband share is not a meaningful indicator of the horizontal competitive effects of the transaction, debates over the definition of broadband—although potentially relevant for transactions that affect competition in local broadband markets and for other important policy issues—are of little relevance to the analysis of the transaction. That said, evidence derived from ordinary course and survey analyses of the products to which marginal customers

would switch if faced with a broadband price increase (the relevant issue when considering market definition) implies that, to define today's local broadband markets, one should use a speed no higher than 10 Mbps, and likely closer to the current 3 Mbps standard.9 This conclusion follows from the adequacy of slower speeds for many uses, including many video applications, and the fact that the marginal customers who would discipline a price increase would likely consider switching to providers that offer lower speeds. Basing the standard on higher speeds (such as 25 Mbps) would exclude important current competitive constraints. Finally, I note that (i) defining broadband based on a 10 Mbps standard (rather than the FCC's current 3 Mbps used in my initial declaration) has little effect on the national share calculations presented in my initial declaration and (ii) switching to a 25 Mbps standard would imply that TWC has relatively few broadband customers today and thus that the proposed transaction would have little effect on Comcast's current national broadband share. (See Section II.B, ¶¶ 27-35, for more detail.)

9 The Commission defines the current broadband standard as 4 Mbps download speed and 1 Mbps upload speed. However, in practice, to match the data on broadband customers available from the Commission's Form 477, the Commission actually uses a standard of 3 Mbps download speed and 768 Kbps upload speed. Since those cutoffs define the data used to measure broadband customers under the current definition, I refer to the standard as "3 Mbps" throughout.

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- Comcast and TWC do not constrain each other's actions today and thus the transaction will not relax any competitive constraints. The heart of a standard argument for horizontal harm from a merger is that, absent the merger, the merging parties would place significant constraints on one another's behavior and thus that, by eliminating this constraint, the merger would make it easier for the merging parties to raise prices or otherwise harm competition. Yet, despite dozens of pages on alleged market power, available substitutes, recent negotiations with edge providers, and related topics, commenters have provided no evidence of any relevant competitive constraint that Comcast or TWC place on one another today. This includes not only a lack of evidence that the firms constrain one another's retail broadband pricing or related strategies, but also a lack of evidence that any competitive constraints from TWC affected Comcast in its recent negotiations with Netflix, Cogent, or other edge providers or their agents (or vice versa). There is simply no direct evidence that any pricing, strategies, or negotiations would have been different absent some constraint imposed by one merging party on one the other. (See Section II.C, ¶¶ 36-37, for more detail.)

9. Lacking evidence for any incremental harm from the transaction, many commenters attempt to divert attention to Comcast's current broadband market position, a discussion that primarily serves to highlight the reasons Comcast would not want to harm the broadband marketplace and, otherwise, has little relevance for evaluation of the proposed transaction. Commenters collectively spend dozens of pages analyzing Comcast's current market position in broadband, arguing that Comcast faces few competitive constraints as a broadband provider today. This entire discussion is of

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limited relevance: Proper merger analysis focuses on the incremental effect of the merger on the competitive constraints faced by the parties and, as noted above, the parties do not constrain one another today. That said, what is true is that Comcast has spent tens of billions of dollars to develop its (last mile and backbone) broadband network, that as a result it offers very high-quality broadband service with speeds up to 505 Mbps, and that (as explained in my initial declaration), it sees the transaction as a way to extend this high-quality broadband service into additional territories and to expand the footprint over which to deploy future innovations, making more investment in such innovations profitable. The speed enabled by Comcast's broadband network is well suited to—in fact is only fully utilized by—online video content, and thus Comcast's broadband investment is deeply complementary to the growth of online video distributors (OVDs); their side-by-side development being a leading example of the virtuous cycle between improving broadband networks and edge provider services. As a result, any strategy to harm online video distributors would involve Comcast degrading the very applications that its broadband network is built to serve and that best enable Comcast to attract broadband customers and generate a return on its broadband investment.

10. Commenters understate the constraints faced by Comcast, including those that constrain its ability to degrade an edge provider's access to Comcast's last-mile network.

- In an attempt to support claims that Comcast can harm competition via "terminating access" market power, many commenters focus attention narrowly on interconnection points through which traffic travels from the broader Internet backbone into last-mile networks, claiming that Comcast has bottleneck control at these points. Such theories ignore the constraints imposed by the competition on

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both sides of these interconnection points, including competition among last-mile networks and especially in the hyper-competitive Internet backbone. Given Comcast's commitment to adhere to Open Internet rules, theories of competitive harm based on discrimination or degradation of traffic inside the Comcast access network (the "last mile") are not tenable. And given the overall competitiveness of the Internet backbone and the merging parties' relatively small role in that ecosystem, theories of competitive harm to the Internet backbone (including transit) are also not tenable. Hence, commenters' theories of harm are reduced to claims about potential changes to agreements regarding interconnection into the merging parties' last-mile networks—the terms under which edge providers or, more often, their agents (CDNs, transit providers, etc.) are able to transmit traffic into the parties' last-mile networks. However, interconnection points are not immune from the market forces that prevent competitive harm in the last-mile and backbone networks that sit on either side of them; rather, these market forces—explained in detail in the following bullets—prevent competitive harm via potential transaction-induced changes in interconnection agreements as well. (See Section III.A, ¶¶ 40-43, for more detail.)

- Commenters largely ignore the range of options open to edge providers to defeat any attempt to degrade their access to ISP last-mile networks. Due to the competitiveness of backbone services, edge providers—either on their own if they are large enough (and decide to do so) or through CDNs or other agents—can utilize a wide variety of paths into the Comcast network. Hence, no edge provider is forced to negotiate with Comcast or TWC directly. Rather, there are dozens of

third-party CDNs and transit providers who have interconnection agreements with Comcast and TWC—many of them settlement-free agreements under which interconnection is free—with which edge providers can contract to access the Comcast and TWC last-mile networks. Although commenters attempt to dismiss the importance of alternative paths into the Comcast network, in part based on claims about the recent negotiations between Comcast and Netflix, Comcast's Kevin McElearney explains in his declaration that these commenters have their facts wrong, and that there were actually many paths with substantial spare capacity available to Netflix, many of which Netflix simply refused to use. More generally, commenters' claim that Comcast can simply degrade or charge for these interconnection paths ignores the presence of numerous settlement-free paths into the Comcast network and the fact that Comcast would have to compromise significantly its connectivity to the overall Internet to attempt to prevent providers from making use of such paths. (See Section III.B, ¶¶ 44-56, for more detail.)

- Comcast's broadband customers also have important and growing options, through which they can effectively discipline any attempt by Comcast to degrade edge provider access to its last-mile network. As an initial matter, note that any reduction in demand for broadband service among Comcast customers would be very costly to Comcast. For example, ordinary-course-of-business customer lifetime value (CLV) calculations show that if a customer were to cancel her broadband service, this would eliminate a very large fraction of that customer's overall lifetime value to Comcast. And should Comcast degrade its customers'

access to edge providers, the customers can and most likely would react in one of many possible ways. One obvious such reaction—entirely ignored by commenters—is that, if faced with diminished broadband service, a customer could downgrade or even cancel broadband service (an option open to all customers in all areas). Indeed, as noted above and stressed by Netflix, a primary incentive to subscribe to higher speed tiers is to watch more online video, meaning that actions to harm online video would reduce demand for Comcast's higher speed broadband tiers. Or Comcast customers could switch broadband providers; commenters significantly understate the strength of competitive alternatives available to Comcast customers. In fact, the competitive threat to Comcast's broadband service, particularly from the full set of options provided by powerful telco competitors, is large and growing. Commenters attempt to downplay this telco competition via a double standard that downplays DSL—which remains highly relevant today—due to claims that its competitive significance is declining, while ignoring the fact that the competitive significance of wireless—while more limited today—is growing rapidly. Together, these options, combined with fiber-to-the-premises (FTTP) options—which AT&T, CenturyLink, and others are committed to expanding, in part as a competitive response to this transaction—form an overall strategy by which the telco providers will remain a highly relevant competitive threat. None of these threats is merely theoretical: Empirical evidence indicates that customers would switch to broadband alternatives in large numbers should Comcast degrade access to edge providers. (See Section III.C, ¶¶ 57-94, for more detail.)

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- Finally, commenters largely ignore the constraints on Comcast due to potential broadband entrants, including Google and certain municipalities, with such entry potentially facilitated by Commission action. To be clear, I am not claiming that such potential entrants are options for most consumers today. But, in considering whether Comcast could profitably harm edge providers, the role of recent or potential entrants like Google cannot be ignored. Indeed, Dr. Evans acknowledges that Comcast's strategies are affected by the possibility of entry by Google and others. However, he reaches the implausible conclusion that, post-transaction, Comcast could thwart the current and planned efforts by firms like Netflix, Google, Amazon, Apple, Sony to establish OVD services and thereby deter broadband entry by Google and others. The more realistic conclusion is that Comcast cannot thwart the OVD efforts of these powerful firms, and that attempts to do so would encourage broadband entry, including by firms like Google that have a vested interest in maintaining competitive broadband markets in support of their enormous edge provider businesses and a proven willingness and ability to enter the broadband business. To the extent that such entry needs any further encouragement, Chairman Wheeler has been quite clear that the Commission intends to provide it, with induced Commission action a further risk Comcast would face should it attempt to harm broadband competition or edge providers. (See Section III.D, ¶¶ 95-99, for more detail.)

11. Some commenters advance a theory of OVD foreclosure, which depends on the dual hypotheses (i) that Comcast has an incentive to harm OVDs and (ii) that the increased size of the combined firm would give it the ability to foreclose OVDs. Neither hypothesis holds: Comcast does not have an incentive to foreclose OVDs, and the combined firm would lack the ability to do so.

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- Given the constraints discussed above, the proposed transaction would not give Comcast the ability to foreclose OVDs. As above, I note that foreclosure is not a last-mile issue because Comcast's commitment to the Open Internet requirements precludes discriminatory conduct inside the last mile. Thus, my focus is again on the supposed ability to manipulate interconnection arrangements into the combined company's last-mile network to achieve OVD foreclosure. Several points each independently refute such ability. First, the discussion above reveals the lack of an effective mechanism to foreclose: Given the ability for OVDs to rely on multiple transit providers or on CDNs that, in turn, can utilize multiple paths, including settlement-free paths, into Comcast's last-mile network, Comcast effectively lacks the ability to limit OVD access to its customers. Any attempt to degrade OVD access to the Comcast network would require substantial disruption to Comcast's overall Internet interconnectivity. Second, the idea that the combined firm could drive enormous edge providers with vested interests in using the OVD business to support core parts of their strategies—including Google, Amazon, Apple, and Sony—out of the OVD business (or significantly degrade their competitive strength) is not credible. And the firm that had received the most attention and is focused primarily on the OVD segment—Netflix—is protected by a multi-year direct interconnection agreement with Comcast. Indeed, for a foreclosure strategy to work, it would need to force out most or all of these large OVDs, as a foreclosure strategy that left some OVDs in the market would

not eliminate the OVD sector but rather would primarily serve to strengthen the remaining, non-foreclosed OVDs. Third, even accepting the (incorrect) notion that Comcast actually "controls" its customers, analogies to minimum scale levels that the Commission has used in related contexts and to the size of other content providers or MVPDs reveal that the number of non-Comcast/TWC customers is far more than sufficient to sustain a viable OVD. This fact becomes even more obvious when recognizing that OVDs' global operations are growing rapidly, and still more obvious when recognizing that (as discussed above), even within the combined firm's footprint, most customers have choices regarding broadband service, with empirical evidence indicating that many would switch ISPs were Comcast to degrade its broadband service. Hence, by the "open field" analysis that the Commission has used in other settings, the combined firm would lack the ability to foreclose OVDs. Finally, no commenter has presented any evidence to support a merger-specific foreclosure claim that the number of customers gained by Comcast via the transaction would make the difference between the ability to foreclose or the lack thereof. (See Section IV.A, ¶¶ 104-115, for more details.)

- The combined firm will lack the incentive to foreclose OVDs, just as Comcast lacks such incentives today. Commenters do not argue that the transaction will create a new incentive to foreclose OVDs, rather they claim that the increased size of the combined firm will enhance its ability to foreclose OVDs. Hence, the revealed lack of incentive to foreclose OVDs today should also dictate analysis of post-transaction incentives. Following Netflix's recent negotiations with Comcast and TWC, both merging parties gave Netflix {{ }}. None of those facts is

consistent with an incentive to harm OVDs' competitiveness. This should not be surprising; it is explained by fundamental economic logic. OVDs provide services that are highly complementary to Comcast's broadband business, increasing returns from the high-speed broadband network that Comcast has built up through billions of dollars in investments. Moreover, OVDs are significant purchasers of NBCUniversal content, paying hundreds of millions of dollars per year, and thus are complementary to that business as well. Well-established economic theory teaches that strategies to leverage a strong position in one industry (broadband) to foreclose competition in a complementary industry (OVD/video) are rarely profitable, explaining why Comcast lacks the incentive to undertake such a foreclosure strategy pre- or post-transaction. (See Section IV.B, ¶¶ 116-129, for more detail.)

12. Moving beyond theories regarding foreclosure of OVDs, commenters also advance "big is bad" theories based on increased bargaining power. In particular, commenters argue that, even though the merging parties do not overlap, the increased size created by the merger would increase Comcast's bargaining power vis-à-vis edge providers and their agents (e.g., transit providers and CDNs) and thus enable the combined firm to charge higher prices for interconnection into the Comcast network. However, this theory is not supported by theoretical or empirical economic analysis and is rejected by marketplace realities.

- Marketplace realities, including the large number of settlement-free paths into Comcast's network and the extremely small size of interconnection payments to Comcast, contradict theories of harm based on bargaining power. The small size

of Comcast's charges for interconnection refutes any theory that Comcast's large size as an ISP parlays into anti-competitive power over edge providers or their agents. Most simply, the existence of over 40 settlement-free paths into the Comcast network is inconsistent with the claim that Comcast can impose anti-competitive terms on interconnection. More generally, the amount of money at issue in Comcast's interconnection agreements is {{ }}. For example, Netflix's {{ }} relative to Netflix's variable operating costs and revenue. Indeed, interconnection payments from edge providers or their agents to Comcast fail even to cover {{ }}. (See Section V.A, ¶¶ 132-138, for more detail.)

- Economic theory does not support the claim that the proposed transaction will increase Comcast's bargaining power. Dr. Farrell has presented the one economic theory in this case that yields a clear economic prediction about the effect of the transaction on prices charged to edge providers, and it predicts a price decrease. In discussing the effects of a price increase to OVDs (assuming there would be one), Dr. Farrell presents a model that assumes that OVDs do not price discriminate in the prices they charge to customers with different ISPs, meaning that if one ISP were to raise an OVD's costs (including via higher interconnection payments), that OVD would pass this cost increase through to customers of all ISPs. An implication of this model is that if Comcast or TWC charges more to an OVD today, they effectively impose a tax on each other in the form of higher OVD prices charged to one another's broadband customers. That tax creates an externality on one another, which the combined firm would internalize post-transaction, leading to lower prices to edge providers. Aside from

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Dr. Farrell's model, the larger body of economic theory establishes no conclusion about the effect of a merger of non-overlapping firms on bargaining power, a point commenters do not dispute. (See Section V.B, ¶¶ 139-150, for more detail.)

- Empirical evidence rejects the claim that the proposed transaction will increase Comcast's bargaining power. First, any attempt to use an observed relationship between size and prices to establish that greater size creates greater bargaining power must rule out the obvious alternative explanation, that higher quality firms generally are relatively large and generally charge relatively high prices. That general economic concept applies to the present context—larger ISPs tend to have higher quality networks and, in particular, to offer a richer, more robust set of interconnection services. Second, the analogy to MVPD/content provider negotiations demonstrates the importance of controlling for quality: The greater advertising revenue (and thus greater surplus) that certain MVPDs can generate for content providers more than explains the small observed gaps in affiliate fees across MVPDs. Third, once quality is controlled for, the Cogent data presented by Dr. Farrell actually contradicts the claim that ISP bargaining power due to a greater number of broadband customers leads to higher prices. In particular, once basic measures of ISP quality are accounted for, an ISP's number of broadband customers is no longer even a statistically significant predictor of interconnection prices, with the ISP quality metrics the relevant determinants of price. Finally, the limited details that Dr. Evans provides about Netflix's interconnection prices are meaningless, at most revealing whom Netflix pays for interconnection, but lacking sufficient detail to reveal anything about the relevant question, how much Netflix pays. (See Section V.C, ¶¶ 151-170, for more detail.)

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13. Even if the structure or magnitude of interconnection prices were to change, as some commenters have predicted, this would not be harmful to consumers or competition.

- Direct interconnection agreements between edge providers and ISPs are not harmful to competition, consumers, or edge providers. The recent direct interconnection agreements between Netflix (and other edge providers) and Comcast and TWC have served to "disintermediate" Cogent and other transit providers, an economically efficient and mutually beneficial outcome in many cases. The Netflix direct interconnection contracts also provide a direct test of whether such direct interconnection agreements are harmful to competition, consumers, or edge providers. In fact, (i) there is no evidence that the contracts led to a change in Netflix's churn, margins, or other such metrics and (ii) the agreements led to no significant change in Netflix's stock market performance, which indicates that the agreements have not harmed Netflix and are not expected to harm its future performance. (See Section VI.A, ¶¶ 172-179, for more detail.)

- Even if prices to edge providers (or their agents) were to increase further, this would be beneficial to broadband customers and economically efficient. An ISP's broadband platform is a classic example of a "two-sided market" that facilitates interaction between edge providers and broadband customers, with charges potentially being paid by either side of the market. The economics of two-sided markets provides several reasons why additional charges on the edge provider side of the market would be beneficial to broadband customers and economically

efficient. These reasons include: (i) the "seesaw" principle says that higher prices to edge providers would result in lower prices to broadband customers,10 which would benefit customers directly and also reduce cross-subsidization of heavy OVD users by light or non-OVD users; (ii) requiring edge providers to pay a greater share of the incremental cost of the traffic generated by their services would incentivize them to make more efficient decisions about how to provide the services; and (iii) greater charges to edge providers could help to solve distortions created by the large and growing heterogeneity between the largest edge providers and much smaller providers. The theoretical two-sided pricing model presented by Dr. Farrell supports many of these conclusions, as do many prior writings by Dr. Evans on two-sided markets. (See Section VI.B, ¶¶ 180-201, for more detail.)

14. Miscellaneous other arguments advanced by commenters are also without merit:

- There is no evidence that Comcast and TWC have any plans to compete with one another either in the traditional MVPD or OVD space and thus no basis for a concern about potential competition. To the contrary, the relevant potential competitors are fiber-based broadband providers like Google and municipalities, as well as the growth of wireless broadband providers, all of which have

10 Throughout the declaration, when I refer to lower prices, this should be taken as a comparison to the "but-for" world absent the transaction, meaning that the lower prices might manifest themselves as a slowed rate of price increase rather than a reduction in the price level. In either case, the key implication is that prices are lower with the transaction than without it.

established plans to expand into the merging parties' territories and thus which place actual constraints on the merging parties' behavior. (See Section VII.A, ¶¶ 203-206, for more detail.)

- There is no basis to conclude that eliminating TWC as one of many competitive benchmarks would lead to higher prices or otherwise harm competition. (See Section VII.B, ¶ 207, for more detail.)

15. No commenters challenge the consumer benefits from the transaction in any substantive way. Although some commenters make general assertions that the benefits from the transaction will not come to pass, they offer no substantive refutation of the extensive discussion of broadband benefits in the Israel Declaration, the Rosston/Topper Declarations, and the parties' application. As one striking example, no commenter refutes the significant benefits to business customers, nor the fact that such benefits would lead to network expansion and hardening that would also help residential customers. Nor is there an economic refutation of the fact that investments made by Comcast or TWC are presently "landlocked" by limited footprints, with the geographic expansion due to the transaction thus unlocking value for incremental investments and making more such investments profitable to undertake. As such, there is no refutation of the gains from faster access networks (due to faster rollout of digital service and DOCSIS 3.0/3.1), expanded broadband networks, expanded Wi-Fi networks, or improved home network technology, nor the virtuous cycle that such improvements foster. Any one of these sizable efficiencies would likely be sufficient to overwhelm the small, tenuous claims for adverse competitive effects from the transaction; the combination of consumer benefits surely swamps any alleged harms. (See Section VIII, ¶¶ 208-222, for more detail.)

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II. COMMENTERS HAVE NOT ESTABLISHED THE EXISTENCE OF A NATIONAL BROADBAND MARKET NOR THE EXISTENCE OF ANY MARKET IN WHICH COMCAST AND TWC CONSTRAIN ONE ANOTHER TODAY

16. Much of the public discussion of the transaction to date has appealed to calculations of the combined firm's share of national broadband subscriptions. (I discuss the details of these calculations in Section II.B.2, below.) Such calculations give complaints about the transaction the patina of traditional horizontal merger analysis in which it is standard practice to consider "the merging parties' market shares in a relevant market, the level of concentration, and the change in concentration caused by the merger."11 However, as I explain in this section, no commenter has established the existence of a national broadband market in which such market shares would be a relevant indicator of horizontal competitive effects nor, for that matter, any market in which Comcast and TWC compete to any significant degree today. Moreover, no commenter has provided any evidence that Comcast and TWC constrain one another's behavior today. In fact, the contrary conclusion holds: Comcast and TWC do not constrain one another to any significant degree in any well-defined antitrust market today.

11 Horizontal Merger Guidelines, 3.

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A. Commenters provide no coherent basis to define a national broadband market in which national broadband shares would be relevant indicators of horizontal competitive effects

17. Several commenters present calculations of national market shares (based on various definitions of what constitutes broadband).12 However, in presenting such shares, commenters fail to establish the existence of a national broadband market in which such shares would be relevant.

18. The lack of support for a national market in the present case is made clear by considering the Horizontal Merger Guidelines ("Guidelines"). The Guidelines indicate that product market definition is about "customers' ability and willingness to substitute away from one product to another," and that product markets are defined to include "a group of substitute products," meaning "products that are reasonably interchangeable with a product sold by one of the merging firms."13 The Guidelines are also clear that "the same principles apply" to geographic market definition and that the market may be "geographically bounded if geography limits some customers' willingness or ability to substitute to some products, or some suppliers' willingness or ability to serve some customers."14

12 Evans Declaration, ¶ 31 and Table 6; Farrell Declaration, ¶ 92 and Figure 5; Sappington Declaration, ¶¶ 20, 58 and note 29.

13 Horizontal Merger Guidelines, 7-9.

14 Id., 8, 13.

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19. In the present case, the market is clearly geographically bounded by individual provider's local service areas. Broadband providers do not make sales to broadband customers outside the boundaries of their geographically limited footprints and thus there is no cross-region substitution.

20. Adding edge providers into the mix does not change this conclusion. The relevant venue for analysis of potential competitive effects on edge providers involves options for interconnection into the Comcast and TWC last-mile networks; the broader venue of Internet backbone service is recognized to be highly competitive,15 and has not been raised as an area of concern by commenters. With regard to interconnection into last-mile networks, the Comcast and TWC networks reach only customers within their footprints, and their footprints do not overlap. Hence, from the point of view of edge providers, interconnection services into the Comcast and TWC last-mile networks are not substitutes for purposes of reaching any consumers.

21. An alternative perspective on market definition may cause some confusion and thus deserves additional comment. One could posit that Comcast and TWC are both buyers of content from edge providers and thus both participate in a national market for content purchases. However, this analogy does not withstand scrutiny. One way to see

15 See, e.g., Memorandum Opinion and Order and Declaratory Ruling, In the Matter of Applications filed by Global Crossing Limited and Level 3 Communications, Inc. for Consent to Transfer Control, IB Docket No. 11-78, September 29, 2011 (hereinafter, Level 3-Global Crossing Order), ¶ 27.

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this is to note that, in actuality, ISPs are not generally buyers of services from edge providers, but rather edge providers (or their agents) negotiate to interconnect with ISP networks, and the networks of Comcast and TWC are not substitutes but rather geographically separate, as explained above. However, even if one continues to rely on the analogy of ISPs to buyers of content (like MVPDs buying from cable networks), the same conclusion derives from the fact that content is not a "rival" input in the sense that there are not units of content—like widgets—that are sold to a particular buyer in a market. Rather, once the content is created, it can be accessed by an unlimited number of viewers, and what is sold to MVPDs are rights to show the content. When dealing with MVPDs with separate footprints, those rights cover distinct footprints and thus are not substitutes for one another.

22. Again, the Horizontal Merger Guidelines are on point. They indicate that in defining relevant markets for mergers of buyers, "the Agencies focus on the alternatives available to sellers in the face of a decrease in the price paid by a hypothetical monopsonist."16 Continuing with the analogy to MVPDs as buyers of content, if Comcast were to reduce the price paid for content (or not take the content at all), selling it to TWC would not be a meaningful "alternative" for a content provider. Presumably the content provider would already have a deal with TWC regarding access to the content for TWC's customers and, more generally, a deal with TWC would not replace the customers lost to

16 Horizontal Merger Guidelines, 32-33.

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the content provider if no deal with Comcast were reached. Rather, the alternatives for the content provider to reach Comcast's customers would be deals with other MVPDs covering the Comcast footprint, some of which may have national footprints (e.g., DBS providers), others of which may have distinct but overlapping geographic footprints (e.g., telco providers), but none of which would be cable providers with non-overlapping footprints.

23. Indeed the Commission grappled with and resolved a similar issue in the Comcast-NBCUniversal transaction. There the issue was whether NBCUniversal, due to its affiliation with Comcast, would have an incentive to raise prices for content to those content buyers (e.g., MVPDs) that compete with Comcast. Although there was great disagreement on many aspects of this question, there was consensus that the relevant measure of competition with Comcast was the diversion rate—the fraction of customers leaving a given MVPD due to higher content prices that would switch to Comcast. As such, there was agreement that the set of MVPDs who competed with Comcast were those that overlapped geographically with Comcast and thus presented a true "alternative" for a content provider to reach the Comcast customers. Hence there was no allegation that non-overlapping cable providers, including TWC, would face higher prices from

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NBCU—they were not seen as competitors for Comcast, even in a market for purchase of content.17

24. Notably, because national cable networks operate on a nationwide basis and some of the MVPDs buying content have national footprints, it may be most convenient to talk about a national market for sale of national cable networks, and this language may be tempting to apply to edge providers.18 However, even if one were to adopt this language, this would be purely a semantic change with no substantive effect on merger analysis. Instead of defining separate local markets for Comcast and TWC, one would have defined a national market in which there is no diversion between Comcast and TWC and thus no competitive interaction between the two firms and thus no transaction-related effect on the ability for customers to divert to competing ISPs. This conclusion is confirmed by the

17 Memorandum Opinion and Order, In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. For Consent to Assign Licenses and Transfer Control of Licensees, MB Docket No. 10-56, January 20, 2011 (hereinafter, Comcast-NBCU Order), ¶¶ 40, 42, and Technical Appendix, ¶¶ 13, 47; Department of Justice, Competitive Impact Statement, US vs. Comcast, Docket No. 1:11-cv-00106, January 18, 2011, 14, available at http://www.justice.gov/atr/cases/f266100/266158.pdf, site visited September 12, 2014; William P. Rogerson, "Economic Analysis of the Competitive Harms of the Proposed Comcast-NBCU Transaction," In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licensees, MB Docket No. 10-56, June 21, 2010, 24-25.

18 See, e.g., Sappington Declaration, § III.B.

28

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Comcast-NBCUniversal analysis where a national market for national cable networks was used but where no competitive effects were found on non-overlapping cable providers.19

25. Finally, some commenters argue that because certain edge providers "require national distribution" or "enter the market with national distribution in mind," and because "any edge provider that requires national distribution would have to deal with the combined company," there is a market for the "national high-speed broadband distribution of edge provider content."20 Even if one accepts that some edge providers "require" national distribution—an unsupported assertion—this argument is incoherent. Comcast and TWC provide completely distinct, non-substitutable inputs to an edge provider that seeks national distribution. If an edge provider truly "requires" national distribution and fails to obtain access to the TWC network, the Comcast network is not a substitute. Indeed, if commenters' argument were correct and some edge providers required national distribution and needed to work directly with ISPs to obtain it, then both Comcast and TWC would have the alleged power today, as failure to reach a deal with either of them would prevent national distribution. In fact, however, the same alternatives exist today as will exist post-transaction—the dozens of CDNs and transit

19 Comcast-NBCU Order, Technical Appendix, ¶ 13 (in the context of assessing vertical incentives associated with national broadcast networks).

20 Petition to Deny of Netflix, Inc., In the Matter of Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, MB Docket No. 14-57, August 25, 2014, § III.A.

providers who offer edge providers the ability to transmit traffic onto the TWC network and thus who provide a substitute to a direct agreement with the merging parties.21

26. In short, there is no meaningful national broadband market in which Comcast and TWC constrain one another today. Hence, national market shares lose the value they would have if there were a national market: The Guidelines make clear that it is market definition that "allows the Agencies to identify market participants and measure market shares and market concentration."22

21 It is true that the transit services offered by Comcast and TWC are among this large set of alternatives for reaching one another's network. But, as discussed throughout this declaration, the Internet backbone is highly competitive, with Comcast and TWC small players in this overall ecosystem and with no commenter alleging harm to Internet backbone services.

22 Horizontal Merger Guidelines, 7. Some commenters have attempted to rely on the AT&T/MediaOne transaction (conditionally approved by the FCC and Antitrust Division of the U.S. Dept. of Justice ("DOJ") in 2000) to support the existence of a national market for broadband. (See, e.g., Sappington Declaration, ¶ 21 and note 31). However, that case is not comparable to the present one, as has been noted by careful observers of the debate. (See Paul de Sa, et al., "Comcast/Time Warner Cable: How Persuasive Are Arguments Against the Merger?" Bernstein Research, September 2, 2014.) In the AT&T/MediaOne matter, the merging parties were the two largest providers in a national market for the provision of portals for accessing and interacting with the Internet, and they could compete to be the exclusive portal on unaffiliated cable systems. (See, e.g., Competitive Impact Statement, US vs. AT&T and MediaOne, US District Court, District of Columbia, 1:00cv00176, May 25, 2000; Memorandum Opinion and Order, In the Matter of Applications for the Consent to the Transfer of Control of Licenses and Section 214 Authorizations from MediaOne Group, Inc., Transferor, to AT&T Corp., Transferee, CS Docket No.99-251, June 6, 2000). The fact that providers of exclusive portals to the Internet competed in a national market has no bearing on whether broadband providers with non-overlapping footprints compete in a national market or whether interactions between national edge providers and regional broadband providers give rise to a national broadband market.

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B. Potential revisions to the minimum speed standard used to define broadband change none of my conclusions about the proposed transaction

27. Along with the focus on national broadband shares has come a focus by some commenters on the minimum speed required for a particular Internet access service to qualify as broadband.23 Given that national broadband shares are not a meaningful indicator of horizontal competitive effects of the transaction, debates over the definition of broadband—while potentially relevant for analysis of broadband-related mergers with local market overlap and for other policy issues—are of limited relevance to the analysis of the transaction. No matter which Internet access services are defined as "broadband," there is no market in which Comcast and TWC compete or constrain one another in the provision of such services, and thus the transaction raises none of the standard horizontal merger concerns.

28. Nevertheless, in the remainder of this section, I make two points regarding the minimum speed used to define broadband. First, although it makes sense to set policy goals that continue to strive for faster broadband—and indeed, as explained below, the realization of such faster speeds for more customers is an important goal and benefit of the proposed transaction—standards of market definition point either to the current 3

23 For more discussion of this issue, see Tom Wheeler, "The Facts and Future of Broadband Competition," prepared remarks at 1776 Headquarters, Washington, DC, September 4, 2014, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0904/DOC-329161A1.pdf, site visited September 11, 2014 (hereinafter, Wheeler Remarks).

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Mbps standard or, taking a more conservative, forward-looking view, to speeds no higher than 10 Mbps as the appropriate definition of broadband to use when defining markets. And even if I conservatively adopt the 10 Mbps standard, the national broadband share figures presented in the Israel Declaration (based on the FCC's current standard) change at most slightly, meaning the substantive discussion of shares in my initial declaration remains correct. Second, if one were to ignore the evidence presented in this section and insist on a standard of 25 Mbps to define broadband, one implication would be that TWC has few broadband customers today and thus that the transaction would have only a small effect on Comcast's current number of broadband customers.

1. The appropriate speed for defining local broadband markets is at most 10 Mbps, with the current standard a reasonable alternative

29. In recent statements, the Commission has pointed toward speeds of 25 Mbps as a goal for broadband service, based on speeds that may be required in certain high-use cases in which multiple users make simultaneous use of high-bandwidth broadband applications. Although it certainly makes sense for the Commission to continue to encourage faster broadband speeds to support high-use cases, some commenters have advocated using these high-use cases to define the broadband market for analysis of the present transaction.24 However, while such high-use cases certainly can occur, they do

24 Sappington Declaration, ¶¶ 15-16; Evans Declaration, ¶¶ 48-51.

not define markets. To the contrary, the decisions made by the marginal customers who are likely to switch providers or reduce broadband usage, and thereby discipline a theoretical price increase or quality reduction, define the boundaries of (local) broadband markets. As explained in this section, a broadband definition that excludes all broadband services below 25 Mbps would miss important competitive constraints that each of Comcast and TWC faces in its footprint and thus produce an overly narrow market definition. Rather, a speed threshold of no more than 10 Mbps (and perhaps the current 3 Mbps standard) provides a more reasonable definition of broadband for use in defining (local) broadband markets.

30. Perhaps the simplest evidence regarding the effect of excluding broadband service below 25 Mbps comes from the parties' own customers. A sizeable fraction of customers at both companies are currently on service tiers with speeds below 25 Mbps. In particular, according to the December 2013 FCC Form 477 data, [[ ]] percent of TWC customers and [[ ]] percent of Comcast customers (in combination, 41 percent of the post-transaction customers of the combined firm) are on speed tiers below 25 Mbps even though speeds over 25 Mbps are generally available.25 Hence, to ignore speeds below 25 Mbps would be to ignore 41 percent of the customers of the combined firm.

25 Comcast offers a 105 Mbps downstream tier in all of its markets (see Israel Declaration, ¶ 167). TWC offers a 30 Mbps downstream tier in nearly all of its markets (see, e.g., TWC document summarizing speed tiers available by geographic area: Speeds Tiers Pricing 2014 Q1.xlsx).

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31. When considering substitution by the marginal customers who would discipline price increases or other competitive strategies, other recent commentary from the Commission is on point. In its recent NOI, the Commission defines usage cases that would require a speed of no more than 10 Mbps, and perhaps less.26 In particular, the FCC estimates that a speed of 4 Mbps would be sufficient for a "light use" broadband household engaged in up to four Internet-related activities, a speed of 7.9 Mbps would be sufficient for a "moderate use" household engaged in up to four Internet-related activities, and a speed of 10 Mbps would be sufficient for a "high use" household engaged in up to four internet-related activities.27 Thus, even for the "high use" case, customers would be

26 See Tenth Broadband Progress Notice of Inquiry, In the Matter of 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, August 5, 2014. In a comment to the Commission, AT&T noted that the Commission's calculations did not take into account common network management practices, such as statistical multiplexing, which would lessen the amount of bandwidth required by several applications running simultaneously. Thus, the 10 Mbps figure is likely an overestimate of throughput needs, even for the high-use case. See Comments of AT&T, In the Matter of 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, September 4, 2014, 9-10.

27 The four activities for each type of household include: (a) one user watching a standard definition (SD) movie, one user making a high-quality voice call, one user browsing on the web, and syncing of email, alerts, and weather information taking place in the background (low use); (b) one user watching a high definition (HD) movie, one user taking an online education course, one user browsing on the web, and syncing of email, alerts, and weather information taking place in the background (moderate use); (c) one user watching a super high definition (SHD) movie, one user making a HD video call, one user saving files to and from the cloud, and syncing of email, alerts, and weather information taking place in the background (high use).

able to make use of broadband service offering speeds of 10 Mbps, indicating that such options are part of the relevant market. To the extent that "light use" or "moderate use" customers represent the marginal users who would switch following a price or quality change, the appropriate speed threshold for market definition would be even lower.

32. In addition, evidence (presented in detail in Section III.C, below) shows a significant likelihood of customer switching to slower speed services, which means that slower speed services place relevant competitive constraints on Comcast today. As one example, a survey commissioned by Comcast shows that the vast majority of customers would be willing not only to switch but to switch to slower speed service (including DSL or wireless) if their broadband provider were to degrade access to edge providers in a material way. And, notwithstanding Chairman Wheeler's concern about switching costs, substantial switching does occur: Comcast's churn data indicate that over the course of a single year, approximately {{ }} of Comcast's broadband customers churn.28 As explained in more detail in Section III.C.1, below, such switching would be quite costly to Comcast, indicating that the competitive constraint from these slower speed services is relevant to Comcast pricing and other strategies.

28 As noted below, even conservatively excluding movers from this total, roughly {{ }} percent of Comcast broadband customers churn each year.

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33. Many industry participants consider broadband download speeds at (or near) 3 Mbps to be sufficient for many of their services today. For example, Netflix's website recommends a download speed of 3 Mbps per stream for playing movies and TV shows in standard definition quality, 5 Mbps per stream for high definition quality, and 25 Mbps only for Ultra HD quality.29 Similarly, Hulu's website recommends a speed of 3 Mbps for high definition videos and 1.5 Mbps for standard definition video, and Amazon Prime's website recommends a speed of 3.5 Mbps for high definition videos and 900 Kbps for standard definition videos.30

2. Alternative broadband definitions do not affect my conclusion that changes in national broadband share provide no basis for a finding of horizontal competitive effects from the transaction

34. Given that there is no meaningful national market for broadband, national broadband shares are not indicative of horizontal competitive effects of the transaction in any well-defined market. Nevertheless, even if I compute national shares using a 10 Mbps threshold, they are quite similar to the shares presented in the Israel Declaration based on the 3 Mbps standard. As Table 1 shows, using a 10 Mbps threshold, the share of

29 See Netflix Internet Connection Speed Recommendations, available at https://help.netflix.com/en/node/306, site visited September 12, 2014.

30 See Streaming issues with Hulu Plus on your TV, available at http://www.hulu.com/help/articles/20196801, site visited September 12, 2014; System Requirements for Streaming on Your Computer, available at http://www.amazon.com/gp/help/customer/display.html?nodeId=201422810, site visited September 12, 2014.

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the merged firm (after accounting for the divestitures in the three-way Comcast-TWC-Charter transaction) is 40 percent ignoring mobile broadband competition. If mobile wireless customers are included in the share calculation, the post-transaction share with the proposed divestiture is 22.5 percent.

Table 1: National Broadband Shares Using 10 Mbps Threshold

[[REDACTED]]

35. Although I consider a broadband definition based on a downstream speed of 25 Mbps overly narrow and hence inappropriate, it should be noted that TWC currently has fewer than one million broadband customers with speeds at 25 Mbps or higher, whereas Comcast has more than 12 million such customers. Consequently, if broadband is defined as requiring 25 Mbps, the transaction has little effect on Comcast's current share of national broadband customers. Table 2 shows that, under a 25 Mbps definition, without accounting for mobile broadband, Comcast's share increases by only 0.7 percentage points following the transaction; with mobile broadband included Comcast's share increases by only 0.5 percentage points.

Table 2: National Broadband Shares Using a 25 Mbps Threshold

[[REDACTED]]

C. Commenters present no evidence of competitive constraints that Comcast and TWC impose on one another and thus no transaction-induced relaxation of competitive constraints

36. The Horizontal Merger Guidelines focus on mergers that lead to enhancements of market power and substantial lessening of competition. As the Horizontal Merger Guidelines note, "[a] merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm

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customers as a result of diminished competitive constraints or incentives."31 For this reason, evidence that merging parties act as competitive constraints on one another is generally at the heart of merger analysis.

37. Such evidence of competitive constraints is entirely absent from commenters' analysis of the transaction. In particular, commenters have not advanced any direct evidence of a competitive constraint imposed by one of the merging parties on the other, or any indirect evidence of substitution between the merging parties on any dimension (either acting as sellers or buyers). As such, there is no evidence for the standard horizontal theories of harm, in which constraints imposed by one merging party prevent the other from profitably taking an action unilaterally, or taking an action in coordination with other competitors, with this constraint relaxed due to the transaction. This includes not only the obvious lack of evidence that the firms constrain one another's retail broadband pricing or strategies, but also a lack of evidence that any competitive constraints from TWC affected Comcast in its recent negotiations with Netflix, Cogent, or other edge providers or their agents. There is simply no evidence that any pricing, strategies, or negotiations would have been different absent some constraint imposed by the other merging party.

31 Horizontal Merger Guidelines, § 1 [emphasis added].

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III. THE MERGING PARTIES FACE LARGE AND GROWING COMPETITIVE CONSTRAINTS, INCLUDING ON THEIR ABILITY TO AFFECT EDGE PROVIDER ACCESS TO THEIR LAST-MILE NETWORKS

38. Commenters dedicate dozens of pages to allegations of Comcast's market power, including substantially overstated claims about the lack of competitive alternatives available to Comcast broadband customers.32 Commenters' focus on current market power is of limited relevance, particularly absent any showing that the transaction enhances that power. However, because I disagree with commenters' conclusions and because those conclusions also infect their foreclosure and bargaining theories, I refute the conclusions that commenters attempt to draw from Comcast's current broadband market position at some length in this section.

39. Before turning to this refutation, I note that commenters and I do agree on one fact: Comcast has an extremely high-quality broadband network and thus offers very high-quality broadband service to its customers. Comcast has spent tens of billions of dollars to develop its network and now offers broadband speeds up to 505 Mbps. Furthermore, as explained in the Israel Declaration, Comcast sees this transaction as a way to extend its high-quality broadband service into additional territories and to expand

32 For example, Dr. Evans concludes that "there are no significant competitive constraints" on Comcast and TWC and "[a]pplicants' subscribers have nowhere else to turn" (Evans Declaration, ¶¶ 21, 89). Dr. Sappington states that "most residential customers have little or no meaningful choice among suppliers of high-speed broadband Internet access service." (Sappington Declaration, ¶ 37).

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its footprint for future investments, thus making more such investments profitable. The speed enabled by this broadband network is well suited to—in fact is only fully utilized by—online video content, and thus Comcast's broadband investment is deeply complementary to the emergence and growth of online video distributors (OVDs). This means that any strategy to harm online video distributors would involve Comcast degrading the very applications that its broadband network is built to serve and that best enable Comcast to attract broadband customers and thus generate a return on its broadband investment.

A. The merging parties' ability to affect edge provider access to their last-mile networks is constrained by competition in the internet backbone and among last-mile networks

40. Commenters dedicate substantial attention to the large number of customers who make use of Comcast's last-mile broadband networks and, from its size as a retail broadband provider, attempt to make the leap to claims about the combined firm's ability to harm edge providers' access to its last-mile network.33 In this section, I explain why this logical leap does not follow, with further details in Sections III.B through III.D.

41. As an initial matter, note that the commenter theories of harm apply neither to last-mile networks nor to transit services on backbone networks through which (among other things) edge provider content is carried to the last-mile networks.

33 Evans Declaration, § III.A; Farrell Declaration, § V.B; Sappington Declaration, § IV.B and § IV.E.

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- The lack of any overlap between Comcast's and TWC's last-mile networks, and Comcast's stated willingness to adhere to Open Internet principles—which prevent selective degradation of particular traffic in the last mile—effectively eliminates any concern about harm in the last mile.

- Although Comcast and TWC participate in the backbone as transit providers, I have seen no allegation that either Comcast or TWC has any market power—or that the transaction would have any anti-competitive effect—in the Internet backbone. To the contrary, as noted, the Commission has previously found that Internet backbone services are highly competitive.34 No commenter has contested that finding nor argued that this transaction will change that reality.

42. Hence, the possibility of competitive effects from the transaction collapses to the possibility of competitive effects at the "interconnection points" where last-mile and backbone networks intersect. In general, commenters' theories of harm are theories about possible changes to interconnection agreements—the terms under which edge providers, (or more often their CDN or transit provider agents) obtain access into the Comcast and TWC last-mile networks.

43. Much of the remainder of this declaration is explicitly or implicitly about why the transaction creates no harmful effects on interconnection agreements—and more importantly, no harmful effects on the terms under which edge providers can access the

34 Level 3-Global Crossing Order, ¶ 27.

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Comcast or TWC last-mile networks—certainly no effects that come anywhere near the magnitude of benefits from the transaction. At core, the logic follows from a simple idea: Interconnection points are not immune from the competitive forces that prevent competitive harm in the last-mile and backbone networks that sit on either side of them. Most importantly, as explained in Section III.B, the recognized intense competitiveness of backbone services places strong constraints on an ISP's ability to manipulate interconnection terms in a way that would harm edge providers, whatever the size of its last-mile network. And, as developed in Section III.C, consumers do have important and growing choices between last-mile networks and thus have options should an ISP degrade edge provider access to its last-mile network. Finally, as developed in Section III.D, efforts to harm edge providers' access to last-mile networks would likely only hasten the development of new, alternative last-mile networks, sponsored directly by edge providers themselves (e.g., Google), by municipalities, or by Commission action.

B. Constraints arising from the highly competitive internet backbone

1. The wide range of interconnection options means that attempts to degrade interconnection options open to edge providers would be highly disruptive to the combined firm

44. Comcast lacks the ability to degrade edge provider access to its last-mile network to any significant degree. Due to the competitiveness of backbone services, there are many options for an edge provider to obtain access to Comcast's last-mile network. In particular, as detailed in the declarations of Kevin McElearney and Constantine Dovrolis, there are dozens of third-party CDNs and transit providers that have interconnection agreements with Comcast and with which edge providers can contract to access the

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Comcast last-mile network. 35 And, importantly, it is the edge provider, not Comcast (or any receiving ISP), that makes all the choices about which of these many paths to use to deliver content.36

45. Hence, no edge provider is forced to negotiate with Comcast directly. Rather, edge providers—either on their own if they are large enough (and choose to do so) or through CDNs or other agents—can use any of multiple paths onto the Comcast network.37 Access through third-party routes is not just a theoretical possibility: I understand that the overwhelming majority of edge providers reach the Comcast last-mile network through indirect connections rather than through direct interconnection with Comcast. And indirect connection is not an option pursued only by small edge providers; for example, Yahoo {{ }}.38

46. Notably, more than 40 of the third parties offering access to the Comcast last-mile network have settlement-free interconnection agreements with Comcast, meaning that Comcast charges nothing to the provider for interconnection services. The existence of so many settlement-free arrangements belies any claim that Comcast is exercising significant market power via interconnection today.

35 Declaration of Kevin McElearney, September 19, 2014 (hereinafter, McElearney Declaration), ¶ 3; Declaration of Constantine Dovrolis, "The Evolution and Economics of Internet Interconnections," September 21, 2014 (hereinafter, Dovrolis Declaration), 24.

36 McElearney Declaration, ¶¶ 3, 17; Dovrolis Declaration, 5.

37 Israel Declaration, § II.B.1.c.

38 Peter Stern, Executive Vice President & Chief Strategy Officer, TWC, September 3, 2014, interview; "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 70, 184.

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47. Commenters' claim that Comcast can simply degrade or charge for these paths significantly underplays the import of the large number of settlement-free paths onto the Comcast network. In particular, to support a claim that Comcast could raise interconnection prices across the board, one would have to claim that Comcast would have sufficient power to disrupt its more than 40 settlement-free paths and force positive interconnection payments onto enough of them to disrupt significantly the spare capacity into Comcast's network, of which "there is more than enough…to carry all of Netflix's Comcast-bound traffic."39 No commenter has presented any evidence that this is possible.

48. To the contrary, given that commenters' discussion focuses on the alleged lack of constraints that Comcast faces today, the evidence points in the opposite direction: Comcast has maintained all of these settlement-free paths despite its alleged market power. This Comcast behavior follows from the fact that Comcast depends on these links to maintain connectivity to the broader Internet, not just in the U.S., but globally. Attempting to disrupt them to harm particular edge provider traffic would be extremely disruptive.

49. The upshot of this wide range of paths onto the Comcast network remains what I explained in my initial declaration: To degrade significantly the access of particular edge

39 McElearney Declaration, ¶ 3.

providers to its last-mile network would require significant disruption to Comcast's own access to the broader Internet, at extremely high cost to Comcast. In particular, as the Israel Declaration explained,40 the ability of edge providers to pool their traffic with other providers (via the use of transit providers or CDNs) and to make use of multiple paths onto an ISP's network (either on their own or via a CDN) together mean that Comcast would have to degrade its connection to the overall Internet to a significant extent to prevent a particular edge provider from accessing its last-mile network.

2. Contrary to commenters' claims, events during the recent Comcast-Netflix negotiations confirm that Comcast has little ability to harm edge providers' access to its last-mile network

50. Experts for Cogent and Netflix argue that during the recent Comcast-Netflix negotiations, Comcast was able to prevent Netflix from obtaining sufficient capacity to deliver a high-quality experience to Comcast customers.41 I understand that this is false, with this apparent lack of capacity driven by artificial limitations placed by Netflix on the providers with which it would work. As Kevin McElearney explains in his declaration:42

Netflix appears to have adopted a self-serving strategy of using limited transit providers that never purchase interconnection services from their destination ISP. The result of this self-imposed limitation is that many transit suppliers with available capacity and potentially comparable market pricing, were excluded from Netflix's consideration. This Netflix transit strategy severely limited Netflix's delivery capability and its ability

40 Israel Declaration, § II.B.1(c).

41 Evans Declaration, § III.A.2 and § III.A.3; Farrell Declaration, § V.C.

42 McElearney Declaration, ¶¶ 23-24.

to deliver a high-quality service. No other large content provider that I know of – including several in the same space as Netflix – has adopted the same restrictive delivery requirements. The small handful of providers to which Netflix limited itself simply were not capable, by themselves, of handling delivery of one-third of peak Comcast-bound Internet traffic without arranging for massive capacity augmentations that would have far exceeded normal growth and put those providers outside of their peering policies or not in a position to augment at the speed that Netflix wanted to shift traffic. Had Netflix instead taken advantage of the many other routes into Comcast's network, including the many settlement-free routes on which Comcast had (and has) abundant available capacity, as noted above, it could have delivered its traffic to Comcast's network with high quality and no performance issues.

51. Netflix's experience with other ISPs was similar. For example, Verizon recently stated that Netflix chose to transmit traffic over congested transit paths, even while other paths into its network were uncongested and had substantial available capacity.43

52. More generally, Mr. McElearney confirms my understanding that Netflix had access to a wide range of interconnection points into the Comcast network, with the ability to pick and choose from those paths, such that Comcast would have needed largely to shut down its connection to the Internet to degrade Netflix's access significantly:44

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43 See "Why is Netflix Buffering? Dispelling the Congestion Myth," Verizon Policy Blog, July 10, 2014, available at http://publicpolicy.verizon.com/blog/entry/why-is-netflix-buffering-dispelling-the-congestion-myth, site visited September 15, 2014. ("While the links chosen by Netflix were congested (congestion occurs when use approaches or reaches 100% capacity during peak usage periods), the links from other transit providers (carrying non-Netflix traffic) to Verizon's network did not experience congestion and were performing fine. The maximum amount of capacity used (or peak utilization) over the links between these other networks and Verizon's network ranged from 10% to 80% (with an average peak utilization of 44%)."

44 McElearney Declaration, ¶¶ 3, 36.

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Comcast reaches well over 99 percent of the Internet's networks through more than 40 settlement-free peers and numerous other commercial interconnection agreements, and across our interconnection partners there is more than enough capacity into our network – even enough to carry all of Netflix's Comcast-bound traffic…even in the face of the Netflix-related congestion, Comcast's utilization with its peers during the last 12 months was less than {{ }} percent on average during peak times – and those peers do not pay Comcast – which undermines Netflix's suggestion that it sought out all routes where no payment to Comcast was required. Netflix chose routes that it knew were insufficient, and created performance issues for itself and its customers.

3. The array of interconnection options are relevant for all providers and may be especially valuable for small edge providers

53. The wide range of options for getting traffic onto the Comcast network are relevant for all providers; no edge provider is required to negotiate directly with Comcast to access its network. That said, some large edge providers such as Netflix and Google are sufficiently large that they choose to invest in their own CDNs and then to negotiate directly with ISPs for interconnection, rather than pay third-party CDNs or transit providers to provide indirect access.45 Not surprisingly given that such providers are large, powerful firms in their own right, the terms they have reached with the merging parties have not proven harmful to them, but rather have represented mutually beneficial disintermediation. (See Sections IV.B and VI.A for further discussion.)

45 Such "self supply" makes sense when the costs of distributing servers around the backbone, and paying multiple ISPs for direct access to their individual networks, is less (or no more) expensive than paying for third-party CDN services or transit. I understand that direct links also may provide additional control, oversight, and dependable capacity that a larger provider may be willing to pay for.

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54. Cases like Netflix and Google are definitely the exception: The vast majority of edge providers are sufficiently small that negotiating direct access with ISPs would be inefficient. Instead, such edge providers, no matter how small, can contract with CDNs such as Akamai and Limelight to deliver content to ISPs' networks (or can use web hosting companies that in turn use CDNs, or can purchase transit from transit providers).46 The third-party agent arranges direct interconnection with various ISPs, perhaps on its own, or perhaps working with yet another third-party transit provider that has a direct connection with the ISP.

55. By delivering traffic via third parties, small edge providers are effectively able to pool their content with other providers who use a given CDN, web hosting company, or transit provider. Moreover, because edge providers (small or large) can route their traffic over multiple redundant transit and CDN routes, in order to degrade any given edge providers' access to an ISP's network, the ISP would have to degrade a significant amount of the other traffic it receives or sends over these same links, and in the process degrade its interconnectivity with the overall Internet. Hence, small edge providers have a level of protection that distinguishes Internet interconnection arrangements from other contexts, including negotiations for carriage of traditional video offerings.

46 Such third parties have plenty of capacity to accommodate traffic from small edge providers. For example, MIT CSAIL Information Policy Project recently found that "[f]or smaller providers of content and applications, who would normally reach their customers across the Internet either by using a third-party content delivery platform or by using the paths provided by peering and transit links, the lack of widespread congestion means they have adequate ways to reach their customers." (MIT/CAIDA, "Measuring Internet congestion: A preliminary report," available at https://ipp.mit.edu/sites/default/files/documents/Congestion-handout-final.pdf, site visited September 22, 2014).

4. Attempts by the merged firm to degrade interconnection into its network in any material way would be extremely costly

56. Recent real world experience illustrates that degradation of edge provider access to the Comcast network—whether inadvertent, intentional, or a temporary side effect of unresolved commercial negotiations—would be harmful to Comcast's business interests. For example, although the recent "event" in which Netflix quality on the Comcast network declined (at least for traffic delivered over certain routes) was fairly short lived and affected multiple ISPs at the same time—thus limiting the impact on customer churn—the Comcast complaint data indicate that customers noticed and reacted negatively to the event, directing complaints to Comcast and, at a minimum, imposing customer service costs on Comcast. In particular, during the brief period in late 2013/early 2014 when Netflix's quality on Comcast network declined (at least for traffic sent over certain routes), Comcast experienced a surge in Netflix-related customer-service calls with customers complaining about Comcast's broadband service. Figure 1 shows that the Netflix-related service calls spiked by approximately [[ ]] percent, from [[ ]] per month before the onset of the dispute to more than [[ ]] per month during the dispute period, which lasted from November 2013 through February 2014. The number of customer calls declined in March and thereafter as Netflix performance improved with the re-routing of its traffic after the resolution of the dispute.

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[[ ]]

C. Constraints imposed by customers, making use of the full range of choices regarding broadband service

57. In this section, I explain that even if, despite the analysis above, Comcast attempted and managed to degrade edge provider access significantly, customers would react in a wide range of ways that would impose substantial costs on Comcast, thus further reducing the chance that Comcast could undertake such actions profitably.

1. Any reduction in customers' demand for broadband services would be quite costly to the merging parties

58. Although certain commenters spend substantial time arguing that customers have limited ability to reduce their consumption of Comcast broadband services—a point I refute below—they fail to acknowledge the substantial cost that such reductions in consumption of broadband service would have on Comcast. Customers taking broadband service are extremely valuable to Comcast, both in absolute terms and relative to customers not taking broadband service. Given the high value associated with broadband service, the converse also holds—the loss of a broadband customer is quite costly to Comcast.

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59. Ordinary-course-of-business customer lifetime value (CLV) calculations show that the addition of broadband service increases a customer's lifetime value to Comcast [[ ]].47 Comcast has computed the following CLVs for standalone and bundled products:48
{{ }}

60. Notable from this table is the high CLV associated with broadband relative to other products and thus the high cost to Comcast if a customer were to drop broadband service. For example, if a broadband/video double-play customer were to drop broadband service, her CLV would fall from {{ }}, thus eliminating more than {{ }} percent of her expected lifetime value. No such effect is seen for traditional video: If the double-play customer drops video and thus switches to "data only," this eliminates less than {{ }} percent of the double-play CLV ({{ }} in double play CLV). A similar pattern holds for

47 In interpreting these high broadband CLVs, it is important to remember that, as explained in Section II, there is no coherent theory of horizontal harm in broadband competition in this case. If there were such a theory (as in a merger of overlapping broadband providers), then standard "upward pricing pressure" logic might imply that the presence of high broadband CLVs heightens the horizontal concern. In the present case, however, with no coherent theory of horizontal harm, the relevant implication of the high broadband CLVs is that Comcast would be unlikely to find it profitable to harm its profitable broadband business to help its much less profitable video business. Moreover, one also cannot use the broadband CLVs to infer that Comcast has sufficient market power in broadband to foreclose OVD competition. Rather, as explained in Section IV.A, Comcast lacks this ability due to factors including the range of options open to OVDs (including powerful established OVDs like Google, Apple, and Netflix) to access Comcast's network; the large number of non-Comcast/TWC broadband customers outside Comcast's footprint and around the world; and the substantial harm that any attempt to degrade edge provider access would do to demand for Comcast's broadband services.

48 The table is based on slide 17 of Comcast's October 2013 presentation titled "Customer Lifetime Value (CLV)." I understand that this presentation was developed by the Finance Department at Comcast and that the CLV is based on the [[ ]].

single-play customers. Losing a single-play broadband customer leads to an expected reduction in CLV of {{ }} loss from losing a single-play video customer. These figures indicate that Comcast suffers substantial losses with each loss of a broadband customer, even if some fraction of those customers chose to replace broadband service with video service.

61. Given that 44 percent of all Comcast broadband customers subscribe to a triple-play package, including video and voice in addition to broadband, the conclusions in this section become even stronger.[49] For any triple-play customers who react to downgraded Comcast broadband service by disconnecting their overall service—as some surely would—Comcast loses {{ }} in value, an amount equivalent to the value from more than {{ }} standalone video customers (or from more than {{ }} customers adding video to what had been a standalone data subscription). Hence, any material risk of loss of triple-play customers would act as a significant deterrent to strategies to downgrade broadband.

2. Customers can substitute away from ISPs along multiple dimensions

62. In evaluating the extent to which customers have the ability to substitute away from Comcast's broadband services, commenters fail to consider all relevant margins of substitution. In particular, commenters focus only on the extent to which Comcast and

49 See Comcast data produced in FCC Information and Data Request – Exhibit 4.2(e).

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TWC customers can substitute to alternative high-speed, wireline ISPs (i.e., one part of the "extensive margin"), ignoring the fact that, if faced with diminished or more expensive broadband service, any Comcast customer in any region could downgrade or even cancel broadband service altogether (i.e., the intensive margin).

(a) Adjusting the Intensity of Usage/Tier of Service (Intensive Margin)

63. Even without switching providers, customers could react to downgraded Comcast broadband service along the intensive margin in a variety of ways, at least two of which would harm Comcast:

- First, if their access to OVDs and other edge providers were degraded, customers might decide they no longer need broadband service from Comcast at all, perhaps relying on mobile service instead, combined with Internet access at work.

- Second, customers could choose to downgrade to a lower tier of Comcast's broadband service (or fail to upgrade to a higher tier). Indeed, both the Commission and industry participants recognize that access to OVD offerings is an important driver of demand for high speed broadband service, so an inability to utilize higher speeds for such access could very well undermine the value of those tiers.[50] Comcast currently offers broadband products that include (among others)

50 Reed Hastings (Netflix, Inc. CEO), 4Q13 Earnings Call, January 22, 2014. The Commission also recognizes that HD-quality streaming is one of the key edge uses that requires high-speed data networks. (See Broadband Speed Guide, available at http://www.fcc.gov/guides/broadband-speed-guide, site visited September 12, 2014).

the 3 Mbps Economy Plus product ($39.95 per month), the 6 Mbps Performance Starter product ($49.95 per month), and the 150 Mbps Extreme 150 package ($89.99 per month).51 Comcast indicates that customers who watch video extensively online disproportionately choose higher-speed tiers.52 Hence, if a reduction in the quality (or increase in the cost) of OVD offerings on the Comcast network were to cause a customer to downgrade broadband service from, for example, Extreme 150 to Economy Plus (which is more than fast enough for most non-video applications), this would cost Comcast $50 per month in revenue—or $1200 over a two-year period. Not surprisingly, then, Netflix CEO Reed Hastings recently explained how Netflix services help cable companies by noting: “I think the more that you own cable companies, you want great broadband services, you want consumers to take higher and higher priced tiers.”53

64. In sum, then, even those customers who might choose not to switch broadband providers if their service were degraded can (and likely would) react to such degradation by downgrading

51 See http://www.comcast.com/internet-service.html, site visited September 12, 2014.

52 John Schanz, Executive Vice President and Chief Network Officer, Comcast Corporation, September 18, 2014, interview.

53 Reed Hastings (Netflix, Inc. CEO), 4Q13 Earnings Call, January 22, 2014 (emphasis added). The Commission also recognizes that HD-quality streaming is one of the key edge uses that requires high-speed data networks. (See Broadband Speed Guide, available at http://www.fcc.gov/guides/broadband-speed-guide, site visited September 12, 2014).

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or canceling broadband service, a decision which would be quite costly to Comcast. And importantly, the threat to substitute along the intensive margin in this way is open to all Comcast customers, not just those in areas where Comcast faces a particular set of broadband competitors.

(b) Switching to Another Provider (Extensive Margin)

65. Despite overstated assertions that "[f]or all intents and purposes, the Applicants' subscribers have nowhere else to turn,"54 the evidence presented by commenters is actually quite consistent with the evidence that I presented in the Israel Declaration, showing that most subscribers definitely do have "somewhere else to turn."55 In particular, Dr. Evans indicates that, on average, Comcast customers have one other fixed high-speed (greater than 10 Mbps) broadband option.56 Similarly, Dr. Farrell acknowledges that most local markets have at least two competitors.57 Thus, by commenters' own evidence, the majority of Comcast and TWC customers do have at least one alternative that would meet even these commenters' standards for a relevant competitor, a finding consistent with the evidence in my original declaration. In addition,

54 Evans Declaration, ¶ 89.

55 See Israel Declaration, ¶ 43 (citing to FCC data showing that "approximately 97 percent of households are located in census tracts in which two or more fixed broadband providers report offering at least 3 Mbps downstream and 768 kbps upstream and approximately 70 percent are located in census tracts in which two or more providers report offering at least 10 Mbps downstream and at least 1.5 Mbps upstream.").

56 Evans Declaration, Table 2.

57 Farrell Declaration, ¶ 55.

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as indicated in the June 2013 FCC Internet Access Report, the inclusion of wireless options—which are becomingly increasingly relevant, with new developments announced nearly every day, as I will explain below—substantially increases the set of options, as 98 percent of US households are located in census tracts that have access to two or more fixed and mobile broadband providers offering speeds of at least 10 Mbps.58

66. In Section III.C.4, I present empirical evidence that, faced with a reduction in the quality of broadband service, customers would, in fact, switch to such alternatives—including lower speed, DSL, and wireless options—in large numbers, thus imposing substantial costs on Comcast per the CLV numbers presented above. Before turning to that, I provide some additional details on the set of alternatives and recent developments that continue to strengthen these alternatives.

3. There exists a large and growing set of competitive broadband alternatives

(a) Overview of Telco Options

67. Commenters discuss two of the broadband options offered by telco providers (DSL and wireless) separately, thus creating an incomplete perspective on the full competitive threat imposed by telco providers. Among other things, this one-off evaluation of these telco options leads commenters to a double standard in which they

58 See Figure 5b in FCC's Report titled "Internet Access Services: Status as of June 30, 2013," available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-327829A1.pdf, site visited September 20, 2014).

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downplay DSL—which is highly relevant today—due to claims that its competitive significance is declining, while ignoring the fact that the competitive significance of FTTP and wireless options—while somewhat more limited today—is growing rapidly. Hence, in this section, I present a more unified view of the competitive strategies and offerings of telco providers. This unified view reveals, unsurprisingly, that firms like AT&T, Verizon, CenturyLink, and others remain powerful broadband competitors and are poised to become even more powerful, in a continuation of the "leapfrogging" that has long characterized broadband competition.59

68. Leading the way among the full set of telco options, fiber to the premises ("FTTP") is offered by telcos in a growing set of geographic areas, with some of the growth being tied directly to the need to respond competitively to the proposed transaction.60 And in areas where FTTP is not presently available, telcos are substantially improving their DSL service. Layered on top of those options, high-speed wireless

59 FCC Chairman Wheeler recently described this leapfrogging phenomenon as follows: "The path from narrowband, to broadband, to high-speed broadband, was forged by competition. In order to meet the competitive threat of satellite services, cable TV companies upgraded their facilities. When the Internet went mainstream, they found themselves in the enviable position of having greater network capacity than telephone companies. Confronted by such competition, the telcos upgraded to DSL, and in some places deployed all-fiber, or fiber-and-copper networks. Cable companies further responded to this competition by improving their own broadband performance. All this investment was a very good thing." (Wheeler Remarks, 3).

60 Thomas Gryta, "AT&T to Build Out Ultrafast Internet in North Carolina," Wall Street Journal, April 10, 2014, available at http://online.wsj.com/news/articles/SB10001424052702303873604579492103338327532, site visited September 15, 2014.

broadband is available nearly ubiquitously. As discussed in the Israel Declaration,61 the combined set of approaches to providing broadband service makes telco firms highly significant competitors.

69. Actual data on market growth rates belie any claim that, appropriately considered as a whole, telco options are falling behind relative to cable; to the contrary, wired telco options are growing faster than cable, and the telco growth rates are even higher when wireless is included. Table 3 shows broadband customer counts from June 2009 through June 2013 and average annual growth rates for FTTP, DSL, mobile wireless, and cable technologies using the FCC's current definition of broadband (based on speeds of 3 Mbps downstream and 768 Kbps upstream). I rely on the existing broadband definition in order to let the data tell the story—if, for example, telco products are more concentrated in the lower speed ranges, and therefore are less popular, telco growth rates should be correspondingly lower.62 They are not.

61 Israel Declaration, ¶¶ 49-68. I note that data available at the time of the Israel Declaration understated the overlap between the Comcast/TWC footprints and the telco footprints. Newly available data indicate greater overlap than reported in ¶¶ 50 and 56 of the Israel Declaration (See Letter from Comcast, TWC, and Charter to the FCC, June 25, 2014, p. 4, which shows, for example, overlap between the Comcast footprint and AT&T's U-verse footprint of [[ ]] percent, and overlap between the TWC footprint and the U-verse footprint of [[ ]] percent, compared to overlaps of [[ ]] percent and [[ ]] percent, respectively, reported in my original declaration.).

62 In addition, if I were to use a higher speed cutoff, it would largely capture upgrades by some customers rather than overall growth rates, and it would only capture growth rates for the highest speed telco options without answering the question about the overall set of telco options.

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70. Across both wired options (i.e., FTTP + DSL), the total number of wired telco customers grew at an annual rate of 26.9 percent during this period, and when wireless is included, the total number of telco customers grew at an annual rate of 89.6 percent. Hence, with or without including wireless options, the telco broadband growth rate is substantially higher than the cable broadband growth rate of only 17.9 percent.

71. In the following sections, I provide more details on the full set of telco broadband options that are generating this growth.

Table 3: Customer Growth Rates for Connections with Speeds at least 3 Mbps-downstream and 768 Kbps-upstream, June 2009 through June 2013

(b) FTTP

72. Commenters all seem to agree that FTTP options pose a significant competitive threat to cable. As such, the recent and planned growth in these options is of particular note. For example, the Israel Declaration noted that AT&T had begun to deploy FTTP (specifically, its GigaPower product with speeds up to 1 Gbps) in certain cities, including

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Austin, Texas.63 In the context of its proposed merger with DirecTV, AT&T stated the following in a submission to the Securities and Exchange Commission (SEC):64

The economics of this transaction will allow the combined company to upgrade 2 million additional locations to high speed broadband with Gigapower FTTP (fiber to the premise) and expand our high speed broadband footprint to an additional 13 million locations . . .

73. Prior to the announcement of its proposed merger with DirecTV, AT&T had already been advancing the deployment of FTTP. In April of this year, in an announcement similar to that of Google Fiber's, AT&T announced plans to expand GigaPower in as many as 100 candidate cities in 21 metropolitan areas.65 Since then, it has launched service in Austin and Dallas/Ft. Worth and has reached agreements with 11

63 Israel Declaration, ¶ 53.

64 AT&T Inc., Current Report (Form 8-K), Item 8.01 Other Events, June 3, 2014. See also, Applications of AT&T Inc. and DIRECTV for Consent to Transfer Control of Licenses and Authorizations, Description of Transaction, Public Interest Showing, and Related Demonstrations, June 11, 2014 ("Specifically, the combined company will commit to provide FTTP wireline broadband service to 2 million more customer locations. In addition, the combined company will commit to deploy fixed wireless local loop ("WLL") technology to bring high-speed broadband to approximately 13 million largely rural customer locations. By using a fixed antenna, this service is designed to perform as well as services with advertised speeds of 15-20 Mbps. This fixed WLL deployment will include areas outside AT&T's wireline footprint and areas within that footprint that currently do not receive the U-verse broadband and video bundle.").

65 Jon Brodkin, "AT&T Copies Google, Names 100 Cities Where It Could Offer Gigabit Fiber," Ars Technica, April 21, 2014, available at http://arstechnica.com/business/2014/04/att-copies-google-names-100-cities-where-it-could-offer-gigabit-fiber/, site visited April 23, 2014.

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additional cities in California, Kansas, North Carolina, Tennessee, and Texas.66 AT&T Chief Executive Randall Stephenson stated that AT&T's work in Austin, along with the proposed Comcast/TWC merger, "has encouraged the company to be 'a little more aggressive and assertive in deploying that technology around the country.'"67

74. In addition to AT&T, other providers have launched or are planning to expand their FTTP services. As I discuss in more detail in Section III.D below, Google Fiber and numerous municipalities are expanding their offerings or entering the FTTP broadband space. Among telco providers, Verizon's CEO has just indicated that "he is more open now than before to expanding the company's FiOS broadband Internet service in new markets."68 Cincinnati Bell has launched "Fioptics Gigabit" in its footprint and explicitly

66 See http://www.att.com/att/gigapowercities/, site visited September 19, 2014; Scott Moritz, "AT&T Plots Zippiest Internet Speed in Google's Backyard," Bloomberg, August 20, 2014, available at http://www.bloomberg.com/news/2014-08-20/at-t-plots-zippiest-internet-speed-in-google-s-backyard.html, site visited August 21, 2014; Jeff Baumgartner, "AT&T Adds Overland Park To 'GigaPower' Targets", August 8, 2014, available at http://www.multichannel.com/news/technology/att-adds-overland-park-gigapower-targets/382993#sthash.dqo3m6o9.dpuf, site visited September 19, 2014.

67 Thomas Gryta, "AT&T to Build Out Ultrafast Internet in North Carolina," Wall Street Journal, April 10, 2014, available at http://online.wsj.com/news/articles/SB10001424052702303873604579492103338327532, site visited September 15, 2014.

68 Ryan Knutson, "Verizon Eyes Digital Video Service by Mid-2015," Wall Street Journal, September 11, 2014, available at http://online.wsj.com/articles/verizon-ceo-eyes-digital-video-service-by-mid-2015-1410467151, site visited September 11, 2014.

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compares its top download speeds to those of TWC.69 And CenturyLink has launched gigabit service to both residential and business customers in ten cities, where it competes with Cox, Mediacom, Bright House, and Comcast, and to just business customers in six additional cities.70

(c) DSL

75. For many customers, DSL remains a highly relevant competitor to cable broadband today, one that is likely to continue to remain relevant in the future given advances in DSL technology. As noted in the Israel Declaration, advanced DSL technologies like VDSL, which are based on "fiber-to-the-node" ("FTTN") architecture, offer speeds up to 100 Mbps while non-FTTN DSL technology can deliver speeds up to 45 Mbps, which certainly qualifies as broadband service and is more than sufficient to meet the requirements of many broadband customers.71 Furthermore, the competitive pressure imposed by DSL is likely to increase over time as telcos continue to make investments in upgrading their DSL footprints.72 As discussed in detail below, ordinary course business documents as well as customer surveys indicate substantial switching

69 Alan Breznick, "Cincinnati Bell Preps for 1-Gig," Light Reading, August 20, 2014, available at http://www.lightreading.com/broadband/fttx/cincinnati-bell-preps-for-1-gig-/d/d-id/710411, site visited August 21, 2014.

70 Jeff Baumgartner, "CenturyLink Pushes 1-Gig Expansion," Multichannel News, August 5, 2014, available at http://www.multichannel.com/news/technology/centurylink-pushes-1-gig-expansion/382971, site visited August 7, 2014.

71 Israel Declaration, ¶ 55.

72 Id., ¶¶ 57-59.

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from Comcast to DSL, thus confirming that DSL would impose a competitive constraint on Comcast if it were to consider degrading its broadband service.

(1) DSL is a viable alternative

76. DSL easily meets the 10 Mbps threshold in many areas. As is evident in Figure 1, nearly 65 percent of the population has access to a DSL provider offering speeds of 10 Mbps or more, and over 18 percent of the population has access to a DSL provider offering speeds of 25 Mbps or more.

Figure 1: Distribution of Population in Comcast Footprint by DSL Speed

77. In his report, Dr. Evans points to the fact that {{ }} occurs on mobile devices today as evidence that wireless service is not an important substitute for wireline options, {{ }}. I discuss the limitations of this analysis below (including the fact that it is a backward-

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looking analysis at a time when extremely rapid changes in mobile video require a forward-looking perspective). Here, I note that Dr. Evans fails to provide a similar statistic for the current share of Netflix viewing that occurs on DSL connections, a telling omission. Although I do not have the required Netflix data to compute the percentage of Netflix viewing on DSL, it is noteworthy that of the 60 broadband providers included on Netflix's "USA ISP Speed Index," approximately 20 provide DSL service.73 Perhaps even more telling, in Netflix's most recent Speed Test (July 2014), the average speed of many of the DSL providers was greater than the average speed offered by some cable providers, including TWC. For example, the average Netflix speeds for Shentel, Lumos, Cincinnati Bell, and Sonic—all DSL providers—were higher than the average speeds for TWC, Brighthouse, and Mediacom.

78. Commenters have also claimed that differences in prices between cable broadband products and DSL suggest that they are in different product markets.74 However, antitrust economists have long recognized that what matters for product market definition is the degree of substitutability between the products, not differences in their prices.75 Differences in prices do not necessarily mean that products are not substitutes or are not

73 Netflix USA ISP Speed Index, available at http://ispspeedindex.netflix.com/usa, site visited September 5, 2014.

74 Sappington Declaration, ¶¶ 18-19.

75 See, for example, Gregory J. Werden and Luke M. Froeb (1993), "Correlation, Causality, and All that Jazz: The Inherent Shortcomings of Price Tests for Antitrust Market Delineation," Review of Industrial Organization, 9: 329-353.

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in the same market. To the contrary, in cases like the present one where one product (DSL) may be of relatively lower quality than some other products, the price differences often serve to make up for the quality gap, making quality-adjusted prices more similar and thus generating more substitution among the products.76 Hence, the pricing of DSL provides a mechanism for telco providers to make DSL more attractive to customers, further enhancing DSL's role as an important part of telco providers' overall broadband strategy and an important competitive constraint on cable ISPs.

79. Commenters, including Dr. Evans, claim that the lack of DSL growth indicates that DSL is not an important competitive threat.77 In particular, Dr. Evans argues that the loss of DSL customers between 2011 and 2013 for AT&T (non-U-verse), Verizon (non-FiOS), and other telco providers suggests that DSL is no longer a viable competitor for cable broadband. Although I agree that growth rates can be one indicator of competitive strength, this indicator, when correctly measured, actually points to the overall strength of telco, as shown above. As an example of the misleading nature of Dr. Evans' narrow

76 See, e.g., Motta (2004) who states that "using price differences as a criterion to define the relevant market is unsound…It might well be, for instance, that the price of product A is twice as much as the price for product B, but that it would be unprofitable to raise the price of A even by a small amount since most of those buying it would switch to B. Markets that exhibit quality differentials are likely to be a case in point. Organic bananas might command a large price premium over bananas grown in plantations that use pesticides…However, a further increase in price of organic bananas (say, because of a merger) is not profitable if there is a sizeable proportion of consumers less keen on organic food who will then switch to non-organic bananas." (Massimo Motta (2004), Competition Policy: Theory and Practice, Cambridge University Press, 109-110.)

77 Evans Declaration, ¶¶ 59-61; Sappington Declaration, ¶ 18 and note 25.

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focus on DSL, he failed even to account for DSL customers who have been upgraded by their telco providers to higher speed technologies. Such customer transitions actually represent overall telco strength, but Dr. Evans ignores that point with his narrow focus on non-U-verse and non-FiOS customers.78

80. Even if one chooses to focus on DSL growth by itself (rather than overall telco growth), Dr. Evans' results are incorrect. For example, he excludes U-verse even though U-verse is acknowledged to be an advanced form of DSL.79 Table 3 shows overall DSL growth rates including all DSL options. As seen in the table, using the current 3 Mbps definition of broadband, the growth rate in DSL subscribership exceeded the growth rate in cable subscribership between June 2009 and June 2013. During this time, the average annual subscribership growth rate was 30.7 percent for DSL relative to 17.9 percent for cable. The difference in annual growth rates is even more pronounced under the 10 Mbps downstream definition of broadband: 150.6 percent for DSL, relative to 52.8 percent for cable. In sum, these differences in growth rates suggest that DSL remains a significant competitive threat to cable broadband.

78 For example, U-verse subscribership increased from 5.2 million in 2011 to 7.7 million in 2012 and to 10.4 million in 2013, implying growth rates of 47.7 percent and 34.4 percent, respectively.

79 The FCC Internet Access Reports, for example, consider U-verse a DSL technology and include U-verse's customer figures in the counts of DSL customers.

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(2) Empirical evidence indicates substantial substitution from cable to DSL

81. Analysis in the ordinary course of business by Comcast also indicates substantial switching to DSL, meaning that, based on its own analyses, Comcast cannot ignore DSL as a competitive threat. In particular, Comcast conducts quarterly studies on customers who voluntarily disconnect or downgrade their broadband, video, or voice services.80 Error! Reference source not found. below presents results for customers who disconnected their broadband service in early 2011, 2012, 2013, and 2014. The results indicate that a sizeable fraction of disconnects were accounted for by switches to DSL. For example, most recently in Q1 2014, [[ ]] percent of the disconnects switched to a DSL provider, and in prior years no less than [[ ]] percent of the disconnects switched to a DSL provider. Thus, DSL remains an important destination for broadband customers leaving Comcast, which is also confirmed by the customer survey evidence discussed in Section III.C.4, below.

80 These studies are based on phone surveys of approximately 2000 households who disconnected services in the prior month.

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[[ ]]

(d) Wireless

82. Some commenters also assert that wireless Internet access is not a good alternative for wired Internet access.81 In support of this view, Table 1 in Dr. Evans' declaration indicates that in May 2014, only {{ }} percent of Netflix viewing hours were accounted for by mobile wireless. However, Dr. Evans' argument represents a backward-looking view of mobile wireless video usage in a world where conditions are changing so rapidly that only a forward-looking view will suffice. Indeed, industry analysts recognize that mobile is the number one growth area for Netflix itself: "[M]ost Netflix content is still watched on TV screens, but . . . mobile is seeing the biggest growth, in part because of the way phones have been changing."82 Similarly, Netflix's OVD rival Hulu recently called wireless a "really critical" part of its business and also noted that in just three years, "content on Hulu has jumped from zero percent to 20% viewership using mobile

81 See, e.g., Farrell Declaration, ¶¶ 28, 49; Sappington Declaration, ¶¶ 14-15; Evans Declaration, ¶¶ 45, 47.

ers, "Netflix May Add Short-form Content to Increase Mobile Usage," GIGAOM, September 5, 2014, available at
.com/2014/09/05/netflix-short-clips/?utm_medium=social&utm_campaign=socialflow&utm_source=twitter&utm_content=netflix-sho
eptember 11, 2014.

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devices."83 As another example, Verizon is poised to launch a new mobile-focused OTT business in 2015:84

Verizon is envisioning a service that would be akin to Netflix . . . but also would likely stream some live channels . . . it would deliver content from major broadcasters and live sporting events to smartphones via a technology called multicasting, which avoids congesting the network because it essentially allows the carrier to broadcast content over a single stream of airwaves that consumers can tune in to.

Other industry representatives also recognize the growing importance of video over wireless. For example, Ericsson notes: "[v]ideo is the largest and fastest growing

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83 Deborah Yao, "Wireless Operators Getting Serious about Mobile Video," SNL, September 10, 2014, available at http://www.snl.com/InteractiveX/article.aspx?CDID=A-29163017-14378&KPLT=4, site visited September 11, 2014.

84 Ryan Knutson, "Verizon Eyes Digital Video Service by Mid-2015," The Wall Street Journal, September 11, 2014, http://online.wsj.com/articles/verizon-ceo-eyes-digital-video-service-by-mid-2015-1410467151, site visited September 11, 2014. For background, see, e.g., "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 13.A.2.f., 35 ("For example, in February 2012, Verizon formed a joint venture with the parent company of Redbox to provide over-the-top services. And, earlier this year, Verizon purchased an online video streaming service from Intel that purportedly will enable it to provide a competitive MVPD substitute service over the Internet, including over wireless broadband networks."). See also, Verizon Communications at Goldman Sachs Communacopia Conference, edited transcript, September 11, 2014, p. 5 ("So if you look at an over-the-top, I [Lowell McAdam, Chairman and CEO of Verizon] think you could end up with a bundle that will have the major broadcast content providers and we would use our network around multicast to handle that very efficiently. And then you'd have a lot of these sort of custom channels that people can do the video demand, the IPTV much more interactive that you could have on these individual channels . . . So that whole ecosystem . . . is coming together; it has been primed for a while. But as I say, over the last six months to a year, that dialogue is changing dramatically.").

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segment of mobile data traffic. It is expected to grow around 13 times by 2019, by which time it is forecasted to account for over 50 percent of all global mobile data traffic."85

83. I present more information on the growth of wireless usage below. Before doing so, I note that, in terms of speed, wireless users can already obtain broadband-level performance today. For example, according to NTIA data, the percentage of U.S. population with access to a mobile wireless provider offering broadband speed of at least 10 Mbps downstream increased from 7.9 percent in December 2010 to 97.5 percent in June 2013.86 Given the widespread availability of wireless networks with broadband-level speed, the main obstacles to increased wireless usage relate to costs and capacity constraints, but these obstacles are diminishing rapidly, as discussed below.

85 "Ericsson Mobility Report: On the Pulse of the Networked Society," Ericsson, June 2014, available at http://www.ericsson.com/res/docs/2014/ericsson-mobility-report-june-2014.pdf, site visited September 4, 2014. See also "Global Video Index: Q1 2014," Ooyala, available at http://go.ooyala.com/rs/OOYALA/images/Ooyala-Global-Video-Index-Q1-2014.pdf, site visited September 4, 2014.

86 Israel Declaration, ¶ 62. National Broadband Map data indicates that 97.5 percent of the U.S. population has access to wireless broadband at speeds greater than 10 Mbps downstream. ("Broadband Statistics Report: Access to Broadband Technology by Speed," July 2014, available at http://www.broadbandmap.gov/download/Broadband%20Availability%20in%20Rural%20vs%20Urban%20Areas.pdf, site visited September 12, 2014.)

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(1) Wireless is growing rapidly in its viability as a broadband alternative

84. As noted in the Israel Declaration, estimates of the degree of substitution from wireline broadband to wireless broadband have been increasing over time.87 Consistent with these estimates, a recent report on Internet trends notes that mobile usage as a percentage of web usage (defined as the percentage of page views coming from mobile devices) increased from 11 percent in May 2013 to 19 percent in May 2014 in North America.88

85. Furthermore, industry research indicates that gains in wireless capacity and reductions in cost will make wireless broadband an increasingly relevant alternative over time.89 As detailed (with reference to industry sources) in the Israel Declaration, additional spectrum will be released via the upcoming spectrum auctions (e.g., AWS-3 auction and 600 MHz incentive auction), and average spectral efficiency is expected to improve with further LTE deployment and advances in LTE technology. The spectrum auctions and greater LTE deployment and innovation will increase the capacity of

87 Israel Declaration, ¶ 65.

88 Mary Meeker, "Internet Trends 2014 – Code Conference," KPCB, May 28, 2014, available at http://s3.amazonaws.com/kpcbweb/files/85/Internet_Trends_2014_vFINAL_-_05_28_14-_PDF.pdf?1401286773, site visited September 12, 2014, Slide 9.

89 See, e.g., the [[ ]] studies discussed in Israel Declaration, ¶¶ 64-65.

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wireless networks, which will put downward pressure on cost and price per gigabyte.90 Continuing recent trends of declining prices to consumers, wireless providers' costs are expected to fall roughly [[ ]] percent over the next several years which should reduce consumer prices substantially.91 The increasing threat of wireless broadband is also noted in a recent [[ ]]92

86. New wireless technologies are further increasing their competitive relevance, particularly for video applications. For example, LTE multicast, based upon evolved Multimedia Broadcast Multicast Service (eMBMS), allows identical content to be sent to many customers at the same time, thus enhancing network efficiency and increasing effective network capacity.93 As noted in a recent press report, "Verizon Communications CFO Fran Shammo called the advent of Multicast 'the pivotal point that starts to change the way content is delivered over a mobile handset which opens up content into the wireless world.'"94 AT&T announced in August of this year that it plans to launch LTE multicast some time in 2015, and Verizon Wireless plans to begin seeding its devices with

90 Israel Declaration, ¶ 67.

91 Id., ¶ 67. See also [[ ]].

92 [[ ]].

93 For background information concerning LTE multicast, see, e.g., Jeff Baumgartner, "Verizon CFO: LTE Multicast 'Pivotal' To Mobile Video," August 12, 2014, available at http://www.multichannel.com/news/technology/verizon-cfo-lte-multicast-pivotal-mobile-video/383137, site visited September 11, 2014.

94 Phil Goldstein, "AT&T to Launch LTE Multicast in 2015," FierceWireless, August 13, 2014, available at http://www.fiercewireless.com/story/att-launch-lte-multicast-2015/2014-08-13, site visited August 15, 2014.

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technology that can support multicast in the fourth quarter of this year, with plans to launch the service in 2015 as well.95

87. Advances in fixed wireless technology provide additional support for expected improvements in wireless capacity and the corresponding downward pressure on wireless network costs and prices. As discussed in the Israel Declaration, fixed wireless is a special type of wireless service that uses radio spectrum (generally licensed to wireless telecommunications providers) to communicate between two fixed points.96 AT&T recently announced plans to bundle DirecTV with 15 Mbps fixed wireless broadband service by dedicating spectrum to a fixed wireless broadband complement to satellite TV service.97 In an AT&T SEC filing in June of this year, AT&T discussed fixed wireless as an anticipated benefit of its planned merger with DirecTV:98

95 Ibid. See also, Jim Barthold, "Report: Verizon will Deliver Cable TV over 4G LTE," FierceCable, August 13, 2014, available at http://www.fiercecable.com/story/report-verizon-will-deliver-cable-tv-over-4g-lte/2014-08-13, site visited August 15, 2014.

96 Israel Declaration, ¶ 63.

aniel Frankel, "AT&T plans to bundle DirecTV video with satellite-delivered wireless broadband for rural customers," FierceCable, Sep
ble at
fiercecable.com/story/att-plans-bundle-directv-video-satellite-delivered-wireless-broadband-rural/2014-09-12?utm_medium=nl&utm_s
September 15, 2014 ("Pending approval of its $49 billion takeover of DirecTV (NASDAQ: DTV), AT&T will bundle the satellite opera
a wireless-broadband product capable of delivering download speeds of 15 Mbps and above, then deliver the package via a single dish
tarting in 2015.")

98 AT&T Inc., Current Report (Form 8-K), Item 8.01 Other Events, June 3, 2014.

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With the cost synergies and increased revenue from this transaction, AT&T will expand its high speed broadband build to offer a competitive bundle of high speed fixed wireless broadband and satellite video service.

Similarly, Dish Network indicated in August of this year that it will begin a trial of a fixed broadband service with Sprint. According to Dish's CEO, "[o]ne of the great things I love about Sprint is their spectrum is tailor-made, I believe, for many homes to be a substitute for a fixed line to the house for broadband. And we're experimenting both with nTelos and Sprint."99

(2) Empirical evidence indicates extensive usage of wireless options for high-bandwidth activities

88. A recent survey commissioned by Comcast documents extensive usage of wireless broadband today, including for "high-bandwidth" activities such as video. In particular, Comcast recently commissioned a survey by Global Strategy Group (GSG) which, among other things, measured current usage of wired and wireless broadband services. Among those with access to wireless broadband, approximately 42 percent of survey respondents indicated that they use wireless broadband at least as much as wired broadband for high-bandwidth activities, and 60 percent or more use wireless broadband at least as much as

9 "Dish Network's (DISH) CEO Joseph Clayton on Q2 2014 Results - Earnings Call Transcript," Seeking Alpha, August 6, 2014, availa at http://seekingalpha.com/article/2391475-dish-networks-dish-ceo-joseph-clayton-on-q2-2014-results-earnings-call-transcript?part=sing site visited August 7, 2014. I note that there are various fixed wireless options available today, and these offerings may get better in the near future. For example, a recent [[ ]] (See [[ ]]).

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wired broadband for low-bandwidth activities.100 This degree of wireless usage indicates that wireless is a relevant alternative to wireline today for at least some customers, with the degree of substitutability increasing rapidly.

4. Customers would respond to decreased Comcast broadband quality by utilizing these various options, disciplining any attempt to degrade edge provider access

89. Ultimately, the relevant question regarding the availability of competitive broadband providers is whether consumers would switch to such providers in significant numbers in response to any Comcast attempt to degrade access to edge providers or otherwise harm broadband service. If so, this would subject Comcast to the large loss of customer value described above and thus discipline the attempt. Any broadband provider to which a sufficient number of consumers would switch in response to a strategy to harm edge providers is a relevant competitive constraint on Comcast's ability to undertake such a strategy, even if its speed is slower than Comcast's.

100 See Appendix I for a more detailed summary of the survey results. Note that the survey requires that a respondent has previously confirmed having access to wireless broadband, so these results are based on a subset of all respondents (683 of 1,012 or 67 percent of all survey respondents). I understand that the survey is careful to avoid confusion between mobile broadband, the subject of the question, and Wi-Fi. In particular, the text of the wireless usage question in the survey includes the following language: "'Wireless or mobile broadband service' allows you to connect to the internet with a mobile device (this does not include devices that only connect to Wi-Fi). Examples of wireless or mobile broadband service include an AT&T data plan for your smartphone, iPad, or tablet; or a Verizon data plan for your Jetpack mobile-hotspot device."

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90. The survey by Global Strategy Group (GSG), discussed above, assesses consumers' willingness to switch broadband providers if access to edge providers were limited—including their willingness to switch to particular types of broadband providers (e.g., DSL or wireless) or, more generally, broadband providers providing slower service. The survey finds that the vast majority of broadband users are likely to switch to another ISP, even an ISP offering slower speeds, if their current ISP were to take any of the following actions: "prevent access to favorite websites"; "slow down Internet speeds for your favorite websites"; or "slow down Internet speeds for Netflix." Specifically, the percentage of survey respondents likely to switch to an ISP offering slower speeds if any of the three actions described above were taken ranges from 71-80 percent for all users; 72-79 percent for heavy Internet users, and 75-81 percent for frequent streaming video users (see Figure 2).101

101 Note that "likely to switch to another ISP" includes "very" and "somewhat" likely to switch responses, and frequent streaming video users are respondents who stream video at least once per month.

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Figure 2: Percentage of Survey Respondents Likely to Switch to an ISP Offering Slower Speeds if Their ISP Takes Selected Actions

91. The results of the survey are striking: If a customer's broadband provider were to limit access to edge providers, the vast majority of customers would switch to an alternative broadband provider, even one that offers slower speed.102 Put differently, access to edge providers (which is possible on lower speeds, as discussed above) appears to trump speed as a driver of consumer choice for most consumers. Hence, the

102 See Appendix I for a more detailed summary of the survey results.

availability of alternative broadband providers, even those providing slower speeds, places an important competitive constraint on the behavior of Comcast or other broadband providers toward edge providers.

92. The percentage of survey respondents likely to switch to another ISP like DSL or Wireless Broadband if any of the three actions listed above ranges from 77-86 percent for all users; 79-85 percent for heavy Internet users, and 81-87 percent for frequent streaming video users. Hence, empirical evidence indicates that DSL and wireless are relevant competitive constraints.

93. Some commenters have also argued that once a consumer chooses a broadband provider, she generally does not change the provider because of switching costs (Chairman Wheeler also referenced switching costs in recent remarks).103 However, the empirical evidence on customer switching does not bear out this concern. For instance, the GSG survey found that consumers switch broadband providers frequently. As Table 9 in the Appendix shows, one-third of survey respondents switched providers in at least the past two years, and nearly half (49 percent) switched providers within the past four years.104

94. Furthermore, Comcast's data shows that the monthly churn rate for broadband customers has been in the [[ ]] percent range for several years.105 This implies that over the course of a single year, approximately {{ }} of Comcast's broadband customers churn, which is in line with the results of the GSG survey.106

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103 Evans Declaration, § II.E; Sappington Declaration, ¶ 38 and note 48; Wheeler Remarks, 4.

104 The percentages in Table 9 include survey respondents who departed following a move. To the extent that customers switch ISPs when they move, this means that moves break whatever switching costs exist and give ISPs a chance to compete for moving customers. Nonetheless, even if I exclude all respondents that moved, I still obtain evidence indicating substantial switching. In particular, results without movers indicate that approximately one-quarter of survey respondents switched providers in at least the past two years, and more than 40 percent switched providers within the past four years.

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D. Constraints imposed by potential entry or expansion by powerful new broadband providers with vested interest in competitive broadband markets

95. In evaluating the competitive threats that shape Comcast's strategy, one cannot disregard the important role played by potential entry or expansion by new broadband alternatives. The leading example of such a new entrant is Google Fiber.107 The Israel

105 See Comcast data produced in FCC Information and Data Request – Exhibit.4.2(e), Exhibit.4.6(a), Exhibit.4.9(a).

106 The churn data from Comcast also includes movers, which, as explained above, is not problematic because moves appear to break any switching costs and give other ISPs an opportunity to compete for customers. Nevertheless, the churn remains high even if I remove the component associated with movers. In particular, Comcast data indicates that approximately [[ ]] of aggregate broadband churn is due to customers moving. Hence, I remove movers from the churn data as follows: Assuming that the aggregate monthly churn rate is [[ ]] percent (midpoint of [[ ]] percent), monthly churn excluding movers is [[ ]] percent (i.e. [[ ]]), and therefore the implied churn excluding movers is approximately [[ ]] percent annually.

107 For further discussion of current and expected entry and expansion plans, see, e.g., "Telcos Extend Lead in 1 Gbps Race," SNL Kagan, September 2, 2014 ("A look at the landscape for the fastest residential HSD offerings from top U.S. providers shows AT&T Inc.'s GigaPower in the lead, Google Inc.'s Google Fiber primed for expansion, and cable slow to enter. Based on a compilation of company announcements, the top telcos combined have targeted almost 40 major metropolitan areas for 1 Gbps services and have deployed the offering in 14 of those areas as of August."). See also, Bryan Nichols, "3 Reasons Why Investors Should Avoid Comcast Corporation," The Motley Fool, September 8, 2014, available at http://www.fool.com/investing/general/2014/09/08/3-reasons-why-investors-should-avoid-comcast-corpo.aspx, site visited September 8, 2014. ("In the past, Comcast had one maybe two competitors, often Time Warner Cable included, but now both Google and AT&T are rapidly building faster networks to compete. So, Comcast could lose customers; to avoid that fate, it'll have to lower prices, affecting revenue or margins either way.")

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Declaration discussed the launch of Google Fiber, which offers broadband speeds of up to 1 Gbps in both directions.108 Evidence since that declaration has confirmed Google Fiber's success. In Kansas City, one of the first cities with Google Fiber, survey results indicate Google Fiber's penetration rate has exceeded 50 percent of homes passed, with substantially higher rates in higher income neighborhoods.109 Furthermore, customer satisfaction with Google Fiber has been extremely high; the median score for "likelihood to recommend Google Fiber" is 10 out of 10 (10 = always recommend it) according to a survey.110 Given this success, a recent Bernstein research report concludes: "there are material chances that Google could build a network passing 20 or 30 million US homes and small businesses in the US profitably."111

108 Israel Declaration, ¶ 51.

109 "Google Fiber: How Well Is It Doing in Kansas City," Bernstein Research, May 6, 2014.

110 Ibid.

111 "Google Fiber: Scale Matters – How Large Could It Be? How Fast Could It Grow? Introducing Bernstein's BIGR Model," Bernstein Research, May 7, 2014.

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96. Municipal overbuilds are also potential broadband entrants, and they are supported by the FCC and others. For example, a recent article in Law360 noted:112

Netflix Inc. is throwing its weight behind the effort to get the Federal Communications Commission to override state laws barring or restricting local municipalities from building their own broadband networks . . . FCC Chairman Tom Wheeler, who has repeatedly said that such laws conflict with his agency's statutory mandate to increase consumer access to broadband, has warned that he might use his authority to preempt them.

97. In addition, in a recent speech Chairman Wheeler could not have been much clearer: "Where greater competition can exist, we will encourage it… where meaningful competition is not available, the Commission will work to create it."113 One would expect that Comcast heard this message and thus would consider the possibility of Commission action before taking any post-transaction actions to harm broadband competition or edge providers.

98. To be clear, I am not claiming that Google Fiber, municipal broadband offerings, or other such providers are alternatives for a large percentage of Comcast broadband customers today. Although these competitors are relevant in certain markets, their current footprint remains limited. Instead, the threat to Comcast comes from the long-term strategies of these potential entrants or expanders. These entrants are entities with a

112 Bill Donahue, "Netflix Jumps Into Fight Over City-Run Broadband," Law360, September 3, 2014. See also, e.g., Masha Zager, "Number of Community FTTP Networks Reaches 143," Community Broadband, August/September 2014, available at http://bbcmag.epubxp.com/i/374665, site visited September 9, 2014, 10-14.

113 Wheeler Remarks, 6.

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vested interest in ensuring that broadband remains competitive and that broadband offerings continue to improve—Google to support its various businesses, as perhaps the most prominent edge provider, and municipalities to support local economic growth and attract businesses to the community.114 As such, if Comcast fails to continue to upgrade its broadband service or degrades the quality of its service by harming edge providers, it would face a heightened risk that these providers would enter or expand to thwart such efforts. Moreover, to the extent that any actions by Comcast were to degrade its broadband service, the evidence presented above indicates that this would cause many customers to wish to switch providers. If those customers do not have good competitive alternatives—as some commenters allege—this would create a source of potential profits

114 See, e.g., Jon Brodkin, "AT&T: Cities Should Never Offer Internet Service Where ISPs Already Do or Might Later," Ars Technica, September 2, 2014, available at http://arstechnica.com/business/2014/09/att-cities-shouldnt-offer-broadband-where-private-isps-already-do-or-might-later/, site visited September 11, 2014 ("Community broadband isn't widespread, but local governments have sometimes built their own networks when service offered by private ISPs was too slow, expensive, or both."); Heather Bellini, Jason Armstrong, Drew Borst, Brian Baytosh, and Dan Pelligrini, "Google Fiber – Build or Bluff," Goldman Sachs, June 28, 2013, 1 ("Fiber's vastly greater speeds have the potential to drive more processing to the cloud and accelerate HTML5 adoption . . . These last two moves could serve to cement Google's dominance as a provider of enhanced web-services on both mobile devices and PCs . . . Google is ultimately indifferent to whether it or incumbent broadband providers deliver fiber-optic internet speeds since either case supports the company's vision of an open, services-based web."); Jon Brodkin, "Fed up with Slow and Pricey Internet, Cities Start Demanding Gigabit Fiber," Ars Technica, November 22, 2013, http://arstechnica.com/business/2013/11/fed-up-with-slow-and-pricey-internet-cities-start-demanding-gigabit-fiber/, site visited March 13, 2014 ("Louisville government officials believe, as many other municipal officials in US cities do, that fiber networks are crucial for attracting and retaining businesses, which increasingly need copious amounts of bandwidth to remain competitive.").

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for new entrants, increasing the likelihood that broadband investments would be profitable. The success of existing Google and municipal efforts, even if in only a few markets to date, means these are not threats Comcast can simply ignore.115

99. Notably, Dr. Evans supports the view that Comcast will consider medium-/long-term entry threats in assessing its strategy today. In particular, he argues that Comcast may attempt to harm OVDs today in order to deter long-term broadband entry.116 Dr. Evans and I agree that long-term entry decisions by potential broadband providers influence Comcast's decisions today, but we reach opposite conclusions on the implications. To understand why my version is correct, one simply needs to recognize that Google and/or municipalities would step in to prevent Comcast from impeding broadband competition and OVD development and that firms like Google would take advantage of the ability to steal dissatisfied Comcast customers to enter and expand profitably, a possibility supported by industry observers. To believe Dr. Evans' version, one would have to believe that (i) Comcast has the ability to thwart the development of the OVD industry and (ii) seeing Comcast doing so, Google, municipalities, and others would reduce their efforts to enter and expand and choose simply to let this occur. As

115 Comcast has recognized this threat in its internal documents (see, e.g., [[ ]]). Comcast's reaction to the threat has also been documented by third parties (see, e.g., Karl Bode, "Comcast Fights Google Fiber in Provo with New Pricing," DSLReports.com, August 15, 2013, available at https://secure.dslreports.com/shownews/Comcast-Fights-Google-Fiber-in-Provo-With-New-Pricing-125390, site visited September 11, 2014 .

116 See, e.g., Evans Declaration, ¶¶ 178-179.

already discussed, point (ii) is implausible. Point (i) may be even more implausible. Comcast would need to prevent the development of successful OVDs by powerful firms like Google, Apple, Amazon, Netflix, Sony, and others.117 And it would have to do so despite having recently agreed to a long-term interconnection contract with Netflix (thus protecting Netflix from foreclosure), and despite the fact that firms like Google, Apple, Amazon, and Sony all view OVD offerings as a way to support other parts of their core businesses. I discuss Comcast's lacks of incentive and ability to foreclose OVDs in more detail in the next section.

Netflix and Amazon are, of course, already highly successful OVDs (see, e.g., Richard Greenfield, "HBO's Amazon Agreement Illustra
Netflix Is a Competitive Media Brand, Amazon Is Not … for Now," BTIG Research, April 24, 2014, available at
http://www.btigresearch.com/2014/04/24/hbos-amazon-agreement-illustrates-netflix-is-a-competitive-media-brand-amazon-is-not-for-n
site visited September 1, 2014 ("HBO fears Netflix's growing industry power. We suspect HBO wanted to balance Netflix's growing m
industry hegemony by helping to bolster their largest direct-to-consumer, SVOD competitor – Amazon."). Sony's ongoing efforts to de
and launch an OVD service are well documented in the public domain (see, e.g., note 127 of this declaration, which indicates that Viac
will be providing "22 channels to Sony's upcoming virtual pay-TV service."). Regarding Apple's OVD plans, it was recently reported t
"[f]or several months now, rumors have continually suggested Apple is working on a new television product, which may be an updated
top box with capabilities like support for games and apps and expanded access to television content." (See Juli Clover, "New Apple TV
Likely Delayed Until 2015 Due to Negotiation Difficulties," July 30, 2014, available at
http://www.macrumors.com/2014/07/30/apple-tv-launch-delayed/, site visited September 11, 2014).

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IV. COMMENTERS' FORECLOSURE-BASED THEORIES OF HARM ARE WITHOUT MERIT

100. Some commenters allege that post-transaction, Comcast would intentionally degrade (or deny) OVD access to the combined firm's broadband network (or other assets)[118] in order to weaken OVD competition. For example, Dr. Sappington states that Comcast has an "arsenal of weapons" to "reduce the quality of competing OVD services, as perceived by Comcast's broadband customers."[119] Dr. Evans concludes that "Comcast has the ability and incentive to degrade significantly the quality of service that its subscribers obtain from an OVD" and that Comcast's incentives to foreclose OVDs are heightened because, among other reasons, "its subscribers are likely to increase their viewing of Comcast video content if they cannot view content from OVDs."[120]

101. In the economic literature, such a theory is known as "foreclosure." In basic terms, the theory is that a firm may be able to leverage market power in one market (the "primary market") to foreclose competition in a second "adjacent market."[121] In some

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118 I note that, as a general matter, foreclosure could take the form of reducing OVD access to broadband customers or limiting OVD access to NBCUniversal content. Comments mainly focus on the former, but much of the logic described below applies to both and the conclusion is the same: The combined firm would lack both the ability and incentive to foreclose OVDs.

119 Sappington Declaration, ¶ 30.

120 Evans Declaration, ¶¶ 91, 117 [emphasis added]. See also, e.g., Farrell Declaration, ¶¶ 78-86.

121 Patrick Rey and Jean Tirole (2007), "A Primer on Foreclosure," in Handbook of Industrial Organization, Volume 3, Mark Armstrong and Robert Porter, eds., Amsterdam: Elsevier (hereinafter, Rey and Tirole (2007)).

cases, the foreclosure takes the form of "tying," in which sale of a firm's product in the adjacent market is "tied together" with sale of a product in the primary market, in order to drive competitors out of the adjacent market. The theories advanced in this case are quite similar to tying—if Comcast can prevent OVDs from using its broadband network then Comcast customers would have to use Comcast's various video services (e.g., its traditional linear video services, perhaps combined with non-linear options such as VOD), effectively tying those services to Comcast's broadband and thus, if the effort were successful, leveraging Comcast's position in broadband to drive out OVD competition.

102. For a theory of vertical foreclosure to make sense, the firm engaging in the foreclosure strategy ("the foreclosing firm") must have both the ability and the incentive to foreclose the "target."122 The ability to foreclose generally requires that the foreclosing firm has sufficient scale and market power to drive the target out of business (or prevent it from entering in the first place).123 The incentive to foreclose requires that the strategy will sufficiently benefit the foreclosing firm in the adjacent market to make up for the loss incurred in the primary market. For example, under commenters' foreclosure theory that

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122 Note that Dr. Evans himself uses this "ability and incentive" formulation in the quotation above.

123 In theory, one could also consider strategies to weaken the competition without driving them out of the market, but if competitors are not driven from the market but rather just weakened, this may simply cause them to become intense price competitors, generally not a good outcome for the firm engaging in foreclosure. See, e.g., Rey and Tirole (2007), 2185. In the present case, this could be a particularly bad outcome for Comcast, as weaker OVDs may also reduce their purchases of NBCUniversal content.

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the combined firm would restrict OVD access to its customers, one would need to show both that this could significantly weaken OVD competition (ability) and that Comcast's gain from so doing would offset the (likely significant, based on the analysis in Section III.C) reduction in broadband profits (incentive).

103. Although economic theory is clear that a coherent foreclosure theory requires that the combined firm have both the ability and the incentive to foreclose OVDs, I show in this section that the combined firm would actually have neither. In particular, available evidence indicates that the transaction would not provide the combined firm with the ability to harm OVD competition to any significant degree, and an analysis of both Comcast's behavior (and thus revealed preferences) and the complementary relationship between the OVD and broadband businesses demonstrates that it does not have the incentive to engage in foreclosure.

A. The combined firm would lack the ability to foreclose OVDs

104. For several reasons, the combined firm would lack the ability to foreclose OVDs. Many of these reasons make use of the evidence presented in Section III on the constraints that edge providers, customers, and emerging broadband alternatives place on Comcast; others are unique to theories of vertical foreclosure.

105. First and most basically, as explained above, Comcast lacks the ability to deny OVDs access to its network without enormous disruption to its Internet service. Comcast's commitment to the Open Internet rules (vis-à-vis the last mile) and the competitiveness of the Internet backbone means that any efforts to degrade edge provider access would have to occur at interconnection points between the two. But, as explained in Section III.B, OVDs (and edge providers generally) can rely on one or more transit

providers or CDNs, which pool their traffic with the content from many other edge providers, to deliver their content to Comcast or other ISPs. Hence, to deny (or significantly impair) access to a particular OVD, Comcast would have to deny (or significantly impair) access to all (or at least most) major CDNs and transit links, else the OVD could rely on those alternatives to reach the Comcast network. Denying or significantly impairing access to multiple routes would be a hugely costly step for Comcast, greatly limiting its customers' access to much of the Internet's content. Notably, Netflix's recent disputes with Comcast occurred only after Netflix chose to stop using third-party CDNs and to limit its massive traffic to six transit providers.124 And, even in this case, Netflix and Comcast eventually agreed to terms for direct interconnection, with Netflix now protected from foreclosure for the next {{ }}.125

106. Second and more generally, the idea that Comcast could foreclose the set of OVDs that already (or will soon) exist is beyond credibility. At this point, the leading OVDs are far from small start-ups that might be driven out of the market; many are extremely large, well-established firms, several with market capitalization that exceeds

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124 Declaration of Ken Florance, Attachment to Petition to Deny of Netflix Inc., August 25, 2014 (hereinafter, Florance Declaration), ¶¶ 30-50; McElearney Declaration, ¶¶ 23-24 and 36-42.

125 See Letter from Kathryn A. Zachem, Comcast Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 14-57 (Sept. 17, 2014) (enclosed documents on CD-ROM); Letter from Matthew A. Brill, Latham & Watkins, LLP, Counsel to Time Warner Cable Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 14-57 (Sept. 17, 2014) (enclosed documents on CD-ROM).

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Comcast's.126 Examples include Google, Amazon, Sony, Apple, Netflix, and Dish Network.127 Moreover, as noted above, many of these are firms for which OVD service supports fundamental parts of their business, including search and related services and ad revenue for Google, the overall sales platform and "Prime" service offered by Amazon, hardware sales by Apple, and so on. It is not credible that Comcast could drive these firms out of the market.

107. Third, the lack of credibility of a successful foreclosure strategy is heightened by the fact that, in practice, the ability to foreclose OVDs effectively requires the ability to foreclose all OVDs. If some combination of the powerful and/or contractually protected OVDs listed above were to survive, any foreclosure efforts by Comcast would at most affect only additional OVDs beyond the core set. A primary effect of such partial

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126 Comcast's market capitalization at market close on September 10, 2014, was $147 billion compared to $153 billion for Amazon, $401 billion for Google, and $605 billion for Apple (WolframAlpha, available at http://wolframalpha.com, site visited September 11, 2014).

7 See, e.g., Daniel Frankel, "Viacom to deliver channels to Sony's new OTT service," FierceCable, September 10, 2014, available at http://www.fiercecable.com/story/viacom-deliver-channels-sonys-new-ott-service/2014-09-10?utm_medium=nl&utm_source=interna site visited September 10, 2014 ("Viacom has struck a deal to provide 22 channels to Sony's upcoming virtual pay-TV service . . . Viacom has agreed to provide live-streaming access to leading channels such as BET, Comedy Central, MTV and Nickelodeon, as we as TV Everywhere authentication and video-on-demand rights. It's the first major announcement relating to Sony's secrecy-shrouded over-the-top service since it was first announced in January . . . In what is shaping up to be a rival OTT pay-TV initiative, Dish Network has secured similar digital rights to Disney and A&E Networks programming for its own upcoming OTT service."). See also e.g., "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 13.A.2., 32-3 which includes a list of potential OVD entrants.

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foreclosure would be to benefit the core, existing set of OVDs, who would likely capture many of the customers departing other, foreclosed OVDs. As such, Comcast would bear the costs of a strategy that would largely benefit other OVDs. Such a strategy is unlikely to be profitable.

108. Fourth, following the "open field" logic that the Commission has used in other settings,128 the pool of non-Comcast/TWC broadband customers in the marketplace provides more than sufficient scale for an OVD to succeed even if (counterfactually) that OVD had no access to the combined firm's customers. In particular, even if one considers only domestic customers—obviously an overly narrow view given that OVDs are generally global—and even if one assumes that the combined firm would "control" its customers—an incorrect view given their available alternatives and demonstrated willingness to switch—there are still plenty of other broadband customers to support an OVD, making a foreclosure theory implausible.

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128 I note that I am not evaluating or endorsing this logic but rather investigating how it applies to the present setting. See Fourth Report & Order and Further Notice of Proposed Rulemaking, In the Matter of The Commission's Cable Horizontal and Vertical Ownership Limits; Implementation of Section 11 of the Cable Television Consumer Protection and Competition Act of 1992; Implementation of Cable Act Reform Provisions of the Telecommunications Act of 1996; Review of the Commission's Regulations Governing Attribution of Broadcast and Cable/MDS Interests; Review of the Commission's Regulations and Policies Affecting Investment in the Broadcast Industry; Reexamination of the Commission's Cross-Interest Policy, MM Docket No. 92-264, MM Docket No. 92-264, CS Docket No. 96-85, MM Docket No. 94-150, MM Docket No. 92-51, MM Docket No. 87-154, December 18, 2007, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-07-219A1.pdf, site visited September 19, 2014. I also note that the D.C. Circuit reversed this order in Comcast Corp. v. FCC (2009) (Comcast Corp. v. FCC, 579 F.3d 1, 9 (D.C. Cir. 2009)).

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109. Table 5 provides the numeric support for this conclusion. In particular, the table compares customer levels that have proven themselves to be sufficient for viability in various analogy cases to the number of customers available to an OVD that (counterfactually) did not have access to Comcast and TWC customers. In particular:

- Lacking direct data on the number of customers an OVD needs to succeed, the table considers a wide range of possible benchmarks, including the threshold the Commission has used for required scale in the MVPD context, the number of customers currently served by a range of successful premium channels and MVPDs, and Netflix itself.

- To determine the number of customers available to an OVD, the table relies on the existing 3 Mbps broadband definition. Whatever one's view on the definition of "broadband," Netflix has stated publicly and demonstrated that it can provide video at broadband speeds as low as (or lower than) 3 Mbps, making this the relevant threshold for considering customers available to an OVD.129

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129 See Netflix Internet Connection Speed Recommendations, available at https://help.netflix.com/en/node/306, site visited September 12, 2014. See also Michael Nathanson, Robert Fishman, and Andrew Izaguirre, "Netflix: The Law of Large … and Small Numbers," MoffettNathanson, February 26, 2014, 3 ("When we first launched on the company, we made the underlying assumption that Netflix's addressable U.S. universe was tied to the underlying U.S. broadband market excluding the homes where broadband is sourced by slower DSL technology. However, in thinking about the addressable universe further (and discussing usage trends with internet-connected device manufacturers), we are revisiting our initial assumption that excluded DSL from these penetration curves. It would appear that the DSL user experience is still acceptable for streaming Netflix at lower speeds and, as such, we need to revise the underlying U.S. addressable market for broadband.")

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110. As seen in the table, when counting wireless customers, the benchmark cases are always less than 30 percent and generally less than 20 percent of the "open field" of non-Comcast/TWC broadband customers. Even without counting wireless customers (something that is becoming increasingly hard to justify given OVD focus on this segment, as explained above), the benchmarks are substantially below (generally less than half of) the open field.

Table 5: Providers' Scale Compared to Non-Comcast and TWC Broadband (Residential + Commercial) Customers Nationwide (2012, HSD Speed of 3 Mbps/768 Kbps)

111. For completeness, Table 6 presents the overly conservative results based on a 10 Mbps threshold. The benchmarks continue to be smaller than the "open field," and in most cases, substantially so.

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Table 6: Providers' Scale Compared to Non-Comcast and TWC Broadband (Residential + Commercial) Customers Nationwide (2012, HSD Speed of at Least 10 Mbps Downstream)

112. In sum, the "open field" is more than sufficient to support an OVD's business without any customers from the combined firm. This conclusion holds even though this analysis has considered only the domestic market. In fact, the footprints of OVDs such as Netflix, Google, Amazon and others are clearly global, with global markets rapidly becoming as or more important than the US. For example, Netflix ended the second quarter of 2014 with 13.8 million international subscribers, a 78 percent increase over the second quarter of 2013. That represents 27.6 percent of its total subscribers. This month (September 2014) Netflix is launching in Germany, France, Austria, Switzerland, Belgium, and Luxembourg, markets with more than 60 million broadband households. Executives say the move will "raise our current international addressable market to over

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180 million broadband households, or 2x the number of current U.S. broadband households."130 Over the longer term, estimates indicate that the "company will have nearly 104 million subscribers globally by 2020."131 It is implausible to think that a cable provider covering a subset of the US could foreclose an OVD with large and growing global operations.

113. Fifth, as documented in Section III.C, it is simply false that Comcast "controls" its customers. As commenters have shown, the typical Comcast customer has at least one broadband alternative, more in some cases, particularly when growing wireless options are included.132 Furthermore, the vast majority of surveyed broadband customers indicate they would switch providers if their provider attempted to downgrade access to edge providers, even if that meant switching to a lower speed alternative, including DSL or wireless. And roughly {{ }} of Comcast's broadband customers do churn every year. As such, it is incorrect to model Comcast as a monopolist that "controls" its customers; the vast majority of such customers have alternatives, and thus the "open field" of customers

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ed Hastings and David Wells, Netflix Letter to Shareholders, July 21, 2014, available at
p://files.shareholder.com/downloads/NFLX/0x0x769748/9b21df7f-743c-4f0f-94da-9f13e384a3d2/July2014EarningsLetter_7.21.14_fin
e visited September 18, 2014 [emphasis added].

rankel, "Netflix Euro rollout puts it on track to 100M-plus international subs by 2020," FierceCable, September 22, 2014, available at
ww.fiercecable.com/story/netflix-euro-rollout-puts-it-track-100m-plus-international-subs-2020/2014-09-22?utm_medium=nl&utm_sour
ed September 22, 2014.

132 Evans Declaration, § II.C and Table 2; Farrell Declaration, § III.E.

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for an edge provider certainly includes Comcast's own customers, further demonstrating that the combined firm lacks the ability to foreclose OVDs.133

114. Dr. Evans' Table 7 appears to be an attempt to refute the above two points, as he uses it to claim that the ability of "very large" ISPs to harm OVDs increases "dramatically" with ISP size.134 However, notably, Dr. Evans does not claim that the combined firm could actually foreclose Netflix or other OVDs from competing; in fact, he acknowledges that Netflix would still be able to operate even if it did not come to terms with the merged firm.135 Further, Dr. Evans' analysis in Table 7 is flawed because he ignores the fact that Netflix customers have choices among ISPs, and that if Comcast were no longer an option for obtaining Netflix service, some customers would switch to another ISP. Switching to another ISP would harm Comcast, not Netflix. Table 7 also excludes all of Netflix's global operations, a rapidly growing source of revenue and profit for Netflix that Comcast cannot affect, as discussed above.

115. Finally, none of the theories presented by commenters has pointed to any transaction-specific evidence of harm. In particular, no one has presented any evidence

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133 I also note that "Comcast does not unilaterally 'downgrade' the capacity of its interconnection links with counterparties and rarely, if ever, decommissions ports." (See, e.g., "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 73, 193-194.).

134 Evans Declaration, ¶ 140.

135 Id., ¶ 168 and note 123. As noted above in footnote 123, as a matter of economics, a foreclosure strategy that leaves OVDs in the marketplace is unlikely to be profitable, even more so because any reduction in NBCUniversal content purchased by the OVD would be harmful to Comcast.

that the incremental number of customers that Comcast would gain from the transaction (post-divestiture) would make the difference between Comcast having or not having the ability to foreclose customers.

B. The combined firm would lack the incentive to foreclose OVDs, just as the merging parties lack this incentive today

116. Not only does the first necessary condition for a foreclosure theory (ability to foreclose) fail, so does the second necessary condition (incentive to foreclose).

1. The merging parties' behavior reveals that they have no incentive to foreclose OVDs

117. When considering whether the combined firm has an incentive to foreclose OVDs, I start by noting that no commenter has advanced a theory that explains why the transaction would create an incentive that does not, by the same logic, exist for Comcast today. That is, any theory under which the video gains would offset the broadband losses and thus support a foreclosure strategy would also apply to Comcast today. Hence, the actions that Comcast has taken on its own, to date, provide the clearest answer to the question of whether Comcast has an incentive to foreclose OVDs, as suggested by some commenters. And, in fact, those actions demonstrate that Comcast does not have such an incentive.

118. As part of regular business operations, Comcast has engaged in negotiations with various edge providers and their agents over interconnection terms—the most publicized

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being with Netflix.136 The outcome of those negotiations indicates that Comcast has not sought to foreclose Netflix. In particular, as explored in more detail in Section V.A, {{ }}. In its post-agreement communications with Comcast, Netflix agreed that it was not harmed by the agreement.137 This behavior is not consistent with Comcast having an incentive to harm Netflix.

119. Two features of the Comcast-Netflix agreement demonstrate Comcast's lack of incentive to harm Netflix's competitiveness most clearly:

- {{ }}.
- {{ }}.138 {{ }}.

120. Moving beyond just the Netflix agreement, another indicator of the merging parties' lack of intention to harm OVDs comes from {{ }}.

121. {{ }}: 139

- {{ }}.

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136 Despite commenters' inferences to the contrary (Evans Declaration, ¶ 117; Farrell Declaration, ¶¶ 10, 13, 130, and 177), it is not surprising (or indicative of any foreclosure incentives) that Comcast did not put additional interconnection capacity in place until these negotiations were completed and thus the terms for payment for such capacity expansions were resolved. To the contrary, this is an entirely standard process: When additional capacity beyond that contemplated in an existing agreement is needed, a commercial negotiation is required, and once terms are reached, capacity can be added. (See McElearney Declaration, ¶¶ 18, 32).

137 See McElearney Declaration, ¶ 44.

138 Sam Schwartz, Chief Business Development Officer, Comcast Cable, July 22, 2014, interview.

139 The OVDs considered in the sample include {{ }}.

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- {{ }}.

{{ }}

2. Economic theory explains why the merging parties have shown no incentive to foreclose OVDs

122. OVDs are obviously complementary to Comcast's broadband business. As such, Comcast's revealed lack of incentive to foreclose OVDs (pre- or post-transaction) is fully consistent with economic theory. In particular, economic theory is clear that it is generally not profitable to leverage market power in one market to foreclose competition in a closely complementary market, even when competitors produce high-quality and/or low-cost products. As Rey and Tirole explain, firms with market power in a primary market do not want to exclude "low-cost and high-quality varieties" from the adjacent market "since their presence makes its own [primary] product more attractive to consumers."140

123. The basic logic against foreclosure of complementary products is straightforward: The strong competitive OVDs add value and thus grow the overall "pie" of profits

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140 Rey and Tirole (2007), 2182. Note that Dr. Evans himself refers to the possibility of "offsetting factors" that would lessen incentives to foreclose. Presumably he has in mind the harm to broadband profits. Notably the empirical analysis above makes clear that these offsetting factors have eliminated any theoretical incentive to foreclose OVDs. And the theory is also clear. Although Dr. Evans argues vaguely and weakly that because "MVPD and broadband services are not consumed in fixed proportion…the Chicago single-monopoly profit theorem does not necessarily hold," I do not rely on a general reference to that theorem to show there is no incentive to foreclose, but rather demonstrate it for this specific case, including via specific discussion of the import of the negotiation between Comcast and Netflix. (See Evans Declaration, ¶ 176 and n. 131.)

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available to the OVDs and Comcast collectively, and thus Comcast is better off letting them do so and then profiting from this via its broadband business, rather than attempting to foreclose OVD competition and shrinking the overall pie. The simplest version of this theory applies to the hypothetical case where Comcast would seek to foreclose OVD competition in order to enhance its own OVD business—the theory indicates that this would generally not be profitable, as Comcast would be better off letting the competing OVDs grow the overall pie and profiting through its established broadband service. But the logic also applies to a theory that Comcast would foreclose OVDs to drive customers to its traditional video offering. Indeed, in this case, foreclosure would likely be even worse for Comcast's broadband business (since traditional video does not rely on broadband and thus would not prop up its value as OVDs are removed) while (as shown in the CLV calculations in Section III.C.1), above, it would offer limited profits to make up for this loss.141

124. Finally, the fact that Comcast negotiates directly with OVDs (or their agents) completes the point. Bottom line, for those OVDs that grow the overall pie, fundamental economic logic indicates that Comcast and the OVD can always find a "middle ground" that leave them both mutually better off than they would be under a foreclosure

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141 It is also worth noting that such a foreclosure theory would imply that OVDs are in the same market with traditional video. This theory would still involve Comcast harming complementary products (OVDs) in an adjacent market (all video), rather than letting successful OVDs continue to grow and capturing this value via the complementary broadband service.

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strategy.142 And notably this is precisely how Netflix described the outcome of the negotiations in communications with Comcast.143

125. To be sure, Comcast may have incentives to develop strong, in-footprint over-the-top video offerings to compete more effectively with OVDs, though it has not entered that market today in any meaningful way. But such competition is fundamentally different from foreclosure—it is good for the broadband business and, should OVDs respond with their own competitive initiatives, that is all the better for broadband. This is much like the case of Google entering the broadband business; Google may well have anticipated the competitive response from other broadband providers but its core edge provider business benefits from this competitive response. This logic is what makes Google such a strong competitive threat in broadband. And the same logic applies to Comcast in the OVD business—Comcast has incentives to compete aggressively with OVDs, in part because stimulated responses are good for broadband, unlike any attempts at foreclosure.

126. Dr. Farrell advances the hypothesis that Comcast could have an incentive to hurt complementary OVD offerings if, in so doing, it hurts other competitors (e.g., other ISPs

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142 This logic has been long understood in economics, dating back to Nobel Prize winner Ronald Coase. As summarized by another Nobel Prize winner, George Stigler, "Ronald Coase taught us, what of course we should already have known, that when it is to the benefit of people to reach an agreement, they will seek to reach it." (George J. Stigler (1989), "Two Notes on the Coase Theorem," The Yale Law Journal, 99.3: 631-633.)

143 McElearney Declaration, ¶ 44.

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or MVPDs) more than it hurts itself.144 Although theoretically possible, such a hypothesis does not apply to the facts of this case: Harming broadband inputs would harm Comcast more than other ISPs or MVPDs, not less. Comcast has spent tens of billions of dollars to develop its high-quality broadband network, which now offers very high-quality broadband service with speeds up to 505 Mbps, with the quality of this broadband network an important source of competitive differentiation that Comcast uses to win customers.145 The existence of a vibrant OVD sector is complementary to this strategy, as it provides the applications that make best use of Comcast's high-speed broadband network. Moreover, given that, under such a strategy, Comcast would have degraded access to OVDs, it seems far-fetched that angry Comcast broadband customers would then turn to (or increase their use of) Comcast video offerings; rather, it seems more likely that customers would prefer to turn to offerings from other providers. For all these reasons, a strategy to foreclose OVDs by harming their access to the Comcast broadband network would harm Comcast more than the competition. By Dr. Farrell's own logic, this means that Comcast does not have an incentive to foreclose OVDs.

127. Alternatively, one might hypothesize that Comcast would foreclose OVDs in order to benefit itself in some largely independent market (rather than one that is complementary to Comcast's broadband offerings). One possible hypothesis would be

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144 See, e.g., Farrell Declaration, ¶ 83.

145 Israel Declaration, ¶ 167.

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that Comcast wants to foreclose OVDs in order to support expansion of its own OVD (or other video) offerings into new geographic markets. However, such a theory does not withstand scrutiny because Comcast has no plans to offer online video offerings outside its footprint Historically, {{ }}.146 Further, Comcast has no plans to extend its geographic footprint by overbuilding another cable operator's territory. Indeed, to my knowledge, no incumbent cable operator has overbuilt another cable operator's territory. As discussed more extensively in Section VII.A, the primary reason that Comcast and other cable companies have not opted to expand into each other's franchise areas is that the fixed costs are too high, causing the return on investment to be either negative or insufficient relative to other strategic options.

128. Alternatively, one could hypothesize that Comcast would have an incentive to foreclose OVDs to protect its NBCUniversal broadcast and cable networks from competition that would reduce their revenues.147 However, this claim also does not withstand scrutiny. First, OVDs do not threaten NBCUniversal to any significant degree. As Netflix as well as other industry participants and analysts have acknowledged, OVDs such as Netflix compete primarily with premium channels like HBO and Showtime, and not with NBCUniversal, which does not offer such premium channels.148 Even more

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146 See, e.g., {{ }}.

147 See, e.g., Sappington Declaration, ¶ 51.

148 See, e.g., Michael Nathanson, Robert Fishman, and Andrew Izaguirre, "2Q Preview: We Interrupt the M&A Show For Earnings," MoffettNathanson Research, July 21, 2014, at 1 ("We believe Netflix will, over time, look like HBO in content offerings, margin, pricing strategy, and, one day, subscriber growth."); Reed Hastings, Facebook post, August 6, 2014, available at https://www.facebook.com/reed1960/posts/10152414721999584, site visited September 1, 2014 ("Minor milestone: last quarter we passed HBO is [sic] subscriber revenue ($1.146B vs $1.141B). They still kick our ass in profits and Emmy's, but we are making progress. HBO rocks, and we are honored to be in the same league."); and according to Netflix's chief content officer, the company's goal "is to become HBO faster than HBO can become us." (See Bryan Bishop, "Netflix wants at least five new shows a year: 'The Goal is to become HBO faster than HBO can become us," The Verge, January 29, 2013, available at http://www.theverge.com/2013/1/29/3930560/netflix-wants-at-least-five-new-shows-a-year-the-goal-is-to-become, site visited June 5, 2014.)

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fundamentally, there are dozens of existing broadcast and cable networks, so the notion that foreclosing OVDs would have a material effect on the profitability of any NBCUniversal network is far-fetched. And finally, this theory ignores the complementarity between OVDs and NBCUniversal content, which arises from the fact that OVDs purchase hundreds of millions of dollars per year in content from Universal studios and NBCUniversal's broadcast and cable networks, and is a source of complementarity that applies to any theory under which Comcast would seek to foreclose OVDs.149

129. In sum, the features of the broadband marketplace, Comcast's observed behavior, and economic theory all confirm that Comcast lacks both the incentive and the ability to foreclose OVDs.

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149 In 2013, NBCUniversal earned {{ }} in revenues from OVDs. (See Comcast data produced in FCC Information and Data Request- Exhibit 19.5(a).)

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V. COMMENTERS' CLAIMS THAT INCREASED BARGAINING POWER WILL LEAD TO HIGHER PRICES TO EDGE PROVIDERS OR THEIR AGENTS ARE NOT SUPPORTED BY ECONOMIC THEORY OR EMPIRICAL EVIDENCE

130. The discussion thus far shows that commenters have advanced no coherent horizontal or vertical theory of harm from the transaction, including no coherent theory of OVD foreclosure. Moving beyond these more standard antitrust theories, commenters also advance "big is bad" claims that increasing Comcast's size—even in the absence of any overlap with TWC—would increase its bargaining power vis-à-vis edge providers or their agents and thus increase its ability to demand higher payments for interconnection.150 Such bargaining theories are distinguished from the (already refuted) foreclosure theories addressed in Section IV in that they do not depend on a claim that Comcast seeks to defend its video business, but rather on a claim that Comcast's increased size post-merger will enable it to demand higher interconnection prices. The higher interconnection prices in such a theory need not occur as part of direct interconnection agreements with edge providers; instead they might be charged to edge providers' agents (e.g., CDNs or transit providers who handle edge providers' traffic). But for such higher prices to even potentially form a coherent theory of competitive harm, a necessary (but far from sufficient, as seen below) condition is that they must result in higher prices to edge providers. In contrast, a situation in which an ISP sets up a direct interconnection

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150 Evans Declaration, § III.E; Farrell Declaration, § VI; Sappington Declaration, § IV.E.2.

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agreement with an edge provider—which may enable the ISP to secure incremental interconnection revenues, but which, due to the efficiencies from disintermediating a previously-used transit provider (e.g., Cogent), enables the edge provider to secure lower quality-adjusted prices than before the agreement—cannot be the basis of a valid theory of harm.

131. In this section, I explain why marketplace realities, economic theory, and empirical evidence—including that presented by commenters, once properly interpreted—all reject this "big is bad" bargaining theory. Then, in Section VI, I explain why even if some outcomes predicted by commenters—including more direct interconnection deals between Comcast and edge providers or, more generally, higher prices to edge providers or their agents—were to occur, these outcomes would not harm competition or consumers.

A. Marketplace realities contradict theories of harm based on bargaining power

132. Perhaps the most striking feature of commenters' discussion of harms due to bargaining power is that they largely focus on allegations regarding Comcast's current size as an ISP and associated market power.151 Of course, claims about Comcast's current bargaining power cannot establish incremental harms from the proposed combination with TWC. But even more telling, if Comcast has such bargaining power today, then

151 Ibid.

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current marketplace outcomes provide a direct test of commenters' theories: Do current marketplace outcomes demonstrate high interconnection prices and limited interconnection options, as one would expect to see if commenters' claims that large size as an ISP parlays into excessive power over edge providers and their agents? The answer is decidedly no.

133. First, the fact that there are over 40 settlement-free paths into the Comcast network demonstrates that having a large number of broadband customers does not parlay into the ability to charge high prices for interconnection services. Indeed, the existence of that large number of paths substantially restricts Comcast's ability to exercise bargaining power on interconnection terms, even post-merger. In particular, if Comcast were to raise the price for only one or a small number of paths into its network, traffic would naturally flow to other paths. And a claim that Comcast could force higher prices on all paths—even though more than 40 are settlement-free today—would depend on an implausibly large and entirely unproven increase in bargaining power over the entire Internet backbone due to the proposed transaction.

134. Second, even where Comcast has entered into paid commercial agreements for direct interconnection, its prices have been very low, generally at or below market prices for transit, which themselves have plummeted over time.152 Consistent with this fact, payments for direct interconnection make up only a tiny sliver of the costs paid by edge

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152 See McElearney Declaration, ¶ 18; see also Appendix III.

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providers and an even smaller percentage of edge providers' revenue (the relevant comparison to assess what effect such charges could possibly have on price, even if fully passed through). Interconnection payments are dwarfed by content costs in particular: As Netflix CFO David Wells recently explained, "I think for Netflix content is our largest cost. It dwarfs all the other costs…."153 Such a pattern is not consistent with a claim that Comcast controls a critical input (direct interconnection into its last-mile network) without which Netflix cannot compete successfully.

135. Table 8 documents the small size of interconnection payments. It shows the interconnection charges paid to Comcast as a percentage of cost of revenue (or cost of sales) as reported by three large edge providers, {{ }}. {{ }}

136. Even more importantly, the payments for direct interconnection from these edge providers are substantially {{ }} their traffic imposes on ISP networks. This comparison is particularly telling because standard theories regarding harm from the alleged exercise of market power involve setting marginal prices over marginal costs, thus inefficiently reducing output. Because Comcast currently charges customers nothing for subscribing

153 "Netflix's (NFLX) CEO Reed Hastings on Q2 2014 Results – Earnings Call Transcript," July 21, 2014, available at http://seekingalpha.com/article/2327585-netflixs-nflx-ceo-reed-hastings-on-q2-2014-results-earnings-call-transcript, site visited September 2, 2014.

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to a given edge provider and little if anything for consuming additional data,154 the marginal revenue associated with an increase in traffic from edge providers comes primarily from the edge provider side of the market. Hence, unless interconnection fees are above marginal cost, then there is no basis to say that such fees are consistent with a standard market power claim of marginal prices greater than marginal costs.

137. The recent Netflix interconnection agreements provide good examples from which to perform compare direct interconnection prices to associated marginal costs. Based on Comcast's estimates of the network costs incurred to serve Netflix traffic, I calculate the marginal costs (per Mbps) associated with Netflix traffic and compare these costs to the direct interconnection fees paid to Comcast by Netflix (also per Mbps).155 The results show that Netflix's payments to Comcast for direct interconnection are less than {{ }} percent of the marginal network costs that the Netflix traffic imposes on Comcast's network. Similarly, TWC indicates that the price that it is charging Netflix for direct interconnection is below the marginal costs of serving Netflix's traffic "by orders of

154 Although Comcast is experimenting with usage-based pricing in certain markets, the monthly data allowances are high relative to usage and very few customers reach the allowance. For details regarding Comcast's usage-based pricing trials and customer usage relative to the 300 GB/month threshold, see, e.g., "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 59.(iii), 156-161.

155 See Appendix III for the details of this calculation.

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magnitude."156 {{ }} for interconnection are not consistent with the standard market power claim that marginal prices are above marginal costs.

138. The fact that Comcast's prices for direct interconnection are below Comcast's marginal costs for the associated traffic holds not just for Netflix, but also for many other edge providers and their agents. Figure 5 plots Comcast's average incremental costs in the 2014-2017 period {{ }} against the schedule of direct interconnection prices for six major interconnection customers. In all cases the price is far below the marginal cost.
{{ }}

B. Economic theory does not support the claim that the proposed transaction will increase Comcast's bargaining power

139. Although current marketplace realities refute the argument that Comcast's alleged bargaining power leads to excessively high interconnection prices, commenters still allege that the proposed transaction will lead to a harmful increase in the exercise of bargaining power. Of course, no commenter has provided any transaction-specific evidence explaining why acquiring TWC would be the critical addition that would enable Comcast to exercise such bargaining power over interconnection terms, particularly given that

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156 Peter Stern, Executive Vice President & Chief Strategy Officer, TWC, September 3, 2014, interview.

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Comcast and TWC do not constrain one another today. To the contrary, economic theory supports no such conclusion (and as I show in Section V.C, empirical evidence rejects it).

1. The one economic theory in this case that yields a clear prediction of the transaction's effects on pricing to edge providers comes from Dr. Farrell and predicts a price decrease

140. In discussing the effects of increased prices for interconnection services to edge providers (assuming there would be increased prices), Dr. Farrell presents a model that assumes that edge providers would not price discriminate in the prices they charge to customers with different ISPs, meaning that if one ISP were to raise an edge provider's interconnection costs, that edge provider would raise prices to the customers of all ISPs.157 Putting aside whether this model is correct, an implication of its assumption about lack of edge provider price discrimination is that if one of Comcast or TWC charges more to an edge provider, it effectively imposes a tax on the other in the form of higher edge provider prices charged to the other's broadband customers. That tax creates an externality, which the combined firm would internalize post-transaction. In particular, after internalizing the reduced broadband demand that the "tax" imposes on the other firm, the post-transaction firm would have an incentive to reduce prices charged to edge

157 Dr. Farrell actually presents two versions of his "simple price-theoretic" model. Here, I focus on the second version of Dr. Farrell's model, which Dr. Farrell appears to prefer. See discussion in Farrell Declaration, ¶¶ 189-192.

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providers.158 Hence, if Dr. Farrell's assumption about edge provider pricing is correct for even some edge providers, then he has presented the only theory in this case that makes a clear prediction about the transaction's effect on prices to edge providers: It will decrease them.

141. I note that the internalization effect that drives this result is not apparent in Dr. Farrell's articulation of the model only because he effectively assumes it away by assuming that customers react to price changes only by switching firms (the extensive margin), and not by dropping broadband service or downgrading broadband tier (the intensive margin). However, this is not a reasonable assumption. As discussed in Section III.C.2(a), substitution on the intensive margin is likely to be an important phenomenon—if edge provider prices change by a material amount, such that some customers reduce edge provider usage, those customers would surely consider whether they could get by with slower broadband service. Thus, to the extent that higher interconnection fees from Comcast would decrease demand for high-quality TWC broadband products (via their effect on edge provider pricing), Comcast would internalize this effect post-transaction, thus creating an incentive to lower interconnection fees post-transaction.159

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158 In Dr. Farrell's model, this effect arises because the transaction reduces the share of non-firm customers that bear a portion of the price increase, relative to Comcast and TWC standing alone. This creates an incentive for the combined firm to reduce price relative to the stand-alone firms.

159 As an aside, Dr. Farrell concludes that customers benefit from an interconnection price increase in his second model as long as (i.e., as long as the edge provider's pass-through rate is not too much higher than the ISP's). This assumption is likely to hold under any reasonable set of assumptions. For example, if the share () of the combined firm is 40 percent, Dr. Farrell's condition would hold as long as the edge provider's pass-through rate is less than {{ }} the ISP's pass-through rate. If one reasonably assumes both pass-through rates are less than one, the edge provider's pass-through rate would have to be less than {{ }} for the condition to fail. Pass-through rates below {{ }} (implied by a linear demand curve) are not commonly used in practice.

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2. Taken as whole, economic theory provides no basis to conclude that the proposed transaction will generate increased bargaining power for Comcast

142. Moving beyond the implications of Dr. Farrell's specific theory, I note that other economic theories provide no basis to conclude that the proposed transaction will lead to increased bargaining power for Comcast. In the Israel Declaration, I demonstrated that "the economic theory of bargaining provides no basis to conclude that the transaction will increase the bargaining power of the combined firm, relative to Comcast and TWC on their own."[160] Neither Dr. Evans nor Dr. Farrell appears to dispute this point.[161]

(a) Economic theory establishes no consistent relationship between size and bargaining power/outcomes

143. As described in the Israel Declaration, the directional impact of a merger of non-overlapping firms on bargaining outcomes depends on technical conditions describing the

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160 Israel Declaration, ¶ 89.

161 Evans Declaration, note 108 ("It is possible to identify some assumptions under which economic theory would show a different result [from the conclusion that greater size leads to greater bargaining leverage] as Dr. Israel has done."); Farrell Declaration, ¶ 148 ("As Dr. Israel suggests, a theoretical literature on the relationship between size and bargaining leverage suggests that the effect of one party's size on its bargaining leverage depends on the shape (concave or convex) of the function that relates value created to the size of the customer base.")

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shape (concavity or convexity) of the "surplus functions" for each party in the negotiation.162 In particular, if the merger involves non-overlapping buyers, it only leads to increased bargaining power if seller surplus functions are concave (exhibit decreasing returns to scale), as in that case each separate buyer is limited by the decreasing returns that the seller receives in working with an additional (marginal) buyer, whereas the merged firm can negotiate over the more valuable (inframarginal) purchases. In contrast, if seller surplus functions are convex (exhibit increasing returns to scale), each separate buyer benefits by negotiating with the seller only over the more valuable marginal sales, whereas the merged firm also bargains over the less valuable inframarginal sales. The same logic holds (with reference to buyer surplus functions) for a merger of sellers.

144. Hence, in situations such as the one arising in the transaction, in which the merging parties do not overlap, the fact that economic theory makes no systematic prediction on the shape of the surplus functions means that it also makes no general prediction on the directional impact of the merger. Lacking any general relationship, the answer varies from case to case (and perhaps even negotiation to negotiation).

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162 Israel Declaration, ¶ 93.

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(b) Dr. Evans' assertion that the transaction will change the split of the surplus is atheoretical and inconsistent with standard economic practice, including the Commission's established practice

145. Traditional bargaining models—including those that give rise to the concavity/convexity results discussed above—assess the impact of a transaction on bargaining outcomes by evaluating how the transaction shifts the outside options of the negotiating parties.163 By basing inferences on observed changes in outside options, this standard approach permits one to use the economic characteristics of the transaction in question to undertake a fact-based analysis of the likely effects of the transaction on bargaining outcomes. Notably, the Commission itself employed this approach in its analysis of Comcast-NBCUniversal to assess the effect of the transaction on NBCU's programming prices to Comcast's MVPD rivals. The predictions of that analysis were based on the changes in the outside options of the various parties.164 Although there was stark disagreement on the relevant facts and thus predictions, there was no meaningful disagreement on the overall approach.

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163 See, e.g., Tasneem Chipty and Christopher M. Snyder (1999), "The Role of Firm Size in Bilateral Bargaining: A Study of the Cable Television Industry," The Review of Economics and Statistics, 81.2: 326-340 (hereinafter, Chipty and Snyder (1999)), whose model is based on a Nash bargaining model; Ken Binmore, Ariel Rubinstein, and Asher Wolinsky (1986), "The Nash Bargaining Solution in Economic Modeling," The RAND Journal of Economics, 17.2: 176-188. The Commission recognized this same logic in the Comcast-NBCU transaction. See Comcast-NBCU Order, Appendix B, ¶ 37.

164 Technical Appendix, Comcast-NBCU Order, ¶ 36.

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146. As explained above, in the present case, this traditional approach does not support any clear prediction of harm from the transaction. Apparently recognizing this, Dr. Evans turns to an alternative claim that the transaction would change the split of the surplus between ISPs and edge providers.165 However, as the authors of one paper that raised this possibility note, and as I discussed in the Israel Declaration, claims that a transaction will change the split of the surplus are atheoretical and thus make no clear prediction on the effects of a merger on bargaining outcomes.166 Put differently, using such an approach only serves to confirm my main conclusion that economic theory provides no general prediction regarding the direction of merger effects from a merger of non-overlapping ISPs.

147. Likely for this reason, neither the Commission nor those opposing the Comcast-NBCUniversal transaction argued for a change in the split of surplus as a basis for harm. Rather, both Dr. Rogerson in his capacity as an expert testifying on behalf of the ACA and the Commission assumed a 50/50 split of the surplus both pre- and post-merger,

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165 Evans Declaration, ¶ 167.

166 Israel Declaration, ¶ 101; Nodir Adilov and Peter J. Alexander (2006), "Horizontal merger: Pivotal buyers and bargaining power," Economics Letters, 91: 307-311, 310 (recognizing that "a precise relationship between firm size and bargaining power cannot be determined by theory.")

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when evaluating bargaining effects in that transaction, directly contradicting Dr. Evans' proposed approach in this case.167

148. Dr. Evans does provide one specific argument about why the transaction could improve the combined firm's outside option relative to Comcast and/or TWC on its own and thus improve Comcast's bargaining position.168 In particular, he argues that Comcast's size might be positively correlated with its outside option because either (i) "decreased use of OVDs leads to greater consumption of its [NBCUniversal] content"; or (ii) Comcast has made "greater investments than other ISPs in streaming video."169 With respect to the first claim, as discussed in Section IV.B.2, there is no evidence that OVD content is a particularly close substitute for NBCUniversal's programming networks. Rather, statements by OVDs point to closer competition with premium networks like HBO, which NBCUniversal does not offer. And OVDs are primarily buyers of NBCUniversal content, giving Comcast an incentive to favor more OVD competition. With respect to the second claim, Comcast's streaming video is just part of its cable offering and thus does not truly compete with OVD offerings. But, in all events, even if

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167 Technical Appendix, Comcast-NBCU Order, ¶40; William P. Rogerson, "Economic Analysis of the Competitive Harms of the Proposed Comcast-NBCU Transaction," In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licensees, MB Docket No. 10-56, June 21, 2010, 12, 24.

168 Evans Declaration, ¶ 172.

169 Ibid.

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Dr. Evans were correct, this boils down to an efficiencies offense: If Comcast has a superior "streaming video" product than TWC has, TWC's customers will benefit from this service post-transaction. If the scale economies from the transaction lead the combined firm to make further investments to improve this service, this would be a prime example of the scale-based benefits from the transaction. To the extent that such improvements affect Netflix, this would likely occur through the normal competitive process by which Netflix competes for customers, meaning that improvements in the Comcast streaming service would likely induce pro-competitive responses from Neflix and other OVDs. But rather than recognize such direct benefits to consumers, Dr. Evans and Netflix argue that these effects are bad due to alleged second-order effects on the division of surplus in negotiations between Comcast and Netflix.

(c) Dr. Farrell's assertion that ISPs can choose not to bargain jointly is not supported by any evidence and is inconsistent with industry practice

149. Dr. Farrell also offers an alternative view, suggesting that a merger could never decrease a firm's bargaining power because the post-merger firm could choose to bargain separately or jointly depending on which approach is more advantageous.170 I first note that regardless of the merits of this argument, it does not provide any affirmative theoretical support for a claim that a merger of non-overlapping firms will increase a firm's bargaining power due to greater size. Instead, it only makes the defensive claim

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170 Farrell Declaration, § VI.A.2.

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that the merger will not reduce the merging firm's bargaining power, a possibility I have never advanced affirmatively.

150. Moreover, Dr. Farrell presents no evidence in support of his alternative view, which, in fact, is inconsistent with industry characteristics on multiple dimensions. Dr. Farrell does not present a single situation in which an ISP or MVPD has negotiated about distinct portions of its footprint separately. The failure for ISPs or MVPDs to engage in such bargaining is likely due to specific features of bargaining in this industry, including:

- Each side of a negotiation likely has a different view about whether combined or separate bargaining would be better. Dr. Farrell offers no basis to assert why the ISP would be able to dictate to an edge provider (or its agent) that negotiations will be conducted in separate pieces, rather than the standard practice of a single negotiation.

- Negotiating separately is likely to increase transaction costs for both the ISP and the edge provider relative to negotiating jointly, which is likely a large part of the reason why separate negotiations do not occur in practice.

- Even if the ISP attempted to enforce separate negotiations for distinct parts of its footprint, it is hard to see how the ISP could keep the other parts of the footprint out of the negotiation. In particular, if either party saw a way to gain bargaining leverage through an action that would affect the other party throughout its footprint—not just in the areas technically under negotiation—it seems likely that the party would take that action everywhere, whatever the stated limits to the negotiation. In such instances, it is hard to see how the stated limits to the negotiation could be maintained.

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C. Empirical evidence rejects the claim that the proposed transaction will increase Comcast's bargaining power

151. Both Dr. Evans and Dr. Farrell argue that, in the absence of theoretical predictions of the direction of the proposed transaction's effect on bargaining power, one must rely on empirical evidence.171 I agree, and I consider available empirical evidence in this section. But given the lack of any general theoretical prediction of harm, one should closely scrutinize empirical evidence to see if it can support a prediction of harm that applies to the specific case in question. When subjected to proper scrutiny—including controlling for the effect of ISP quality on observed prices—the empirical evidence in this case supports no such prediction of merger harm due to increased bargaining power; in fact, it contradicts this claim.

1. To be informative, empirical work on the size/bargaining power relationship must control for firm quality

152. To provide a basis to conclude that increased firm size leads to greater bargaining power, empirical evidence would need to rule out alternative explanations, including the well-known relationship between firm size and quality. In any study of the effect of firm size on price, one needs to account for the fact that higher quality firms tend to have higher share and higher price. Hence, it is well known that, to be informative, empirical

171 Evans Declaration, ¶ 159; Farrell Declaration, § VI.B.

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analysis must determine whether an observed size/price relationship actually reflects anti-competitive effects as opposed to the effect of higher quality or other factors.172

153. The fact that larger firms tend to be higher quality is not just an abstract possibility; it applies directly to the relevant issues in the present case. Network quality and the quality of interconnection services tend to differ across ISPs of different sizes. Most basically, the smallest ISPs simply do not have backbone facilities, meaning that they generally have to pay someone for transit services. Comparisons between larger ISPs that do offer backbone services—and thus for whom the relevant decision may be between settlement-free interconnection vs. charging for interconnection services—and smaller ISPs, who generally have to pay for transit and at best might hope to get settlement-free terms, are effectively meaningless due to this fundamental difference.173 In effect, the difference in the "quality" of interconnection services offered by these ISPs is so extreme as to render the comparison meaningless.

154. Even among ISPs that do have backbone facilities, I understand there are important differences in network quality and in the quality of interconnection services, with larger ISPs generally offering higher quality. For example:

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172 See, e.g., Peter C. Reiss and Frank A. Wolak (2007), "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," Handbook of Econometrics, Vol. 6A, Elsevier B.V., § 7.4.3.

173 See McElearny Declaration, ¶ 22; Dovrolis Declaration, 13, 25.

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- Evidence cited by Dr. Evans, as well as engineers from Netflix and Cogent, indicates that connectivity to the Internet (as measured by the number of paths between the ISP's network and the broader Internet) plays an important role in the negotiations.174 Greater ISP connectivity to the Internet reduces the costs of direct interconnection with the ISP because of the presence of more interconnection options for edge providers and because of the reduced distance between servers.175 More interconnection points also lead to more efficient interconnection and greater redundancy.176 Figure 6 demonstrates that larger ISPs, including Comcast, tend to have more interconnection points than do smaller ISPs.

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174 Evans Declaration, ¶ 147; Florance Declaration, ¶ 63; Declaration of Henry (Hank) Kilmer, Attachment to Petition to Deny of Cogent Communications Group, August 25, 2014 (hereinafter, Kilmer Declaration), ¶¶ 34, 42-43. See also, McElearney Declaration, ¶ 5 (investments in backbone "enabled Internet backbone providers and edge providers to more efficiently (and cost-effectively) interconnect to our growing network.")

175 John Schanz, Executive Vice President and Chief Network Officer, Comcast Corporation, September 19, 2014, interview.

176 For example, Comcast requires applicants for settlement-free interconnection to "meet Comcast at a minimum of four mutually agreeable geographically diverse [third-party exchange] points in the U.S." (McElearney Declaration, ¶ 7.)

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Figure 6: Comparison of ISP Customer Base to Number of Interconnection Points

- I also understand that other differences across ISPs generate differences in the quality of their interconnection services. Such differences include greater server capacity and more efficient server utilization, which also reduce the costs of interconnection and thus create additional surplus.177 I understand that large ISPs

177 John Schanz, Executive Vice President and Chief Network Officer, Comcast Corporation, September 19, 2014, interview.

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in general (and Comcast in particular) tend to offer higher quality along these dimensions as well.178

155. The fact that network quality matters to interconnection terms seems beyond reasonable debate. Indeed, in describing the "stringent standard" that Cogent uses to determine which networks warrant settlement-free peering, Cogent engineer Hank Kilmer cites "size, geographic scope, capacity, traffic volume and significance," and also specifically calls out "geographic reach and multiple interconnect points," as relevant factors.179 Strikingly, however, Cogent's economist, Dr. Farrell, makes no attempt to control for any of these determinants of settlement-free peering when evaluating the prices that different ISPs pay for interconnection with Cogent. As I show below, controlling for these factors eliminates the appearance of any relationship between an ISP's number of customers and interconnection prices.

2. The analogy to MVPD/content provider negotiations demonstrates that quality differences can explain the observed relationship between size and price

156. As an example of the importance of controlling for quality, I consider evidence from negotiations between MVPDs and content providers. Although they take place in a separate industry, with its own unique institutional features, MVPD/content provider

178 Ibid.

179 Kilmer Declaration, ¶¶ 14, 16.

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negotiations are often used as an analogy for what will happen in ISP/edge provider negotiations as ISPs get bigger.180 Here, I show that, in fact, to the extent one relies on this analogy, it actually demonstrates that quality (and associated surplus) differences can entirely explain differences in observed bargaining outcomes, with no need to resort to (theoretically ambiguous) claims about bargaining power.

157. The key point in the analogy is to note that, similar to the variation in ISP quality, there are also quality differences across MVPDs that lead to variation in the surplus that different MVPDs generate for content providers. Sources of quality variation across MVPDs include, among other things, differences in the advertising revenue per customer that content providers earn when working with different MVPDs due, for example, to variation across MVPDs in efficacy in monetizing advertising on video-on-demand (VOD) or other non-linear platforms.

158. The differences in quality across MVPDs are easily large enough to explain observed affiliate fee differences across MVPDs (Comcast and TWC in particular). In particular:

- I understand that Comcast's initial assessment was that it expects to generate some modest cost savings on these fees, in part by bringing down the rates on existing TWC contracts to the level of Comcast contracts (as well as by making certain

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180 Farrell Declaration, § VI.B.2.

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other adjustments in TWC's programming profile).181 The cost savings are quite small in total, amounting to only {{ }} per year, with the savings phasing in gradually over three years.182 For my purposes, the key implication of this analysis is that—even assuming that all of the savings are a function of contract price differential, as opposed to tier placement, channel lineups, etc.—the difference in average affiliate fee rates between Comcast and TWC is very small on a per customer per month per network basis. Specifically, TWC has a little more than 11 million video customers currently and each customer has on average access to over 168 video networks.183 These figures imply a difference between the per-network average affiliate fees of Comcast and TWC of only approximately {{ }} per customer per month.184

- Given that Comcast and TWC almost surely generate at least somewhat different surplus per customer for content providers, this tiny difference in affiliate fees is

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181 I understand that the actual size of the realized gains will depend on whether the savings are realizable under the contracts, but that does not affect my conclusions regarding the size of the price differences between Comcast and TWC implied by the Comcast analysis.

182 Declaration of Michael J. Angelakis, Attachment to Comcast Corporation and Time Warner Cable Inc., Description of Transaction, Public Interest Showing, and Related Demonstrations, April 8, 2014, ¶ 7.

r Cable Reports 2014 Second-Quarter Results", July 31, 2014, available at
arnercable.com/investor-relations/investor-news/financial-release-details/2014/Time-Warner-Cable-Reports-2014-Second-Quarter-Res

site visited September 14, 2014. TWC's average number of video networks per subscriber estimated using Rovi data.

184 That is, {{ }}/[11,011,000 (subs) x 12 (months) x 168 (networks/sub)] ~={{ }} .

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not surprising and does not imply differences in bargaining power. For example, NBCUniversal's own analysis indicates that Comcast creates greater surplus for content providers than TWC, in the form of greater advertising revenue, at least in part because of the higher quality of Comcast's VOD platform including its ad-insertion tools. Evidence from analysis performed by NBCUniversal on a group of video networks indicates that, on average, relative to TWC, content providers earn an additional {{ }} per customer per month per network in advertisement revenues on Comcast relative to TWC.185 Hence, this result illustrates that greater surplus generated for content providers by Comcast is easily of a magnitude that can more than explain the very small estimated differences in affiliate fees across the two companies, with no need to turn to differences in bargaining power.186

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185 Comcast slide deck analyzing advertisement revenues "Ad Contribution Per Sub by MVPD.pdf." I understand that {{ }}. Even if I conservatively assume that the {{ }} savings that Comcast is expected to generate from the transaction similarly stems entirely from the top 50 networks, instead of all of the 168 networks, the per sub per month per network fee difference comes out to {{ }}, which is still below the {{ }} of additional advertisement revenue generated by Comcast.

186 Literature cited by Dr. Farrell does not change this conclusion. (See Farrell Declaration, ¶¶165-171). The FCC staff report (Mark M. Bykowsky, Anthony M. Kwasnica and William W. Sharkey (2002), "Buyer Size and Bargaining Power: An Experimental Analysis," FCC OPP Working Paper No. 35) presents experimental evidence in which participants are presented with bargaining situations in which the number and share of programming distributors varies. The authors find no effect of size on bargaining power at shares greater than 12 percent.

George S. Ford and John D. Jackson (1997), "Horizontal Concentration and Vertical Integration in the Cable Television Industry," Review of Industrial Organization 12.4: 501-518 and Gregory S. Crawford and Ali Yurukoglu (2011), "The Welfare Effects of Bundling in Multichannel Television Markets," American Economic Review 102.2: 643-685 only show that prices paid by MVPDs fall with sizes, with no examination of the source of the difference, and thus cannot answer the question posed in this section.

Dr. Farrell's references to the health care literature describe an entirely different industry with different institutional features. As explained above, given that economic theory makes no general prediction on the relationship between size and bargaining power, the answer is highly context-specific, making the hospital industry findings irrelevant to the present case.

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3. Once quality is controlled for, Dr. Farrell's conclusions based on Cogent data are reversed

159. Dr. Farrell presents data on interconnection terms between ISPs (including both cable and telco ISPs) and Cogent and concludes on the basis of this evidence that "the largest ISPs have settlement-free peering while smaller consumer ISPs pay Cogent."187 From this, Dr. Farrell attempts to infer that larger ISPs have greater bargaining power than smaller ISPs.188 However, Dr. Farrell's empirical results support no such conclusion.

160. Most basically, for many ISPs this result is entirely unsurprising and demonstrates only the fact that, as noted above, many smaller ISPs simply do not have backbone facilities, meaning that they generally must pay someone for transit services. No inference of differences in bargaining power can be drawn based on this stark difference in the backbone assets of different ISPs. Among other things, Dr. Farrell's interpretation would suggest that the fact that some large ISPs have built out backbone services, thus

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187 Farrell Declaration, ¶ 175. See generally, Farrell Declaration, § VI.B.3 and Appendix B.

188 Id., ¶ 176.

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increasing the capacity of the overall Internet, is a bad thing, because he interprets resulting price differences as evidence of bargaining power.

161. More generally, in his analysis of interconnection terms, Dr. Farrell makes no attempt to distinguish between the role of bargaining power associated with a firm's size as a broadband provider and other factors, including the quality of ISPs' interconnection services. For the reasons described above, absent sufficient controls for variation in quality across ISPs, his conclusion that "[t]his pattern seems difficult to reconcile with a view that an ISP's size has no systematic relationship with its bargaining power…"189 is nothing more than an unsupported assertion.

162. To test whether Dr. Farrell's assertion is correct—or whether, instead, quality differences rather than bargaining power (based on number of broadband customers) explain the observed price differences—I perform a basic regression analysis using the data reported by Dr. Farrell.190 The results show that, in fact, observed price differences are explained by quality differences across ISPs and that, once such quality differences

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189 Ibid.

190 To perform these regressions, I start from the data that Dr. Farrell reports in Appendix B. I drop those ISPs for which SNL Kagan does not report the number of customers. I also drop {{ }} from my analysis because the {{ }} that Dr. Farrell reports in Appendix B is inconsistent with his statement in paragraph 174 indicating that {{ }}. Because Dr. Farrell has not supplied the code used to calculate the average transit prices, I cannot verify its accuracy. {{ }}. For these two companies, I include customer counts using data from SNL Kagan, the same data source that Dr. Farrell uses. I include the number of private peering facilities that each ISP has from data reported by www.peeringdb.com.

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are controlled for, an ISP's size (measured as its number of broadband customers) has no significant effect on interconnection prices.

163. Table 9 presents the regressions results:

- In Column (1), I simply regress ISP interconnection fees with Cogent (as reported by Dr. Farrell) on the number of ISP customers (in millions). The results indicate that, without controlling for any other factors, increasing the number of ISP customers by one million {{ }}. This is the relationship to which Dr. Farrell's inference refers.

- However, the regression specification in Column (1) controls for none of the differences across ISPs described above. To correct this limitation, I use data reported by www.peeringdb.com to introduce a control for each ISP's number of peering facilities (as described above, the number of peering facilities an ISP has reflects the degree of connectivity the ISP's network has with the broader Internet, an important measure of the quality of an ISP's interconnection services). Where www.peeringdb.com does not report any peering facilities for an ISP, I assume that the absence of any data indicates that the ISP does not have any peering facilities. As described below, I test the sensitivity of the results to alternative assumptions. Of course, an ISP's number of peering locations is likely to be correlated with an ISP's number of customers (see Figure 6), but that is the point of the regression analysis—to sort out whether interconnection prices are driven by the number of broadband customers (the source of the alleged market power that commenters say drive higher interconnection prices) or by measures of interconnection quality.

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- Results with the quality control in place are presented in column (2). They demonstrate that, after controlling for quality, the number of broadband customers has no measureable impact on interconnection prices. With the control for quality in place, {{ }}.

{{ }}

164. In sum, the Cogent data are more consistent with {{ }} based on an ISP's "control" of more broadband customers.191

4. Dr. Evans' analysis of Netflix's interconnection payments is uninformative

165. Although he has not produced interconnection terms at the same level of detail as Dr. Farrell, Dr. Evans claims that "[e]xcluding the largest four ISPs, ISPs have not been able to impose terminating access fees on Netflix. Smaller ISPs have been unable to demand and receive payment. They continue to adhere to the zero price equilibrium."192 For the reasons described below, no coherent theory of harm can be supported based on Dr. Evans' analysis.

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191 I ran several sensitivities on this analysis, all of which confirm my finding that the relationship between ISP size and interconnection fees is no longer statistically significant once one controls for ISP quality. These sensitivities included dropping the observations for which data on the number of connection points are unavailable, treating these same observations as having one (rather than zero) connection point, and including data on {{ }}, based on Farrell Declaration, ¶¶ 173-174).

192 Evans Declaration, ¶ 142.

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166. Dr. Evans' claim is effectively meaningless. It does not establish that {{ }}; only that it pays more to the ISP itself, with which it connects directly. This simply reflects the fact that, as noted above, edge providers have a range of interconnection options, only one of which is direct interconnection with the ISP. The difference Dr. Evans points to is one of form, not substance: The fact that Netflix pays the ISP, rather than some other interconnection provider, does not establish that Netflix pays more in total. Dr. Evans' analysis falls prey to the trap described above; he focuses only on what is charged by an ISP, not on the critical question of whether the edge provider actually pays more as a result.

167. An analogy may clarify the point. If a consumer buys corn directly from a farmer at a farmer's market, he pays more to the farmer than if he buys the corn at the grocery store. But this says nothing about how much the consumer pays for the corn in the two cases (or how much the farmer receives), even though those are clearly the relevant economic questions. Analogously, Dr. Evans' statements say nothing about how much Netflix pays for interconnection in the various cases, only to whom it pays.193

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193 This analogy also highlights another flaw in Dr. Evans' analysis; like Dr. Farrell's analysis, it fails to control for quality. A consumer may happily pay more for corn at a farmer's market if, by eliminating the grocery story middleman, she can get fresher corn. Similarly, I understand that direct interconnection agreements offer benefits like predictability and control, which might explain any increase in price paid by the edge provider, if there were one.

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168. Indeed, Netflix's Ken Florance explains that Netflix always pays to interconnect into an ISP's network no matter which of its methods for delivering traffic it uses. In particular, Mr. Florance describes two methods of delivering traffic in addition to direct interconnection.194 First, with some ISPs (e.g., Cablevision), Netflix might deliver traffic through its own CDN, Open Connect. In this case Netflix "pays for the hardware…, delivery, and maintenance of the appliance," presumably along with the overall costs of running an in-house CDN.195 Second, for many of the smaller ISPs, as well as Charter and CenturyLink, Netflix "uses transit providers to deliver traffic…."196 As explained above, this means that Netflix pays a transit provider rather than an ISP directly; it certainly does not mean that Netflix pays less in total.

169. Absent data to compare the prices Netflix pays to the large ISPs with which it interconnects directly, relative to the prices it pays to transit providers and to the costs it incurs to operate its CDN, Dr. Evans' comparisons say nothing about whether large ISPs capture higher prices than other transit providers, which of these methods is most costly to Netflix, or whether these highly technical distinctions between interconnection methods have any material negative effect on Netflix. Because Dr. Evans has not produced any of his underlying data—including the data on prices and costs that would

194 Florance Declaration, ¶¶ 14-23.

195 Id., ¶ 16.

196 Id., ¶ 23.

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permit an evaluation of Netflix's costs under the different arrangements—his analysis adds no value to the analysis of the proposed transaction. In contrast, the evidence I present in Section VI.A, below, indicates that its agreements for direct interconnection with Comcast and TWC have not harmed Netflix.

170. Finally, Dr. Evans also notes that {{ }}197 However, the fact that Comcast and TWC are known to differ in the quality of their networks and interconnection services renders such a comparison—or any simple comparison of {{ }} that does not account for the quality differences—uninformative, as {{ }}. The fact that Dr. Evans relies on a {{ }} without controlling for quality differences is particularly notable, as Dr. Evans himself recognizes that quality differences are important and that Comcast is ahead of TWC on many important quality metrics.198

VI. POTENTIAL CHANGES IN THE MAGNITUDE OR STRUCTURE OF INTERCONNECTION PAYMENTS WOULD NOT BE HARMFUL TO COMPETITION OR CONSUMERS

171. The discussion thus far has established that neither economic theory nor empirical evidence can establish that the transaction will give Comcast greater bargaining power through which it could impose higher prices on edge providers or their agents. Although this should end the inquiry on this topic, in this section I go on to consider whether

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197 Evans Declaration, ¶ 146.

198 Id., ¶ 57 and Figure 1. Effectively, Dr. Evans' conclusions, while not based on any formal econometric modeling, suffer from omitted variable bias. The regressions that I present in Section V.C.3 illustrate that such an omission leads to an incorrect conclusion.

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possible changes to the structure or magnitude of interconnection payments, which some commenters allege may occur as a result of the transaction, would be harmful.199 In particular, I assess whether either increased usage of direct interconnection agreements between edge providers and ISPs (thus cutting out the intermediaries), or increased payments from edge providers or their agents to ISPs, would harm competition or consumers. In both cases, I explain why the answer is no.

A. Direct interconnection agreements between edge providers and ISPs are not harmful to competition, consumers, or edge providers

172. Recent trends indicate that, with or without the proposed transaction, there may be increased usage of direct interconnection agreements between edge providers and ISPs—cutting out intermediaries.200 This trend (whether or not the proposed transaction has any effect on it) is not harmful to competition or consumers, as evidenced by the lack of harm to Netflix from its recent direct interconnection agreements with Comcast and TWC.

1. Direct interconnection agreements between edge providers and ISPs often represent economically efficient disintermediation

173. To put direct payments from edge providers to ISPs in context, it is useful to recognize them for what they are—the disintermediation of intermediaries such as transit providers and CDNs, which otherwise would sit between the edge provider and the ISP,

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199 Farrell Declaration, § VI; Evans Declaration, § III.F.1; Sappington Declaration, ¶ 60 and note 59.

200 Dovrolis Declaration, 13-14.

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charging one or both of them to connect to the other.201 Direct interconnection agreements (and associated payments, whichever direction they flow) reflect the fact that when both an edge provider and an associated ISP are large enough to have a sufficient Internet backbone presence, they may no longer need such intermediaries. Instead, they may find it mutually beneficial to avoid the cost associated with an intermediary's services (and the associated intermediary profit margins). Such a decision is hardly surprising and not unique to the interconnection context—the economic efficiency of "cutting out the middleman" is well recognized in economics across a wide range of industries. It may not be a good financial result for the intermediary (e.g., Cogent), but it is not a bad outcome for the edge provider (e.g., Netflix) or the ISP (e.g., Comcast), or for competition or consumers.

174. The recent direct interconnection agreements between Netflix and both Comcast and TWC provide examples of such mutually beneficial, economically efficient

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201 See Dan Rayburn, "Here's How the Comcast & Netflix Deal Is Structured, With Data & Numbers," StreamingMediaBlog.com, February 27, 2014, available at http://blog.streamingmedia.com/2014/02/heres-comcast-netflix-deal-structured-numbers.html, site visited September 12, 2014; Dan Rayburn, "Chart Shows Which Content Owners Have Direct Interconnect Deals with ISPs," StreamingMediaBlog.com, May 21, 2014, available at http://blog.streamingmedia.com/2014/05/chart-shows-which-content-owners-have-direct-interconnect-deals-with-isps.html, site visited September 12, 2014; Dan Rayburn, "How Transit Works, What It Costs, & Why It's So Important," StreamingMediaBlog.com, February 24, 2014, available at http://blog.streamingmedia.com/2014/02/transit-works-costs-important.html, site visited September 12, 2014.

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disintermediation. The benefits of the agreement to Netflix are clear. As Mr. McElearney explains, "[the Comcast-Netflix agreement] provides Netflix long-term {{ }}202 Indeed, as Mr. McElearney further explains, Netflix appears to recognize the value of such disintermediation.203 The fact that Netflix benefited from the direct interconnection agreement belies any claim that such agreements and associated payments are anti-competitive or harmful to edge providers or consumers.204

175. Direct interconnection agreements (and associated capacity expansions) also free up capacity that the intermediaries can sell to other transit buyers, to the benefit of edge providers and consumers. Again, McElearney explains clearly:205

Today, the Cogent-Comcast interconnection links are uncongested and the parties' traffic flows are back in general balance, with a ratio of less than {{ }} over those links, and so now back in compliance with the SFI Policy. This means capacity is again available for many third parties who need to reach Comcast's network through this route.

As a matter of economics, such an increase in available capacity is good for Internet consumers, likely leading to lower transit prices and greater output to make use of the

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202 McElearney Declaration, ¶ 43 [emphasis in original].

203 Id., ¶ 44.

204 On this point, it is also worth noting that, to my knowledge, no edge provider other than Netflix has commented in this docket or has come out publicly against the proposed transaction. Certainly firms like Google, Apple, Sony, Amazon, and others have the wherewithal to complain if they felt the transaction would harm their ability to compete.

205 McElearney Declaration, ¶ 41.

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capacity. But it is also economically harmful to Cogent, perhaps explaining why Cogent is unhappy with the transaction.

2. Recent direct interconnection agreements between edge providers and ISPs have had no material negative impact on edge providers' financial performance

176. Recognizing that the recent agreements with Netflix are only one example, they still provide a useful opportunity to see if direct interconnection deals between edge providers and large ISPs have had a material negative effect on edge providers. In fact, no such effect has been observed, and public statements made by Netflix confirm that the direct interconnection agreements did not have a material impact on its margins.206 In fact, analyst reports suggest that, if anything, the direct interconnection contracts should enhance Netflix's profitability.207 Netflix apparently considered the agreement's effects

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206 Netflix CFO David Wells mentioned on the Q2, 2014 earnings call that, "[o]n a short term basis I think there is great assurances in the sense that we've been able to sign these immediate interconnect deals and still able to achieve our margin targets…" Netflix's (NFLX) CEO Reed Hastings on Q2 2014 Results – Earnings Call Transcript," July 21, 2014, available at http://seekingalpha.com/article/2327585-netflixs-nflx-ceo-reed-hastings-on-q2-2014-results-earnings-call-transcript, site visited September 2, 2014.

207 For example, analyst Dan Rayburn states: "This allows Netflix to spend less on delivery, increase their quality, reduce churn do [sic] to streaming issues, and has a direct and positive impact on their bottom line. Show me any company that wouldn't want this, or feel it's an advantage." Dan Rayburn, "Why A Comcast/TWC Merger Is Good For Netflix's Business," StreamingMediaBlog.com, April 30, 2014, available at http://blog.streamingmedia.com/2014/04/netflix-comcast.html, site visited September 2, 2014.

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so minor that it did not discuss the agreement in any of its subsequent filings with the SEC, despite being required by law to disclose factors that materially affect earnings.208

177. To further assess whether the direct interconnection agreements—or the anticipation of the transaction and any associated inferences about future changes to interconnection agreements—has had any negative effect on Netflix or other edge providers, I used standard event study methodology to test the effect of the Comcast/TWC merger rumor, Comcast/TWC merger announcement, and Netflix's direct interconnection agreements with Comcast and TWC on the stock market valuations of Netflix, Google, Amazon, and Apple. In particular, I study whether each company's stock experienced a statistically significant "residual return" (i.e., change in valuation associated with the event net of market and industry effects) on the trading day immediately following the event, and if it did, whether the change in valuation was positive or negative. Based on the results of this analysis, I can infer whether the firm in question was affected directly by the given event and, more generally, whether the market

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anticipated that the event would have either a positive or negative effect on the firm in question (or no effect).

178. I evaluated the following four events:

- Effect of rumored transaction between Comcast and TWC (November 23, 2013) on all four edge providers.
- Effect of announcement of Comcast/TWC merger (February 13, 2014) on all four edge providers.
- Effect of announcement of Netflix Interconnection Agreement with Comcast (February 23, 2014) on Netflix.
- Effect of announcement of Netflix Interconnection Agreement with TWC (August 19, 2014) on Netflix.

179. As shown in Table 10, below, the various events were not associated with negative changes (i.e., statistically significant declines in valuation or stock price) for Netflix or any of the other selected edge providers. These results provide additional evidence that market participants did not expect the transaction to harm edge providers. The results also indicate that Netflix's direct interconnection agreements with Comcast and TWC had no measureable direct negative effect on Netflix.209 As such, these results stand in sharp contrast to any claim that Netflix has been harmed by direct interconnection agreements

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nnounced price increases in the spring of 2014, it mentioned the cost of content but not the cost of interconnection ("A Quick Update C
s," Netflix US & Canada Blog, May 9, 2014, available at http://blog.netflix.com/2014/05/a-quick-update-on-our-streaming-plans.html,
014; Netflix letter to shareholders, April 21, 2014, 5, available at
eholder.com/downloads/NFLX/3102704504x0x745654/fb5aaae0-b991-4e76-863c-3b859c8dece8/Q114%20Earnings%20Letter%204.2
tember 2, 2014).

209 See Appendix IV for further details regarding the methodology used in this event study and the statistical results.

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with large ISPs such as Comcast and TWC, or that such agreements are generally harmful to edge providers' ability to compete effectively.

Table 10: Results from Stock Market Event Study

B. Further shifts toward pricing on the edge provider side of the market would represent an efficient move toward marginal cost pricing and reduced cross-subsidization

180. As explained in Section V, there is no support for the claim that the transaction will lead to higher payments by edge providers or their agents. In this section, I go on to explain that even if interconnection payments by edge providers or their agents

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(collectively, "the edge provider side of the market") were to increase due to the transaction—in contrast to the evidence presented above—this would not be bad for competition or consumers. To the contrary, economic theory and available evidence indicate that any further shifts toward pricing on the edge provider side of the market would in fact be an efficient move toward incremental cost prices and would reduce cross-subsidization on the customer side of the market.

1. ISPs provide two-sided broadband platforms

181. To understand the implications of increased prices to the edge provider side of the market, a bit of economic theory is required. As both Dr. Evans and Dr. Farrell recognize, ISPs run two-sided broadband platforms, which facilitate the interaction of broadband customers and edge providers.210 Customers derive value from interacting with edge providers. Similarly, edge providers derive value from interacting with customers (some of which may occur by selling to advertisers access to these broadband customers).

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210 Evans Declaration, ¶ 38; Farrell Declaration, ¶ 1. For general articles describing the economics of two-sided markets, see Jean-Charles Rochet and Jean Tirole (2003), "Platform Competition in Two-Sided Markets," Journal of the European Economic Association, 1.4: 990-1029; Jean-Charles Rochet and Jean Tirole (2006), "Two-sided markets: a progress report," The RAND Journal of Economics, 37.3: 654-667 (hereinafter, Rochet and Tirole (2006)); E. Glen Weyl (2010), "A Price Theory of Multi-Sided Platforms," American Economic Review, 100.4: 1642-1672 (hereinafter, Weyl (2010)); and David S. Evans and Richard Schmalensee (2014), "The Antitrust Analysis of Multi-Sided Platform Businesses," in The Oxford Handbook on International Antitrust Economics, Volume 1, Roger Blair and Daniel Sokol, eds., New York: Oxford University Press, forthcoming. (hereinafter, Evans and Schmalensee (2014)).

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(a) Overview of two-sided platforms

182. A two-sided (or more generally, multi-sided) market has two distinguishing features:211

- Cross-group externalities:212 The value of the platform to one side of the market increases with the amount of participation and/or usage on the other side of the market.
- The price structure, in addition to the price level, matters: The relative prices that the platform charges to each side of the market impact welfare and profits on each side of the market.213

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211 See Rochet and Tirole (2006) and Weyl (2010).

212 Externalities arise when end-users do not fully internalize the value they produce or the costs they impose on the system. Cross-group externalities (or network effects) arise in many industries, including payment cards, advertising, video gaming, and job matching websites. In the context of the broadband segment, internet access is more valuable to customers the more and higher quality are the available edge provider applications. Similarly, more users with high-quality Internet connections make it more profitable for edge providers to invest in developing content and applications.

213 In order for the price structure to matter (to the welfare and profit on either side of the platform), market participants must not be able to undo the price structure via side payments. If market participants can undo the price structure via side payments, then the price structure is said to be "neutral." This "neutrality exception" does not apply in the present context; among other things, many edge providers have no direct interaction with broadband customers and thus no opportunity for side payments. Dr. Farrell agrees that "[t]his [neutrality] exception almost certainly does not apply to the case for consumer ISPs." (Farrell Declaration, ¶ 27.)

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(b) Seesaw principle and optimal pricing to each side of the market

183. A core principle of pricing in multi-sided markets is the "seesaw" principle, which Rochet and Tirole describe as follows:214

[A] factor that is conducive to a high price on one side, to the extent that it raises the platform's margin on that side, tends also to call for a low price on the other side as attracting members on that other side becomes more profitable.

In the present context, the implication of the seesaw principle is simple: Higher prices to edge providers or their agents for interconnection imply lower prices to broadband customers. And this result is very general: The seesaw principle is present in nearly all models of two-sided markets, including, as described below, the model introduced by Dr. Farrell.215 The principle does not depend on any assumption about market structure or the degree of competition. Thus, as both Dr. Evans and Dr. Farrell recognize, in evaluating pricing in two-sided markets, it is critical to evaluate the impact on both sides of the market, taking into account the fact that higher prices to edge providers or their agents directly imply lower prices to broadband customers and conversely that lower prices to edge providers or their agents directly imply higher prices to broadband customers.216

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214 Rochet and Tirole (2006), 659.

215 Farrell Declaration, § VII. For a more complete discussion of his model, see Sections V.B.1 and VI.B.3.

216 Evans Declaration, ¶¶ 38, 156; Farrell Declaration, ¶ 27.

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184. The question of the welfare effects of a decision to charge more to edge providers or their agents is an example of a long-standing question in economics, concerning the optimal split of pricing between the two sides of a two-sided market, taking the tradeoff implied by the seesaw principle into account. As economists including Dr. Evans have long recognized, as a general matter, the answer depends heavily on the market-specific facts, with no presumption that prices should be higher or lower on one side of the market versus the other.217 Hence, by Dr. Evans' own logic, there is no general theoretical support for a claim that higher prices on the edge provider side of the market (and thus lower prices on the consumer side of the market) would harm welfare.

185. The fact that there is no general presumption that one side of the market should pay while the other should not also refutes blanket assertions by Netflix that it should not have to pay anything to Comcast for direct interconnection simply because Comcast can charge its broadband customers.218 This argument simply assumes, without support, that a particular price structure—in which customers pay to use an ISP's broadband platform to interact with edge providers, while edge providers do not pay the ISP for dedicated access to the platform in order to interact with customers—is appropriate, with no economic

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217 See Evans and Schmalensee (2014) (reviewing various models of pricing in two-sided markets that arrive at different optimal pricing rules depending on the modeling assumptions).

218 Petition to Deny of Netflix, Inc., In the Matter of Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, MB Docket No. 14-57, August 25, 2014, 66.

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support establishing that such a price structure is likely to be socially optimal. As such, there is no economic basis for this position.

2. Features of the two-sided market for broadband services indicate that greater payments on the edge provider side of the market are likely to be efficient

186. Building off both the general principles described above and the economic literature regarding two-sided markets, several specific features of the broadband industry point to the conclusion that, if anything, increased prices charged to the edge providers or their agents are likely to be welfare enhancing (in part because such price increases to edge providers or their agents would tend to lower prices to broadband customers, in a socially beneficial way).

(a) The seesaw principle means that payments by edge providers reduce payments by broadband customers and reduce cross-subsidization of OVD users by non-OVD users

187. Under the most common current pricing structures, ISPs do not price differentially to customers depending on the costs they impose on the network (other than any weak correlation between the average usage in a given speed tier and the price of the tier).219 Hence, all customers (in a given tier) pay a price based on the average usage across all

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219 As noted above, although Comcast is experimenting with usage-based pricing in certain markets, the monthly data allowances are high relative to usage and very few customers reach the allowance.

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users in the tier. An implication of these pricing policies is that non-OVD users (or low-usage customers in general) subsidize OVD users (or high-usage customers in general).

188. Focusing on the case of Netflix in particular, Comcast data indicate that only approximately {{ }} percent of Comcast customers use Netflix.220 Similarly, only approximately {{ }} percent of TWC customers use Netflix.221 And these Netflix users tend to use a disproportionate share of network bandwidth. For example, during peak hours, approximately {{ }} percent of Comcast customers are streaming Netflix, and that usage accounts for 35 percent of peak downstream traffic.222 Thus, because Netflix customers impose relatively large data loads on the network, uniform customer pricing means the majority (non-Netflix users) are subsidizing the minority (Netflix users).

189. Pricing by ISPs to edge providers or their agents can alleviate this cross-subsidization problem. As noted above, an implication of the seesaw principle is that ISP customers will pay less if edge providers or their agents pay more.223 Edge providers may pass on a portion of any interconnection fee to their own customers, but this pass-through necessarily only goes to customers who use the particular edge provider, and thus such

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220 Barry Tishgart, Vice President, Comcast Wholesale, September 15, 2014, interview.

221 Nielsen Total Communications (TCS) Survey Q2 2014.

222 Barry Tishgart, Vice President, Comcast Wholesale, September 15, 2014, interview.

223 Both Dr. Evans and Dr. Farrell acknowledge that the seesaw principle implies lower broadband pricing given increases in interconnection fees. (See Evans Declaration, ¶ 156; Farrell Declaration, ¶ 187.)

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pricing is targeted at the right customers, limiting cross-subsidization by those who watch little online video.

(b) Increased payments by edge providers would permit marginal prices to move closer to marginal costs, yielding economically efficient reactions by edge providers

190. Prices are the mechanisms by which firms cause buyers to "internalize" the costs their actions create. It is a well-established economic principle that the efficiency of market outcomes requires prices to reflect marginal costs.224 Given prices that reflect marginal costs, those that interconnect with the platform (customers, edge providers, or both) can then decide how best to optimize their behavior. If prices are below marginal network costs, customers and edge providers will have an incentive to "over-consume" or "over-provide" data.

191. Under current pricing policies, neither customers nor edge providers face prices that fully reflect the marginal network costs that their actions (and interactions) create. Customer pricing is largely on a per customer per month basis and does not vary with usage.225 Although interconnection fees naturally do have at least some variable

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224 Dennis W. Carlton and Jeffrey M. Perloff (2004), Modern Industrial Organization, 4th Edition, Prentice Hall, at 58, 70. See also, Israel Declaration, note 105 and Stanley M. Besen and Mark A. Israel (2013), "The evolution of Internet interconnection from hierarchy to "Mesh": Implications for government regulation," Information Economics and Policy, 25: 235-245 (hereinafter, Besen and Israel (2013)).

225 As noted above, even where usage-based pricing is in place, the usage level at which additional charges apply is generally set very high, meaning that for most consumers prices do not vary with usage and, in general, the correlation between usage and price is weak.

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component, as described in Section V.A, Comcast's interconnection fees are generally substantially below marginal network costs. Given prices that are below marginal costs, increasing incremental prices to edge providers or their agents, in order to move them closer to marginal cost, would be efficient.

192. Notably, charging prices that more closely reflect marginal costs to edge providers in particular is likely to be efficient. Edge providers can make investments to react to marginal cost pricing in flexible ways. Because such investments are costly, Netflix has a reduced incentive to undertake such investments (or conversely an increased incentive to over-invest in high-quality video even if it generates limited consumer benefits) if it does not internalize the full costs of its actions, including the costs those actions impose on ISPs' networks. For example, Netflix has a variety of options to optimize its traffic, including investing in caching and compression technologies and establishing flexible pricing policies such as premium charges for consumers who stream video during congested periods.226 Such options are not just theoretical possibilities. For example, in Canada, Netflix reduced the data requirements associated with streaming video by two-

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226 "Optimizing the Netflix Streaming Experience with Data Science," Netflix Tech Blog, June 11, 2014, available at http://techblog.netflix.com/2014/06/optimizing-netflix-streaming-experience.html, site visited September 15, 2014. See also, Besen and Israel (2013).

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thirds "with minimal impact to video quality" in response to data allowances used by Canadian ISPs.227

(c) The presence of a small set of very large edge providers supports the efficiency of pricing on the edge provider side of the market

193. Finally, economic theory also indicates that, all else equal, it is generally optimal to charge more to the side of the market which: (i) exhibits greater heterogeneity between the largest "inframarginal" users and the smaller "marginal" users,228 and (ii) derives relatively higher valuation from the interactions facilitated by the two-sided platform.229 Hence, both the extremely large heterogeneity across edge providers and the large

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227 "Netflix Lowers Data Usage By 2/3 For Members in Canada," Netflix US & Canada Blog, March 28, 2011, available at http://blog.netflix.com/2011/03/netflix-lowers-data-usage-by-23-for.html, site visited September 15, 2014.

228 See Weyl (2010). Weyl shows that a two-sided platform facing heterogeneity in user values has an incentive to cater to the preferences of the marginal user on either side, causing it to underprice to the side with more heterogeneity (meaning the side with a bigger gap between the preferences of the marginal and inframarginal users; in the language of economics, the side with a larger Spence distortion). Hence, in such a setting, welfare is generally enhanced if more of the payments can be shifted to the side of the market with greater heterogeneity; here, the edge provider side.

229 See Mark M. Bykowsky and William W. Sharkey (2014), "Net Neutrality and Market Power: Economic Welfare with Uniform Quality of Service," FCC Office of Strategic Planning and Policy Analysis (hereinafter, Bykowsky and Sharkey (2014)). Bykowsky and Sharkey show that the optimal pricing depends on the relative importance, or "willingness-to-pay," of edge providers and consumers for interactions via the ISP's platform. If edge providers have sufficiently high valuations for interacting with customers relative to customers' valuations for interacting with edge providers—as one might expect given the large revenue that some edge providers generate, including from advertisers—and if edge providers' demand is relatively elastic (such that increasing output will not depress their willingness-to-pay too much), then constraining the amount that ISPs can charge edge providers (including for establishing a dedicated access arrangement) tends to diminish welfare.

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valuation that at least some edge providers receive from interacting with consumers point toward the efficiency of greater charges to edge providers (or their agents).

194. First, as Dr. Evans has noted in his academic writings, there is a huge degree of heterogeneity on the edge provider side of the market, with a few large firms dominating Internet traffic and a "long tail" comprising "thousands of blogs and small websites that provide valuable content."230 For example, Table 11, based on data from Sandvine, shows that the 10 largest Internet applications account for approximately 76 percent of total peak-period Internet traffic, with Netflix alone accounting for more than one-third of peak-period Internet traffic. Observed trends indicate that such heterogeneity will continue to grow: There has been a huge shift in traffic toward the largest OVDs over the past few years, creating even more heterogeneity on the edge provider side.231

195. Large providers such as Netflix and Google are likely to derive substantially more value from interactions via ISPs' platforms than do the millions of small websites in the "tail" of the distribution, which in many cases rely on completely different business

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230 David S. Evans (2011), "Net Neutrality Regulation and the Evolution of the Internet Economy," CPI Antitrust Chronicle, 2: 1-9.

231 For instance, Netflix began streaming in 2007 and now accounts for one-third of peak download traffic. See Nate Anderson, "Netflix offers streaming movies to subscribers," Ars Technica, January 16, 2007, available at http://arstechnica.com/uncategorized/2007/01/8627/, site visited September 15, 2014; Sandvine, "Global Internet Phenomena Report: 1H 2014," May 15, 2014, Table 2, available at https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/1h-2014-global-internet-phenomena-report.pdf, site visited September 15, 2014.

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models and do not require direct interconnection. As noted above, economics indicates that, given such heterogeneity, shifting charges toward the edge provider side of the market, including via charges for direct interconnection, is likely to be economically efficient and welfare enhancing.

Table 11: Top-10 Share of Peak Internet Traffic (Sandvine)

196. Moreover, edge providers have pursued a variety of business strategies, a further source of heterogeneity. For example, Table 12 compares the business models of the largest edge providers. Whereas Netflix and HBO derive their revenue almost exclusively from subscription fees, Google (including YouTube) and Facebook derive the vast majority of their revenue from advertising.

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Table 12: Sources of Revenue for Large Edge Providers (Revenue in Thousands)

197. Second, the largest edge providers are likely to derive substantially more value from interactions with customers (including interactions facilitated by direct interconnection) than customers derive from interactions with edge providers. For example, in the case of edge providers like Google, which earn nearly all of their revenue via advertising, prices charged on the customer side of the market cannot incorporate advertisers' willingness to pay for higher quality broadband. In such a setting, economic theory, including models developed by FCC staff economists, indicates that output and welfare will increase with higher fees to edge providers.232 For example, in an environment where an ISP can only price to customers but not edge providers, it will price based on the willingness to pay of those customers. If the willingness to pay of edge providers is substantially higher than that of customers, pricing only to customers will generally lead to sub-optimal output. In such a case, output would increase if the ISP

232 Bykowsky and Sharkey (2014).

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could raise the price to the edge provider side of the market and thus decrease price to customers.233

3. The two-sided pricing model presented by Dr. Farrell supports my conclusion that it is efficient to charge edge providers

198. In Section V.B.1, I described a model of two-sided pricing presented by Dr. Farrell.234 In this section, I explain that Dr. Farrell's model is closely related to other models of two-sided markets and that it supports my conclusion that it is likely to be economically efficient to charge edge providers or their agents.

199. First, I note that Dr. Farrell's model reflects the seesaw principle. In all versions of his model, under reasonable parameter assumptions, increasing the price (t) to edge providers creates an incentive to reduce the price to customers.235

200. Second, I note that Dr. Farrell does not reach any conclusions about overall welfare effects arising from increases in interconnection fees. Instead, he concludes that customers and Comcast are likely to gain while edge providers (and possibly customers of other ISPs) may be harmed. But he provides no mechanism to balance these harms and

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233 Id., Figure 4.

234 See discussion in Farrell Declaration, ¶¶ 189-192

235 This incentive arises for two reasons. First, an increase in is effectively a reduction in the ISP's marginal cost to serve customers (because edge providers cover some of the cost) and, as a matter of economics, the ISP has an incentive to pass a portion of marginal cost reductions on to its consumers in the form of a price decrease. Second, because edge services are a complement to broadband services, an increase in reduces demand for both the edge service and broadband service and creates an additional incentive to lower the broadband price

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benefits and thus no conclusion about overall welfare effects. Thus, although it is obvious why Cogent and Netflix might object to increased interconnection fees, Dr. Farrell provides no evidence to even support a claim that the competitive effects he points to would be harmful (rather than helpful) to consumers and welfare. This stands in sharp contrast to the largely unchallenged benefits from this transaction, which clearly will benefit consumers and welfare.

201. Third, if, as described in Section V.B.1, Dr. Farrell is concerned that interconnection fees impose "taxes" on rival ISPs (assuming edge providers cannot price discriminate),236 then he should also be concerned about cross-subsidization that benefits one OVD at the expense of another.237 Yet, such cross-subsidization is what occurs when one OVD, such as Netflix, imposes marginal costs on an ISP that it (or its agents) does not fully pay for. For example, when an OVD sends traffic onto an ISP's network, that action imposes marginal costs on the ISP. If the OVD (or its agents) do not fully pay for those marginal costs, then (absent usage-based pricing that perfectly accounts for those costs, which does not exist today) that raises the ISP's overall marginal costs of service which are then passed on to all of the ISPs' customers. As such, when Netflix argues that broadband customers, not Netflix or its agents, should pay for the costs of delivering its

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236 Farrell Declaration, ¶ 192.

237 Dr. Farrell's model implicitly assumes that all of an ISP's customers use the edge provider's service (for example, there is no parameter that scales the increase in edge provider price increase by the fraction of the ISP's customers using the service) and thus does not consider any cross-subsidization within an ISP's customer base.

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traffic, they are actually arguing that the users of all other edge providers, including the smallest ones, should pay more to interact with their preferred edge providers in order to subsidize Netflix traffic. Charges to OVDs or their agents that more fully reflect the marginal cost imposed by such traffic reduce such cross-subsidization.

VII.OTHER THEORIES OF COMPETITIVE HARM RAISED BY COMMENTERS ARE WITHOUT MERIT

202. The discussion thus far has refuted all of the core competitive issues raised by commenters with regard to broadband. In this section, I briefly discuss two other claims raised by commenters.

A. A theory of potential competition between Comcast and TWC is not supported by available evidence

203. Dr. Farrell finds it "somewhat puzzling" that cable operators have not expanded by entering into other cable companies' historical franchise territories. He also asserts that approval of the transaction would "make permanent the absence of such competitive expansion between Comcast and TWC."238 Thus, he raises a potential competition theory with regard to the transaction.

204. There is no valid potential competition concern with regard to this transaction. As discussed in Section IV.B.2, neither Comcast nor TWC has plans to overbuild one

238 Farrell Declaration, ¶ 100.

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another's current footprints.239 Indeed, to my knowledge, no incumbent cable operator has ever overbuilt another incumbent cable operator's footprint. Hence, as with all other horizontal aspects of this transaction, Comcast and TWC do not constrain one another today, including via potential competition.

205. The primary reason that incumbent cable operators have not generally overbuilt each other's historical franchise areas is that the fixed costs are too high to be recouped, making the return on an investment either negative or at least not worth it relative to other strategic initiatives. As noted in the Israel Declaration, "[o]verbuilding (i.e., building a network entirely from scratch) in one another's service area would be a significant expense made more difficult to recover by the competitive video and broadband marketplace that already exists."240 In addition to the cost of materials and labor to build a network entirely from scratch, the expense of obtaining permits, rights-of-way, and so on can be very substantial.241 Notably, lower fixed cost alternatives to expansion—such

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239 In addition, as discussed above in Section IV.B.2, neither Comcast nor TWC have current or future plans to enter each other's footprints as OVDs.

240 Israel Declaration, ¶ 115.

241 See, e.g., Federal Communications Commission, "Connecting America: The National Broadband Plan," March 17, 2010, available at http://download.broadband.gov/plan/national-broadband-plan.pdf, site visited March 28, 2014, at 109: ("The cost of deploying a broadband network depends significantly on the costs that service providers incur to access conduits, ducts, poles and rights-of-way on public and private lands. Collectively, the expense of obtaining permits and leasing pole attachments and rights-of-way can amount to 20% of the cost of fiber optic deployment.")

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as expanding distribution of OVD services out of market—have also been considered and rejected, as explained in Section IV.B.2 above.

206. Dr. Farrell is correct that the threat of potential competition can be an important constraint on firms; he is simply incorrect about the relevant source of such potential competition. Contrary to the evidence that Comcast and TWC have no plans to overbuild one another's footprints, there is substantial evidence, presented in Section III, above, that Google is planning broadband entry into additional cities; that telco operators including AT&T, CenturyLink, and others are planning to roll out FTTP in more markets; that AT&T, Dish Network/Sprint, and others are planning expanded fixed wireless offerings; that various municipalities are considering investments in municipal fiber networks, and so on. These entities provide the relevant actual and potential competition constraining any ability for the merging parties to slow their broadband investments or degrade the quality of service offered over those networks.

B. The elimination of one competitive benchmark provides no basis to allege competitive harms from the transaction

207. Some commenters assert that Comcast and TWC serve as competitive benchmarks for each other, and that the elimination of this benchmark could increase the likelihood of anticompetitive behavior.242 Such claims are without basis with regard to the proposed transaction. I am aware of no coherent economic theory or empirical evidence indicating

242 Farrell Declaration, ¶¶ 87-96; Sappington Declaration, ¶¶ 70-71.

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that more benchmarks lead to lower prices and/or higher quality. Competition between firms selling substitute products benefits consumers because competing firms must make attractive offers to consumers (e.g., lower prices and/or higher quality) in order to attract them away from rival firms. Benchmarking has no such systematic effect on pricing incentives. Moreover, to the extent that competitive benchmarks provide any valuable information to consumers, the transaction results in a negligible decrease in the number of available benchmarks, with multiple cable, telco, and other providers continuing to operate.

VIII. CONSUMER BENEFITS ARISING FROM THE TRANSACTION OVERWHELM SMALL, TENUOUS COMPETITIVE EFFECTS

208. In this section, I begin by providing an overview of commenters' claims about consumer benefits. In short, commenters leave the benefits from the transaction largely untouched, and to the extent they present any analysis of efficiencies, it is without merit. I then summarize the substantial benefits for business customers, residential customers, and edge providers discussed in my initial declaration, which are largely untouched by commenters.243 At the end of this section, I show that the magnitude of consumer benefits

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243 I understand that Comcast's analysis indicates that the divestiture transaction will increase the benefits from the Comcast-TWC transaction (see, e.g., "September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request," RFI 80(a).2, 225-226.).

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arising from even a small subset of the consumer benefits from the transaction easily swamps any alleged harms.

A. Commenters' vague claims about consumer benefits provide no basis to reject the importance and likely realization of these benefits

209. Commenters' analysis of consumer benefits from the transaction, to the extent that there is any analysis at all, is either vague or without merit. Generally, commenters do not address the extensive, specific evidence presented in my original declaration, in the declarations of Drs. Rosston and Topper, and by the merging parties in their application. Dr. Sappington does not address consumer benefits at all. Dr. Evans provides an extremely limited assessment of consumer benefits, acknowledging that he is "not expressing any opinion on the efficiency [sic] of the Transaction."244

210. Dr. Farrell raises two issues regarding the consumer benefits. First, he states that my "claim that economies of scale are so significant conflicts with . . . [my] assertion that Comcast and TWC face strong competition in the provision of broadband to consumers."245 He states that, given such competition, "either or both could readily expand their scale and capture any scale efficiencies simply by improving their

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244 Evans Declaration, note 12. Dr. Evans' discussion of consumer benefits is limited to one part of a sentence in ¶ 37 (in which he states that he has "found that their substantive claims concerning . . . efficiencies from the merger are not supported by the economic analysis and evidence they present") and a corresponding footnote with selected citations to the economics and business literature.

245 Farrell Declaration, ¶ 102.

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competitive offerings and thus taking customers from their supposedly many rivals."246 Hence, he concludes that scale-based efficiencies are generally not merger-specific.247

211. Dr. Farrell's criticism is effectively a version of a common criticism of scale-based efficiencies from a merger—that the merging parties should compete to capture the scale benefits, rather than merge. However, in the present case, this argument has two fundamental flaws:

- First, it misses the fact that, unlike most mergers that attract scrutiny, in this transaction the parties do not compete with one another but rather operate in separate footprints. Hence, they cannot compete with one another to capture more scale. And any investments they might consider are "landlocked"—no matter how successful they are, they can capture customers only in their own footprint, thus inherently limiting the revenue available and thus potentially turning many high-cost investments into money losers (negative NPV). Given that the parties have decided that footprint expansion is cost-prohibitive, and given the unchallenged fact from the original Israel Declaration that cross-operator partnerships have proven largely unsuccessful in this industry,248 unlocking the

246 Ibid.

247 Ibid.

248 Israel Declaration, ¶ 128.

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profitability of these investments by scaling them to more territories is a transaction-specific benefit.

- Second, the fact that Comcast faces strong competition does not mean it could "readily expand…simply by improving [its] competitive offerings." To the contrary, as a matter of economics, Comcast is making the investments it can justify, and competing as effectively as it can within its footprint today. Nonetheless, as illustrated by recent actions by AT&T, Google, and others, those investments stimulate a competitive reaction that limits how much share can be gained and thus limits the returns on any investment, particularly as long as those share gains are constrained to be within footprint.

212. Second, Dr. Farrell asserts that my claims about scale benefits are belied by Comcast's and TWC's low customer service scores.249 Despite the fact that I never claimed that Comcast has an advantage relative to other cable companies in customer satisfaction scores, Dr. Farrell devotes substantial attention, including several regression analyses, in an attempt to demonstrate that Comcast does not have such an advantage.250 Of course, the relevant question is the incremental effect of the transaction, and Dr. Farrell does not even purport to show that Comcast's or TWC's customer satisfaction would be lower than it is today because of the transaction. If Dr. Farrell is arguing that

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249 Farrell Declaration, ¶ 103.

250 Id., § IV.E.

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the transaction will harm customer service scores, his data do not support this claim: In the surveys Dr. Farrell cites, the performance of Comcast compared to TWC shows no systematic pattern. Comcast is ranked higher than TWC in the PC Magazine survey and in the 2014 ACSI survey, the same as TWC in the Consumer Reports ranking, and lower than TWC in the JD Power and 2013 ACSI rankings (without taking each survey's margin of error into account).251

213. Furthermore, although largely irrelevant for assessing the central question of the incremental effect of the transaction, Dr. Farrell's attempt to demonstrate an inverse relationship between cable company size and consumer satisfaction is highly flawed. Among other shortcomings, Dr. Farrell's regression analysis generally fails to generate statistically significant results (meaning that he generally cannot reject the possibility of no relationship between cable company size and consumer satisfaction). In addition, his analysis focuses on fairly large ISPs, and thus he excludes many smaller ISPs, the inclusion of which might alter his results. Finally, his analysis does not account for potentially confounding variables, such as the possibility that larger ISPs are more likely to be the subject of negative news reports about customer service, as well as differences in service levels and expectations across ISPs.252

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251 Id., ¶ 105 and Figure 6.

252 I also note that Comcast has experienced recent improvements in its J.D. Power satisfaction rankings. From 2010 to 2013, Comcast's score in the U.S. Residential Internet Service Provider Satisfaction Study improved by nearly 80 points (averaged across all regions), which was a larger improvement than for any other provider in the survey over that same time period. According to J.D. Power, this study "measures customer satisfaction with high-speed Internet service based on five factors: performance and reliability; cost of service; billing; communication; and customer service." (See Press Release, "2013 U.S. Residential Internet Service Provider Satisfaction Study," J.D. Power and Associates, September 26, 2013, available at http://www.jdpower.com/press-releases/2013-us-residential-internet-service-provider-satisfaction-study, site visited September 17, 2014 and Press Release, "2010 U.S. Residential Internet Service Provider Satisfaction Study," J.D. Power and Associates, October 28, 2010, available at http://businesscenter.jdpower.com/news/pressrelease.aspx?ID=2010167, site visited September 17, 2014.).

In addition, in a recent report on Comcast's 2013 fourth quarter performance, industry analyst Craig Moffett observed that Comcast's customer service has "improved by…lightyears" (Craig Moffett, Nick Del Deo, and Cathy Yao, "Comcast Q4 2013 Earnings: Boardwalk Empire," MoffettNathanson, January 28, 2014 [emphasis added]).

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214. Regarding the objective network benefits that I have actually claimed will arise from the transaction—improvements in residential and business network speed and quality, improvements in Wi-Fi networks, improvements in home networking, and so on—such surveys are mostly silent, confounding objective network quality with other subjective metrics and offering no guidance on the transaction's incremental effects. As explained in my initial declaration, objective measures of network quality are an area where Comcast has excelled, and the transaction is designed to bring this quality to the TWC footprint and extend it due to scale economies. For example, as noted in my initial declaration, Comcast has already converted its entire network to all-digital, while TWC has completed the transition in only 17 percent of its footprint, and under current plans expects to reach only 75 percent in 2016.253 Similarly, Comcast has deployed DOCSIS

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253 Israel Declaration, ¶¶ 173-174. An additional 1.25 million TWC customers will be converted to all-digital in Los Angeles in October of this year.

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3.0-capable modems to approximately [[ ]] percent of its customers, relative to [[ ]] percent for TWC.254 Looking forward, Comcast is on track to deliver CCAP technology to about [[ ]] percent of its footprint by the end of this year and [[ ]] percent by 2016, while TWC's plans only contemplate reaching 75 percent of its footprint over the next several years.255 These improvements are reflected in network speeds available to customers. At present, [[ ]] as many Comcast customers are in downstream speed tiers of 25 Mbps or greater as TWC customers.256 Comcast customers also have access to a greater range of digital amenities than do TWC customers. Comcast had more than 725,000 hotspots operating at the end of 2013, twenty times as many as TWC.257

215. The FCC's Measuring Broadband America Report provides additional support for the contention that Comcast ranks highly in terms of network quality. For example, according to the report, Comcast scored the best of all ISPs for download speeds as a percentage of advertised speeds for 1 to 5 Mbps plans and second only to Verizon's fiber-

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254 Id., ¶ 176.

255 Id., ¶ 178.

256 Id., ¶ 168.

257 Id., ¶¶ 192-193. The number of hotspots is growing rapidly, and Comcast expects to reach 8 million hotspots by the end of this year. ("Comcast to Reach Eight Million Xfinity WiFi Hotspots in 2014," available at http://corporate.comcast.com/news-information/news-feed/comcast-to-reach-8-million-xfinity-wifi-hotspots-in-2014, site visited September 17, 2014).

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optic network in the same metric for 25 and 50 Mbps service.258 Comcast was also tied with Cox for the fastest web page load time of all ISPs on the 1 to 3 Mbps tier and second only to Frontier's fiber for 18 to 25 Mbps service.259

B. Commenters fail to address specific analyses of efficiencies arising from the transaction

216. Three main mechanisms drive substantial benefits from the transaction: economies of scale, expanded geographic reach, and sharing of technologies and services. Commenters provide no detailed economic refutation of the comprehensive discussion of these broadband benefits in my initial declaration or the Rosston/Topper declarations. As one notable example, there is no refutation of the significant benefits to business customers. As I described in my initial declaration, the transaction improves the combined firm's ability to serve business customers in at least three ways:260

- First, in the case of businesses whose locations span the footprints of multiple cable operators ("super-regional" businesses), the transaction helps to alleviate the coordination problems that currently plague efforts by cable operators to serve those businesses.

- Second, the transaction combines the complementary skills and products of the two companies and facilitates the provision of higher quality business services.

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258 Federal Communications Commission, "2014 Measuring Broadband America: Fixed Broadband Report," 2014, at 28-30, available at http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf, site visited September 8, 2014 (hereinafter, FCC 2014 Broadband Report).

259 Id., 36 and 38.

260 Israel Declaration, ¶¶ 133-160.

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- Third, as explained above, the combined firm can spread fixed cost investments over a larger group of current and potential business customers, thereby incentivizing new investment and innovation that benefits those business customers.

217. There is also no refutation of the fact that such business benefits would be a catalyst for network expansion and hardening, which would also benefit residential customers.261 Commenters also do not refute the fact that investments made by Comcast or TWC are currently "landlocked" by footprint limitations and that the geographic expansion from the transaction therefore unlocks value for incremental investments and makes more of such investments profitable. Thus, there is no denial of the gains regarding faster access networks (owing to quicker rollout of digital service and DOCSIS 3.0/3.1), expanded broadband and Wi-Fi networks, or improved home network technology, nor the virtuous cycle that such improvements catalyze, which also benefits edge providers.

218. My continued investigation has revealed additional sources of consumer benefits that will accrue to TWC customers. As one example, Comcast is ahead of TWC in technology and procedures to enable self-installations for customers who prefer this option, particularly on the broadband side. In particular, I understand that Comcast has made substantial investments to standardize its products on the network and to develop

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261 For a discussion of benefits to residential customers and edge providers, see Israel Declaration, ¶¶ 161-201.

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the processes that enable customers to activate products remotely.262 As a result of these investments, a large fraction of Comcast customers now choose to self-install broadband equipment. I understand that approximately [[ ]] percent of Comcast's new customer orders chose to self-install their equipment, and the activation success rate among these customers is greater than [[ ]] percent. Furthermore, Comcast has increased the rate of self-installs over time, with the rate increasing from [[ ]] percent to [[ ]] percent in the last four years. Among the benefits of self-installation are:

- Customers have the option (but not requirement) to self-install the equipment, thus saving time that would otherwise be spent waiting for a technician.263
- When customers choose the self-installation option, Comcast saves the costs associated with installation-related truck rolls.
- Perhaps most importantly, extensive use of self-installation is also the reason why Comcast is able to roll out new technologies quickly and efficiently, as evidenced by the fact that Comcast upgraded its network to all-digital two years ahead of the schedule, with 90 percent of the upgrades implemented through self-installs. Hence, technologies like those enabling more self-installation are a part of the reason why Comcast expects to be able to roll out all digital service, as well as

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262 This paragraph relies on an interview with John Schanz, Executive Vice President and Chief Network Officer, Comcast Corporation, June 25, 2014.

263 See http://customer.comcast.com/help-and-support/selfinstall/, site visited September 19, 2014.

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- DOCSIS 3.0 and 3.1 in the TWC footprint faster than TWC would be able to do on its own.

C. Even a highly conservative quantification of a subset of consumer benefits from the transaction swamps any alleged competitive effects

219. A highly conservative quantification of just a subset of the consumer benefits from the proposed transaction illustrates the substantial value to consumers that that the proposed transaction will generate.

220. As seen in Table 13, as of December 2013, the average broadband speed enjoyed by Comcast customers was [[ ]] Mbps versus [[ ]] Mbps for TWC customers.264 Although there may be a number of reasons for this difference, it is likely to be due at least in part to differences in Comcast's and TWC's network infrastructure.265 With the proposed transaction, Comcast has committed to

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264 I calculate customer-weighted averages using data from FCC Form 477. The data report the following ranges: > 200 kbps and < 768 kbps, >= 768 kbps and < 1.5 Mbps, >= 1.5 Mbps and < 3 Mbps, >= 3 Mbps and < 6 Mbps, >= 6 Mbps and < 10 Mbps, >= 10 Mbps and < 25 Mbps, >= 25 Mbps and < 100 Mbps, >= 100 Mbps. For the purposes of this calculation, I have assumed that each household is at the lower bound of the relevant range. The difference between Comcast and TWC is larger if I assume that customers are at the mid-point of the range.

265 See Israel Declaration, § IV.B.3.

Comcast typically automatically upgrades the speed received by customers as the costs of its network decline. (See, e.g., Comcast Corp., Press Release, "Xfinity Internet Performance Tier doubles to 50 Mbps. Blast Tier doubles to 105 Mbps and Extreme Tier moves from 105 Mbps to 150 Mbps," July 31, 2014, available at http://corporate.comcast.com/news-information/news-feed/comcast-increases-internet-speeds-in-california-kansas-missouri-an site visited September 21, 2014.)

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invest hundreds of millions of dollars to improve TWC's network and to realize higher broadband speeds.266 Comcast and TWC have already made substantial progress in working toward implementation of this commitment.267
[[ ]]

221. Even small increases in broadband speeds resulting from these transaction-specific investments will be very valuable to customers.268 For example, a recent paper by Aviv Nevo and coauthors found that a one Mbps increase in broadband speed is worth as much as $5.86 per sub per month (to customers who place the most value on network speed), with an average of $1.76 and a median of $0.87.269 Using the median valuation (which is conservative relative to the average), each one Mbps increase in average speed spread

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266 Description of Transaction, Public Interest Showing, and Related Demonstrations, 28. ("Comcast is committed to putting [the efficiencies and synergies of the transaction] to work to forge a faster path to all-digital systems, higher broadband speeds, more advanced video and voice services, a more secure network, better system reliability, and other benefits to consumers, businesses, and the public interest generally.")

267 See Comcast and TWC, "Comcast – TWC Merger Integration: Integration Summit II," September 4, 2014, Exhibit 88.3, 49-56.

268 Based on the survey results presented in Section III.C.4 and Appendix I, which demonstrate that the majority of respondents would switch to a slower speed provider if access to edge providers were degraded, it is clear that access to edge providers is worth even more than speed, and that speed becomes less valuable if the broadband uses for which speed is most valuable, such as online video, are degraded or blocked.

269 Aviv Nevo, John L. Turner and Jonathan W. Williams (2013), "Usage-Based Pricing and Demand for Residential Broadband," Working Paper (hereinafter, Nevo et al. (2013)), 28. Note that, although significant, these values are also consistent with statements above that reasonable speed differences across firms can be overcome with price differences of the magnitude that are seen in practice, enabling slower speed options to be important competitors.

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across all TWC customers would be worth approximately $95 million per year to consumers.270 Given the gap between the Comcast and TWC networks and Comcast's commitment to bring TWC up to Comcast levels, speed increases of several Mbps for TWC customers seem likely, meaning that this source of consumer benefits alone is worth hundreds of millions of dollars.271 Hence, even small broadband speed gains from the transaction completely overwhelm any theories of harm that commenters have advanced.272 And this is without even counting any benefits to Comcast customers, all the other benefits to TWC customers, or benefits from the virtuous cycle that start when edge providers develop offerings to take advantage of the increased speeds. Moreover, the comparison of benefits to alleged harms becomes even more one-sided in favor of the

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270 After divestitures, the former TWC systems remaining with Comcast will constitute 9.1 million broadband customers. Thus, a one Mbps average increase in broadband speed for all customers would be worth $0.87 per sub per month x 12 months x 9.1 million TWC customers ~= $95 million per year. Because Nevo et al. (2013) estimate a complicated non-linear model, the precise calculations would be more complicated—for example depending on the baseline broadband speed for each customer. Nevertheless, I include this estimate as an illustration of the immense benefits that the transaction will yield.

271 Note that arguments that speed differences are even more important than those listed here, such as some may advance in support of a higher standard for the definition of broadband, would make these consumer benefits even larger.

272 Note that the full consumer value of these speed increases (without deducting any possible price increase arising from the quality improvements) is the appropriate metric to compare to alleged price increases to edge providers. Economic literature makes clear that upward pricing pressure, changes in marginal cost, and the full value consumers derive from changes in quality all can be weighed directly against one another to determine the directional effect of a merger on consumer welfare. (Robert Willig (2011), "Unilateral Competitive Effects of Mergers: Upward Pricing Pressure, Product Quality, and Other Extensions," Review of Industrial Organization, 39:19–38.)

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benefits when one recalls that any alleged "harms" via higher prices to edge providers will actually reduce prices for broadband customers due to the seesaw principle.

222. In sum, then, the large and mostly unchallenged consumer benefits from the transaction easily swamp any potential competitive harms from the transaction, particularly given that commenters have made no attempt to quantify any such harms and that, as shown throughout this report, such harms are unsupported by theoretical or economic evidence and are likely to be extremely small, if they occur at all.

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I, Mark A. Israel, declare under penalty of perjury that the foregoing declaration is true and correct to the best of my knowledge, information, and belief.
Executed on September 22, 2014.

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Mark A. Israel

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APPENDIX I: GLOBAL STRATEGY GROUP'S BROADBAND SURVEY

223. Global Strategy Group (GSG) implemented an online survey of 1,012 adult broadband Internet users from July 10th – 14th of this year. The survey was designed to assess the "likelihood of switching Internet Service Providers if their provider limits Internet speeds, slows down streaming or downloading speeds, or prevents access to certain websites."273

224. The primary findings of the survey are as follows:274

- A high percentage of broadband users are likely to switch to another Internet service provider (ISP) if their current ISP were to take any of the following actions: "prevent access to favorite websites;" "slow down Internet speeds for your favorite websites;" or "slow down Internet speeds for Netflix."

  - The percentage of survey respondents likely to switch to another ISP (without qualifying the type of ISP) if any of the three actions listed above were taken by their current ISP ranges from 79-89 percent for all Internet users; from 83-

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273 Memorandum from Jef Pollock, James Delorey, and Michelle Woodruff, Global Strategy Group to Davis Polk, re: Broadband Survey, July 16, 2014.

274 All figures and tables report weighted results, which are based on GSG's adjustment of the raw data to be representative of the broader adult population of the United States.

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90 percent for heavy Internet users, and from 84-91 percent for frequent streaming video users. (See Figure 7.)275

- o Similar results are obtained when the type of ISP to which respondents would switch is restricted to ISPs with slower speeds or to DSL or wireless providers:

§ The percentage of survey respondents likely to switch to an ISP offering slower speeds if any of the three actions were taken ranges from 71-80 percent for all users; from 72-79 percent for heavy Internet users, and from 75-81 percent for frequent streaming video users. (See Figure 8.)

§ The percentage of survey respondents likely to switch to another ISP using DSL or Wireless broadband technology if any of the three actions were taken ranges from 77-86 percent for all users; from 79-85 percent for heavy Internet users, and from 81-87 percent for frequent streaming video users (See Figure 9.)

- The survey results also indicate that wireless broadband, in particular, is a relevant and highly-used alternative for many customers:276

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275 Note that "likely to switch to another ISP" includes both "very" and "somewhat" likely to switch, and frequent streaming video users are respondents who stream video at least once per month.

276 The survey is careful to avoid confusion between mobile broadband, the subject of the question, and Wi-Fi. To avoid confusion, the text of the wireless usage question in the survey includes the following language: "'Wireless or mobile broadband service' allows you to connect to the internet with a mobile device (this does not include devices that only connect to Wi-Fi). Examples of wireless or mobile broadband service include an AT&T data plan for your smartphone, iPad, or tablet; or a Verizon data plan for your Jetpack mobile-hotspot device

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- Note that the survey requires that a respondent has previously confirmed having access to wireless broadband before answering the questions regarding use of wireless broadband as an alternative, so these results are based on a subset of all respondents (specifically, 683 of 1,012 or 67 percent of all survey respondents).
    - Among those with access to wireless broadband, approximately 42 percent of survey respondents use wireless broadband at least as much as wired broadband for high-bandwidth activities, and 60 percent or more use wireless broadband at least as much as wired broadband for low-bandwidth activities.277 (See Figure 10.)

- The percentage of survey respondents who use wireless broadband at least as much as wired broadband for high-bandwidth activities equals 42 percent for all users; 41 percent for heavy Internet users, and 42 percent for frequent streaming video users.

- The percentage of survey respondents who use wireless broadband at least as much as wired broadband for low-bandwidth activities

277 Note that using wireless broadband "at least as much" as wired broadband includes "always," "most of the time," and "equally both" responses regarding usage of wireless relative to wired broadband.

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equals 60 percent for all users; 62 percent for heavy Internet users, and 62 percent for frequent streaming video users.

Figure 7: Percentage of Survey Respondents Likely to Switch to Another ISP If Their ISP Takes Selected Actions

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Figure 8: Percentage of Survey Respondents Likely to Switch to an ISP Offering Slower Speeds If Their ISP Takes Selected Actions

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Figure 9: Percentage of Survey Respondents Likely to Switch to Another ISP Like DSL or Wireless Broadband If Their ISP Takes Selected Actions

Figure 10: Percentage of Survey Respondents Who Use Wireless Broadband At Least As Much as Wired Broadband, by Activity and Type

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225. The survey results also indicate that a large proportion of respondents have recently switched ISPs, including one-third of respondents within the past two years and nearly half (49 percent) within the past 4 years. Table 14 below summarizes these results. Based on these results, a large percentage of all broadband customers are available for capture by new ISPs over relatively short periods of time.

Table 14: Internet Service Provider Switching Trends

226. Table 15 through Table 18, below, provide more detailed tabulations of the survey results.

227. According to Table 15:

- The percentage of survey respondents likely to switch to another ISP (without qualifying the type of ISP) if any of the three actions listed above were taken by their current ISP ranges from:
  - 54-76 percent for light Internet users
  - 79-91 percent for medium Internet users
  - 83-90 percent for heavy Internet users
- The percentage of survey respondents likely to switch to another ISP offering slower speeds if any of the three actions were taken by their current ISP ranges from:

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- 51-69 percent for light Internet users
- 74-84 percent for medium Internet users
- 72-79 percent for heavy Internet users

- The percentage of survey respondents likely to switch to another ISP like DSL or wireless broadband if any of the three actions were taken by their current ISP ranges from:
  - 59-81 percent for light Internet users
  - 77-87 percent for medium Internet users
  - 79-85 percent for heavy Internet users

Table 15: Cross-Tabulation of Internet Usage Versus Switching

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228. According to Table 16:

- The percentage of survey respondents likely to switch to another ISP (without qualifying the type of ISP) if any of the three actions listed above were taken by their current ISP ranges from:
  - 62-84 percent for users who stream video rarely or never
  - 84-91 percent for users who stream video at least monthly
- The percentage of survey respondents likely to switch to another ISP offering slower speeds if any of the three actions were taken by their current ISP ranges from:
  - 60-78 percent for users who stream video rarely or never
  - 75-81 percent for users who stream video at least monthly
- The percentage of survey respondents likely to switch to another ISP like DSL or wireless broadband if any of the three actions were taken by their current ISP ranges from:
  - 60-82 percent for users who stream video rarely or never
  - 81-87 percent for users who stream video at least monthly

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Table 16: Cross-Tabulation of Video Usage Versus Switching

229. According to Table 17:

- The percentage of survey respondents who use wireless broadband as least as much as wired broadband for high and low-bandwidth activities ranges from:
  - o 46-53 percent for light Internet users
  - o 43-59 percent for medium Internet users
  - o 41-62 percent for heavy Internet users

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Table 17: Cross-Tabulation of Internet Usage versus Wireless Broadband Usage

230. According to Table 18:

- The percentage of survey respondents who use wireless broadband as least as much as wired broadband for high and low-bandwidth activities ranges from:
  - 43-51 percent for users who stream video rarely or never
  - 42-62 percent for users who stream video at least monthly

Table 18: Cross-Tabulation of Video Usage versus Wireless Broadband Usage

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APPENDIX II: ANALYSIS OF EDGE PROVIDER SCALE

231. This Appendix provides details on the calculations underlying the edge provider scale analysis (summarized in Table 5 and Table 6 in Section IV.A, above). It also includes sources and notes to the tables.

232. I cannot observe directly the minimum scale required for an edge provider to succeed. Instead, I examine the size of one large edge provider (Netflix) and a number of potential "analogy cases" from other industries, including premium movie channels (HBO, Showtime, Starz, and Cinemax), as well as MVPDs (DIRECTV and Dish Network) as examples of video distributors.

233. As a reference point, I also include the minimum viability threshold of 19.03 million subscribers articulated by the FCC in its "Fourth Report & Order and Further Notice of Rulemaking" released on February 11, 2008. The document states the following: 278

We also need to decide which characteristics of a network should be taken into account when calculating the survival probability. We use the survival probability for a network that is not vertically integrated and is not a "spin-off" of an existing network. We exclude the effect of vertical integration and "spin-offs" from the calculation in order to account for the additional difficulties faced by independent and unaffiliated programming networks. Thus, we rely on empirical data indicating the number of subscribers needed for a network with the characteristics specified above

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278 Federal Communications Commission, Fourth Report & Order And Further Notice Of Rulemaking, February 11, 2008, ¶ 57.

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to have a 70 percent probability of survival after five years. These choices lead to a minimum viable scale of 19.03 million subscribers.

234. I do not claim that any of these analogies or reference points is perfect, but I certainly see no basis to believe that an edge provider would need more scale than these comparison cases, particularly given the conventional wisdom that the Internet has reduced entry barriers and minimum efficient scale in many businesses.279

235. In the tables in Section IV.A, I present the number of customers for the selected comparison cases as a share of the total number of (post divestiture) non-Comcast and non-TWC broadband customers. In this way, I demonstrate that these comparison cases could be replicated (in many cases, more than once over) without any reliance on Comcast-TWC broadband customers (even though there is no reason to believe the transaction would make this necessary).

236. This analysis was performed using information for 2012 due to unavailability of certain data for subsequent years.

237. As a first step, I determined the denominator for the exercise, that is, the number of non-Comcast and non-TWC customers in the marketplace. I estimated this number at the national level using information from the most recent report of the Commission entitled "Internet Access Services: Status as of December 31, 2012," December 2013

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279 See, for example, Federal Communications Commission, "Connecting America: The National Broadband Plan," [March 17, 2010], 266, available at http://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf, site visited September 17, 2014.

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(hereinafter, FCC IAS Report), which contains data on the total number of U.S. broadband customers, and from FCC Form 477s for Comcast, TWC, Insight, and Charter which contain data on the number of broadband customers for each firm. I calculated non-Comcast and non-TWC customers for speeds of 3 Mbps downstream /768 kbps upstream (3Mb/768k) and for at least 10mbps downstream (10Mb).

238. The FCC IAS Report provides broadband counts for customers with "fixed" broadband service (either wireline or wireless) and "mobile" wireless service. I estimated the relevant figures both excluding and including mobile wireless in the universe of all broadband customers. This resulted in four alternative figures for the denominator; that is, the total number of non-Comcast and non-TWC customers, based on the following cases: (1) 3Mb/768k speed with mobile wireless included, (2) 3Mb/768k speed with mobile wireless excluded, (3) 10Mb speed with mobile wireless included, and (4) 10Mb speed with mobile wireless excluded.

239. When subtracting Comcast and TWC customers from the nationwide broadband counts, I accounted for divestitures reported in an internal Comcast document and scaled them appropriately for HSD customers.280

240. The customer numbers for satellite MVPDs and premium movie channels were sourced from SNL Kagan,281 and Netflix customer figures were derived from its quarterly

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280 Project Tiger_Cheetah Transaction_Updated System List_5 29 143.pptx ("Systems Included in Transaction").

281 Satellite MVPD Subscribers: SNL Kagan - U.S. DBS Industry Projections (2012); Premium Movie Channel Subscribers: SNL Kagan - Broadband Cable Financial Databook 2013 Edition, December 2013, pg. 21.

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financial statements on its website.282 By dividing these customer numbers (and the FCC's 19.03 minimum scale number) by the number of non-Comcast and non-TWC customers discussed in the previous paragraph, I obtained the shares as reported in the tables in Section IV.A.

Table 19: Providers' Scale Compared to Non-Comcast and TWC Broadband (Residential + Commercial) Customers Nationwide (2012, HSD Speed of 3 Mbps/768 Kbps)

[[REDACTED]]

Table 20: Providers' Scale Compared to Non-Comcast and TWC Broadband (Residential + Commercial) Customers Nationwide (2012, HSD Speed of at Least 10 Mbps Downstream)

[[REDACTED]]

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282 Quarterly Earnings, Q4 2012 Financial Statement, Netflix, available at http://ir.netflix.com/results.cfm, site visited August 6, 2014.

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APPENDIX III: INCREMENTAL COST ANALYSIS

241. I estimated the incremental costs of additional traffic on Comcast's network based on information provided by Comcast regarding the incremental capital expenditures that it would incur to serve incremental Netflix traffic in the 2014 to 2017 period.283, 284 I understand that the major elements of incremental capital costs include costs associated with investments in backbone and investment in metro and access components (primarily costs associated with routers, CMTSs, and node splits).

242. Given the existence of an active competitive market for backbone services, I used the market price for backbone to reflect the relevant marginal costs of backbone service, as the backbone market price is essentially the opportunity costs for Comcast of providing transit via its backbone. Unlike the backbone services, there is no spot market for metro and access services and I therefore relied on Comcast's estimate of the incremental costs associated with these services. I very conservatively assumed that the costs associated with operating expenditures (e.g., space rental, power, network maintenance, etc.) are zero. Comcast also provided estimates of its cost of capital and the lifetime of the

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283 Amit Garg, Executive Director, Capacity Planning, Comcast Corporation, August 6 and September 22, 2014, interviews.

284 {{ }}. (Amit Garg, Executive Director, Capacity Planning, Comcast Corporation, August 6 and September 22, 2014, interviews.)

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relevant network capital, which I used to convert capital expenditures to a levelized monthly estimate of costs per Mbps.285

243. Table 21 shows that the total monthly incremental cost for serving the Netflix traffic is {{ }} in 2014 and decreases to {{ }} by 2017 due to the projected decline in the costs for each element of the network. The average monthly interconnection price paid by Netflix to Comcast is {{ }} in 2014 (monthly payment of {{ }} divided by an allocated data usage of {{ }}) and declines to {{ }} by 2017. Hence, Netflix's payments to Comcast are no more than {{ }} of the incremental costs incurred by Comcast in carrying the additional Netflix traffic in the 2014 to 2017 period.
[[ ]]

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285 Conclusions are robust to a wide range of values for the lifetime of the capital.

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APPENDIX IV: STOCK MARKET EVENT STUDY

244. A stock market event study is a statistical method commonly used in financial economics to estimate the association between releases of information and stock returns, controlling for the effect of market factors on stock returns.286 The standard approach is to use regression analysis to estimate the historical relation between a company's stock returns and the corresponding returns on a market index (i.e., a one-factor model), perhaps also including an industry-specific index (i.e., a two-factor model). The expected return on the event date is calculated based on the parameters from the regression model and the actual performance of the market index (and industry index in a two-factor model) on that date. The expected return is subtracted from the actual return to estimate a residual return (sometimes referred to as an "abnormal return" or "market-adjusted return").

245. In this case, I have estimated two-factor models for Netflix, Amazon, and Apple, and a one-factor model for Google using daily data for the year ending November 21, 2013.287 For each company, I used the market and industry indices that the company used in their contemporaneous performance comparisons in their 10-K reports to the SEC.288

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286 See, e.g., A.Craig MacKinlay (1997), "Event Studies in Economics and Finance," Journal of Economic Literature, 35: 13-39 (hereinafter, MacKinlay (1997)).

287 Data for the industry index used by Google, the RDG Internet Composite Index, was not available and thus an industry index was not used for the Google event study. The year ending November 21, 2013 was selected for the estimation period because November 21, 2013 was the last trading day prior to the earliest event tested in the event study analysis.

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246. When performing event studies, the conventional practice is to test the "null hypothesis" that the residual return is zero against the alternative hypothesis that the residual return is different from zero.289 If the null hypothesis cannot be rejected at conventional levels of significance, then the residual returns are not considered to be statistically significant (i.e. not significantly different from zero). I have implemented this approach. Results—showing no significant residual returns for the OVDs studied—are presented in Table 22 below.

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288 In instances where the company used multiple market or industry indices, I selected the market and industry index combination that yielded the highest R-squared. However, the market and industry index selection did not affect any substantive conclusions as none of the event studies yielded statistically significant residual returns on any of the dates tested.

289 John Y. Campbell, Andrew W. Lo and A. Craig MacKinlay (1997), The Econometrics of Financial Markets, Princeton University Press, 160-66; MacKinlay (1997), 13-39; G. William Schwert (1981), "Using Financial Data to Measure Effects of Regulation," The Journal of Law and Economics, 24: 121-157; Daniel R. Fischel (1982), "Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities," The Business Lawyer, 38: 1-20, 19.

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Table 22: Event Study Results

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An Economic Analysis of The Proposed Comcast Transactions with TWC and Charter In Response to Comments and Petitions

September 20, 2014

Gregory L. Rosston
Michael D. Topper

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I. Introduction

A. Assignment

1. On April 8, 2014, we filed a report (the "April Report") analyzing potential benefits and video/advertising competition issues related to the Comcast – Time Warner Cable Inc. ("TWC") transaction (the "TWC transaction").1 On June 2, 2014, we filed a report (the "June Report") supplementing our analyses to account for an April 25, 2014 agreement between Comcast and Charter Communications ("Charter") on a series of transactions (the "divestiture transactions"), under which Comcast, conditioned on the completion of the proposed TWC transaction, will divest and swap systems serving a net of approximately 3.9 million video customers to Charter and to GreatLand Connections ("GreatLand"), a newly formed, independent, publicly traded company.2

2. In this report, we have been asked by counsel for Comcast Corporation ("Comcast") to review and respond to petitions to deny and comments regarding the efficiencies of the proposed Comcast transactions with TWC and Charter, and the impact of the proposed transactions on video and advertising competition.

B. Summary of Opinions

3. Nothing we have reviewed in the petitions to deny and comments changes the conclusions in our April and June Reports. Moreover, we have undertaken additional empirical analysis, some at the request of the Commission and some replicating analyses performed in connection with the Commission's Order in the Comcast-NBCUniversal transaction. The results of those analyses further support our conclusions.

4. The proposed TWC and divestiture transactions will lead to transaction-specific efficiencies that will benefit residential consumers, businesses, and advertisers:

- Economies of scale will justify more fixed-cost investment and lead to more and higher-quality innovations in video, broadband, and advertising. Increasing the size of the company's set of potential customers increases the potential returns on fixed-cost investments. In our previous reports, we provided several examples of transaction-specific benefits and explained why those benefits were unlikely to be attained without the transactions. Some commenters argue that Comcast is already large enough and that such benefits are, therefore, not transaction-specific. We disagree with these commenters' claims, and provide additional transaction-specific examples where increased scale afforded by the transactions will increase investment incentives.

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1 Declaration of Gregory L. Rosston and Michael D. Topper, "An Economic Analysis of the Proposed Comcast – Time Warner Cable Transaction," April 8, 2014 ("April Report").

2 Declaration of Gregory L. Rosston and Michael D. Topper, "An Economic Analysis of the Proposed Comcast Divestiture Transactions with Charter," June 2, 2014 ("June Report")

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· Expanded geographic reach from the transactions will increase Comcast's ability to serve multi-location and enterprise business customers, and thus increase the competitiveness of business services. Expanded geographic reach will also increase Comcast's incentives to invest in Wi-Fi hotspots and increase the speed and resiliency of Comcast's network, benefitting both residential and business customers. Notably, no commenters presented any credible evidence challenging these benefits.

· Current TWC and Comcast customers and potential customers will benefit from the sharing of technologies across the companies. Some commenters argue that these benefits are not transaction-specific because TWC was planning on upgrading its systems prior to the transaction. However, these upgrades are likely to occur faster and possibly at lower cost with the transactions because of Comcast's specialized knowledge from its own system upgrades. Comcast and TWC have each invested in technology; however, contracting to share technology has not occurred because of transactional frictions. The transactions will allow Comcast to integrate the best technology from each company without the same transactional frictions.

· Customers will benefit from these procompetitive efficiency gains. Some commenters assert, without evidence or economic theory, that such benefits will not be passed through, but it is well known that all firms have incentives to pass through cost reductions and quality improvements in some ways to their customers. In addition, in a dynamic competitive marketplace, competitors will also be forced to increase the attractiveness of their offerings to customers in response to product improvements by Comcast so there will be widespread benefits.

5. The transactions will not cause competitive harm for video or advertising services:

· There is no overlap in the territories served by Comcast, TWC, and Charter, so there will be no reduction in the number of MVPD choices of any consumers. The combined company will continue to compete with two DBS providers in its entire footprint, with telco MVPDs in almost half of its footprint, and with overbuilders and new facilities-based entrants such as Google Fiber in certain areas. Some commenters have made market share and market concentration calculations that assume Comcast and TWC compete with each other, but do not compete with DBS providers. That is simply wrong.

· The transactions will not generate market power in program buying. Some commenters express concern that the transactions would generate monopsony power, but provide no credible evidence to support this assertion. Because the firms do not compete in the distribution of programming, the sale of programming to distributors involves zero marginal cost, and programming is sold to distributors through individualized negotiations, there is no valid economic theory to support the monopsony assertion. Finally, the divestiture transactions bring the national share of MVPD households below 30%, a level even the Commission believed, in a marketplace with fewer competitors and fewer options for the sale of programming than today, would not lead to monopsony concerns.

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· The transactions will not increase Comcast's incentives to foreclose or harm unaffiliated content providers to favor NBCUniversal programming. No commenters have provided any viable economic theory or evidence of transaction-specific program carriage concerns. If Comcast were to deny carriage to unaffiliated programming of interest to its customers, it would reduce Comcast's ability to compete with its MVPD rivals and to a lesser extent, with OVDs, and would unlikely benefit its affiliated programming networks due to competition from other unaffiliated programming. Moreover, we have updated the empirical analysis underlying the Commission's conclusion in the NBCUniversal Order that Comcast "may have in the past" favored its own programming for anticompetitive reasons.3 This updated analysis provides no support for that conclusion now.

· The transactions will not increase Comcast's incentives to foreclose access to or raise prices of programming to rival MVPDs. Commenters have not presented any credible evidence supporting such program access concerns. Those program access strategies would not be profitable for Comcast given the strong competition it faces in the distribution and programming marketplace. Updating the Commission's empirical analysis shows no price effect from vertical integration. In addition, application of the Commission's vertical foreclosure and Nash bargaining models from the Comcast-NBCUniversal Order provides no support for claims that the acquisition of TWC and Charter systems in the current transactions will lead Comcast to use its programming to disadvantage its rivals. Finally, the Commission's program access rules and the Comcast-NBCUniversal conditions remain available if there were any legitimate concerns.

· The transactions will not generate market power in program selling. TWC controls a very small amount of programming. NBCUniversal will continue to have only a modest share of overall programming revenues after the transactions, and will not gain the ability to charge supra-competitive prices for its programming after the transactions. Application of the Commission's empirical model from the Comcast-NBCUniversal Order finds no evidence of price increases due to joint ownership of NBC O&Os and Comcast RSNs in the same area. This result suggests that there is no empirical support for commenters' horizontal program selling power concerns about the current transactions.

3 Comcast-NBCUniversal Order, ¶ 117.

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· The transactions will not impair competition in national or local advertising. Advertising is a broad market with television, internet, radio, newspapers, direct mail, and others all competing for dollars. The transactions affect only a small part of this broad market and will not cause competitive harms. Concerns raised by certain commenters about Comcast's and TWC's participation in local cable advertising "interconnects" are not transaction-specific, do not appropriately account for the incentives of interconnect managers and participants, and do not account for the fact that local cable advertising competes in a broad market with many other forms of advertising.

II. Transaction-Specific Competitive Benefits and Efficiencies

6. In our previous reports, we described how the TWC and divestiture transactions will lead to transaction-specific competitive benefits and efficiencies through economies of scale at the national and regional levels, expanded geographic reach, and sharing of technologies and services.4 Nothing in the comments changes these conclusions. We will address comments related to each of these economic mechanisms in turn and also address claims that the efficiencies we have identified would not be passed through to customers. Commenters ignore many of the clearly demonstrated benefits of the transactions and mischaracterize others, leading them to mistakenly conclude that there will not be transaction-specific benefits and that any benefits will not be passed on to customers. We show that business, residential, and advertising customers all stand to benefit from the identified transaction-specific efficiencies.

A. Additional National and Regional Economies of Scale

7. As we described in our April Report, the TWC transaction will allow Comcast to achieve additional economies of scale in its investments and innovation because it will be able to spread the fixed costs of those investments across more potential customers.5 Among other benefits, increased economies of scale from the transaction should allow Comcast to provide more advanced video services to residential customers, more robust and higher-quality service to business customers, and more valuable dynamic ad insertion possibilities to advertisers.6 In our June Report, we described how the divestiture transactions will allow Comcast to achieve increased economies of scale at the regional level, which should benefit customers through efficiencies in a variety of areas: network infrastructure and upgrades; operational, marketing and administrative functions; and customer service.7

4 April Report, ¶¶ 41–161; June Report, ¶¶ 7–19.
5 April Report, ¶¶ 44–57.
6 April Report, ¶¶ 85–94, 134–138, 144–147.
7 June Report, ¶¶ 9–14.

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8. Multiple commenters suggest that any claimed benefits due to economies of scale are not transaction-specific, not likely to be realized, or will not lead to benefits to consumers.8 Commenters' suggestions are vague, unspecific, and do not address the specific transaction-specific efficiencies we discussed in our previous reports. As we described in our April Report, the economies of scale are very much transaction-specific because the TWC and divestiture transactions remove some of Comcast's and TWC's geographic limitations on scale and allow Comcast to achieve scale that it could not achieve in its current footprint.9 The benefits of economies of scale are likely to be realized because they are based on the fundamental economics of the fixed investment costs needed for innovation. These benefits should flow to consumers through improved service, more advanced features, or lower prices that would not occur absent the transactions.

9. Several commenters suggest that Comcast and TWC are already so large that additional economies of scale will be negligible.10 Commenters' remarks miss the point. While it is true that Comcast and its customers already benefit from Comcast's scale, there are additional economies of scale to be realized from the transactions. In our April Report, we provided examples of investments that Comcast was not able to make or was not able to make as quickly as it would have with a larger scale.11

10. AAI suggests that our assertion that Comcast will realize additional efficiencies from a scale larger than its current scale "almost implies an emerging national natural monopoly in wired broadband."12 We are not suggesting such a natural monopoly, and it does not necessarily follow from the existence of economies of scale in investment at Comcast's current scale. In our April Report, we identified investments for which economies of scale are present at the scale that the transactions will provide. However, this does not necessarily mean that scale economies will always hold at any scale or for any particular investment. Therefore, while having a larger scale increases the incentives for particular investments, it does not necessarily mean there is a natural monopoly in the provision of wired broadband or MVPD services more generally, especially with the competitive success of video and broadband delivery on DBS and telco platforms in addition to overbuilders and wireless providers.

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8 For example, Joint Petition to Deny of Future of Music Coalition and Writers Guild of America West, Inc. ("WGAW/FMC Comment"); Comments of the American Antitrust Institute ("AAI Comment"); Petition to Deny of Netflix, Inc.; Petition to Deny of COMPTEL ("COMPTEL Comment"); Petition to Deny of Free Press; Petition to Deny of The Greenlining Institute; Statement in Opposition to Comcast's Proposed Acquisition of Time Warner Cable, Senator Al Franken ("Franken Comment"); Cogent Communications Group, Inc.'s Petition to Deny; Declaration of Joseph Farrell, filed on behalf of Cogent Communications Group, Inc. ("Farrell Report"); Joint Petition to Deny of Consumers Union and Common Cause ("Consumers Union/Common Cause Comment"); Petition to Deny of Los Angeles County, et al. ("Los Angeles County, et al. Comment"); Petition to Deny of Consumer Federation of America, et al. ("Consumer Federation of America Comment").

9 April Report, ¶ 50.

10 For example, Consumers Union/Common Cause Comment, pp. 38–39; AAI Comment, pp. 24–29; Los Angeles County, et al. Comment, pp. 6–8; Franken Comment, pp. 10–11.

11 April Report, ¶¶ 87, 90, 93, 136.

12 AAI Comment, p. 25.

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11. Professor Farrell argues that if scale economies were present, Comcast and TWC could realize them by simply expanding within their current footprints.13 While it is true that Comcast could gain scale by winning more customers within its current footprint (and it continues to aggressively compete for these customers), the transactions allow for additional scale through an expanded footprint and the ability to compete for a larger universe of otherwise unavailable potential customers; such growth cannot be obtained organically within Comcast's existing footprint.14

12. Dr. Evans claims that there is no empirical support from Comcast's history or theoretical support for our claim that economies of scale will lead to increased investment.15 But Dr. Evans has overlooked the evidence in our April Report, in which we showed how Comcast realized economies of scale due to its acquisition of AT&T Broadband and consequently made larger fixed cost investments.16 Comcast thus produced the benefits that the Commission recognized in its approval of that transaction.17 In addition, we explained that after Comcast's and TWC's acquisition of Adelphia's cable systems, Comcast and TWC substantially increased investments in those systems to enable them to provide advanced digital services.18 Here too, Comcast generated the consumer benefits that the Commission anticipated in its Order approving the Adelphia transaction.19

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13 Farrell Report, ¶ 102.

14 In addition, the competitors that Comcast and TWC face within their current footprints also have large footprints: DirecTV and Dish operate at the national level, AT&T and Verizon have broad geographic reach, and OVDs also have a national (or international) scale.

15 David S. Evans, "Economic Analysis of the Impact of the Comcast/Time Warner Cable Transaction on Internet Access to Online Video Distributors," 8/25/14, filed on behalf of Netflix, Inc. ("Evans Report"), fn. 12. While Dr. Evans technically states that we have not provided evidence on Comcast "as it has grown over the last decade," the fundamental economics of economies of scale held even prior to the last decade.

16 April Report, ¶ 69.

17 In Re Applications for Consent to the Transfer of Control of Licenses from Comcast Corporation and AT&T Corp., Transferors to AT&T Comcast Corp., Transferee, Memorandum Opinion and Order, 17 FCC Rcd. 23246, ¶ 184.

18 April Report, ¶ 71.

19 In re Applications for Consent to the Assignment and/or Transfer of Control of Licenses Adelphia Communications Corporation (and Subsidiaries, Debtors-In-Possession), Assignors, to Time Warner Cable Inc. (Subsidiaries), Assignees, Adelphia Communications Corporation, (and Subsidiaries, Debtors-In-Possession), Assignors and Transferors, to Comcast Corporation (Subsidiaries), Assignees and Transferees, Memorandum Opinion and Order, 21 FCC Rcd 8203 ¶ 23 (2006) ("Adelphia Order"), ¶ 257.

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13. Dr. Evans also ignores support in the economics literature for our claim that economies of scale from the transactions will lead to increased investment. Dr. Evans provides one theoretical criticism that narrowly assumes that the benefit of increased innovation due to economies of scale can occur only if the amount of investment and innovation increases more than in proportion to firm size.20 That criticism does not hold.

14. Consider a simple example. Suppose Comcast's scale justified it investing $1 billion to develop its X1 set-top box platform and TWC's scale justified it investing $500 million to develop its own set-top box platform with fewer features. Even if the level of investment scaled only proportionally with firm size, the combined company would have the scale to justify investing $1.5 billion in a set-top box platform.21 This platform, which would be more advanced than either the Comcast or TWC platforms in isolation, would be available to all customers in the former Comcast and TWC service areas. As we described in our April Report, the difficulties involved in contracting between MVPDs preclude Comcast and TWC from achieving this benefit of scale absent the transactions. Therefore, customers would benefit from economies of scale even though investment increases in proportion to firm size, providing a counter example to Dr. Evans' assertion.

15. Professor Comanor argues the benefits of economies of scale would occur on only 3% of Comcast's total costs (namely the costs devoted to R&D) and therefore represent minor cost savings.22 Even though R&D may represent only a relatively small portion of Comcast's total costs, that is irrelevant to the impact that economies of scale can have on consumer welfare. The level of R&D spending undertaken by Comcast is determined by weighing the costs of R&D against the benefits from that R&D and customers' willingness to pay for those benefits. And the fact that Comcast also incurs costs in the form of programming expenses and operating expenses has no bearing on the new and improved technologies and services that would be enabled through the increased R&D spending arising from additional economies of scale. After the transactions, the combined firm will have the scale to justify higher R&D spending than would occur absent the transactions.

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20 Evans Report, fn. 12.

21 Even a $1 billion investment would be better because former TWC subscribers would get access to the technology and benefits of a $1 billion investment in technology instead of those associated with a smaller $500 million investment.

22 Testimony of William S. Comanor on the Competitive and Economic Consequences of the Comcast – Time Warner Cable Merger, August 2014, filed on behalf of WGAW/FMC ("Comanor Report"), pp. 22–23.

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16. In addition to the examples of the benefits of scale described in our previous reports, another area in which additional economies of scale arising from the transactions may lead to concrete, measurable benefits to customers is in the development of tools to monitor the "health" of Comcast's network.23 To ensure that it is providing high-quality service, Comcast has invested substantial resources in developing such tools. These include proprietary systems to monitor "node health" (a "node" is a location in Comcast's network where the network transitions from fiber to coax) or "plant performance." Comcast's continual enhancement of these tools over the past decade has been a contributing factor to improvements in network performance, including fewer video quality impairments, faster broadband speeds, and fewer (and shorter) service outages. One indicator of these improvements is that Comcast's technical call volumes and truck roll repairs have decreased steadily each year over the last six years.24 Investment in network monitoring tools is largely a fixed cost that does not depend on the number of subscribers. Therefore as Comcast gains additional scale from the transactions, it will be able to justify additional fixed cost investments in network monitoring tools.25 These new network monitoring tools will be a benefit to both business and residential customers through improved network performance and reductions in the marginal cost of serving customers.

17. Comcast internal data on node health and customer churn shows the concrete, quantifiable nature of this benefit to customers. Comcast has found that [[ ]].26 Early data and analysis from 2014 indicates this is particularly true for business customers, but also holds for residential customers.27

18. Another area in which the additional scale from the transactions is likely to yield tangible benefits is in accelerating the deployment, measurement, and uptake of advanced advertising services such as dynamic ad insertion (DAI). As discussed in our previous reports, sharing of Comcast's industry-leading VOD content and delivery platforms will benefit customers in TWC's territory.28 Moreover, their combination with the additional scale and reach afforded by the transactions has the potential to speed up improved measurement of viewing in ways that could create significant incremental revenue for content providers and, as a result, potentially increase free content for consumers.29

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23 This example is based on interviews that took place after we submitted our previous reports.
24 These reductions are based on year-over-year comparisons (e.g., Q1 2014 compared to Q1 2013, etc.). Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
25 Comcast invested in developing a system to evaluate the health of its network. Its "national watchtower" can be used to determine, for example, the location of an impairment in the network to within three feet. Going forward, Comcast plans to develop more advanced tools including spectrum analysis at the premise level, systems for monitoring network health on the customer side of the wireless gateway, and a big data engine that will allow Comcast to use more sophisticated algorithms. Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
26 Comcast Business Presentation, "Business Service Maintenance Improvement Pilot Overview," 1/9/14.
27 Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
28 For example, Comcast represents 55–60% of total national VOD use, even though it represents only about 20% of MVPD subscribers. Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).
29 Rentrak, State of VOD: Trend Report 2013, Free on Demand, p. 23: "While there has been significant effort to replicate linear C3 ad loads for VOD content, nearly 70% of views do not have full ad loads. Monetizing these views is a major opportunity to increase the value of VOD as an advertising platform, with the potential for multi-billion

dollar ad revenues. As with last year, there is still a significant portion of viewing being left on the table by content providers and advertisers."

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19. On the VOD platform, [[ ]]% of viewing is outside of the traditional window measured by Nielsen on which advertising sales are based.30 Comcast has been working to improve measurement of viewing outside this window using On Demand Commercial Ratings (ODCR), which it believes would measure an additional [[ ]]% of VOD viewing.31 ODCR has been tested and trialed, and Comcast is waiting for accreditation and auditing. However, Comcast has encountered difficulties gaining industry acceptance of this technology with its current scale and reach.32

20. The additional scale and expanded geographic reach provided by the transactions may help accelerate deployment, acceptance, and uptake of these new measurement tools. At present the industry looks at ODCR as a regional, Comcast-only solution.33 The additional scale and expanded geographic reach enabled by the transactions will make it easier for ODCR to be viewed as a national advertising solution and help get more traction with advertisers, content providers, and other MVPDs.34 The additional scale and reach will also make it more likely that ad agencies will accept ODCR insertions as something they are willing to pay for and invest in the large scale coordination effort needed.35

21. Since even with ODCR, up to [[ ]]% of VOD viewing would not be measured, Comcast has also been working with Nielsen to develop a different methodology for DAI based on Nielsen's online campaign tool, which creates a reliable projection of demographic impressions.36 Comcast is trying to establish this technology as viable, but believes it needs other MVPDs to accept the methodology in order for it to prove a national solution; with a broader presence, Comcast could more readily convince advertisers, and hence other MVPDs, to take a chance on this tool.

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30 Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).

31 The basic idea with ODCR is to cut and paste advertisements from the C3 window into older episodes of a given show if being viewed within the C3 window for a current episode. For example, in week 10 of a broadcast season for a show, some consumers will have not seen week 8 and will watch on VOD. With ODCR, if within the C3 window of the week 10 episode, the ads from the week 10 episode would be cut and pasted into the week 8 episode. Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).

32 Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).

33 Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).

34 Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).

35 Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast). See "Comcast Trials Aim to Unlock VOD Ad Dollars, Measure TV Binge Viewing," Multichannel News, 12/2/13.

36 In the television world, Nielsen projects viewer demographics from a sample panel, and in digital web content, Nielsen has managed to obtain demographic information by working with Facebook. Nielsen takes cookies from the websites someone visits and sends the pool of cookies to Facebook, who provides the demographics for the pool. Nielsen then applies those demographics to the viewed content. Similarly, the VOD solution under development involves trying to generate a projection for each insertion: Comcast provides some data to Nielsen and then Nielsen tries to model the demographic characteristics of who is actually watching

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22. If DAI on VOD can be measured so that advertisers pursue it more enthusiastically, content providers and consumers would also benefit. One of the biggest issues faced by content providers is the growing use of DVR viewing, which leads to ad skipping and reduced revenues.37 DAI in VOD offers an opportunity for content providers to enable the time-shifted viewing that consumers increasingly demand along with better monetization than DVR.38 To the extent that content providers realize greater revenues from VOD viewing relative to DVR viewing (due to ad-skipping on DVRs), Comcast's large VOD library allows it to provide content providers more ad revenue per subscriber.39 Content providers are willing to provide more VOD content, e.g., entire seasons of popular shows, to Comcast (and other MVPDs) if they are able to monetize it — and consumers are then often able to enjoy this additional content with no additional charges.40 The availability of more, free VOD has also proven to be self-reinforcing for content providers' business, as it allows viewers to catch up on previous episodes, and increases the live and total audience size for current shows by helping build momentum as a season progresses.41

B. Expanded Geographic Reach Will Increase Comcast's Ability to Serve Residential and Business Customers

23. In our April Report, we described how the transaction will increase Comcast's ability to serve customers whose needs span the existing geographic footprints of Comcast and TWC.

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37 See "As DVRs Shift TV Habits, Ratings Calculations Follow," The New York Times, 10/6/13.
38 See "CBS Research Chief: Significant Changes in TV Viewing in Past Two Years," Ooyala.com 12/10/13: "As to VOD, [Dave] Poltrack [Chief Research Officer, CBS] said its 'increasing the average audience for our prime time programming by 4%,' and said VOD is being used to watch television and catch up on favorite shows. Some shows, he said, have recorded more than double the 4% overall bump the network has experienced, like the 9% increase experienced by 'The Good Wife.'" See also "VOD Advertising Business Is Slowly Coming to Life," Broadcasting & Cable, 11/11/13.
39 NBCUniversal Presentation, "NBC Ad Contribution Per Sub," 11/22/13.
40 In contrast, with traditional or cloud DVR technology, consumers often pay $10–20 per month for similar capabilities. Interview with Rob Holmes (Vice President of Advanced Advertising Services, Comcast).
41 See "Comcast Trials Aim to Unlock VOD Ad Dollars, Measure TV Binge Viewing," Multichannel News, 12/2/13.

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These customers include (1) businesses with multiple locations that span the Comcast and TWC footprints and (2) residential and business customers who travel throughout the Comcast and TWC footprints and need Wi-Fi access while away from their primary location.

24. As we described in our April Report, by being able to provide business services on its own network in an expanded footprint, Comcast will be a more effective competitor in serving multi-location businesses. This will increase competition for these customers and possibly lead to lower prices and improved service quality. Notably, no commenter addresses the transaction-specific increase in Comcast's ability to provide service to more multi-location businesses and to provide improved enterprise-level service.42 These benefits of the transaction are cognizable and are recognized by industry analysts.43 In our April Report we provided specific examples of Comcast contracts for service that could have been provided at lower cost with the expanded geographic reach provided by the transaction.44

25. Information obtained since submitting our April Report about Comcast's network investment approval process underscores our conclusions as to the transaction-specific benefits of expanded geographic reach. Comcast undertakes network investment projects within its current footprint if a project satisfies profitability criteria even when individual components of such projects (e.g., network build-out to a particular site) do not meet profitability criteria when examined on a standalone basis. For example:

· A proposed business services investment to serve a customer in [[ ]].45

· Comcast approved the network investment required to provide [[ ]].46

26. The same logic will spur post-transaction investment that would not take place absent the merger. Today, network investment to serve customers whose locations span the Comcast and TWC footprints does not occur unless the TWC- and Comcast-specific investments each meet profitability criteria. The transaction will relax this constraint: investments that meet profitability criteria on an aggregate basis (i.e., across the combined footprint) may go forward, even if the investment within one party's current footprint does not meet the profitability threshold.

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42 The City of Los Angeles argues that increased availability of "world class" business services cannot be a transaction-specific benefit because TWC already claims to offer "world class" business services. However, this argument misses the point that the transaction will allow those "world class" business services to be available to more businesses, namely those with locations spanning the Comcast and TWC service areas. Comments of the Office of the Mayor of the City of Los Angeles ("City of Los Angeles Comment"), p. 3.
43 April Report, ¶¶ 120–133.
44 April Report, ¶ 127.
45 Interview with Robert Victor (Senior Vice President, Finance and Operations, Comcast Business).
46 Interview with Kevin O'Toole (Senior Vice President and General Manager, New Business Solutions, Comcast Business).

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27. Finally, new information obtained since submitting our April Report underscores our conclusion that the benefits of geographic reach are transaction specific, and joint sales are not a viable means of realizing the same benefits. We noted in our April Report that Comcast, TWC and other MVPDs have discussed partnering on sales to super-regional businesses that span their footprints, and that Comcast had recently reported closing its first joint contract to serve a super-regional customer. However, the contract in question was not the fruit of a larger collaborative initiative targeting super-regional businesses, but rather a transaction led by Comcast in which TWC and other providers served locations outside Comcast's footprint. We understand that [[ ]]. In addition, [[ ]].47

28. It should also be noted that Comcast serving more business customers due to the transactions should lead to more network hardening in the nodes that will be serving the additional business customers. For example, when Comcast serves business customers it may lay more fiber or install additional capacity in CRANs to serve these customers. Because business and residential customers use largely the same physical plant, these investments should spill over to benefit residential customers through improved service quality by increasing the capacity of CRANs (allowing, for example, a larger VOD library) and improving "node health" (i.e., reducing service outages or impairments).48

29. On the residential side, expanded geographic reach and increased regional clustering from the transactions will increase Comcast's incentive to invest in its Wi-Fi network. These increased incentives arise because Comcast will be able to internalize the benefits of Wi-Fi access to customers across its entire combined service area in a way that the separate cable operators currently do not.

30. Some commenters make reference to the existence of the CableWiFi consortium as a reason to discount claims about the improvements in Comcast's Wi-Fi network due to the transaction.49 However, these commenters miss the key point that the transactions increase Comcast's incentive to invest in its Wi-Fi network.50 This increased incentive comes from Comcast internalizing the benefits of the Wi-Fi network to customers in both Comcast's and TWC's current service areas (as well as the service areas being acquired from Charter).51

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47 Interview with Kevin O'Toole (Senior Vice President and General Manager, New Business Solutions, Comcast Business).
48 April Report, ¶ 63.
49 Consumers Union/Common Cause Comment, p. 37; City of Los Angeles Comment, p. 3; and Los Angeles County, et al. Comment, p. 16.
50 April Report, ¶¶ 96–99.
51 April Report, ¶¶ 96–99.

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31. Comcast has already demonstrated a continued commitment to expanding its Wi-Fi network within its footprint. In addition to installing Wi-Fi access points in outdoor locations and in businesses throughout its footprint, it has pioneered the use of in-home "neighborhood" hotspots that allow Comcast customers to access the Wi-Fi network through in-home routers in Comcast customer homes equipped with capable routers. By the end of the year, Comcast plans to have installed over 8 million Wi-Fi hotspots.52

32. Comcast's large investment in Wi-Fi access points to date is consistent with it having a strong incentive to invest in a network that will benefit its comparatively large subscriber base. That is, Comcast is able to internalize the benefit that investments in one part of its service area will provide to customers in another part of its service area. For example, when Comcast is considering whether to install an additional Wi-Fi access point in the Philadelphia area, it weighs the cost of doing so against not only the benefit that its customers in the Philadelphia area will realize, but also the benefit that its customers traveling from Washington, DC, Boston, or San Francisco, among others, will realize. The transactions will increase Comcast's incentive to invest in Wi-Fi access points. With the expanded geographic reach afforded by the transactions, Comcast will internalize the benefits to the additional customers in former TWC and Charter areas and therefore will have an even stronger incentive to add Wi-Fi access points. This increased incentive applies to all types of Wi-Fi access points, including in-home neighborhood hotspots.

52 Comcast Press Release, "Comcast to Reach Eight Million Xfinity WiFi Hotspots in 2014," 4/30/14, available at http://corporate.comcast.com/news-information/news-feed/comcast-to-reach-8-million-xfinity-wifi-hotspots-in-2014.

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33. Finally, Professor Farrell and Senator Franken suggest that Comcast could obtain the benefits of expanded geographic reach by simply expanding its footprint to encompass TWC's service areas without the need for the transactions.53 As we described in our April Report, Comcast and TWC have not found it profitable to build new cable systems outside their existing geographic footprints or make the major investments necessary to successfully enter as an out-of-footprint OVD.54 It would be cost prohibitive for Comcast or TWC to build new cable systems throughout each other's geographic footprint, and we have seen no evidence that either firm has considered doing so. And if either firm were to provide OTT services outside its existing footprint, it would face strong competition from large players like Apple, Sony, Dish, and others in providing OTT services. As a result, the geographic expansion suggested by Professor Farrell and Senator Franken is highly unlikely to be a viable strategy for Comcast or TWC.

C. Sharing of Technologies and Services Will Benefit Customers

34. In our April Report, we explained that by combining the Comcast and TWC portfolios of technologies and services, the combined company should be able to provide more services at lower cost than Comcast or TWC could on its own.55 Each company will bring proprietary technology and specialized knowledge about providing its unique mix of services. For example, the sharing of Comcast's advanced X1 or addressable advertising technology with TWC should speed up deployment of the technology in TWC's territory. Some commenters argue that these benefits are not transaction-specific because (1) TWC has announced plans to upgrade its systems and increase broadband speeds, or (2) in some cases, TWC's offerings appear to be a better value for consumers.56 In addition, some commenters argue that combining Comcast's and TWC's systems will actually lead to difficulties in integration, which will harm customers.57

35. Even though TWC announced plans prior to the transaction (via its "Maxx" initiative) to upgrade systems in certain geographic areas over the next several years, the transaction will allow those upgrades to occur faster and more efficiently because the combined company will be able to leverage Comcast's experience. For example, although TWC announced in January 2014 its plan to transition 75% of its systems to all-digital by 2016, Comcast should be able to use the experience it gained from its own 2009 to 2012 transition to all-digital to transition TWC's systems more rapidly and at lower cost than TWC could on its own. Based on the information Comcast has obtained so far, we understand that Comcast plans to be able to offer all Comcast products and services to TWC customers within 36 months.58 That will necessitate a transition of all TWC systems to all-digital prior to that time. This will benefit customers, particularly those served by systems TWC was not planning to transition to all-digital via its "Maxx" initiative, through earlier and increased availability of advanced digital services and faster broadband speeds.

53 Farrell Report, ¶¶ 97–100; Franken Comment, p. 14.
54 April Report, ¶ 173.
55 April Report, ¶¶ 65–68.
56 For example, WGAW/FMC Comment, pp. 63–65; Consumers Union/Common Cause Comment, pp. 35–38.
57 For example, Consumers Union/Common Cause Comment, pp. 39–40.
58 Comcast Response to FCC Request for Information 88.

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36. In order to make its transition to all-digital more seamless, Comcast invested in developing a configuration of QAM channels that it believes currently best serves the needs of its customers by utilizing the bandwidth at each of its headends more efficiently.59 This configuration is a standard by which the QAM channels at Comcast headends are allocated between data and video, among other things. By standardizing its headend configuration, Comcast was able to make self-installation of all-digital set-top boxes relatively seamless for customers. In large part because of this standardization, when Comcast made its transition to all-digital, over 90% of digital upgrades were self-installs.60 By bringing this standardized configuration to TWC systems, Comcast will be able to use the knowledge it has in this area to make the all-digital transition of TWC systems more efficient. This will benefit customers by giving them access to digital service sooner and perhaps more conveniently by allowing self-installation. The standardization of the channel configuration at Comcast and TWC headends will also make the future deployment of DOCSIS 3.1 (for which chips are currently being designed and deployment should begin in 2016) more rapid than it would be absent standardization.61

37. In addition to the benefits from standardizing the channel configuration at its headends, Comcast learned many other "best practices" for the transition to all-digital from its experience going through that transition. A Comcast presentation summarizing these best practices makes clear that Comcast's learning-by-doing spanned multiple areas.62 These areas include customer messaging, warehouse/inventory management, back-office systems, staffing, and handling of service calls.63 In transitioning TWC systems to all-digital, Comcast will be able to apply its specialized knowledge about these and other best practices to make the transition faster and more efficiently than TWC could on its own. Consumers in turn will benefit from having access to all-digital systems sooner and with less disruption to their service.

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59 Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
60 Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
61 Interview with John Schanz (Executive Vice President and Chief Network Officer, Comcast Cable).
62 Comcast Presentation, "All Digital Initiative," July 2013.
63 Comcast Presentation, "All Digital Initiative," July 2013.

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38. WGAW/FMC and Consumers Union/Common Cause argue that sharing technologies and services is not a benefit of the transaction because, in some cases, TWC appears to offer a better value to consumers.64 In support of that assertion, WGAW/FMC cites one low-cost Internet option that TWC offers that Comcast does not, while Consumers Union/Common Cause cites the ability of TWC customers to access their MVPD service via a Roku device. However, while commenters may be able to find differences in the product portfolios of Comcast and TWC, they have offered no support for the claim that on the whole customers would be better off absent the transaction. It is natural for different companies to offer different products to meet the needs of their different customers. After the transaction, Comcast will seek to meet the needs of its customers, including former TWC customers. To the extent that there are some areas where TWC is able to offer a product at a better value to consumers through superior or more efficient technology than what Comcast has, the combined company will have the option of deploying that technology more broadly, to the benefit of Comcast customers. As we said in our April Report, sharing of technologies works in both directions.65

39. Consumers Union/Common Cause also argue that the transaction will lead to integration difficulties, which will actually increase prices to consumers.66 However, while there are certain to be some costs related to integrating Comcast and TWC systems, if the costs were so high that they would lead to increased prices or lower quality service, Comcast would not choose to make those service changes. After all, Comcast has the option of leaving current TWC technologies in place if they are a more efficient way of meeting customer demand than an alternative Comcast technology. As discussed below, the benefits of efficiency-enhancing changes in technology due to the integration will be passed on in part to customers. Moreover, Comcast's history of integration and investment subsequent to its prior transactions demonstrates the benefits from sharing technologies. For example, Comcast's successful integration and upgrades of AT&T Broadband and Adelphia systems to bring them to the same quality as existing Comcast systems led to increased availability of advanced digital services, as the Commission recognized.67

64 WGAW/FMC Comment, pp. 64–65; Consumers Union/Common Cause Comment, pp. 36–37.
65 April Report, ¶ 68.
66 Consumers Union/Common Cause Comment, pp. 39–40.
67 Adelphia Order, ¶ 257.

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D. Transaction-Specific Efficiencies Will be Passed Through to Customers

40. Some commenters argue that even if Comcast were to realize efficiencies from the transaction, these would not be passed through to customers in the form of lower prices or improved service.68 They argue either that the efficiencies will come in the form of reduced fixed costs, which would not be passed through, or that due to a lack of competition, Comcast will not have an incentive to pass through cost savings. As we discuss below in Section III.A, it is a straightforward matter of economics to show that cost reductions benefit customers. Even a monopolist, which Comcast is not, would choose to pass through some portion of a cost reduction to customers in the form of lower prices because that would allow the monopolist to sell to some marginal customers for which the monopolist's marginal revenue exceeds the new, lower marginal cost.69

41. Regarding the claim that fixed cost savings would not be passed through to customers, it should first be noted that many of the efficiencies we describe should result in reduced marginal costs in the near-term. For example, even with a narrow, static view of marginal costs, the geographic clustering of cable systems from the Charter transactions should lead to lower marginal costs for technicians to travel to customers.70 Moreover, as we described in our April Report, "fixed" cost savings can lead to substantial customer benefits as well:

[T]he deployment of new technologies depends on a firm's willingness to undertake the fixed costs of research, development, and deployment. As a result, while such costs are 'fixed' when viewed through a static lens, they are incremental costs when viewed through the lens of undertaking or accelerating investment and new product deployment.71

42. Therefore, the benefits we described in our previous reports and expand upon here are not merely reductions in Comcast's fixed costs. They are effects of the transaction that will lead to increased investment, which will in turn facilitate and accelerate deployment of new and enhanced services and products. These longer-term benefits, along with reductions in marginal costs that will be passed on to customers, are the ways in which customers will benefit from the efficiencies we have described. Finally, as we discussed in our April Report, the transactions give Comcast the ability to compete for customers in an expanded footprint, but it will need to compete for these customers with a number of rivals that operate on a national scale or with broad geographic reach.72 Comcast's new and enhanced service offerings will not only benefit its customers directly, but will also likely encourage a competitive response from DBS operators, telcos, and other providers of video, broadband, voice, and advertising services that in turn can lead to new or improved services.

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68 For example, Consumers Union/Common Cause Comment, pp. 38–39; COMPTEL Comment, p. 9; Franken Comment, pp. 8–11.
69 See, e.g., Hal Varian, Microeconomic Analysis, 3rd Ed., pp. 236–237.
70 June Report, ¶ 12.
71 April Report, ¶ 54.
72 April Report, ¶¶ 80–83.

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III. No Video Programming Competitive Concerns

43. We showed in our previous reports that the transactions did not raise competitive concerns about video programming, and that conclusion still holds. Comcast, TWC, and Charter do not overlap in their service territories so the transactions will not affect the competitive choices available to MVPD customers.73 Therefore, the transactions will not raise any competitive concerns about the distribution of video programming to consumers.

44. The combined company will continue to compete with the two DBS providers in its entire footprint, with telco MVPDs in almost half of its footprint, and also with overbuilders and new facilities-based entrants such as Google Fiber in certain areas within its footprint.74 Some commenters have made market share and market concentration calculations that assume Comcast and TWC compete with each other, but do not compete with DBS providers.75 That is simply wrong. DBS providers have been able to compete effectively, increasing their share of MVPD subscribers from 29% to 34% in the past decade alone.76 Similarly, it does not make sense, as suggested by WGAW/FMC, to ignore OVDs from a competitive analysis of program buying simply because they do not own facilities to distribute content directly to their customers. OVDs are a competitive factor – Netflix, Apple, Google, Amazon, Hulu, Sony, and other online companies are entering or have entered online video provision and are positioning themselves as competitors to MVPDs for at least some services such as VOD. They are also large purchasers of video programming and provide an alternative channel of monetization for content providers.

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73 Consumer Federation of America argues that combining Comcast and TWC will increase the combined company's ability to "lead, signal and coordinate actions that would diminish competition," especially from OVDs. However, because Comcast and TWC do not compete with one another in distributing video programming to any particular customer, there will be no reduction in the number of competitors serving any customer and no increased possibility of "coordinated effects." Consumer Federation of America Comment, pp. 17–18.
74 Letter from Comcast, Time Warner Cable, and Charter to Marlene H. Dortch, 6/24/14, p. 4.
75 Comanor Report, pp. 13–14; Consumer Federation of America Comment, pp. 25–28.
76 SNL Kagan, "National MVPD subscribers 2005–2013."

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For example, as of the end of 2013, Netflix had purchased licenses for $7.25 billion in streaming content.77 Ignoring the realities of DBS providers and OVDs being part of the open field for content providers in the programming marketplace renders Professor Comanor's and Dr. Cooper's calculations, and WGAW/FMC's speculations, meaningless for understanding any competitive implications of the transactions.

45. In this section, we first address the program buying power and program carriage issues raised by the commenters, and then discuss the program access and program selling power issues raised by the commenters.

A. No Monopsony Program Buying Power Concerns

46. Various commenters have argued that because the TWC and divestiture transactions will increase the number of subscribers served by Comcast, the transactions will give Comcast more program buying power.78 In our previous reports, we showed that program buying power was not a concern because the TWC and divestiture transactions would not change the demand for or supply of programming, would not give Comcast bottleneck power over the purchase of programming, and would not give Comcast market power from the perspective of bargaining theory. None of these elements is effectively rebutted by any commenter. In addition, size is far from the only determinant of program pricing; there are many other factors that content providers and MVPDs consider in the course of their negotiations.

47. Even if the transactions would allow Comcast to negotiate more favorable terms from content providers, consumers would benefit. Over time, part or all of the savings in Comcast's programming costs, which constitute the largest share of Comcast's marginal cost of serving an MVPD customer, would be passed through to Comcast's customers in the form of slower growth in their subscription fees, or through greater investments in service, expanded program offerings, or other non-price alternatives, relative to what consumers might pay without the transaction, implying an increase in consumer welfare.

48. The theoretical arguments and limited empirical evidence put forward by commenters do not change these conclusions. We respond to the commenters' specific program buying power concerns below. First, we discuss how market facts and economics imply that Comcast will not gain monopsony power from the proposed transactions. Next, we show that there is no evidence that Comcast has exercised monopsony power. We then examine the impacts of the alleged monopsony power on consumers. Our analysis confirms the conclusions in our previous reports that the transactions will not give Comcast monopsony power and even if it did, that would increase consumer welfare.

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77 Netflix, Inc. 2013 Annual Report, p. 28.

78 For example, WGAW/FMC Comment; Comanor Report; AAI Comment; Consumer Federation of America Comment; Comments of Entravision Communications Corporation ("Entravision Comment"); John Kwoka, "Economic Analysis of the Effects of the Proposed Merger of Comcast and Time Warner Cable on Program Providers Serving the Latino Market," 8/25/14, filed on behalf of Entravision Communications Corporation ("Kwoka Report").

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1. Comcast Will Not Gain Monopsony Power from the Proposed Transactions

49. As discussed above and in our previous reports, an MVPD's demand for programming is driven by the need to compete for and retain customers within its footprint. Even within an MVPD's footprint, its demand for programming (including nationally available programming) may vary depending on variations in consumer preferences locally and on the carriage decisions of other MVPDs operating in that local area.79 Because Comcast and TWC do not compete for MVPD customers, the combination of the two will not change the demand for programming – the combined firm will continue to need programming of the same quality, quantity, and diversity as the separate firms do in each of their local service areas today to satisfy the demands of subscribers and compete with rival MVPDs in the combined service areas. The combination of the two also does not change the supply for programming because there is essentially zero incremental cost for a content provider to sell its programming to both Comcast and TWC relative to selling it to one of the two. Therefore, Comcast and TWC are not competitors in a national market of video programming from either a demand or a supply perspective.

50. Professor Comanor states that even though Comcast and TWC do not compete for customers (in the "output market"), the two may still compete in the program buying market (the "input market"). He argues that "the merger to monopsony may or may not involve monopoly in the output market" and buyers who do not compete with each other directly "can still exploit any market conditions that restrict the number of prospective buyers available to sellers."80

51. Professor Comanor's argument is not supported by economics or market facts. According to economic textbook theory, monopsony power stems from a buyer reducing its purchase of an input to drive down the input's price.81 This textbook scenario requires the input having increasing marginal costs, which leads to an upward sloping supply curve. However, carriage negotiations between MVPDs and content providers do not fit the textbook model. Comcast and TWC do not compete with each other in the distribution of programming, a content provider's sale of programming to both Comcast and TWC involves zero marginal cost, and programming is sold to distributors through individualized negotiations. Therefore, the supply curve for a content provider's sale of programming to Comcast and TWC is essentially flat at zero. In that case, Comcast and TWC cannot reduce programming fees post-transaction by reducing their purchase of programming and moving along the supply curve.

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79 For example, Comcast continues to carry RFD-TV in Jacksonville, FL, Nashville, TN, and Salt Lake City, UT, but made a decision to stop carrying RFD-TV in Colorado and New Mexico, where it primarily operates in areas with low demand for RFD-TV programming. Letter from David L. Cohen to Rural Media Group, 8/15/14.
80 Comanor Report, p. 21.
81 See, e.g., Hal Varian, Intermediate Microeconomics, 6th Ed., pp. 464–467.

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52. In practice, because Comcast and TWC do not compete with each other in the distribution of programming to consumers, content providers cannot play Comcast and TWC off one another in their negotiations with the two. Consider, for example, a TWC customer in Los Angeles whom a content provider would like to reach. Even prior to the transaction, the content provider could not urge TWC to accept its terms to carry its network in order to serve and retain the customer based on any competitive threat of carriage by Comcast because Comcast could not serve that customer. TWC's programming purchases do not affect the content provider's opportunity cost of selling the same exact programming to Comcast and vice versa. This implies that the combination of Comcast and TWC will not change the content provider's negotiating position.

53. Finally, as explained in our April Report, any deals between MVPDs and content providers must be mutually beneficial. In this transaction, Comcast's larger size raises the stakes for both sides, but there is no clear gain of relative leverage for either side.82 And because content providers have a large open field in which to sell their programming, Comcast will not gain leverage through any bottleneck power in program buying. In fact, the dramatic increase of programming fees in recent years suggests that content providers have substantial leverage in negotiations with MVPDs (including Comcast).83 The transactions will not change the balance of negotiating power and will not allow Comcast to exercise monopsony power.

2. No Evidence That Comcast Has Exercised Monopsony Power

54. Commenters claim there is evidence that the largest MVPDs pay less for their programming than small and medium MVPDs. They argue this is an indication of monopsony power.84 However, the relevant competition question here is not whether small to medium MVPDs generally tend to pay a higher price than large MVPDs, which we do not dispute. Rather, the relevant competition question is whether Comcast will obtain anticompetitive leverage in its programming negotiations after the acquisition of TWC and Charter systems. We have seen no evidence that Comcast's per-subscriber programming costs will be lower as a result of the transactions, and, more importantly, no evidence that, even if Comcast's per-subscriber programming costs were lower, consumers would be harmed rather than benefitting.

82 April Report, ¶ 192.
83 April Report, ¶¶ 193–194.
84 See, e.g., Biglaiser Report, p. 28, Comanor Report, p. 17 and WGAW/FMC Comment, p. 35.

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55. First, some commenters refer to Comcast's preliminary estimated savings of {{ }} million in programming costs over three years for the TWC transaction,85 But even if we were to assume that all of these estimated savings are owing to pricing differentials in Comcast's and TWC's contracts. the savings are small relative to the size of what the combined company's programming budget is likely to be three years after the closing of the transactions.86

56. More importantly, these cost savings arise in part because Comcast estimated that some of its existing contracts may have somewhat lower prices than TWC contracts; Comcast did not anticipate any additional discounts to its own prices in its due diligence analysis for the TWC transaction. (And the difference is small even though Comcast currently has about twice the number of MVPD subscribers as TWC. This is likely because TWC already is a "large" MVPD, and thus its rates are likely to be far more different from those of a small MVPD than from those of a larger MVPD.) In addition, if a content provider gives one MVPD a lower rate, it faces the risk that the MVPD with the lower rate would use the cost advantage to attract subscribers of rival MVPDs with a higher rate. If subscribers of the high-rate MVPD were to switch to the low-rate MVPD, the content provider would collect lower fees. Thus, content providers may have disincentives to give lower rates to Comcast. Of course, any comparisons of per-subscriber fees across MVPDs needs to control for a variety of factors including, for example, differential advertising revenue that the content provider can generate from carriage by different MVPDs.

57. Professor Comanor asserts that Comcast has exercised monopsony power by reducing quantity as predicted by a traditional monopsony model. He measures the "quantity" using the number of channels carried by MVPDs and cites the 2012 and 2013 FCC Video Competition Report to show that Comcast carries a lower number of channels on its "medium-tier" packages than other wireline distributors. He claims that Comcast does so not by reducing the quantity of any particular channel, but instead by reducing the number of channels it takes from a provider.87

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85 Comanor Report, p. 17.

86 TWC's 2014 programming cost is expected to be around $5.2 billion (TWC 2013 10-K, p. 52) and Comcast's 2014 programming cost is expected to be around $9.8 billion (Comcast 2013 programming cost was $9.1 billion and the annual growth rate of the cost was 7.7% in the last two years; Comcast 2013 10-K, p. 53).. If the combined company's programming costs continue to grow at the 7.7% annual rate, the combined company's programming cost would grow to $18.7 billion in three years (by 2017), of which the estimated {{ }} million savings is just {{ }}.

87 Professor Comanor suggests that "one means to exercise monopsony power is to reject the seller's proposed bundles and agree only to pay for a smaller number of channels." Comanor Report, p. 18.

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58. Professor Comanor's claim is flawed both conceptually and empirically. Reduction in demand and exercise of market power cannot be shown by simple channel counts because the number of channels carried on a particular tier is not a proper measure of output. Some channels are very valuable whereas others generate little overall surplus, and it would be inappropriate to compare channel counts without adjusting for quality or consumer welfare. Professor Comanor picked arbitrary "medium-tier" packages to compare without any justification for why those particular packages are appropriate, comparable, or relevant for assessing the economic impact and consumer welfare implications of the many other packages offered by MVPDs.

59. Moreover, Professor Comanor's data do not take price of packages into account. According to the 2013 Video Competition Report he cites, the 160-channel package that Comcast offers is priced at $39.99. The prices of other medium-tier packages he uses for comparison of channel counts are much higher: TWC's is $49.99; Cox's is $65.99; Verizon's is $74.99; and AT&T's is $72.00.88 Even on its own terms, Professor Comanor's interpretation of the data is deeply flawed by not accounting for price.

60. Professor Comanor's data is also out-of-date. He relies on the Commission's 2013 Video Competition Report, which in turn relies on company websites visited on October 30, 2012.

61. Finally, it may be efficient for MVPDs to carry fewer channels. For example, an MVPD may carry fewer channels and devote more of its limited bandwidth to broadband or HD channels. Or an MVPD may decline to carry channels for a variety of legitimate competitive business reasons. For example, Dish does not carry several RSNs, including the YES Network.

62. Despite all of these infirmities in using channel counts as a metric for quantity, applying Professor Comanor's channel count methodology to current data obtained from company websites visited in September 2014 shows that Comcast carries more channels than most major MVPDs. For example, Table III.A.1 provides the advertised channel counts offered by a variety of major MVPDs in September 2014. Comparing "medium-tier" packages (analogous to the method used by Professor Comanor), Comcast currently offers 220+ channels ($39.99) compared to TWC's 200+ channels ($49.99), Cox's 220+ channels ($49.99), DirecTV's 205+ channels ($39.99), Dish's 190+ channels ($54.99), AT&T's 300+ channels ($44.00), and Verizon's 225+ channels ($49.99). Comcast also carries a large number of unaffiliated channels and carries more networks produced by independent content providers (i.e., those outside the top 15 content providers by revenue) than other cable MVPDs.89 There is no support in the data for a conclusion that Comcast exercises monopsony power by restricting the number of channels.

88 FCC 15th Video Competition Report, ¶ 127 (Table 6).
89 Source: Rovi. See Table III.B.1 below.

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3. Comcast Will Not Gain Monopsony Power Over Hispanic Programming from the Proposed Transactions

63. Entravision and its expert Professor Kwoka express concern that the transactions will harm Hispanic programming.90 Their arguments about Hispanic programming are similar to the comments about potential horizontal and vertical harms for programming overall that we have addressed in our previous reports and above. The same economic logic and analysis in our earlier discussion show that these concerns about Hispanic programming also do not lead to a cause for concern about anticompetitive behavior.

64. Entravision claims that Comcast will acquire buying power and make it more difficult for other Hispanic programming providers to reach enough subscribers to be successful. In particular, Professor Kwoka claims that Hispanic programming providers may have difficulty reaching a scale of 20 million subscribers if they do not gain carriage on Comcast.91 There are several problems with this claim.

65. First, Professor Kwoka assumes that reaching 20 million MVPD subscribers is necessary for success of a Hispanic programming network. There is no evidence to support this hypothesis. The minimum viable scale for a network can vary greatly depending on a variety of factors, including its programming concept, delivery strategy, programming costs, revenue sources, and brand recognition. In addition, the 20 million figure is unlikely to apply to Hispanic programming since according to the U.S. Census, there are far fewer than 20 million Hispanic households in the U.S., and only a fraction of those subscribe to MVPD service.92

66. In fact, there are other ethnic networks that have succeeded with a limited subscriber base. For example, WAPA-America, which focuses on Caribbean-produced programming, has been a cable network since 2004 and has only an estimated [[ ]] million subscribers. CentroAmerica TV, which focuses on Central American programming, has been a cable network since 2004 and is carried by MVPDs to only an estimated [[ ]] million subscribers.93 Other networks with Hispanic-oriented programming and fewer than 20 million U.S. subscribers include Mexico TV, Sorpresa!, LatinoAmerica TV, MEXICANAL, Canal Sur, De Pelicula, and Bandamax.94

90 Entravision Comment; Kwoka Report.
91 Kwoka Report, p. 9.
92 U.S. Census Bureau, 2008–2012 American Community Survey; National Association of Broadcasters, “Broadcast Television and Radio in Hispanic Communities,” July 2013.
93 Source: SNL Kagan, Economics of Basic Cable Networks 2013.
94 Source: SNL Kagan, Economics of Basic Cable Networks 2013.

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67. Second, even assuming Entravision's hypothesis is correct, an agreement with Comcast is not necessary to reach 20 million MVPD households. As we showed in our April Report, it is easy for a content provider to reach 20 million MVPD households through other MVPDs, including MVPDs that serve all of the top DMAs with high Hispanic populations.95 In addition, over-the-air (including Entravision broadcast stations) and online distribution would make reaching 20 million households without Comcast relatively easy.

68. Finally, because much Hispanic programming is shown over the air, many of the stations on which this programming is carried have must-carry rights and therefore can demand carriage on Comcast's systems. In addition, such programming is now thought to be valuable enough that many such stations are forgoing must-carry and instead negotiating compensated retransmission consent. There is no evidence that Comcast has the bottleneck power alleged by Professor Kwoka.96 It is indisputable that Hispanic programming networks can succeed without carriage on Comcast.97

4. A Reduction of Comcast's Programming Cost Will Benefit Consumers, Will Not Harm the Quality of Programming, and Will Not Increase the Cost of Other MVPDs

a) Lower Programming Costs Will Benefit Consumers

69. Professor Comanor suggests that a reduction of programming cost from Comcast's exercise of alleged monopsony power would not lower the prices to consumers because "[the monopsonist's] relevant costs for decision marking purposes are marginal costs and these are not lower" and "when the monopsonist has market power in its output market, the reduced input prices translate into higher output prices."98 Professor Comanor further claims that "any enhanced monopsony power resulting from the proposed merger will likely lead to higher prices for wireline consumers."99

95 Because there are only about 13.4 million Hispanic households in the U.S., Entravision's claim of 20 million households necessarily includes both Hispanic and non-Hispanic households. Source: U.S. Census Bureau, 2008–2012 American Community Survey. In addition, DirecTV recently announced that it is "building the infrastructure for a Hispanic OTT product," which will provide yet another potential avenue for Hispanic-oriented programming to reach Hispanic households. DirecTV Conference Call at Bank of America Merrill Lynch Media, Communications and Entertainment Conference, 9/16/14, p. 8.

96 In fact, a sizeable share of Hispanic households are over-the-air only and Comcast could not be a bottleneck for them. See, e.g., National Association of Broadcasters, "Broadcast Television and Radio in Hispanic Communities," July 2013.

97 The National Hispanic Media Coalition claims that the transaction would "make Comcast the cable provider for up to 90 percent of Latinos nationwide" (Comments of the National Hispanic Media Coalition, p. 2). However, after the transactions, Comcast will not pass 90% of Latino households nationwide, but will only operate in zip codes where about 79% of Hispanic households are located. Moreover, Comcast will be an option, but certainly not the only option for those households. It will need to compete for those customers with other MVPDs, over-the-air viewing, and potentially OVDs.

98 Comanor Report, p. 20 (quoting Roger D. Blair and Jeffrey L. Harrison, Monopsony, Antitrust Law and Economics, Princeton University Press, 1993, pp. 39–42).

99 Comanor Report, p. 20.

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70. In our April Report, we addressed this issue, and the facts and economics have not changed. Programming fees are generally assessed on a per-subscriber basis, and are thus a marginal cost to MVPDs.100 In addition, as discussed above, the monopsony claim requires a reduction in input quantity (which may in turn affect the output quantity and price) but there is no quantity reduction present here. Without a change in input quantity, basic economics teaches that changes in marginal cost will be passed on in full or in part to consumers, even for a monopolist (which Comcast is not).101 Economic studies have found changes in programming costs are passed through to MVPD subscribers at a rate of about 50 percent.102 According to Dr. Shelanski, who recently served as head of the Bureau of Economics at the Federal Trade Commission:

The case for pass-through of efficiencies is compelling for a firm that faces competition, particularly competition as vigorous as that in the MVPD market. . . . Reductions in the direct costs of procuring programs will result in both a lower cost per-program for subscribers and in an increased number of programs being made available to subscribers. . . . Efficiency gains from the merger may also be passed through to consumers in a less direct way through increased investment in network upgrades and the development and deployment of innovative services.103