EXHIBIT A

Statement of Dr. Fiona Scott Morton re the Merger of Charter, TWC, and BHN

November 2, 2015

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I. Qualifications, Assignment, and Summary of Opinion

1. I am the Theodore Nierenberg Professor of Economics at the Yale School of Management, a Visiting Professor in the Economics Department of the University of Edinburgh, and a Senior Consultant at Charles River Associates. I was the Deputy Assistant Attorney General for Economic Analysis with the Antitrust Division of the US Department of Justice in 2011 and 2012. I have taught at the business schools of Stanford and the University of Chicago and served as Associate Dean for Faculty Development at Yale School of Management. I received a PhD in Economics from MIT in 1994.

2. At Yale University, I teach courses in the area of competitive strategy and competition economics and policy. My research is in the area of empirical Industrial Organization, the sub-field of microeconomics that includes competition economics and the study of firm behavior. I have authored or co-authored more than 20 articles in a variety of areas of economics. Those articles have been published in leading scholarly and professional journals, including the *American Economic Review*, the *RAND Journal of Economics*, the *Journal of Industrial Economics,* and the *Quarterly Journal of Economics*.

3. I filed a previous statement regarding the merger of Charter Communications ("Charter"), Bright House Networks ("BHN"), and Time Warner Cable ("TWC") as part of the parties' June 25, 2015 Public Interest Statement. I included my complete curriculum vita as an attachment to that statement. In what follows below, I update and supplement findings from my previous statement.

4. In particular, counsel for the parties have asked me to further consider whether or not the post-merger firm ("New Charter") will have an incentive to foreclose or otherwise disadvantage Online Video Distributors or other edge providers ("OVDs"), either unilaterally or in concert with Comcast. Below, I reaffirm my previous finding that New Charter will not have an incentive to foreclose or otherwise disadvantage OVDs, either unilaterally or in concert with Comcast. To the contrary – I find that Charter's past technology choices, along with the margins New Charter will likely earn from the various services it sells, will give New Charter a strong economic incentive to support OVDs. I address these and other issues in more detail below.

5. In preparing this statement, I have reviewed documents and interviewed executives from Charter and TWC. I rely on information from those documents and interviews below. As the merger review process continues, more information will become available, and I may update my findings.

II. Comments and Responses

6. I have reviewed the statements and concerns of the various commenters in this proceeding. This report in its entirety addresses many of these concerns. However, in this section, I consider certain specific comments about the transaction.

A. Comments with General Concerns not Related to the Merger

7. Not all of the concerns reflected in the comments were merger-specific. Merger-specific concerns are those arising from the merger itself, rather than general concerns about competitive conditions in the cable industry that are not affected by the merger. Merger-specific concerns generally involve potential changes in the competitive interaction between rivals post-merger. They also include changed circumstances due to the merger, such as concerns related to New Charter's debt. However, many commenters expressed general concerns about the state of the cable industry that would not be affected by the merger. I address some of those concerns here and explain why they are not merger-specific, and therefore not an argument the merging firms need address.

1. Substitutes for Cable Broadband

8. A number of commenters were concerned that consumers have insufficient choices among broadband providers.[1] This comment is not merger-specific. As covered in more detail below, the merger of Charter, BHN, and TWC does not alter the number or type of broadband providers available to any household. In Section VII below, I describe how broadband choices are growing over time. I also describe how entry by OVDs provides more consumer choices in video services and, as described by Assistant Attorney General for Antitrust, Bill Baer, enhances broadband competition.[2]

2. Bundling Discount

9. Some commenters argue that New Charter's bundled services will either distort video competition via unfair subsidization of MVPD services from the margins earned on broadband, or will distort competition via unfair

[1] See, for example, Comments of Free Press., MB Docket 15-149, October 13, 2015 (hereinafter, *Free Press Comments*), Comments of DISH Network Corporation, MB Docket 15-149, October 13, 2015 (hereinafter, *DISH Comments*), Comments of COMPTEL, MB Docket 15-149, October 13, 2015 (hereinafter, *COMPTEL Comments)*

[2] See *Assistant Attorney General Bill Baer Delivers Keynote Address at the Future of Video Competition and Regulation Conference Hosted by Duke Law School*, October 9, 2015, available at http://www.justice.gov/opa/speech/assistant-attorney-general-bill-baer-delivers-keynote-address-future-video-competition. ("...a more competitive video entertainment market will also spur more broadband competition.")

subsidization of broadband from margins earned on MVPD services.[3] First, the comments show that independent sellers of parts of the bundle wish that the portion against which they compete were priced higher. But the two types of sellers (MVPD and broadband) cannot *both* be competing against a product that is cross-subsidized by the other; this is a logical impossibility. Commenters cannot have it both ways. However, in either case, such a concern is not merger specific, as the parties already offer MVPD and broadband services as bundles. Moreover, if they desired, the concerned parties that sell separate parts of the bundle could join forces to offer a similar bundle of broadband and video services.

10. Although a general concern regarding bundles is not merger specific, New Charter expects to achieve certain benefits in programming cost savings, investments, and service deployment that will lead to enhanced value from the bundles offered by New Charter. These merger-specific effects on service bundles are likely to enhance competition and benefit subscribers.

3. Local Bargaining Power

11. One commenter observed that TWC already has a significant subscriber share in Hawaii.[4] The commenter expressed concern that the transaction will increase market power in local video and broadband provision, and that this increased market power will enable New Charter to use exclusive contracts to deny smaller providers, including Hawaiian Telcom, access to local and national sales, and installation and construction contractors. Yet neither Charter nor BHN is present in Hawaii. As such, the merger will not increase market power in local video and broadband provision. New Charter will have the same initial position as the current TWC in Hawaii. If New Charter is able to subsequently grow its presence in Hawaii, it may well be due to the synergies it is able to achieve from the deal. As I discuss in sections below, New Charter expects to achieve synergies from the merger that will result in enhanced value to consumers from current services. These savings are a benefit from the merger, not a harm.

4. The Economics of Incentives to Support or Foreclose OVDs

12. COMPTEL comments, "New Charter will have the incentive and ability, with exclusive gatekeeper power over access to close to 20 million broadband subscribers, to use interconnection to slow the development of video competition with OVDs."[5] Multiple System Operators ("MSOs") like New Charter sell video, broadband, and voice

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[3] See, for example, *Free Press Comments,* Comments of Public Knowledge et al., MB Docket 15-149, October 13, 2015 (hereinafter, *Public Knowledge Comments*), Comments of Writers Guild of America West, Inc., MB Docket 15-149, October 13, 2015 (hereinafter, *Writers Guild Comments*), *COMPTEL Comments,* Comments of Cincinnati Bell Extended Territories LLC, MB Docket 15-149, October 13, 2015 (hereinafter, *Cincinnati Bell Comments), DISH Comments.*

[4] See, for example, Comments of Hawaiian Telcom Services Company, Inc., MB Docket 15-149, October 13, 2015 (hereinafter, *Hawaiian Telcom Comments*).

[5] See, for example, *COMPTEL Comments.*

services.[6] An MSO may have an incentive to foreclose an OVD if it will make more profit from its video, broadband, and phone services by doing so. On the other hand, if the MSO will make more profit by supporting an OVD, it will have an incentive to do that instead of foreclosing. The effect of an OVD on the profits MSOs earn from video, broadband and voice services depends on several things. It depends on the various effects OVDs have on the profits of each of the separate services, and also on the profits of the different bundles of those services the MSO sells.

13. As I will explain below, OVDs very likely increase the demand for and profits from broadband services. It also turns out that for many MSOs, including for New Charter, OVDs can increase the net demand for and profits from video and phone services as well. This is largely due to the fact that the availability of the differentiated video services provided by OVDs attracts subscribers that tend to purchase more video and phone services, on average.

14. If cable systems were identical to one another, the concern about lack of support for OVDs would not be merger-specific. However, support for OVDs is a merger-specific issue in these transactions because, as I explain in more detail below, Charter's OVD friendly strategy will be expanded to cover the entire TWC, BHN, and Charter footprints.

B. Comments with Merger-Specific Concerns

1. Increased Concentration in a National Broadband Market

15. It is important to explain why the mergers will not cause any harmful price effects in the markets for multichannel video programming distributor ("MVPD"), broadband, or voice services. Charter, BHN and TWC have *de minimis* overlap geographically, and therefore do not currently compete to provide MVPD, broadband or voice services to the same subscribers. Despite the lack of geographic overlap, some commenters suggest that there is a national broadband market where the transaction will lead to increased concentration.[7] Because there is *de minimis* geographic overlap between the merging firms, there can be no change in the post-merger firm's incentives to unilaterally increase prices to subscribers.[8] The post-merger firm would not want to increase one of its prices and risk losing a subscriber with the hope of "recapturing" the subscriber with its merging partner's products. There is no hope of such recapture without meaningful geographic overlap. Therefore, these mergers will not create a loss of competition for subscribers of MVPD, broadband or voice services.

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[6] They sell other services too, like home security monitoring, but those have a much smaller impact on their revenue and profits.

[7] See, for example, *Free Press Comments, Public Knowledge Comments, DISH Comments, Writers Guild Comments, COMPTEL Comments,* and *Cincinnati Bell Comments.*

[8] In fact, cost savings and other synergies related to the merger will give the post-merger firm an incentive to lower prices. See my discussion below.

16. Commenters are concerned that such increased concentration will give New Charter an increased incentive to unilaterally foreclose OVDs.[9] But a market is defined by products that are substitutes, and a broadband provider such as legacy Charter in St. Louis is not a substitute for OVD distribution for a broadband provider in San Diego. Because the merging companies have *de minimis* geographic overlap, they do not offer substitute routes for OVD broadband distribution to a particular consumer.[10]

2. Reduced Future Competition in TV Anywhere

17. One commenter expressed a concern that the transaction may reduce future competition in streaming video "TV Everywhere" type services.[11] The premise is that absent the mergers Charter, TWC, BHN, and presumably other MVPDs will develop their own streaming video services that will be marketed nationally and independently from their MVPD services. This appears to be a speculative concern, as the parties' current and planned services only work within each party's footprint, and users must subscribe to the parties' MVPD services in order to access the content.[12]

18. In any event, this speculative future may not be in the programmers' best interests, in which case programmers would not allow such expansion. Programmers seek to maximize the value of their content via various distribution models that include geographic exclusivity, windowing, and other terms. These terms generally keep access to content limited so that customers (distributors) are willing to pay to show it. Contract terms affect whether or not an MVPD can include content on an OVD service distributed outside of its geographic area. Simply put, programmers may not want MVPDs to offer competing OVD services. Roger Lynch, CEO of Sling TV, recently expressed hope that more programmers could be added to its OVD service.[13] However, he stated that, "To some extent, [networks] aren't ready." The concerns stated by Sling TV's CEO are borne out by the actions of the programmers themselves. For example, Disney and other programmers have not embraced Verizon's Custom TV skinny bundle service and instead would not broadcast ads for it.[14]

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[9] Id.

[10] Even if the parties overlapped geographically, it is not clear that their products would be substitutes. Since subscribers normally only use one broadband service, each party would have its own unique set of subscribers. Thus, even with geographic overlap, the parties would not offer substitute ways for OVDs to reach the same subscribers.

[11] See, for example. *Writers Guild Comments.*

[12] For example, I understand that Charter's Spectrum TV Stream service is a Title VI service operating only within Charter's broadband footprint and thus not a traditional OVD service. It is not nationally available.

[13] "Sling TV to Add Broadcasters 'When They're Ready'," Multichannel News, October 21, 2015, available at http://www.multichannel.com/news/content/nyc-tv-week-sling-tv-add-broadcasters-when-theyre-ready/394725.

[14] "Verizon: Disney ad blackouts slowed growth of skinny bundle to 9K subs in Q2," FierceCable, July 22, 2015, available at http://www.fiercecable.com/story/verizon-disney-ad-blackouts-slowed-growth-skinny-bundle-9k-subs-q2/2015-07-22.

3. Potential Foreclosure of Sling TV

19. DISH Network Corporation ("DISH") has expressed concern about potential future foreclosure of its Sling TV service.[15] I describe in sections below how consumers desire a variety of video content and how MVPD and OVD services are differentiated in content and offerings. In addition, consumer tastes are heterogeneous. This combination will generate rich patterns of substitution, where some consumers find many OVDs to be complementary to their MVPD service and those with a strong taste for video purchase several, while other consumers find a particular OVD to be a substitute for MVPD service and may "cut the cord." In addition, different cable networks may have different business models that focus on selling certain services, or to certain types of consumers, that may be differentially affected by entry of OVDs. For reasons I will explain later in this report, Charter finds access to OVDs to be, on average, helpful to its business model of selling packages of broadband, MVPD, and phone service.

20. For some consumers, the offerings from Sling TV may be a substitute for MVPD services, depending on each consumer's preferences for channels, desire for specific content, ease of use, ability to record and other factors. For most consumers, however, Sling TV is not a close substitute. For example, Sling TV's CEO, Roger Lynch, said in an August 2015 earnings call that the "vast, vast" majority of Sling TV subscribers do not currently have pay TV when they begin their Sling TV subscription.[16] Similarly, Glenn Eisen, Sling TV's CMO, stated that Sling TV is not targeting current MVPD subscribers.[17] Instead it is "targeting those who are already ready to cut the cord" and "we aren't going to create cord cutters." Mr. Lynch detailed three types of subscribers for Sling TV: cord nevers that never previously had pay TV, cord cutters (who "cut the cord sometime maybe in the last four years"), and supplementers (who subscribe to Sling TV on top of their pay TV service). To the extent that Sling TV appeals to cord nevers, cord cutters that cut some time ago, and supplementers, the Sling TV service adds value to the broadband New Charter offers to subscribers without cannibalizing its sales of MVPD services.

21. Sling TV is just one example of an OVD service. I discuss the potential foreclosure of OVDs services more generally in sections below.

4. Debt Concerns

[15] See, for example, *DISH Comments*.
[16] See DISH Earnings Call, August 5, 2015.
[17] "Sling TV CMO Courts Cord Cutters, Careful Not to Undercut Dish TV," Advertising Age, September 15, 2015, available at http://adage.com/article/print-edition/sling-tv-cmo-courts-cord-cutters-carefully/300332/.

22. Some commenters noted the increased debt that New Charter would hold due to the transaction and compared that level of debt to levels for other companies.[18] These comments expressed a concern that the increased debt would spur New Charter to more actively protect its video business via OVD foreclosure. Higher debt levels generally raise a firm's discount rate, making the firm value current revenues more highly than revenues arriving sometime in the future. Contrary to the stated concern, this would make New Charter less likely to engage in speculative and risky entry deterrence and foreclosure schemes with payoffs far in the future. Because revenues today are especially valuable to New Charter, it will be less likely to spend them on costly collusion to weaken OVDs in the hope that future years' profits would be higher. (See Section VIII below for a specific discussion of the factors affecting the likelihood of collusion.) New Charter would instead have incentives to work on projects such as upselling customers to higher value packages and triple plays that generate immediate revenue. New Charter's increased incentives to promote broadband and improved product packages is consistent with the strategies and business partnerships that Charter is already implementing. An extensive discussion of these strategies and actions is provided in later sections.

III. New Charter will benefit OVDs

23. Commenters suggest that New Charter will have an increased incentive to foreclose OVDs.[19] In contrast, the proposed transactions make New Charter a stronger and more beneficial partner for OVDs.

24. The transactions combine Charter's leading set-top box technologies with TWC's leading efforts to deliver its video programming via apps on third-party devices.[20] New Charter will be able to harness both means of making OVD content more readily available to its customers and will apply those OVD-friendly policies using the combined scale of Charter, TWC and BHN. Strong partners who can provide active support for OVDs will raise investment in OVDs, encourage quick adoption of OVDs, and promote innovation in video consumption.

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[18] See, for example, *Knowledge Comments*, *Writers Guild Comments*, *Free Press Comments*, Comments of MFRConsulting, MB Docket 15-149, September 28, 2015, Comments of Stop the Cap!, MB Docket 15-149, October 10, 2015 (hereinafter, *Stop Cap Comments*).

[19] See, for example, *DISH Comments*, p. 49 ("New Charter would enjoy both the expanded footprint of its MVPD services and a nationwide footprint through its new OTT service. This would allow New Charter to gain video subscribers not only in its own footprint, but also those outside of it. That increased video footprint significantly increases New Charter's incentive to foreclose a competing OVD.")

[20] See, for example, John Falcone, *TWC TV app turns Roku into a cable box for Time Warner customers (hands on)*, CNet, March 5, 2013, available at http://www.cnet.com/news/twc-tv-app-turns-roku-into-a-cable-box-for-time-warner-customers-hands-on/; Consumers Union, Opposition to Proposed Merger of Comcast Corp. and Time Warner Cable, FCC Docket No. 14-57, Oct. 2, 2014, at 30 (characterizing TWC's development of an app for Roku as a "consumer-friendly, maverick initiative[]" that gave consumers "more choice in entertainment" – including OVD content presented alongside TWC's content – "than was ever possible before," and noting that TWC was "the first multichannel video program distributor to offer TV access to authenticated subscribers without the need of a cable set-top box").

25. OVDs can enter the market, in the sense of supplying content, very easily. An OVD must simply obtain the rights to content and then offer that content through an interface for viewing on the internet. An MVPD cannot prevent an OVD from entering the market, nor can an MVPD prevent an OVD from reaching minimum viable scale.

26. However, in some instances an MVPD can help OVDs both to enter the market effectively and to reach the MVPD's subscribers quickly. For example, if an MVPD were to help an OVD implement its internet interface and then prominently display that OVD's offerings within its electronic programming guide ("EPG") (either as a separate application or even within its program grid), the OVD might enter at a lower cost and obtain more customers more quickly. Additionally, if an MVPD provided software or hardware in the home that allowed the OVD to be more easily viewed in combination with other content, or that delivered more functionality, that would raise consumer valuation of the OVD. Note that the beneficial effect of these actions to an OVD would be magnified if the MVPDs were larger, all else equal. The OVD might want to work with the MVPD to obtain these benefits for its service. For example, Hulu has entered deals over the past year for placement in the EPGs of several MVPDs.[21] An MVPD, for its part, would have the incentive to enter into these kinds of agreements if the MVDP's customers desired the relevant OVD content.

27. In other words, a valuable MVPD partner for an OVD has three characteristics: a modern technology platform, incentives to promote the OVD, and scale. On each of these dimensions, New Charter will be a better partner for OVDs than any of Charter, TWC or BHN as a standalone company. As I explain in more detail below, New Charter has a modern technology platform and the incentives to promote OVDs. In addition, New Charter will have scale greater than any of the three standalone companies.

28. For example, based on the number of basic subscribers, New Charter will be larger (and therefore have more favorable economies of scale) than TWC, though not as large as Comcast or AT&T / DTV. Table 1 below shows the number of basic video and broadband subscribers for the top 20 multichannel providers in the second quarter of 2015, adjusted for the AT&T/DTV deal.[22] By the number of basic subscribers, New Charter will be the third largest behind AT&T/DTV and Comcast. By the number of fixed broadband subscribers, New Charter will be the second largest behind Comcast.

[21] See "INTX 2015: Hulu Adds MVPD Partners," Multichannel News, May 5, 2015, available at http://www.multichannel.com/news/tv-apps/intx-2015-hulu-adds-mvpd-partners/390385.

[22] SNL Kagan broadband figures include DSL, satellite broadband, and a small number of fixed wireless service subscribers. SNL Kagan broadband figures are published under a legacy term "high speed data" that does not imply the 25 Mbps minimum download speed defined by some other industry sources.

Table 1

Top 20 Multichannel Providers - Ranked by 2Q 2015 Basic Video Subscribers

Rank	Company Name	Basic Subscribers		Broadband Subscribers	
	Total for Top 72 Multichannel Operators	112,146,231		92,438,161	
1	AT&T / DTV	39,107,000	35%	15,961,000	17%
2	Comcast Corporation	22,306,000	20%	22,548,000	24%
	Pro Forma New Charter	17,245,476	15%	20,248,092	22%
3	DISH Network Corporation	13,932,000	12%	595,000	1%
4	Time Warner Cable Inc.	10,982,000	10%	12,770,000	14%
5	Verizon Communications Inc.	5,765,000	5%	9,221,000	10%
6	Charter Communications, Inc.	4,258,000	4%	5,294,000	6%
7	Cox Communications, Inc.	4,000,000	4%	4,953,868	5%
8	Cablevision Systems Corporation	2,637,000	2%	2,781,000	3%
9	Bright House Networks, LLC	2,005,476	2%	2,184,092	2%
10	Suddenlink Communications	1,102,600	1%	1,248,600	1%
11	Mediacom Communications Corporation	879,000	1%	1,051,000	1%
12	WideOpenWest Networks, LLC d/b/a WOW!	582,700	1%	713,100	1%
13	Frontier Communications, Inc.	570,000	1%	2,407,000	3%
14	Cable One, Inc.	399,878	0%	497,036	1%
15	RCN Corporation	306,133	0%	409,066	0%
16	CenturyLink, Inc.	258,000	0%	6,108,000	7%
17	Midcontinent Communications	225,668	0%	272,630	0%
18	Atlantic Broadband Group, LLC	223,066	0%	204,967	0%
19	Armstrong Utilities, Inc. d/b/a Armstrong Cable Services	221,275	0%	236,218	0%
20	Service Electric Cable TV Incorporated	199,078	0%	91,969	0%

Source: SNL Kagan. AT&T and DirecTV have been combined to reflect merger. Note: DirecTV figures include U.S. and international subscribers. SNL Kagan omitted Frontier Communications from this list. Frontier was added based on quarterly report.

29. While numerous MVPDs like Charter have adopted partnership strategies with OVDs, not all have done so. Notably, some larger players such as Comcast have not actively pursued partnerships to integrate OVD content into their EPGs and other offerings. As will be described in greater detail in a subsequent section, these MVPDs have concentrated efforts on set-top-box ("STB") development and video on demand ("VOD") offerings. On the other hand, Charter has chosen to pursue OVD partnerships, and in fact Charter has chosen a strategy that integrates OVDs into its EPG more than most other MVPDs, as will be discussed below. Netflix has provided its own comparison of the differing strategies taken by MVPDs vis-à-vis OVDs:

> "While some MVPDs want to inhibit our growth, others would prefer that our growth happen through their remote control and set top experience."[23]

A. OVD Partnering Choices

30. The more strong partners that are available to a new OVD, the more likely it is to find at least one MVPD partner with the necessary attributes that is willing to actively support aspects of its go-to-market strategy. All else equal, more strong partner choices lead to a better match for the OVD. Below I describe the other major MVPD/ISP partners available to OVDs.

[23] See "Netflix Long Term View," available at http://ir.netflix.com/long-term-view.cfm.

1. New Charter

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[END HIGHLY CONFIDENTIAL INFORMATION]In order to provide a wide variety of content, Charter has chosen to support OVDs. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] For example, Table 2shows a summary of Charter's Spectrum content in comparison to the offerings of the largest OVDs – Netflix, Hulu, and Amazon Prime. As can be seen in the table, no single source of content can serve as a one stop shop for diverse content.

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32. Another way to describe Charter's strategy is to recognize that by implementing it Charter is essentially outsourcing some of its content curation. Video content is becoming increasingly expensive and diverse. It would be costly and difficult to fill every niche within a single MVPD's offerings. For example, industry analysts estimate Netflix's deal with Disney will cost $300 million annually. [26] And Hulu recently reached a non-exclusive content agreement with Epix to obtain movies from Lionsgate, MGM, and Paramount. [27] The financial terms of the Epix-Hulu deal are not public, but Netflix reportedly paid $1 billion for its five year deal with Epix that expired in August

[24] See Charter presentation "General Product Meeting: Video On Demand Content Strategy," May 12, 2014, p. 4.
[25] See Charter presentation "General Product Meeting: Video On Demand Content Strategy," May 12, 2014, p. 2.
[26] See "Breaking Down the Disney-Netflix Deal," CNBC, December 4, 2012, available at http://www.cnbc.com/id/100277562.
[27] Epix content is also available on Amazon Prime. See "Epix headed to Hulu with Netflix deal ending in September," USA Today, August 31, 2015, available at http://www.usatoday.com/story/tech/2015/08/31/epix-headed-hulu-netflix-deal-ending-september/71473212/.

2015.[28] Partnering with OVDs with desirable content to incorporate that content on New Charter's video service allows for the offloading of these increasing content costs onto the OVDs. In addition, any customer service costs associated with the programming is also currently born by the OVD, although one can imagine business models where an MVPD might partner with an OVD in an effort to minimize these types of costs.

33. In partnering with MVPDs, OVDs such as Netflix and Hulu are adopting a business model similar to that of HBO. They create and contract for valuable content that can be marketed as a stand-alone product or an add-on for MVPD subscribers. Netflix first began to identify HBO as its "primary long-term competitor" back in 2011.[29] Netflix has more recently said "The goal is to become HBO faster than HBO can become us."[30]

34. Charter has sponsored studies confirming the appeal to consumers of integrating streaming content into Charter's other offerings. One 2015 study to investigate the streaming device ownership and viewing behavior of Charter subscribers found:

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35. Charter identified that both cord cutters and other OVD users would like to access both traditional and OVD services and that Charter could base its strategy on these findings.

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36. As part of its overall OVD-friendly strategy, Charter has chosen a technology strategy that is beneficial to OVDs. Charter has developed an STB called the Worldbox, and an advanced EPG called the Spectrum Guide. According to Charter,

> For set-top boxes, we are implementing a video conditional access strategy utilizing our downloadable security on a set-top box specified by us which can be manufactured by many different manufacturers. We expect to roll out downloadable security throughout our current systems…[As] we roll out downloadable security, we will utilize the Worldbox, and we expect to introduce Spectrum Guide at that time as well. Our Spectrum Guide will deliver an improved guide on all boxes. We believe Worldbox utilizing downloadable security along with the introduction of Spectrum Guide will reduce our incremental set top box costs and

[28] See "Hulu shows new aggressive strategy in deal with Epix," LA Times, September 1, 2015, available at http://www.latimes.com/entertainment/envelope/cotown/la-et-ct-epix-hulu-20150901-story.html

[29] See Netflix Top Investor Questions, available at http://ir.netflix.com/faq.cfm.

[30] See "2015 Will Be the Year Netflix Goes 'Full HBO'," Time, January 20, 2015, available at http://time.com/3675669/netflix-hbo/.

[31] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 5.

[32] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 30.

allow for a consistent service for all of our customers and on all of their televisions with a service that is rich in HD, has modern search and discovery features and is capable of improved implementation of future enhancements.[33]

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40. Charter's new cloud-based interface called Spectrum Guide provides the user interface on the Worldbox as well as two-way legacy set top boxes. Charter describes its Spectrum Guide as:

[33] See Charter 2014 10K, p. 8. This statement was made in reference to the prior Comcast, TWC, Charter transaction, but the premise of the ease of downloadable security remains true.
[34] See "Charter Worldbox Deployments Underway", Multichannel News (Aug. 17, 2015)
[35] A CableCARD is a separable security device that can be inserted into a STB or third-party device to identify and authorize the customer and subsequently decode encrypted digital cable networks.
[36] See, for example, Charter's presentation "World Box and DCAS/DRM Summary," July 2014, slide 5.
[37] Rovi makes EPGs for the Arris and Cisco systems.
[38] See, for example, Charter's presentation "World Box and DCAS/DRM Summary," July 2014, slide 5.

> [A] network, or "cloud" based user interface designed to enable our customers to enjoy a common user interface with a state-of-the-art video experience on all existing and future set-top boxes.[39]

41. In fact, Charter has even made the Spectrum Guide available on Roku devices for current Charter subscribers.[40] This allows subscribers to watch Charter programming, including live television on additional televisions via an already owned (or newly purchased) Roku device. The app is also available on Roku's Streaming Stick, iOS and Android devices.[41] Because the Spectrum Guide can be used on legacy STBs, subscribers with legacy STBs will also get the benefits of this new technology without the cost of a home visit by technicians or the purchase of a new piece of hardware.

42. Remote updating of software from the cloud allows each subscriber's box to be updated at almost no cost whenever a significant quality improvement is available. Therefore all consumers can enjoy the latest level of quality at all times. This offers significant consumer benefit compared to the legacy method of infrequent updates, and even less frequent box replacements, in order to enjoy technology improvements.

43. The Spectrum Guide offers potential benefits to third-parties, including OVDs. It was designed to use ActiveVideo's CloudTV standards based system.[42] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]Because it uses a common programming language, it is relatively easy for third-parties, including OVDs, to design applications that could be included within the Spectrum Guide or in its App Store.

44. Charter's Spectrum Guide also offers consumer benefits. The Guide assembles available content for the consumer to browse and search among, and then view. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] This obviates the need for the consumer who wants to watch OVD content from having to change input sources, pick up her Roku or

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[39] See Charter 2014 10K, p. 8.
[40] See "Charter Lineup Joins Roku," Multichannel News, October 12, 2015, available at http://www.multichannel.com/news/video/charter-lineup-joins-roku/394487.
[41] Id.
[42] See, for example, information from http://developer.activevideo.com/ and "Charter Plots Post-Deal Future," LightReading, August 4, 2015, available at http://www.lightreading.com/cable/set-top-boxes/charter-plots-post-deal-future-/d/d-id/717435.
[43] See, for example, Charter document "CloudTV OTT-to-Managed Devices Solution," p. 9.
[44] See, for example, "Hulu & Netflix: Product Update," June 2, 2015, p. 5 and "Project: 3rd Party App Integration Platform: Spectrum Guide," July 6, 2015, p. 8-17.

Apple remote control and start searching there. Being able to move seamlessly from MVPD offerings to OVD offerings is a consumer benefit.

45. A unified Spectrum Guide is a good way for a partnering OVD to get access to many viewers and thereby lower its subscriber acquisition costs.

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47. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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48. The Spectrum Guide reduces switching costs among OVDs. Such switching costs create stickiness, and reduce competition, between OVDs. Any given OVD would prefer to keep a consumer in its fold choosing other content from its menu, than have that consumer depart to watch another OVD. It is possible that as OVD brands become stronger, the ease-of-use of the Spectrum Guide will increase competition among OVDs in the New Charter footprint.

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[45] See, for example, Charter document "Spectrum Guide Cloud-Based App Platform," July 16, 2015, p. 3.
[46] See *Response of Charter Communications Inc. to Information and Data Requests Dated September 21, 2015*, October 13, 2015, Response to Requests 12 and 14.
[47] Id., p. 4. See also Charter document "SKY UI App Strategy," July 23, 2014, p. 3. Note that Charter does hope to monetize their relationships with OVDs. See, for example, Charter documents "Project: 3rd Party App Integration Platform: Spectrum Guide," July 6, 2015, p. 6-7 and "Spectrum Guide Cloud-Based App Platform," July 16, 2015, p. 6.
[48] See, for example, Charter documents "Project: 3rd Party App Integration Platform: Spectrum Guide," July 6, 2015, p. 6-7 and "Spectrum Guide Cloud-Based App Platform," July 16, 2015, p. 6.
[49] See, for example, Charter document "TV App Store Matrix".
[50] See, for example, Charter document "SKY UI App Strategy," July 23, 2014, p. 5-6.
[51] Note that such terms do not "raise rivals' costs". In fact, if OVDs agree to such terms in order to be included on the Spectrum Guide, then both the OVD and Charter must be better off. It is a basic tenet of economics that both parties to a transaction that is freely entered into benefit from that transaction.

49. I conclude that Charter's technology is low cost, high quality, and promotes entry of OVDs.

2. Comcast

50. Comcast is the largest and arguably the most technologically advanced cable system. Comcast invested early in an advanced STB called X1 on the Xfinity platform, which it released in mid-2012 in Boston and offered in other regions shortly thereafter.[52] The X1 STB uses traditional CableCARD technology. Comcast is several years ahead of other cable systems in the adoption of certain modern technologies. In a recent earnings call, Brian Roberts, chairman and CEO of Comcast, said that about 25 percent of its triple-play subscribers are using the X1 service.[53] Comcast is now deploying about 30,000 X1 boxes per day, and it now allows double-play subscribers to upgrade to the X1 system (in the past, the X1 was only available to triple-play subscribers).[54] It is estimated that 6 million[55] X1 boxes will be deployed as of the end of 2015, with at least 5 million deployed as of Q3 2014.[56]

51. Comcast's X1 platform has a modern user interface designed to sell additional VOD content[57] and individually-targeted advertising.[58] A large portion of the VOD content is available for online viewing with Xfinity TV Go. The Xfinity TV app allows for mobile devices and computers to stream X1 content while connected to Xfinity internet.[59]

52. Consumers must have the new X1 box in order to take advantage of the technology. The manufacturing cost of the box includes the cost of the CableCARD.[60] This technology gives the subscriber the ability to access

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[52] See "X1 Video Platform Transforms Traditional TV into Integrated Entertainment Experience," September 5, 2014, available at http://corporate.comcast.com/news-information/news-feed/comcast-begins-national-launch-of-x1-next-generation-cloud-enabled-television-platform-and-introduces-the-x1-remote-control-app.

[53] See, for example, "Comcast's X1 'Restart' Feature Moves Out of the Lab," Multichannel News, May 18, 2015, http://www.multichannel.com/news/next-tv/x1-restart-feature-moves-out-comcast-s-lab/390694.

[54] See, for example, "Comcast Revving Up X1 Rollout," Multichannel News, July 24, 2015, available at http://www.multichannel.com/news/next-tv/comcast-revving-x1-rollout/392432.

[55] This number is based on estimated voice remote shipments by the end of 2015. Information provided by Brian Roberts, Chairman and CEO of Comcast Corporation, on July 23, 2015, Q2 2015, available from the Comcast Corporation Earnings Call at http://files.shareholder.com/downloads/CMCSA/697777418x0x841029/430997F7-0B02-45F1-8DD8-5F1C44523352/Comcast_2Q15_Earnings_Transcript.pdf. Voice remotes are standard for X1 systems now.

[56] Brian Roberts announced surpassing 5 million X1 boxes in the Q3 2014 Comcast Corporation Earnings Call on October 23, 2014, available at http://files.shareholder.com/downloads/CMCSA/697777418x0x788306/8A402FF8-F104-476E-8385-9C7002AC4D3B/Comcast_3Q14_Earnings_Transcript.pdf.

[57] More information available at http://www.xfinity.com/x1 and the Xfinity on Demand schedule, available at http://tvgo.xfinity.com/ondemand/?cmpid=FCST_rdrct04, accessed September 3, 2015.

[58] More information available at https://www.mapr.com/sites/default/files/mapr_case_study_comcast.pdf, accessed September 4, 2015.

[59] This is only available to customers with the X1 platform, including a STB, and "customers must have X1 DVR and cloud services to use DVR functionality." Information available at http://tvgo.xfinity.com/apps, accessed September 14, 2015.

[60] They also offer the option of using CableCARD ready devices, such as TiVo, Ceton, or SiliconDust equipment, with a CableCARD provided by Comcast. This allows access to the digital television content, but only select devices allow

Comcast's vast VOD library with more than 80,000 titles, to watch Comcast's entire channel line-up of live TV in any room of the house on any device, to access DVR recordings anywhere through cloud technology, to schedule the DVR remotely, and many other features.[61] Comcast also offers customers the option to subscribe to Streampix, an extensive VOD library with access to additional movies for one monthly fee.[62]

53. Comcast can include third party apps on its platform. To date it has included some apps on its X1 platform such as Twitter, Pandora, Instagram, Flickr and Facebook, but it has not included any OVDs.[63]

54. Comcast has developed two products to compete with OVDs. The first is Stream, designed to capture cord cutters but not cannibalize X1 and other higher cost and higher margin Xfinity products. Comcast has started beta testing of Stream in Boston this summer, with a full rollout by early 2016, which, depending on the city, includes streams of ABC, CBS, CW, FOX, NBC, PBS, Telemundo, Univision, Streampix, HBO and local channels.[64] Comcast did not need to obtain any additional rights for Stream.[65] Stream is not an OTT product, it is a Title VI product that is delivered over a subscriber's IP-enabled gateway, which is covered under existing contracts.[66] It is not a nationally available service. It costs $15 per month and offers something beyond the typical OVDs: a cloud-based DVR that allows for pausing of live programming and recording of live shows for later viewing.[67] It also will contain access to Xfinity's on-demand content. Because Stream will enter a home through Comcast's managed IP network, households will only be able to watch live content at home on their Xfinity Internet and Stream is not available outside the Comcast footprint.[68] Stream is only available for online viewing via tablets, mobile phones and

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access to Xfinity's on demand content. Information available at http://customer.xfinity.com/help-and-support/cable-tv/about-cablecards, accessed September 3, 2015.

[61] More information available at http://corporate.comcast.com/images/Comcast-Press-Kit-July-2015.pdf, accessed September 4, 2015.

[62] See Comcast's Streampix, http://www.xfinity.com/streampix/. Service is standard on certain packages. See website for details.

[63] Not all apps for Comcast X1 are available on all STBs. See Comcast customer support pages such as http://customer.xfinity.com/help-and-support/cable-tv/x1-application-availability/, http://customer.xfinity.com/help-and-support/cable-tv/dashboard-for-xfinity-tv-on-the-x1-platform, and http://customer.xfinity.com/help-and-support/cable-tv/x1-photos-app-connect-to-facebook-instagram-flickr. See also "Why the Cloud Is Key to Charter's Big Deal For Time Warner Cable," Variety, June 3, 2015, available at http://variety.com/2015/biz/news/cloud-charter-time-warner-cable-deal-1201510642/.

[64] See, for example, "Comcast's Strauss: MSO is testing Stream OTT service in Boston; launch is 'imminent'," FierceCable, October 27, 2015, available at http://www.fiercecable.com/story/comcasts-strauss-mso-testing-stream-ott-service-boston-launch-imminent/2015-10-27 and "Why Comcast is Still Betting on Bundles with Stream," Forbes, July 27, 2015, available at http://www.forbes.com/sites/hnewman/2015/07/27/why-comcast-is-still-betting-on-bundles-with-stream/.

[65] See, for example, "Comcast Revving Up X1 Rollout," Multichannel News, July 24, 2015, available at http://www.multichannel.com/news/next-tv/comcast-revving-x1-rollout/392432.

[66] Id.

[67] See "Introducing a New Streaming TV Service from Comcast," Comcast Voices, July 12, 2015, available at http://corporate.comcast.com/comcast-voices/a-new-streaming-tv-service-from-comcast.

[68] See, for example, "Comcast's 'Stream' Won't Be OTT," Multichannel News, July 13, 2015, available at http://www.multichannel.com/blog/bauminator/comcast-s-stream-won-t-be-ott/392154.

web browsers.[69] Comcast does not plan to offer Stream on devices like Roku and Apple TV, which will make it harder for subscribers to watch Stream on a television (unless a person plugs their computer or tablet directly into the TV). Because Stream will come into a household through a managed IP network, it will not count against usage (for those households that are subject to usage-based data policies).[70] Analysts describe Comcast Stream as an opportunistic play to extract money from broadband-only subscribers without cannibalizing video service. It appears that Comcast has a guaranteed subscriber count in its HBO contract. Since Comcast has reached the contract number, it can sell more HBO at zero programming cost. This is what HBO calls "nonrevenue-generating" customers.[71] The offerings on Stream will be limited to the channels listed above and will not feature the original content offered by other OVDs (House of Cards on Netflix or Transparent on Amazon Prime). Streaming is also limited to just two live streams in one household at a time.[72]

55. In addition, Comcast launched a beta test of a new video platform,[73] Watchable, that will be an app within the X1 platform. This is meant to compete with YouTube and the video capabilities of Facebook.[74] It will contain curated, ad-supported OTT video content.[75] Comcast has secured rights to content from about 30 digital partners including, AwesomenessTV, Buzzfeed, CelebTV, Collective Digital Studio, Defy Media, Discovery Digital Networks, Fast Company, Flama, Future Today, GarageMonkey, GoPro, Jukin Media, Machinima, Maker Studios, Mashable, Mic Media, NBCUniversal, Network A, Newsy, The Onion, POPSUGAR, Red Bull, Refinery29, Scripps Networks Interactive, Tastemade, TEN, TYT Network, Vice, Video Detective and Vox.[76] Videos are available to watch on iOS, watchable.com and on the X1 STB.[77]

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[69] See, for example, "Comcast's Streaming Service Sounds as Bad as You'd Expect," Wired, July 13, 2015, available at http://www.wired.com/2015/07/comcast-stream/.
[70] See, for example, "Comcast's 'Stream' Won't Be OTT," Multichannel News, July 13, 2015, available at http://www.multichannel.com/blog/bauminator/comcast-s-stream-won-t-be-ott/392154.
[71] Id.
[72] See, for example, "Comcast's Streaming Service Sounds as Bad as You'd Expect," Wired, July 13, 2015, available at http://www.wired.com/2015/07/comcast-stream/.
[73] See "Introducing Watchable: Bringing the Web's Best Networks and Shows – From Buzzfeed, GoPro, Maker Studios, Refinery29, Vice, Vox Media & More – To All Screens, Including the Television," Comcast Voices, September 29, 2015, available at http://corporate.comcast.com/comcast-voices/introducing-watchable.
[74] See for example, "Why Comcast is Playing Defense with 'Watchable' Online-Video Push," Variety, August 17, 2015, available at http://variety.com/2015/digital/news/why-comcast-is-playing-defense-with-watchable-online-video-push-1201571515/ and "A Sneak Peek at Watchable, Comcast's Online Video Service," Variety, September 2, 2015, available at http://variety.com/2015/digital/news/a-sneak-peek-at-watchable-comcasts-online-video-service-exclusive-1201584205/.
[75] Id.
[76] See "Introducing Watchable: Bringing the Web's Best Networks and Shows – From Buzzfeed, GoPro, Maker Studios, Refinery29, Vice, Vox Media & More – To All Screens, Including the Television," Comcast Voices, September 29, 2015, available at http://corporate.comcast.com/comcast-voices/introducing-watchable.
[77] Id.

56. Comcast makes it relatively more costly for subscribers to use OVD services compared to Comcast's own VOD services. Comcast does this by not counting video watched through X1 as part of the data cap that applies to OVD video watched using its broadband service.[78]

57. These strategic choices indicate that Comcast may currently experience X1 VOD and film content as substitutes for OVD services; this would be consistent with the firm not finding it in its interest to include OVD apps on the Xfinity system. If substitution between X1 VOD and OVD content were indeed occurring, easy access to OVDs would reduce the revenues Comcast receives from X1 users. Comcast cites the success of the X1 platform as contributing to the fact Comcast has achieved 30 percent less voluntary churn.[79] Also, Neil Smit mentioned in the Q3 2014 Comcast Corporation Earnings call that, in part due to X1, "DVR purchases are up, the transactional VOD is up 20 percent."[80]

58. Based on its actions thus far, I conclude that Comcast has both the scale and technology platform to be a strong partner for OVDs but has not yet chosen not to take that route.

3. TWC

59. TWC sells MVPD and broadband services. Its broadband services can be helpful to OVDs – for example, TWC has developed apps for third party devices, and TWC does not differentiate between content types and does not impose data caps, except for a small number of customers who opt into limited data tiers by choice for a discount on their bill. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[78] See, for example, "Comcast's 'Stream' Won't Be OTT," Multichannel News, July 13, 2015, available at http://www.multichannel.com/blog/bauminator/comcast-s-stream-won-t-be-ott/392154.

[79] Neil Smit, EVP and President and CEO of Comcast Cable Communications cited this statistic during the Q2 2015 Comcast Corporation Earnings Call on July 23, 2015, available at http://files.shareholder.com/downloads/CMCSA/697777418x0x841029/430997F7-0B02-45F1-8DD8-5F1C44523352/Comcast_2Q15_Earnings_Transcript.pdf.

[80] See the Q3 2014 Comcast Corporation Earnings Call on July 23, 2015, available at http://files.shareholder.com/downloads/CMCSA/697777418x0x788306/8A402FF8-F104-476E-8385-9C7002AC4D3B/Comcast_3Q14_Earnings_Transcript.pdf.

[81] Evidence regarding TWC's technology choices is based on *Response of Time Warner Cable Inc. to Information and Data Requests Dated September 21, 2015*, October 13, 2015, Response to Requests 3 and based on conversations with Peter Stern.

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62. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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65. I conclude that TWC has useful scale for partnering with OVDs and has benefitted OVDs through its development of apps for third-party retail devices, but its set-top boxes are not designed to integrate OVDs and likely will not be for a number of years. TWC therefore has a less comprehensive strategy of promoting OVDs as a complement.

4. AT&T/DTV

66. AT&T has recently merged with DTV and now must determine a technological strategy that takes advantage of the assets of both firms. AT&T/DTV has scale and may evolve into a strong technology partner for OVDs in the future. Randall Stephenson, the CEO of the AT&T Wireless, said in a recent investor conference call

that "our customers are demanding video to be delivered across any device," causing speculation that AT&T will leverage the new DirecTV relationship to start to deliver OTT content.[82]

67. Hulu and AT&T have reached a deal to bring Hulu to AT&T mobile customers later in 2015. Currently, the deal does not include U-Verse integration, but the announcement does say that the two companies are "exploring the possibility of bringing a Hulu app to TV."[83]

5. Verizon

68. Verizon recently urged the FCC to make clear that blocking access to the Internet is not a good negotiating tactic. This is thought to be due to the launch of new OTT content targeting mobile customers.[84] This new OTT service is called Go90. Verizon has announced partners including AOL, ESPN, Scripps Networks, CBS Sports, DreamWorks, Vice Media, Discovery Channel, TLC, Animal Planet, ID and the Science Channel.[85] It will be available on mobile devices and Verizon customers will be able to watch the content without it counting against their monthly data usage cap. For non-Verizon customers, watching the service will cut into monthly data caps. Go90 will utilize the LTE multicast technology that uses less bandwidth.[86] The service is free to users because it is supported by advertising. Go90 launched to 5 million Verizon subscribers on September 8, 2015, with the rest of subscribers gaining access by September 24, 2015.[87] Without major channels being offered and no local content, this is not expected to be a viable option for cord cutters on its own.

69. Prior to the Proposed Transactions, therefore, it was not obvious what firm would make the best partner for an entering OVD looking for a distributor that had all three characteristics: scale, technology, and the incentive to work with OVDs.

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[82] See, for example, "AT&T CEO hints at over-the-top mobile video service," CNET, January 27, 2015, available at http://www.cnet.com/news/at-t-ceo-hints-at-over-the-top-mobile-video-service/

[83] See, for example, "AT&T-Hulu Deal Brings OTT Video to Mobile and Broadband," May 13, 2015, available at http://www.telecompetitor.com/att-hulu-deal-brings-ott-video-to-mobile-and-broadband/.

[84] See, for example, "Verizon, Netflix Seek Video Rule Tweaks to Grab Millennials," August 26, 2015, available at http://www.bna.com/verizon-netflix-seek-n17179935257/.

[85] See "Verizon to Launch Go90 Mobile Video Service Thursday," Wireless Week, September 21, 2015, available at http://www.wirelessweek.com/news/2015/09/verizon-launch-go90-mobile-video-service-thursday.

[86] See "Verizon's OTT Service to Be Called 'Go90': Report," July 24, 2015, available at http://www.multichannel.com/news/next-tv/verizon-s-ott-service-be-called-go90-report/392477.

[87] See "Verizon's Go90 mobile video service set to launch later this month," CNET, September 10, 2015, available at http://www.cnet.com/news/verizons-go90-mobile-video-service-will-launch-later-this-month/.

IV. Merger-specific Technology Benefit

70. Public Knowledge comments that "the FCC must be assured that these lower costs result from real efficiencies and not anticompetitive leverage."[88] In this section I discuss the technological benefit of the merger and resulting benefits and efficiencies for consumers, OVDs and New Charter.

71. New Charter will expand on TWC's app-based strategy while adding its leading approach to integrating OVD content in the set-top box environment. The merger is a signal from the market that the current TWC and BHN strategies are not optimal, and that a different strategy should be implemented. New Charter's top management will come from Charter, and New Charter will adopt Charter's current business strategy of investing in speed, limiting fees, and rolling out the Worldbox and Spectrum Guide.

72. This optimization of an OVD-friendly strategy engendered by the merger will allow households in the TWC and BHN footprints to adopt Charter's more modern technology. As I explained above, Charter's Spectrum Guide is cloud based and can be used on legacy STBs. TWC and BHN subscribers with any kind of STB will be able to enjoy the New Charter Spectrum Guide and consumer experience once their STB has downloaded the necessary middleware.

73. Furthermore, pairing Charter's Spectrum Guide with its broadband product and pricing strategy brings even more value to consumers interested in viewing OVD content. The Spectrum Guide allows subscribers to easily discover and access the content of Charter's OVD partners. And, Charter's broadband has no data caps and a high minimum speed, which allows subscribers to stream that content at low cost and with high quality. This combination will be particularly valuable to subscribers who consume a large amount of OVD content.

74. The roll out of Charter's technology is a merger-specific benefit: TWC and BHN would not provide their subscribers a similar modern experience on their own because of the past technology choices they have made. Because they chose a hardware centric strategy, neither TWC nor BHN could quickly update their subscribers to a more advanced technology. To update their subscribers, TWC and BHN would need to develop a product like Spectrum Guide from scratch, replace each household's STB, which would be expensive and time consuming.[89]

75. The increased number of STBs using DCAS will also provide increased scale and DCAS knowledge to the providers who make STBs and related hardware and software. This increased scale and knowledge will allow providers to design turnkey DCAS solutions that can be bought by smaller cable systems. This, in turn, will lower

[88] See *Public Knowledge Comments*, p. 15.

[89] While Charter could license its Spectrum Guide to TWC and BHN to share its technology outside of a merger, the novelty and firm-specificity of the technology, the uncertainty of the environment, and the opportunity cost of starting up a licensing business make it very difficult to fully specify and agree to the terms of such a contract when firms are at arms-length. Vertical integration is often the solution when firms face these conditions.

the adoption costs of these types of solutions for smaller cable systems that do not have scale to adopt their own modern solution. Thus, the roll-out of the Worldbox and Spectrum guide to current TWC and BHN subscribers will result in externalities that benefit smaller MSOs and increase the technology competition between providers of cable card and DCAS solutions.

V. OVDs Benefit New Charter

76. Some commenters have noted how online video has allowed OVDs to "offer rising volumes of content from increasingly diverse and independent sources."[90] While these commenters have emphasized this growth in OVDs and their content within an expression of concern regarding the transaction, this growth is in fact helpful in demonstrating how OVDs benefit New Charter.

77. OVDs benefit New Charter in at least two ways. First, OVDs increase the demand for New Charter's broadband services. Second, OVDs provide differentiated video services that subscribers can use in tandem with New Charter's video services to create a more complete video offering. The differentiated aspect of OVD services mitigates any concerns that OVDs will cannibalize New Charter's video services. On the contrary, the differentiated OVD services will contribute unique and valuable content to New Charter's subscribers without requiring New Charter to incur the risks and costs associated with assembling that content, nor shoulder the customer service costs. As such, the differentiated OVD services will enable New Charter to efficiently provide its subscribers with a valuable set of varied video program offerings.

A. OVD services increase the demand for broadband services

78. It is well established that OVD services are a complement to broadband. OVD services are used extensively by broadband subscribers and are a major driving force in the overall growth of Internet traffic. In order to continue to use OVD services into the future, subscribers will need more and faster broadband services from ISPs like New Charter.

79. For example, the Leichtman Research Group found that 52% of U.S. households use a subscription OVD service from Netflix, Hulu, or Amazon.[91] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] Netflix is currently the largest subscription based OVD. In the

[90] See e.g., *Writers Guild Comments*.
[91] See "Over Half of U.S. Households Have a TV Connected To the Internet," Leichtman Research Group, press release, May 27, 2015, available at http://www.leichtmanresearch.com/press/052715release.html.
[92] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 7.

first quarter of 2015, Netflix users watched over 10 billion hours of Netflix programming.[93] Video growth is not limited to subscription based OVDs, but also includes transactional, advertiser supported, and free services. For example, roughly 28% of Amazon Prime video usage comes from transactional rentals rather than subscription services.[94] Hulu offers a non-subscription advertising supported service,[95] and OVDs include YouTube and similar services. YouTube accounts for hundreds of millions of video hours per day.[96]

80. As a result of the increasing consumption of OVD services, Internet traffic is growing at a tremendous pace. A 2015 Cisco White Paper found that that North American Internet traffic would grow at a 20 percent compound annual growth rate through 2019.[97] Most of this traffic growth comes from online video. OVD services are expected to grow from 69% of all Internet traffic in 2014 to 80% by 2019.[98] During that same time, North American video traffic is forecast to grow at a compound annual growth rate (CAGR) of 29%.[99] In addition, ACG Research forecasts that broadband speed requirements will rise at a compound annual growth rate of 31% from 2014 through 2018.[100] Much of that increasing demand for broadband speed is to satisfy consumer demand to use OVDs.

81. Because of the continued growth in Internet traffic, SNL Kagan predicts that broadband subscriptions will increase substantially. Table 3 below shows the predicted trend in video and broadband services nationwide. Broadband subscriptions are forecast to rise 15 percent between 2014 and 2020. In contrast, the subscribership for traditional MVPD services is forecasted to remain largely stagnant with a slight fall of 0.48 percent.

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[93] See Netflix April 15, 2015 Letter to Shareholders, available at http://files.shareholder.com/downloads/NFLX/50690019x0x821407/DB785B50-90FE-44DA-9F5B-37DBF0DCD0E1/Q1_15_Earnings_Letter_final_tables.pdf.

[94] See "Amazon Prime users on par with Netflix for streaming video," Investor's Business Daily, February 10, 2015, available at http://news.investors.com/technology-click/021015-738690-amazon-beats-netflix-in-subscriber-video-watching.htm.

[95] More information available at http://www.hulu.com/about.

[96] YouTube statistics available at https://www.youtube.com/yt/press/en-GB/statistics.html.

[97] See "Cisco Visual Networking Index: Forecast and Methodology, 2014-2019," White Paper, May 27, 2015, available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html.

[98] Id.

[99] Id.

[100] See "Forecast of Residential Fixed Broadband and Subscription Video Requirements," ACG Research, 2014, available at http://acgcc.com/wp-content/uploads/2014/12/Forecast-of-Residential-Fixed-Broadband-Requirements-2014.pdf.

Table 3

Total MVPD and Broadband Subscribers

Year	Total MVPD Subscribers	Broadband Subscribers
2010	100,856,894	76,079,489
2011	101,179,770	79,968,727
2012	101,349,082	84,056,202
2013	101,207,106	87,296,068
2014	101,260,436	89,908,463
2015	101,063,789	92,306,697
2016	101,052,594	94,680,525
2017	101,020,185	97,006,059
2018	100,964,328	99,220,343
2019	100,878,096	101,277,181
2020	100,774,325	103,167,125
Percent Change from 2010-2020	-0.08%	35.60%
Percent Change from 2014-2020	-0.48%	14.75%

Source: SNL Kagan. Includes residential cable, DSL, wireless and satellite high speed data subscribers.

B. OVD services are differentiated from MVPD services

82. MVPDs are differentiated from OVDs in the type of content they carry. MVPDs like New Charter typically specialize in providing a wide variety of current linear television programming, and typically have a relatively small collection of VOD content. In contrast, OVDs typically do not offer extensive linear programming, but instead specialize in providing unique VOD content. There are many types of VOD content, including current and previously released movies and television. Table 4 lists several large OVDs and describes the content they offer.

Table 4
List of Selected Online Video Distributors

Service	Estimated Titles	Cost	US Sub
Netflix	Movies: 6,200 TV Seasons: 2,600 Original series and Movies	$7.99/mo for basic (1 screen) and $9.99/mo for standard (2 screens)	42,300,000
Amazon Prime	Movies: 15,409 TV Seasons: 1,769 Original series and Movies	$99/year	over 20,000,000
Hulu Plus	Movies: 5,200 TV Seasons: 3,700 TV content includes current season Original series and movies	$7.99/mo	9,000,000
HBO Now	Original series and limited movies	$14.99/mo	1,000,000
Showtime	Original series and movie content	$10.99/mo $8.99/mo for Hulu users	not available
SlingTV	ESPN, ESPN2, TNT, TBS, HGTV, DIY Network, Food Network, Travel Channel, CNN, Cartoon Network, ABC Family, Disney Channel and AMC Additional channel packs are available at additional cost	$20/mo	275,000
Sony Vue	Plans with over 50 to 85 channels including AMC, CBS, Discovery, Fox, NBC Universal, Scripps, Turner and Viacom.	$49.99 to $69.99	limited cities
CBS All Access	15 series current seasons, 8 series full back catalog, live streaming in some areas, over 5,000 CBS Classic episodes	$5.99/mo	over 100,000
Curiosity Stream	1,000 titles	$2.99/mo	not available
Crackle	Dozens of movies	ad supported	not available
CrunchyRoll	>25,000 episodes	ad supported	not available
Feeln	1,000 titles including Hallmark Hall of Fame movies	$3.99/mo	not available
Lifetime Movie Club	30 made-for-tv movies	$3.99/mo	not available
Noggin	Hundreds of episodes	$5.99/mo	not available

Sources:
Selected US OTT video services - Subscription from SNL Kagan Data for Estimated Titles and Cost
Analyst Reports and Investor Relations for Subscriber Counts

83. In order to differentiate themselves from other video services, many OVDs offer original content or seek exclusive distribution rights. Netflix, for example, states that, "Given our increased focus on exclusive content, our service will continue to become even more differentiated."[101] Some OVDs offer original programming, such as Amazon Prime's Transparent and Netflix's House of Cards. Some OVDs contract with content producers for exclusive distribution rights. For example, Netflix has obtained so-called "first-window" rights from Disney

[101] See "Netflix Top Investor Questions," available at http://ir.netflix.com/faq.cfm.

beginning in January 2016.[102] The Disney first-window rights will give Netflix the exclusive right to stream Disney, Pixar, Lucasfilm, and Marvel movies just weeks after the theatrical release.[103]

84. OVDs are not only growing in sheer magnitude, they are also increasingly assembling unique and exclusive programming content that further entrench them in consumer preferences. For example, Netflix, HBO, Hulu, and Amazon Prime each widely market their growing stables of original series and movies that can only be viewed via their OVD services. These OVDs have also become significant players in the competition for exclusive distribution rights for first-window movie content. For example, beginning in 2016, Netflix will have the rights to Disney movie and television programming that were previously held by the premium cable mainstay Starz. Hulu recently announced a deal with Epix that will allow Hulu to stream first run movies from Lionsgate, MGM, and Paramount.[104] CuriosityStream recently launched as an ad-free, subscription-based service in March 2015, providing nonfiction documentaries and series about science, technology, history and nature.[105] The service began with approximately 800 titles and plans to co-produce some original content with producers like BBC and NHK. Vessel launched on March 24, 2015 and is a subscription video service. It offers a variety of short videos spanning a variety of topics in a curated setting.[106]

85. While some OVD services, such as Dish's Sling TV and Sony's Vue, have content that appears to be similar to that offered by MVPDs, those OVD services appeal mainly to consumers that do not already have MVPD service. For example, Roger Lynch, CEO of Dish's Sling TV, stated in a recent earnings call that:

> So the vast, vast majority of the subscribers that we take on do not currently have pay TV at the time they subscribe to Sling TV. Many of them have never had pay TV. And the ones that are cord cutters generally cut the cord a while ago. …a relatively small percent actually have pay TV at the time that they subscribe.[107]

Though these services largely target customers that would not otherwise be purchasing video services, it is still possible that such services could serve as substitutes for traditional MVPD for some consumers. In general we would not expect all consumers to have the same taste for video, nor the same patterns of substitution across different types of video. The available evidence is consistent with such heterogeneity.

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[102] See "Why April 10 is Huge for Netflix Inc. and Walt Disney Co Investors," The Motley Fool, April 1, 2015, available at http://www.fool.com/investing/general/2015/04/01/what-april-10-means-to-netflix-inc-and-walt-disney.aspx.

[103] Id.

[104] See "Hulu and EPIX Announce Extensive Multi-Year Agreement," Hulu Blog, August 30, 2015, available at http://blog.hulu.com/2015/08/30/hulu-and-epix-announce-extensive-multi-year-agreement/.

[105] See, for example, "Discovery Channel Founder to Launch Ad-Free SVOD Service," MediaPost, June 17, 2015, available at http://www.mediapost.com/publications/article/241881/discovery-channel-founder-to-launch-ad-free, and "Discovery Channel Founder Jumps Into Video Stream," Wall Street Journal, January 14, 2015, available at http://www.wsj.com/articles/discovery-channel-founder-jumps-into-video-stream-1421268320.

[106] See, for example, "Former Hulu CEO Jason Kilar's Vessel Launches to the Public," TechCrunch, March 24, 2015, available at http://techcrunch.com/2015/03/24/former-hulu-ceo-jason-kilars-vessel-launches-to-the-public/.

[107] Information from "Transcript, DISH - Q2 2015 DISH Network Corp Earnings Call," TheStreet, August 5, 2015.

86. Some commenters agree. For example, DISH states:

> Today, nearly 60 percent of U.S. broadband households subscribe to an OTT video service. At a minimum, OTT services are complementary to a traditional pay-TV subscription, but they can also serve as substitutes for traditional pay-TV subscriptions entirely, depending on the offering.[108]

1. Many subscribers combine MVPD and OVD services

87. OVD subscribers typically consume more video than average television viewers. One Nielsen report found that homes with subscription OVD service consume nearly 50 minutes more video on TV-connected devices than non-OVD consumers.[109] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] This statistic may be dated, since it is based on an early 2014 survey that would not account for the rapid growth of Netflix over the past year. More recently, it is estimated that 43% of total pay TV subscribers also subscribe to Netflix.[112]

88. Another example is a mid-2014 Centris survey that found that 40% of OVD subscribers used more than one subscription OVD.[113] Roughly one-third of these multi-OVD subscribers used at least three OVDs.[114] Subscription-based OVDs are not the only source of online video content either. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[108] See *DISH Comments*, p. 17.

[109] OVD subscriber households were found to watch 2 hours 45 minutes of video on television-connected devices, while non-OVD households watched only one hour 57 minutes on average. See "Nielsen Report Sheds Light on U.S. SVOD Audience," Variety, March 11, 2015, available at http://variety.com/2015/digital/news/nielsen-report-sheds-light-on-u-s-svod-audience-1201450317/.

[110] See Charter document "General Product Meeting: Video On Demand Content Strategy," May 12, 2014, p. 7.

[111] See Charter document "General Product Meeting: Video On Demand Content Strategy," May 12, 2014, p. 5.

[112] See "Over Half of U.S. Households Have a TV Connected To the Internet," Leichtman Research Group, press release, May 27, 2015, available at http://www.leichtmanresearch.com/press/052715release.html.

[113] The survey found that 35% of respondents used a subscription OVD, while 14% used multiple subscription OVDs. Thus, 40% (=14%/35%) of the OVD users were users of multiple OVDs. The propensity of consumers to use multiple OVDs has grown. In 2013, Centris found only 11% of subscription OVD consumers used multiple OVDs. See "Multiple Household SVOD Subs Rise," August 21, 2014, available at http://www.homemediamagazine.com/streaming/multiple-household-svod-subs-rise-34003.

[114] The Centris survey found that 63% of multi-OVD subscribers had Netflix and Amazon Prime, and 46% had Netflix and Hulu. Another 23% had Hulu and Amazon Prime. The percentages sum to 132%, implying 32% of these subscribers had all three of these OVDs and potentially others not included in the three.

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89. MVPDs have acknowledged the role of OVDs in filling out the content available to their subscribers. For example, John Pascarelli, Mediacom's EVP of operations, noted that "We believe Hulu is the perfect complement to Mediacom's Internet service offerings."[118] He continued, "Hulu brings a robust video selection to our customers who want to supplement their traditional cable service with online content at home or on the go."

90. As the facts of OVD content offerings and usage suggest, OVD subscribers are not typically making a discrete choice between OVDs and MVPD services. Rather, they typically use and pay for both.[119] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] A 2014 survey by TNS Global of 25,000 US households found that households that use streaming video were twice as likely to have changed their pay TV service level than those that did not use streaming video.[121] Yet, instead of cutting service, the OVD subscribing households were nearly twice as likely to have upgraded rather than downgraded their pay TV service level. It is likely that OVD subscribers are typically among the consumers the view, or at least pay for, the most video content. OVD subscribers are more likely to have MVPD service, and, when they do so, they are more likely to choose higher tier services. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[115] See presentation "Time Shifting," Hub Research, February 2015.
[116] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 8.
[117] Id.
[118] See "INTX 2015: Hulu Adds MVPD Partners," Multichannel News, May 5, 2015, available at http://www.multichannel.com/news/tv-apps/intx-2015-hulu-adds-mvpd-partners/390385.
[119] To be sure, on any given night, consumers may choose among their subscriptions for what to watch in the next hour.
[120] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 9.
[121] See "Pay-TV Subscribers Who Stream Video More Likely to Upgrade Than Downgrade Service," MarketingCharts, November 10, 2014, available at http://www.marketingcharts.com/online/streaming-video-pay-tv-service-48179/.
[122] See "LRG Emerging Video Services IX Results Presentation."
[123] See "Magid HP Deep Dive 6-18-15 Final."

2. Cord Cutters and Cord Nevers

91. A portion of OVD subscribers do not subscribe to an MVPD. Some of these are called "cord cutters," because they have chosen to "cut the cord" and stop subscribing to MVPD services, possibly several years earlier. Others are called "cord nevers," because they never subscribed to MVPD services. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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92. Leichtman Research Group surveys have found that 83% of U.S. households have pay TV service in 2015, which is a fall from its 87% in 2010 but up from 81% in 2005.[125] The survey found that 63% of the pay TV non-subscribers have OVD service. Despite the rapid growth in OVD services over just the last few years, around 70% of the households without MVPD service have not had MVPD service for over three years, if they ever had it at all. The survey's author states:

> Historically, consumers have gone in and out of the pay-TV category, primarily for economic reasons. While the rate of those leaving is actually similar to a decade ago, those who are entering or reentering the market has decreased over time…[126]

93. Surveys suggest that many of the OVD subscribers that do not use MVPD video service are not likely to switch to MVPD video services if their preferred OVD becomes unavailable. As noted above, OVD subscribers typically subscribe to at least two OVD services, not including ad supported and transactional video rental services. Additionally, most OVD subscribers have digital over the air (OTA) broadcast networks available to them using an antenna. Consumers with OVD service but no MVPD video indicated several reasons for their choice including viewing convenience, cost, ease of finding content, and content choice.

3. OVDs and Charter have common goals

94. OVDs and MVPDs recognize the common and complementary goals they have in selling video services to subscribers. As a result, many OVD and MVPD partnerships have emerged. For example, Netflix has announced deals to integrate its services in the set top boxes of DISH, Suddenlink, Mediacom, Atlantic Broadband, and others.[127] Similarly, Hulu has announced deals with Cablevision and five other MVPDs.[128] Tim Connolly, Hulu's senior VP of distribution, praised these deals saying: "At Hulu, we believe users should have the ability to consume

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[124] See "Decoding the Default," Hub Entertainment Research, June 2015, 2015.
[125] See "83% of U.S. Households Subscribe to a Pay-TV Service," Leichtman Research Group, press release, September 3, 2015, available at http://www.leichtmanresearch.com/press/090315release.html.
[126] Id.
[127] See "Hulu Pacts with 5 More Cable Operators to Resell Subscription-Video Service," Variety, May 5, 2015, http://variety.com/2015/digital/news/hulu-plus-cable-operators-svod-1201487593/.
[128] Id.

their favorite content, when, where and how they want … We are very excited to partner with these MVPDs to bring Hulu to users where they are already watching TV."[129]

95. Showtime has also chosen to partner with MVPDs in launching its new OVD service. Regarding the Showtime OVD launch, Leslie Moonves, CEO of CBS, stated in June 2015: "But by no means are we wanting to go around our existing partners. We want them to participate with us and have a different way of getting Showtime to consumers. There's another 90 million homes out there that we would like to get to."[130]

96. Appropriate partnerships between New Charter and OVDs make sense to both sides because OVD services are generally complementary in content to New Charter's offerings in the content and services provided.[131] OVDs fit well with New Charter's technology, and provide differentiated content from that provided by New Charter, which can result in more complete programming for consumers. The OVDs offer a wide array of unique programming that fills in the gaps in traditional MVPD programming. OVDs provide a wide array of content types. Consumers can choose among content options with current- and back-catalog television, first run and back catalog movies from numerous studios, and exclusive content such as Netflix's House of Cards. Some OVDs offer the full binge TV experience, while others may specialize in original content, niche programming, or offer exclusive streaming of recent movie blockbusters. The content differences between OVDs and traditional MVPD services have become increasingly apparent as the various OVDs have grown. OVDs and MVPDs have taken different paths to providing content. Some consumers perhaps do view OVDs as substitutes for traditional MVPD services.

97. Many OVDs describe their content as complementary or supplemental to MVPD service. For example, Mike Hopkins, CEO of Hulu, stated in 2014 that: "We want to work very closely with [MVPDs]. And the majority of our customers are pay TV customers as well. We're a complementary product for them."[132]

98. In describing a deal reached between Netflix and DISH, Bill Holmes, Netflix global head of business development, commented that "Many households subscribe to both Netflix and a traditional pay-TV service."[133] He continued in saying that "Our vast library of TV shows and movies, combined with DISH's lineup of live television content, gives customers easy access to a wide variety of complementary programming."

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[129] See "INTX 2015: Hulu Adds MVPD Partners," Multichannel News, May 5, 2015, available at http://www.multichannel.com/news/tv-apps/intx-2015-hulu-adds-mvpd-partners/390385.

[130] See "Leslie Moonves Divulges Details on Showtime's New Online Streaming Service," Variety, June 3, 2015, available at http://variety.com/2015/biz/news/leslie-moonves-showtime-cbs-ott-1201511637/.

[131] Here, the term complementarity is used with regard to how the services tend to fill different niches in the marketplace. This does not necessarily imply the services are economic complements in that the demand for one service rises when the price of the other falls.

[132] See "Hulu CEO Mike Hopkins Is Helping Digital Video Get the Respect It Wants and the hits his company needs," AdWeek, April 27, 2014, http://www.adweek.com/news/television/hulu-ceo-mike-hopkins-helping-digital-video-get-respect-it-wants-157284.

[133] See "Netflix Arrives on Dish Set-Top Boxes," PC Magazine, December 17, 2014, available at http://www.pcmag.com/article2/0,2817,2473811,00.asp.

99. Charter has already started offering traditional cable programming alongside other streaming content. Via its recent launch of the Spectrum app for Roku devices, consumers can access both Charter traditional programming and OVD content. Regarding the launch of the new Spectrum app, Andrew Ferrone, vice president of pay TV at Roku stated that:

> With today's announcement, Charter TV customers will now be able to access their cable programming alongside other streaming content available on Roku devices. We congratulate Charter on embracing consumers' desire to stream the video they want. [134]

VI. New Charter's financial incentive to support OVDs

100. Several commenters have noted the complementarity of OVD services and broadband services.[135] In fact, OVDs are among the key reasons consumers come to New Charter for broadband services or demand faster and more reliable broadband. Rather than providing an incentive to foreclose OVDs, the complementarity of OVD and broadband services provides an incentive to New Charter to support OVDs.

101. New Charter's incentive to support OVDs is clearly illustrated by the various gross margins Charter, TWC, and BHN currently earn on video and broadband services. Simply put, the gross margins on broadband services are higher than the gross margins on video or phone services; and margins on video are not only smaller, but shrinking over time. As shown in Table 5, the average gross margin across New Charter entities (Charter, TWC, and BHN) was roughly **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month for video services but roughly **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month for broadband services.[136] As a result, all else equal, to the extent that OVDs increase the demand for broadband services, New Charter will have an incentive to encourage and support OVDs.

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[134] See "Charter Launches Spectrum TV App as a Channel on Roku Platform," Press Release, October 12, 2015, available at http://www.prnewswire.com/news-releases/charter-launches-spectrum-tv-app-as-a-channel-on-roku-platform-300158031.html.

[135] See e.g., *Writers Guild Comments* ("An OVD subscription is worthless without an Internet connection fast enough to stream high-quality video, let alone fast enough to stream video without freezing, buffering or endlessly reloading.")

[136] I have relied here on the gross margins that Charter, TWC and BHN calculate in the normal course of their business and report on their financial statements. These are gross margins calculated for each service on a residential per subscriber basis as average revenue minus average direct expense. For this table, video revenues were calculated to include the average advertising revenue per video subscriber. Direct expenses reflected those calculated by Charter and TWC in the course of business in internal reports. For Charter, video direct expenses include programming costs, franchise fees, and miscellaneous direct expenses. For the purposes of [BEGIN HIGHLY CONFIDENTIAL INFORMATION]
Table 5, video direct expenses include expenses related to commissions and other expenses associated with third-party sales of advertising. Programming and franchise fees accounted for the vast majority of video direct expenses and include expanded basic channels, premium channels, pay per view direct expense, and franchise

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102. I understand that Charter estimates that it will save approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per Charter subscriber in programming costs due to the deal. In his submission, Professor Katz has separately estimated that New Charter will save approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in marginal cost per subscriber due to the deal.[137] These savings will only have a small effect on the average video margins for New Charter. For example, suppose the pass-through rate was 50%. This means that New Charter will lower the prices it charges Charter video subscribers by 50% of the program cost reduction. It also means that the video margins New Charter will earn on current Charter subscribers will increase by approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** (or **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** using Professor Katz's estimate of cost savings). By basic cable subscribers, current Charter subscribers will be about 24% of New Charter. [138] This means the average per subscriber video margin increase for New Charter would be approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Such a small increase in the New Charter video margin will not significantly change the conclusions of my analysis.

103. In fact, due to economic complementarities, the availability of OVD services will also increase the demand (on net) for other New Charter services. Video, broadband and phone services are typically purchased in bundles.

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fees. Broadband direct expenses were limited to non-commercial categories including national backbone, IP transit usage, IP recurring, and product support. Phone service direct expenses include network facilities, long distance costs, customer support, and state/federal regulatory fees.

[137] See "Charter-TWC-BHN: Efficiencies Analysis: Reply Declaration of Michael Katz," Professor Michael Katz, November 2, 2015.

[138] Legacy Charter's share of New Charter's video subscribers can be calculated across the bundles shown in Table 6. In that table, Charter's 4.167 million video subscribers reflect 24.3% of the total 17.160 million New Charter video subscribers.

Although the products themselves are not directly related, improving the value of one service can increase the demand for the bundle.[139]

104. In particular, Table 6 shows the mix of subscribers across single, double and triple play services for TWC, Charter, and BHN at the end of December 2014. The subscriber mix is similar across TWC and Charter companies. BHN broadband subscribers are significantly less likely to purchase broadband alone. For all three companies, most subscribers purchase bundles. Around **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** of subscribers purchase a triple play bundle, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** purchase either a double or triple play bundle.

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105. Notably, broadband customers typically subscribe to more than just the broadband service. Only a little over **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** of broadband customers subscribe only to the broadband service. Table 7 is based on Table 6 and shows the breakout of broadband customers across each bundle type.

[139] See AT&T-DirecTV Order, FCC 15-94, ¶68.

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106. Table 8 summarizes the average revenues and average gross margins by broadband bundle for the 19 million New Charter broadband subscribers shown in Table 7. Since subscribers need broadband services to access OVDs, this is the set of subscribers that are potentially affected by OVD foreclosure. Larger bundles include more services and have higher average revenues. Table 8 is based on the weighted average Charter and Time Warner Cable revenues and direct expenses based on their respective subscriber numbers. The average direct expense per subscriber in each bundle reflects the sum of the average direct expenses of each service included in the bundle.[140]

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[140] Direct expenses in Table 8 are based on the full year 2014 figures. This is conservative. Since December 2014, average direct expenses were approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** higher than the full year average and gross margins based solely on December 2014 would be slightly lower.

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107. The gross margins by broadband bundle help define what New Charter stands to lose if it disadvantages or forecloses OVDs. First, recognize that only broadband subscribers would be affected, since OVDs are accessed via the Internet. Second, recognize that there are many potential actions broadband subscribers could take if New Charter foreclosed an OVD, and these actions have associated gains and losses for New Charter. On one hand, New Charter would gain if broadband subscribers responded by adding or upgrading their New Charter video or phone services. On the other hand, New Charter would lose if broadband subscribers responded by downgrading or cancelling services and switching to a different ISP and MVPD.

108. Importantly, any potential losses would include not only the losses of broadband service margins, but also the losses of the other service margins associated with the affected broadband subscriber's bundle. For example, New Charter would lose the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** triple play gross margin for each triple play subscriber that switched completely away from New Charter services in response to an OVD foreclosure.

109. The potential gains to New Charter depend on the services affected broadband subscribers would add or upgrade to. For example, assume affected consumers add or upgrade their video service in response to an OVD foreclosure. First, I will consider broadband customers that already purchase video services from New Charter, then I will consider broadband customers that do not.

110. Table 7 implies that **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of potentially affected broadband subscribers already buy video service from New Charter.[141] If one of these subscribers upgraded to a higher tier video service, New Charter would likely earn less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in additional margin.[142] Along with selecting a higher video tier, the affected subscribers might also consume more VOD after OVD foreclosure. Charter's VOD offering is far smaller than that of the large OVDs. As noted in Table 2, the Spectrum TV VOD offerings are sparse in past season, binge TV, and movies. More than half of the VOD content is free and is already available to video subscribers. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Taken together with upgraded service, Charter could gain up to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in gross margin per average affected broadband subscriber already with video service that upgraded video service or used VOD.[144]

111. Table 7 also implies that **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of potentially affected broadband subscribers do not currently

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[141] Figure reflects the sum of Triple Play **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** and Video/Broadband **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[142] Specific information on the gross margins earned on upgraded video service is unavailable due to the wide array of options provided by the parties. For the purposes of this illustrative calculation, consider the three basic video packages offered by Charter: Select, Silver, and Gold. Charter currently advertises the Silver upgrade for an additional $20 and Gold for an additional $40 over Select. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[143] See Response of Charter Communications Inc. to Information and Data Requests Dated January 15, 2015, February 5, 2015, Response to Request 62 and Charter's response to DOJ Second Request, Spec 7. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[144] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

buy video services from New Charter.[145] The potential gain from these subscribers might be higher, since Charter could potentially earn a full video margin if they chose to add video services. However, some of the broadband only customers actually already have MVPD service, just not from Charter. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] If these broadband customers upgraded video service in the event of OVD foreclosure, it is likely they would upgrade service on the satellite MVPD and not on Charter. Hence, Charter would not gain from foreclosure to these customers.

112. The remaining potential gain to Charter comes from the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** of broadband subscribers without Charter video that do not already subscribe to satellite MVPD service. One possibility is that these subscribers choose to purchase a full Spectrum TV bundle for $59.99 to $99.99 per month.[147] The gross margin gain of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** on such subscribers can be calculated from Table 8 as the difference between the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin for broadband and video double play less the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin Charter already received for broadband. However, such a selection may be unlikely when one considers the $59.99 to $99.99 Spectrum price in comparison to the $7.99 monthly cost of large OVDs such as Hulu and Netflix.

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[145] Figure reflects the sum of Broadband/Phone **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** and Broadband Only **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

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[147] Figures reflect advertised prices. More information available at https://www.charter.com/browse/content/charter-home.

[148] "Charter Quietly Offers Skinny Bundle Aimed at Cord Cutters," DSL Reports, October 22, 2015, available at http://www.dslreports.com/shownews/Charter-Quietly-Offers-Skinny-Bundle-Aimed-at-Cord-Cutters-135432. See also Charter presentation, "General Product Meeting: Spectrum TV App on Roku," August 11, 2015.

[149] The monthly fee figure does not include taxes or local broadcast television fees. See Spectrum TV Stream channel lineup available at https://www.charter.com/resources/roku/pdfs/CHA_1278_ROKUChannelLineup_Madison_R1.pdf.

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TWC is also planning to have a limited beta test of an IP version of its current video service in New York City in the coming weeks.[153] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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114. Charter's Spectrum TV Stream service can actually act to encourage OVD usage. Since the service initially comes with a free Roku 3 device, Charter is providing streaming devices to consumers that can reduce their costs of accessing OVD content. The device puts a wide variety of OVDs and content in front of consumers and they may subsequently choose to subscribe to more services and use more of Charter's broadband service.

115. Based on the experience of Dish with its Sling TV service, one could estimate that the majority of the affected broadband-only subscribers would select among the skinny bundles rather than opting for full Spectrum TV after foreclosure. [154] For the purposes of this report, I will assume half of the affected broadband-only customers would choose to switch from broadband-only at **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin to broadband plus full Spectrum TV with an **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin.[155] Thus, New Charter would gain **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** which is the additional margin above broadband only. I assume the other half of the affected broadband-only subscribers would choose the Charter's new Spectrum TV Stream Plus product which was forecast to have roughly a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin. Thus, the average gross margin on the broadband-only customers who choose to purchase video in

[150] A description of Charter's investments to develop the Spectrum Guide for Roku is found elsewhere in this report. See Promotional Mailings from a direct mail campaign by Charter.

[151] The monthly fee figure does not include taxes or local broadcast television fees. Id.

[152] See Charter presentation, "Roku Package options," July 24, 2015, pp. 4-5.

[153] "Time Warner Cable will test internet-only TV in NYC next week," Engadget, October 23, 2015, available at http://www.engadget.com/2015/10/23/time-warner-cable-internet-tv-beta-roku/.

[154] Information from "Transcript, DISH - Q2 2015 DISH Network Corp Earnings Call," TheStreet, August 5, 2015.

[155] These assumptions are conservative. If less than half of the affected customers choose full Spectrum TV, the gain from foreclosure would be even lower. Similarly, the gain from foreclosure would be lower if instead some of the affected customers choose the base Spectrum TV Stream product with its consequently lower **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** gross margin.

response to OVD foreclosure would be **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

116. Table 9 combines the breakdown of broadband subscribers by bundle in Table 7 with the gross margins by broadband bundle in Table 8. The broadband customers without video service are divided between those with satellite service and those without. For each broadband bundle, Table 9 shows the margin New Charter would lose if the subscriber switched to a rival ISP, and the margin it would gain if the subscriber increased its purchases of video services. These margins are labeled "Loss" and "Gain" under "Impact of Foreclosure." In Table 9Table 9, a loss reflects the gross margin New Charter would stop receiving if an affected customer switched its ISP so that it regained access to the foreclosed OVD.[157]

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117. Note that many broadband subscribers do not watch online video and therefore would not be affected by OVD foreclosure. Thus, the losses and gains from foreclosure would be measured based on the break out of subscribers and associated margins by bundle for those affected subscribers using the foreclosed OVD. As we saw in Table 9 New Charter would derive relatively little value from affected subscribers that already have video service – there is not much more those subscribers can buy. On the other hand, New Charter might potentially derive more

[156] A similar calculation can be made for the affected broadband-phone bundle customers that may choose either to add video via a full Spectrum Triple Play product or add one of the Spectrum TV Stream products.

[157] The loss is not limited to existing customers switching out of New Charter. The gross margin loss would be the same for potential new customers of New Charter that choose not to sign up because their preferred OVD is foreclosed.

value from affected subscribers that only have broadband – they could start buying more video services. Thus, the loss side of foreclosure is largely driven by the proportion of affected subscribers that have bundles including video, while the gains side is largely driven by those without video. That is, the result depends in part on the proportion of affected subscribers that have already have pay TV.

118. Table 9 uses Netflix as an example for a potentially foreclosed OVD. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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Charter's experience is comparable to the rest of the U.S. In Q4 2014, Netflix had 39.1 million U.S. streaming subscribers, which were 42% of the total 92.9 million U.S. broadband subscribers.[159] Assuming the Charter survey result holds for New Charter as well, about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the affected Netflix subscribers in Table 9 also have pay TV from New Charter or a satellite MVPD.[160] The losses from foreclosure are dominated by the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of affected subscribers with pay TV, while the gains are dominated by the remaining **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** without pay TV. Charter has conducted a more recent survey that included a wider definition of OVD to include streaming video from subscription OVDs, free or ad-supported OVDs, and transactional streaming video.[161] That survey found that about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of Charter subscribers that were streaming video users also had pay TV. If the foreclosure analysis were to use this broader definition of OVDs rather than Netflix as an example, the balance of gains and losses would tilt further toward losses. Foreclosure would be even less profitable than shown in Table 9.

119. Based on the estimated number of Netflix subscribers, New Charter would lose **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** on average for every broadband subscriber that left New Charter, and would gain an average **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** for every

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[158] See, for example, General Product Meeting: Video On Demand Content Strategy, May 12th, 2014, p. 5. Assume that these penetration rates also apply to Netflix's penetration of TWC and BHN subscribers, and that Netflix has the same penetration amongst subscribers who purchase broadband and voice as those who only purchase broadband. Netflix has grown significantly since the Charter survey was made and it is likely that a larger proportion of Charter subscribers are now subscribers to Netflix.

[159] This information comes from SNL Kagan data.

[160] This figure is based on the columns under "Netflix Subscribers" in Table 9. Affected subscribers with pay TV are the total across rows Triple Play **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, Video/Broadband **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, Broadband-only with Satellite MVPD **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, and Broadband/Phone with Satellite MVPD **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[161] See Charter presentation "Charter Insiders SVOD Subscribers Final Report," July 22, 2015, p. 9.

broadband subscriber that increased its video purchases.[162] See Table 10. This means that more than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** subscribers would have to purchase upgraded Charter video services for every one that switched to a different provider **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** (Note that if I instead assume that all subscribers would be affected rather than just Netflix subscribers, the ratio would increase to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

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A. New Charter would lose revenue if it disadvantaged OVDs.

120. The evidence suggests New Charter would lose a substantial number of profitable broadband subscribers if OVDs were foreclosed. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION][165] OVDs are a source of this type of programming, and therefore access to OVDs increases consumer value for Charter broadband. If even a small percentage of these consumers switch away from New

[162] Charter would gain more on those customers that added or upgraded Charter video service but would gain nothing from those that upgraded satellite video service.

[163] These estimates are conservative. Upgraded or new video service could come with additional installation costs associated with a "truck roll" (technician dispatched to do installation). We estimate that the average truck roll costs **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** exclusive of equipment costs. There are installations that last longer and are therefore much more expensive than this amount. Installation costs would net against the monthly gross margin gain in determining whether foreclosure was profitable. If these new or upgraded video subscribers did not stay with New Charter for long enough to pay off the installation costs plus the other losses, New Charter could actually lose money. On net, most new Charter subscribers are signing up for promotional plans where margins would be even lower.

[164] See "LRG Emerging Video Services IX Results Presentation."

[165] See Charter document "General Product Meeting: Video On Demand Content Strategy," May 12th, 2014, p. 4.

Charter (or decide not to subscribe in the first place) in response to a foreclosure strategy, New Charter would be worse off.

121. Few surveys have directly asked consumers whether they would switch their broadband provider if OVDs were available. One survey by Global Strategy Group ("GSG") found that over 70% of broadband subscribers also subscribing to Netflix would switch if Netflix service were degraded.[166] This implies approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of total broadband subscribers would switch.[167] Note that if New Charter foreclosed OVDs and that foreclosure caused **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of broadband subscribers to switch to a rival ISP, then **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of broadband subscribers would have to upgrade video services for it to be profitable—a mathematical impossibility. This level of switching is well-within what is feasible for most New Charter subscribers. For instance, in December 2013, 99% of households had access to at least 2 ISPs providing fixed broadband services with download speeds of 3 Mbps, while 86% had access to at least 3 ISPs providing those services. In 2014, more than one in three households in New Charter's service territory had a competitive alternative offering of at least 25 Mbps download speeds.[168] Given that most broadband users consider it easy to switch providers when multiple options are available, this presents an important constraint on New Charter's ability to profitability foreclose OVDs.[169] Furthermore, the fact that Charter sets its prices nationally makes it harder to price discriminate between households that have more broadband choices and those that have fewer.

122. Other surveys have asked consumers about their response to the removal of content in the context of network programming. A Netflix viewer watches around 12 to 13 hours of Netflix content per week.[170] In contrast, a typical television viewer watches only 3 to 4 hours of each of the major broadcast networks each week.[171] In light of

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[166] Memorandum from William Lake, FCC, to Marlene Dortch, FCC, Exhibit 1b (Dec. 9, 2014) and Letter from Michael D. Hurwitz, Willkie Farr & Gallagher, to Marlene H. Dortch, FCC, at encl., p. 1 (Feb. 19, 2015).

[167] This **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** figure reflects approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of broadband subscribers having Netflix times the 71% that would switch broadband service.

[168] See PIS p.60

[169] For instance, a 2010 FCC report found that 63% of broadband adopters with a choice of multiple providers said it would be at least "somewhat easy" to switch providers. See "Broadband decisions: What drives consumers to switch—or stick with—their broadband Internet provider," FCC Working Paper, 2010.

[170] According to Netflix, 60 million subscribers streamed 10 billion hours of video in Q1 2015. Between January 1 and March 31 of 2015, there were 90 days or 12.9 weeks. Netflix average weekly viewing was then 12.96 hours, which equals 10 billion hours divided by 90 days by 7 days per week by 60 million subscribers. See Q1 2015 Earnings Letter, April 15, 2015.

[171] According to Rentrack Viewership data, audiences watched between 3 to 4 hours of each of the top 4 network broadcast channels in the last week of May 2015. See "Rentrack Viewership data from STB Audience Measurement," May 25, 2015.

the intensity of viewing by Netflix subscribers, the consumer response to the loss of content may be higher for Netflix users than for viewers of the major networks.

123. Table 10 can be used to calculate the critical percentage of affected broadband customers whose loss would make foreclosure unprofitable. It shows that for every average subscriber lost, New Charter would need **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** average subscribers to upgrade video service. Stated another way, the foreclosure would be unprofitable if as little as **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the affected broadband customers were to switch while *all* of those that did not switch instead upgraded their video service.[172] Of course, not all broadband subscribers watch OVDs and some will be unaffected by foreclosure. Foreclosure would be even less profitable if the retained broadband subscribers do not all choose to upgrade their video service. For example, if only half of the retained customers upgraded video service, foreclosure would be unprofitable if as little as **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of total broadband subscribers switched away from New Charter.[173]

124. The costly response of consumers leaving Charter need not be immediate to make the analysis above applicable. Broadband providers experience substantial churn, giving customers ample opportunity to leave one provider for another. They also have an opportunity to simply stop turning to one of the providers as it gains the stigma of hostile action against desired OVD content. In any given year, Charter experiences substantial churn among its broadband subscribers. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] Charter constantly needs to attract new customers to replace this churn just to stay even.

125. Some broadband churn is natural and can happen from customers moving residences. However, a substantial amount of the churn is due to competition between broadband service providers. A 2010 FCC report

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[172] This percentage of customers lost where foreclosure becomes unprofitable is typically called "critical loss." Assuming all of the affected broadband customers retained were to upgrade service, it is calculated as the result of the margin gained **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** divided by the sum of the margin gained and the margin lost **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[173] If only half of retained affected customers upgrade video service, the gain would be half as great. The critical loss would be **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**of affected customers, which reflects half the margin gained **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** divided by the sum of the margin gained and the margin lost **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Assuming 39% of broadband customers subscribe to Netflix, the foreclosure would be unprofitable if **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of broadband customers switched away from New Charter.

[174] Internal Charter financial documents.

found that 36% of broadband users had switched providers one or more times in the past three years.[175] Of those users that switched, the FCC calculated that 57% did not switch broadband providers because of moving residences. Thus, about 20% (=57% x 36%) of total broadband users switched providers in the last three years for reasons other than moving residences. Customer dissatisfaction is one reason for switching: 31% of customers that switched for reasons other than moving residences cited poor customer service from their old ISP as a major reason for switching.[176] This proportion could also potentially apply for dissatisfied OVD subscribers, and as described above reduce demand for Charter's broadband service.

126. An OVD foreclosure strategy that would blemish a broadband provider in the eyes of consumers would also reduce the demand for its broadband service from new customers, and would lead to less broadband growth. Any slowdown in attracting new broadband subscribers could easily result in overall losses as new subscribers are not signed up while existing subscribers are turning away at a rapid pace. Furthermore, New Charter will be depending on future broadband growth to drive profits. An OVD foreclosure strategy risks that growth.

VII. New Charter's Commitments

127. Some commenters are concerned that New Charter will be able to foreclose access to OVDs through anticompetitive interconnection fees or slow network access for OVDs. For example, commenters have claimed that "were the Commission to approve the merger it would substantially increase concentration in the national broadband market, increasing the incentive and ability of all ISPs to impose caps and attempt to push the boundaries of the law with zero-rating schemes."[177] Citing the recent FCC decision on the AT&T/DirecTV merger, commenters note that "Prior transactions have established data caps and control over interconnection as potential "levers" for ISPs to discriminate against unaffiliated content or services,"[178] and claim that New Charter "would…have the leverage to require payments of Internet content companies that must interconnect with it and deliver their traffic over its last-mile connections,"[179] and that they "will have the incentive and ability, with…access to close to 20 million broadband subscribers, to use interconnection to slow the development of video competition by OVDs."[180]

128. As I have explained above, New Charter will have strong incentives to cooperate with OVDs and will have no incentive to foreclose or otherwise impede their development. Nevertheless, I also note that that Charter has made the following binding commitments:

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[175] See "Broadband decisions: What drives consumers to switch—or stick with—their broadband Internet provider," FCC Working Paper, 2010.
[176] Id.
[177] See *Free Press Comments,* p.55
[178] See *Writers Guild Comments,* p.25
[179] See *Public Knowledge Comments,* p.6
[180] See *COMPTEL Comments,* p.14

- For 3 years, New Charter will maintain a settlement free Internet interconnection policy. See FCC filing circa 7/15/2015.[181]

- For 3 years, New Charter will not block or throttle Internet traffic or engage in paid prioritization. See PIS.

- For 3 years, New Charter will not charge consumers additional fees to use specific third-party Internet applications, or engage in zero-rating (discriminatory exemptions from a data cap). See PIS.

129. These binding commitments provide further assurance beyond the economic reasoning I describe below – assurance that New Charter will not engage in these types of conduct: charging higher interconnection fees, using discriminatory data plans, or reducing the quality of OVD signals. (Note that Charter already does not have data caps for its residential broadband customers. Notwithstanding the dramatic but welcome rise in data usage by broadband customers, Charter has not had an active data cap since January 2012.)

130. Note that Netflix has recognized that New Charter's commitments favor OVDs:

> Netflix's long-standing support for an open interconnection policy is designed to ensure that consumers get the online content they want at the broadband speeds they pay for. Charter's new peering policy is a welcome and significant departure from the efforts of some ISPs to collect excess tolls to the Internet," Christopher Libertelli, VP of global public policy at Netflix, wrote in the company's FCC filing. "Charter's policy will promote efficient interconnection with online content providers and with the transit and content delivery services that smaller online content providers rely on to reach their customers. Charter's endorsement of the policy as an enforceable merger condition will ensure that consumers will receive the fast connection speeds they expect.
>
> This new policy and the commitment to apply it across the 'New Charter' footprint is a substantial public-interest benefit and will support scaling the Internet to meet consumers' growing demand for online services and help foster continued innovation across the Internet ecosystem," Libertelli added in explaining Netflix's support for Charter's transaction.[182]

131. New Charter is willing to make these binding commitments because New Charter does not have an incentive to engage in these actions, or any other actions meant to disadvantage OVDs, because doing so would reduce New Charter's profits.

132. The fact that these commitments have a finite life (3 years) should not be a cause for concern. Charter has put a time limit on these commitments due to the rapidly changing marketplace. Over the coming years, Charter and

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[181] See letter from Samuel L. Feder to Marlene H. Dortch, "Re: Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer of Control of Cable Television Relay Service Applications, MB Docket No. 15-149," available at http://apps.fcc.gov/ecfs/document/view?id=60001115477.

[182] See "Netflix to support Charter's bid for TWC, Bright House in exchange for free network use," FierceCable, July 15, 2015, http://www.fiercecable.com/story/netflix-support-charters-bid-twc-bright-house-exchange-free-network-use/2015-07-15?utm_medium=nl&utm_source=internal.

other industry participants expect significant growth in broadband penetration and available speeds. Changes in available technologies, broadband capacity, and consumer tastes are causing the business models of programmers and other distributors of content to change. Acknowledging these changes, in three years' time market conditions are almost certain to be such that a strategy of foreclosure or otherwise trying to impede OVDs would be even more unprofitable for New Charter than it will be immediately after the merger.

133. While Charter's public commitments ensure it will not charge interconnection fees for three years, current trends suggest that broadband competition will limit any anticompetitive conduct in future years. As broadband choices for consumers grow over the next three years, a household that faces degraded or slow OVD access will likely be able to switch to a competing broadband provider that delivers the desired service.

134. A recent analysis by Cisco forecasts that North American Internet traffic is expected to grow at a 20% compound annual growth rate through 2019.[183] Peak hour Internet traffic is expected to nearly quadruple over the five years 2014-2019. In order to support such high growth in the demand for broadband, ISPs are expected to invest heavily in their networks. New players are expected to emerge and others will grow. The expansion is expected to greatly intensify competition in offering broadband to residential customers.

135. For example, a July 2015 report from USTelecom states:

> U.S. broadband providers invested $78 billion in network infrastructure in 2014, according to a new analysis of capital expenditures data for wireline, wireless and cable broadband providers. The 2014 investment expenditure was $3 billion, or 4 percent, greater than the $75 billion invested in 2013 and $14 billion, or 22 percent, greater than the $64 billion invested just five years ago in 2009 amidst the financial crisis. Of the 2014 total, the wireline industry invested $28 billion, or 36 percent of the industry aggregate, compared to 43 percent for wireless and 21 percent for cable.... According to the National Broadband Map, as of mid-2014, more than 96 percent of Americans had access to fixed broadband and more than 99 percent of Americans could get mobile broadband. Growing infrastructure Investment has expanded the quality and speed of broadband service. As of mid-2014, 99 percent of Americans could get broadband at 10 megabits per second (Mbps) download or greater speeds. Fixed broadband at 50 Mbps download or greater was available to 83 percent of Americans, up from 46 percent in 2010, and 100 mbps download or greater was available to 65 percent of Americans, up from only 11 percent in 2010.[184]

136. Many consumers who stop buying Charter's broadband package today have several other choices of broadband providers, and will have more in coming years. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[183] See "Cisco Visual Networking Index: Forecast and Methodology, 2014–2019," Cisco White Paper, May 27, 2015, available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.pdf.

[184] See "Surge of Broadband Investment Threatened by Utility Regulation," USTelecom, July 24, 2015, available at http://www.ustelecom.org/blog/surge-broadband-investment-threatened-utility-regulation.

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[185] See Charter document "General Product Meeting: Consumer Internet Strategy," June 24, 2015.
[186] Id., slide 7.

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138. Verizon offers both wired and wireless broadband services. Verizon FiOS has speeds of 50 Mbps or more. As shown in Table 1, Verizon had 9.2 million broadband subscribers in the second quarter of 2015. As of December 31, 2014, Verizon Wireless had 108.2 million retail subscribers.[188] Verizon Wireless also offers LTE Internet, a high-speed Internet service that provides customers with Internet connections in their homes using its 4G LTE network. Verizon continues to invest in technology. For example, it is investing in Multimedia Broadcast Multicast Service technology, which it uses for its LTE Multicast (mobile TV) service and Go90, its OTT service.[189] This service will provide customers with access to live streaming video content with virtually no buffering, regardless of the number of devices using the service.[190]

139. AT&T also offers both wired and wireless data services. As shown in Table 1, AT&T had about 16 million broadband connections in the second quarter of 2015. At the end of 2014, approximately 75% of its broadband subscribers were U-verse, with the rest DSL or satellite.[191] In the second quarter of 2015, AT&T had more than 120 million wireless subscribers.[192] The FCC announced via a press release that:

> As part of the merger, AT&T-DIRECTV will be required to expand its deployment of highspeed, fiber optic broadband Internet access service to 12.5 million customer locations as well as to E-rate eligible schools and libraries. In addition, AT&T-DIRECTV is prohibited from using discriminatory practices to disadvantage online video distribution services and will submit its Internet interconnection agreements for Commission review. Finally, AT&T-DIRECTV will offer broadband services to low-income consumers at discounted rates.[193]

AT&T is on track to convert 14 million DSL subscribers to IP broadband or high-speed broadband, with 13 million completed as of the second quarter of 2015, according to John Stephens, CFO of AT&T.[194] Mr. Stephens also mentioned GigaPower and AT&T's plans to "go into 25 major markets to place fiber to the [premises] in those." In

[187] Currently AT&T/Verizon have usage allotments that make it economically unattractive to use wireless as an in-home broadband service. T-Mobile and Sprint do offer "unlimited" plans, however, they either deprioritize traffic above usage thresholds or limit data roaming usage. Id., p. 8.
[188] See Verizon 2014 10K.
[189] The LTE Multicast service will reduce congestion by allowing multiple wireless users to watch the same video stream from a particular cell site, rather than having individual video streams for each user. See, for example, "Verizon's Multicast LTE Video to Arrive in 2015," Light Reading, July 22, 2015, available at http://www.lightreading.com/video/mobile-video/verizons-multicast-lte-video-to-arrive-in-2015/d/d-id/710057.
[190] Id.
[191] See AT&T 2014 10K.
[192] See SNL Kagan Multichannel Operator Data.
[193] See "FCC Grants Approval of AT&T-DirecTV Transaction," press release, FCC, July 24, 2015.
[194] See 2nd Quarter 2015 Earnings Call, John Stephens, Chief Financial Officer, AT&T.

addition, on an earlier earnings call, in the first quarter of 2015, Mr. Stephens stated that AT&T has expanded their 75-megabit services to "nearly 90 cities."[195]

140. As of December 31, 2014, Frontier had 2.4 million broadband connections.[196] Note that in February 2015 Frontier Communications purchased Verizon's assets in Florida, California, and Texas. As of the date of the announcement, these Verizon properties included 2.2 million broadband connections and 1.2 million FiOS video connections. Frontier has accepted the full amount of CAF-II support from the FCC this year. By doing so, Frontier has committed to offer a minimum 10 Mbps service to unserved areas in its footprint within 6 years. CAF-II is the Connect America Fund Phase II and is meant to provide support for rural broadband expansion to cable companies and telcos.[197] They have also started rolling out 100 MB over copper products in their footprint in Connecticut, according to Dan McCarthy, President and CEO of Frontier.[198]

141. CenturyLink is the third largest wireline telco in the US.[199] The company has a substantial presence in the market supplying broadband services. As shown in Table 1, CenturyLink had 6.1 million broadband subscribers (both fiber and DSL) in the second quarter of 2015. CenturyLink has upgraded its services to GB speeds in 16 markets as of its second quarter 2015 earnings call, according to Glen F. Post, III, President and CEO of CenturyLink. They plan to continue the expansion of GB speeds through 2015 and beyond.[200] CenturyLink is also trialing technologies that would allow 200 MB speeds over legacy copper systems.[201]

142. Google announced its initial plans for Google Fiber in early 2010.[202] Google Fiber has now launched in three cities (Kansas City, Austin, and Provo), lists six more cities as "Upcoming Fiber Cities" (Atlanta, Charlotte, Nashville, Raleigh-Durham, Salt Lake City, and San Antonio), and lists three more cities as "Potential Fiber Cities" (Portland, San Jose, and Phoenix).[203] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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[195] See 1st Quarter 2015 Earnings Call, John Stephens, Chief Financial Officer, AT&T.
[196] See Frontier Communications 2014 10K.
[197] See "Connect America Fund Phase II Funding by Carrier, State, and County," FCC, September 15, 2015, available at https://www.fcc.gov/document/connect-america-fund-phase-ii-funding-carrier-state-and-county.
[198] See Frontier Communications 2Q 2015 Earnings Call.
[199] See CenturyLink 2014 10K.
[200] See 2nd Quarter 2015 Earnings Call CenturyLink, Glen F. Post, III, President and CEO, CenturyLink.
[201] See 1st Quarter 2015 Earnings Call CenturyLink, Glen F. Post, III, President and CEO, CenturyLink.
[202] See, for example, Matt Stump, "Google Fiber at five years," TelcoTrak, July 2015.
[203] See, for example, https://fiber.google.com/newcities/.
[204] See Charter document "General Product Meeting: Consumer Internet Strategy," June 24, 2015, p. 7.
[205] See, for example, Matt Stump, "Google Fiber at five years," TelcoTrak, July 2015, p. 6.

VIII. Analysis of Facilitating Factors for Coordinated Foreclosure of OVDs

143. Some commenters have expressed concern that the merger will increase the risk of coordinated actions between New Charter and other providers.[206] For example, the Writers Guild suggested that the merger would lead to two large firms (Comcast and New Charter) that would "[ease] the ability for firms to coordinate to set market access terms."[207]

144. As I explain below, it is very unlikely that New Charter and Comcast will be able to tacitly collude to disadvantage OVDs. Firstly, because the two firms do not compete for customers, basic theories of collusion do not even apply. Secondly, without evidence of a specific mechanism that would allow the two firms to reach a collusive agreement, monitor that agreement, and punish any deviations from that agreement, any conclusion that collusion is likely is mere speculation. I have seen no evidence of such a mechanism, and no commenter has identified a plausible collusive mechanism. Thirdly, New Charter and Comcast have different assets and strategies; this means they are very unlikely to share the same goals in the first place. Lastly, a range of other characteristics of the market work against the ability to collude. Therefore, I conclude that such collusion is both speculative and very unlikely.

B. The Basic Economics of Collusion

145. Economists have long known that under typical conditions rival firms that compete repeatedly against each other for customers can earn higher long run profits if they collude to increase prices. With higher prices, colluding firms can make more on each sale, and although they will not sell as much as they could in the short run, they can make more profit in the long run. Individual firms, however, have an incentive to deviate from a collusive agreement in order to make more profit in the short run. A deviating firm can make more profit by setting a price just below the other firms' prices and winning their customers. Because of this, there is instability in any collusive agreement.

146. A common way to illustrate this instability is through the use of the Repeated Prisoner's Dilemma. The Prisoner's Dilemma is a simple game with two players, where each player can choose to either collude or defect. An example of the payoffs to the game are shown in the table below:

[206] See e.g., *ATT Comments* ("This emerging competition is vulnerable to coordinated exclusionary actions by cable").
[207] *Writers Guild Comments.*

Payoffs in Prisoner's Dilemma

		Player 2	
		Collude	Defect
Player 1	Collude	5, 5	3, 6
	Defect	6, 3	4, 4

147. Each cell in the table shows the payoff to both players, with the first payoff in a pair going to Player 1 and the second to Player 2. If both players collude and charge high prices, they earn a combined profit of 10. (In the table, this payoff is shown split evenly between both players so that each gets 5, but there is no guarantee that firms will agree to split the collusive profits evenly. Figuring out how to divide the profits is a hurdle that colluding firms must overcome.) If one player colludes, but the other defects, the defecting player earns a profit of 6 and the colluding player earns 3. This represents the ability of the defecting player to set a lower price and win customers from the colluding player. Finally, if both players defect (compete) by setting a low price, they each earn a profit of 4.

148. If the players only play this game once, the only equilibrium is for both players to choose to defect and earn a payoff of 4. This is the equilibrium because there is no way to divide the collusive profit of 10 so that each player would individually prefer colluding to defecting. For example, suppose the profit is split evenly so that each player earns 5. In that case, each player will prefer to defect no matter what the other player does. If the other player colludes, the defecting player will earn 6 instead of 5. And if the other player defects, the defecting player will earn 4 instead of 3. There is no way for an individual player to do better than defecting if the players only play the game once.[208]

149. However, if the players play the game repeatedly forever, they can achieve a collusive equilibrium by using a more complicated strategy that gives each a payoff of 5 each time the game is played. For example, suppose Player 1's strategy is to collude in the first game and to continue to collude as long as Player 2 colluded in the previous game. But, if Player 2 defects, then Player 1 will punish by choosing to defect forever after. In that case, Player 2 would prefer to collude with Player 1 and achieve the average payoff of 5 per game, instead of defect and achieve an average payoff of 4.

150. In most cases, neither of the two extremes—playing once or playing forever—is realistic. Firms usually interact repeatedly with each other, not just once. And firms are normally impatient to some degree and do not make plans that last forever.

[208] Of course, jointly the players can earn 5 each. But that means both players have to choose against their self-interest.

151. More specifically, it is well understood that firms normally put more value on near term profits than on long term profits. In part, this is due to the time value of money—the fact that money can earn interest. The concept is formalized in a firm's discount factor. For a firm, if the value of $1 tomorrow is less than $1 today, or δ * $1, then δ is the firm's discount factor.[209] The discount factor is between 0 and 1, and, when it is smaller, firms value near term profits more; they are more "impatient." Playing the Prisoner's Dilemma once is equivalent to having a discount factor of 0, while playing it repeatedly forever is equivalent to having a discount factor of 1. A more realistic assumption is that the discount factor is between 0 and 1. When the discount factor is between 0 and 1, it is still sometimes possible to achieve a collusive equilibrium, but the strategies can become more complicated.

152. An important question if the firms' discount factors are low is how would one player convince the other to collude? For very low discount factors, it might be almost impossible. As noted by Stigler in his seminal paper, in order to collude firms need to (1) reach an agreement about how to collude and how to divide profits, (2) monitor that agreement, and (3) enforce that agreement by effectively punishing any firm that deviates.[210] When firms are impatient, even if they can overcome the hurdles of reaching and monitoring an agreement, they may not care about future profits enough to make punishments effective. And if firms have different discount factors, reaching a common agreement about the value of collusion and how to divide profits may be impossible.

153. Others have extended Stigler's work by identifying other market and firm characteristics akin to the discount factor—known as facilitating factors—that make it easier for firms to reach, monitor, and enforce a collusive agreement.[211] As stated by Ivaldi, *et al.*:

> "Many characteristics can affect the sustainability of collusion. First, there are some basic structural variables, such as the number of competitors, entry barriers, how frequently firms interact, and market transparency. Second, there are characteristics about the demand side: is the market growing, stagnating, or declining? Are there significant fluctuations or business cycles? Third, there are characteristics about the supply side: is the market driven by technology and innovation, or is it a mature industry with stable technologies? Are firms in a symmetric situation, with similar costs and production capacities, or are there significant differences across firms? Do firms offer similar products, or is there substantial vertical or horizontal differentiation?"[212]

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[209] What I've written as δ is sometimes written as $1 / (1 + i)$, with i defined as the appropriate risk adjusted interest rate. Practitioners often use a firm's weighted average cost of capital ("WACC") as an estimate for i, but other estimates may also be appropriate depending on the specific beliefs and risks that apply to the future revenue stream.

[210] See George J. Stigler, "A Theory of Oligopoly," The Journal of Political Economy, Volume 72, Issue 1 (Feb. 1964), p. 44-61.

[211] See, for example, Marc Ivaldi, *et al.*, "The Economics of Tacit Collusion," Final Report for DG Competition, European Commission, March 2003. See also U.S. Department of Justice and Federal Trade Commission, "Horizontal Merger Guidelines," August 19, 2010, available at http://www.justice.gov/atr/horizontal-merger-guidelines-08192010#7b, §7.2.

[212] Id. Despite the work that has been done, there is disagreement in the profession about how much weight to put on different facilitating factors.

154. These factors help us understand when collusion is more likely, provided one other condition holds: there must be a mechanism by which the tacitly colluding parties will be able to reach a collusive agreement, monitor that agreement, and punish deviations from that agreement. The presence of facilitating factors that may increase the likelihood of collusion is not sufficient on its own to conclude collusion is likely. Rather, the additional step, based on Stigler's framework, of identifying a collusive mechanism is required. Without describing a specific credible collusive mechanism, I believe that finding that a market is susceptible to collusion is speculative at best.

C. Hypothetical theory of harm

155. The first hurdle in applying this model is to identify a plausible if theoretical theory of harm. The traditional reason for collusion does not apply because New Charter and Comcast will not compete for customers.

156. However, in theory, one could view New Charter and Comcast as competing with one another in serving as distribution channels for programming and in developing innovative contracts with OVDs. The collusion hypothesis considered below is whether New Charter and Comcast could and would collude to harm or eliminate independent OVD networks. By doing so, they would control more aspects of OVD development and access to viewers. Such control would potentially result in greater financial benefit in the combined OVD-MVPD businesses.

157. In a counterfactual world where New Charter and Comcast both want to harm OVDs, it is necessary to develop a reason why tacit collusion would be more profitable than acting alone. One possible theory involves externalities. According to the externalities theory, both New Charter and Comcast would gain from costly actions to disadvantage OVDs. However, the gain would be spread across other MVPDs in the market. In the case where the benefit to one firm was lower than the cost of the action, it would not be taken. The key under this theory is that when both firms take the costly action, the combined gain to either one outweighs the cost of the individual action. In this setting, if the firms can tacitly collude to take the action then they are both better off, whereas when they cannot tacitly collude, neither has the incentive to take the action. In this particular game, if the merger raised the possibility of collusion, there could be more harm to OVDs.

158. For example, in its comments Public Knowledge suggests:

> First, while all cable companies act as distributors for video programming, they do not generally compete with each other. Programmers prefer to be carried not just by most cable companies (as they serve distinct geographic areas), but by all MVPDs, even when they do overlap. Although, during carriage disputes, a high-value programmer may pull its content from a distributor as a temporary negotiating tactic, in general, a programmer would prefer to be carried by a cable company, as well as DISH, DirecTV, and any telco video provider, instead of being carried by just one. Because programmers do not choose between competing distributors but instead typically do business with many of them at once, large distributors do not compete with each other for access to programming. This increases the incentive for large distributors to behave in parallel ways—for example, by offering similarly unfavorable terms. Thus, the increased

ability of a post-merger Charter to impose onerous conditions on video programmers would not be offset by competition between distributors.[213]

159. The Repeated Prisoner's Dilemma discussed above is a good way to illustrate the basic incentives involved if the theory is right. Suppose that if neither New Charter nor Comcast takes actions that disadvantage OVDs, then both "defect" and each would earn 4. Suppose further that taking actions to disadvantage OVDs costs a firm 3, and that due to the externality those actions allow both firms to increase profits by 2. So, if one firm takes actions to disadvantage OVDs ("cooperates") and the other firm does not ("defects"), the cooperating firm earns its initial profit minus the cost of the actions plus the increase in profit from the actions, which is $4 - 3 + 2 = 3$. Since the defecting firm incurs no cost from the actions, it earns $4 + 2 = 6$. If both firms cooperate, then each earns $4 - 3 + 2 + 2 = 5$. These are the same payoffs illustrated in the example above.

160. As I have stated elsewhere, I conclude that actions such as charging interconnection fees, imposing usage based billing or data caps, or degrading network performance are very unlikely, both because New Charter has no incentive to undertake them, and because the FCC will enforce New Charter's commitments.[214]

161. But there are other, non-regulated, actions that might theoretically disadvantage OVDs. For example, New Charter and Comcast could require contracts with program suppliers that include Most Favored Nation (MFN) or similar contractual clauses intended to limit the ability of OVDs to acquire programming on competitive terms. If OVDs faced higher programming costs, perhaps their services would not be as attractive to subscribers. Another contract term might prevent programmers from being able to sell their content to an OVD at all, or to an OVD within a certain time window, or to an OVD with a certain business model. Programmers might feel that New Charter is so large that they must agree to these contractual terms or risk being shut out of the New Charter footprint. Of course, programmers may also have their own leverage and incentives to ask for their preferred terms for alternative distribution methods ("ADMs"). As Professor Katz explains in his declaration, these terms are not always anticompetitive, and indeed can help programmers create efficient contracts that benefit both the content creator and the content distributor.

162. And, if OVD services were not as attractive to subscribers due to these contract terms, perhaps New Charter and Comcast would benefit as described above. Such actions might not be profitable unilaterally, but if both New Charter and Comcast engaged in them, the combined impact on OVDs might be enough to outweigh the costs.

163. I discuss the likelihood of this theory of collusion below.

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[213] See *Public Knowledge Comments*, p. 11.

[214] See commitments from Charter's PIS.

D. No Collusive Mechanism

164. Note that commenters have not put forward any specific credible collusive mechanism, by which I mean a method for identifying any shared goal, allocating any of these complex actions, and sharing the cost of achieving them. For example, how would New Charter and Comcast determine which contract term is to be used to achieve these goals? How will the two firms target programmers with restrictive terms and allocate the contracts between the two firms to avoid duplicating the effort of negotiating an expensive provision? How will they choose restrictive terms that satisfy the strategy of New Charter as well as Comcast? This is very complex collusive behavior which must be devised and acted upon without explicit communication.

165. In order to solve these problems and successfully collude, the firms must have a simple way to choose and execute cooperation without an explicit agreement. It is hard to imagine what this might entail. There is nothing in the history of the two firms to suggest a solution exists. Commenters have not offered a theory of how the collusion would be carried out. To the best of my knowledge the economics literature does not contain a framework for how you would effectuate a collusive scheme that would work in this environment.

E. No Shared Goals

166. Not only is there no identifiable collusive mechanism but the two firms have different goals with respect to OVDs. In sections III, IV, and V above, I provide a detailed analysis of the differences between the two firms' technology strategies and an analysis of New Charter's financial incentives to promote OVDs. To summarize, Comcast's strategy is to integrate as much OVD-like functionality into its own X1 system as possible and monetize that functionality, and to leave OVDs to rely on metered broadband only. By contrast, New Charter's active strategy is to partner with independent OVDs and third-party hardware suppliers that consumers desire and integrate their services and products into New Charter's offerings within a more open model. These are very different strategies.

167. Because New Charter and Comcast have very different technology strategies and strategies with respect to OVDs, it is hard to imagine how they could come to any agreement on actions with respect to OVDs, and it seems unlikely that they would want to collude. In fact, when two firms have different profit maximizing strategies it is not plausible to imagine they will voluntarily agree to take the same strategy, as that would harm one of the two.

F. OVDs benefit MVPDs

168. One of the basic premises of the collusive theory is that New Charter and Comcast would both earn higher profits if OVDs were disadvantaged. But this premise is likely incorrect. As I have discussed elsewhere, many MVPDs, including Charter, view OVDs as beneficial to their overall profits. OVDs are beneficial to Charter because increased OVD offerings increase subscriber demand for its highly profitable broadband services, and this increased

demand likely overwhelms any potential loss due to subscriber substitution away from Charter's MVPD services. (See Section VI above.) Because of this, New Charter will have no incentive to disadvantage OVDs. Indeed, the financial analysis in Section VI shows the reverse – that New Charter will have a financial incentive to sell broadband by making it as attractive as possible. Thus, a basic premise of the collusion theory is not true.

169. To the extent that merger opponents have suggested that TWC has an incentive to disadvantage OVDs, and that such a motive will somehow dominate in New Charter because of the relative size of TWC, they are incorrect. The analysis above demonstrates that TWC, like Charter, lacks an incentive to harm OVDs. In any event, TWC customers will receive Charter technology, Charter price levels, Charter management, and over time, Charter investment levels in speed. The analysis above shows that New Charter will assess the incentives from this combination of assets and find that, as is the case for Charter and TWC, there is a financial incentive to sell broadband by offering easy access to OVDs.

170. Nevertheless, for the sake of exposition, I will assume for the remainder of this section that, counter-factually, New Charter and Comcast do have a joint incentive to disadvantage OVDs. I will further assume that there are unidentified costly actions available to New Charter and Comcast that generate the types of externalities that I just described.

G. Past History Makes Collusion to Disadvantage OVDs Unlikely

171. As a starting point, note that neither Charter, nor TWC, nor BHN have any history of collusion against OVDs. As stated in Charter's Public Interest Statement:

> "And none of the Applicants has any history of engaging in anticompetitive actions with respect to edge providers. To the contrary, opponents to the Comcast-Time Warner Cable merger have praised Time Warner Cable's leadership in collaborating with programmers and third-party device developers on app development, TV Everywhere authentication, and related initiatives. Upon the completion of the Transaction, New Charter will follow that path." PIS ¶48.

172. The lack of any history of collusion is consistent with collusion being an undesirable strategy, very difficult for these firms to achieve, or both. If the incentives for firms were more likely to make an anti-OVD strategy possible in the past, and yet we have no evidence of cooperation in the past, it is possible that cooperation is very difficult to achieve. Finding a collusive equilibrium and executing on it may not be feasible.

173. Considering the formidable obstacles to be overcome and the lack of evidence as to how it could be achieved, I believe that any concern that collusion between New Charter and Comcast is speculative at best. Without a specific mechanism to consider, I proceed in the traditional manner by considering the presence of different complicating/facilitating factors. I turn now to the other factors required for collusion—and why a range of factors makes it unlikely the two parties would collude.

H. Other Factors that Make Collusion between New Charter and Comcast Unlikely

174. Following Ivaldi, *et al.*, I consider three categories of facilitating factors: (1) Structural Factors, (2) Demand Factors, and (3) Supply Factors.[215] I show that facilitating factors that support the collusive theory at hand are not present.

1. Structural Factors

175. For more typical theories of collusion—i.e., theories that depend on competition between the colluding firms for customers—the structural factors that facilitate collusion include:

(1) A small number of competitors,

(2) Concentrated market shares,

(3) High entry barriers,

(4) Frequent interaction, and

(5) Market transparency.

176. For the theory at hand, which involves the presence of particular externalities generated by the actions of New Charter and Comcast, the number of competitors, market shares, and entry barriers are not relevant.

177. It should be clear from my discussion of the Repeated Prisoner's Dilemma that when firms interact more frequently, they have an increased likelihood of being able to sustain collusion. But what does this mean in the current context? In the current context, the frequency of interaction is determined by the frequency of the occasions when New Charter and Comcast will have opportunities to take the actions that lead to the externalities. The example actions that I highlight above concern negotiating programming contracts. Suppose when a contract comes up for renewal, New Charter could include in that contract a restriction that the programmer not sell the content to an OVD buyer. New Charter would want to be sure that the programmer was not already bound by Comcast to restrict distribution; otherwise, the programmer would charge New Charter for the restriction without changing its behavior. In general we expect the programmer to raise its price if the contract includes costly restrictions. This is the cost that has an externality on other MVPDs.

[215] See, for example, Marc Ivaldi, *et al.*, "The Economics of Tacit Collusion," Final Report for DG Competition, European Commission, March 2003.

178. But New Charter and Comcast only re-negotiate significant terms in programming contracts infrequently. For example, Table 11 below shows the current expiration dates for Charter, TWC, and BHN programming contracts.

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179. Because the significant terms of programming contracts are only infrequently renegotiated, the opportunities for New Charter and Comcast to collude using these contracts are few and far between. This means that the payoff to deviating from such a collusive agreement is relatively higher, and the ability to punish deviations is relatively lower. Thus, the infrequency of interaction suggests that collusion between New Charter and Comcast is unlikely.

180. Other types of actions are similarly characterized by infrequency. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] The fact that Charter has and plans to make these long term commitments suggests an infrequency of interaction and reduces the likelihood of collusion based on these interactions.

181. Market transparency is the ability of New Charter and Comcast to see and understand each other's actions. With regard to programming contracts and contracts with OVDs, the market is clearly not transparent. These contracts are highly sensitive, confidential, and secret. This means that monitoring any collusive agreement based on these types of interactions would be very difficult. New Charter and Comcast would both have great difficulty verifying that the other took particular actions that resulted in the desired benefits.[218] This means they would not be able to determine if the other deviated from the putative collusive agreement, and they would not know if they needed to punish or not. This would increase the benefit from deviation and make collusion very unlikely.

2. Demand Factors

182. Demand factors that facilitate tacit collusion include:

(1) Growing demand, and

(2) A stable market.

183. When demand is growing, there is a greater future benefit to collusion. When demand is stagnant or declining, there is less to lose from future punishment due to a deviation from a collusive agreement. Table 3, which

[216] See, for example, Charter document "Spectrum Guide Cloud-Based App Platform," July 16, 2015, p. 6.
[217] Id.
[218] Some actions, such as including an OVD on a program guide, would be visible.

was introduced in an earlier section, shows that the demand for MVPD basic services (the number of subscribers) has been relatively constant since 2010 and is expected to remain so through 2020.

184. The lack of growth in basic MVPD subscribers suggests that collusion with the goal of increasing prices to these MVPD subscribers is less likely. This is especially true in the face of the actual and expected increase in broadband subscribers, an increase that would be hampered by any collusion that disadvantaged OVDs.

185. Furthermore, the various markets that New Charter and Comcast participate in are not stable, but are in a high degree of flux. As the Table 3 illustrates, demand is shifting rapidly from traditional MVPD services to broadband services. Furthermore, technology is rapidly changing due to innovation, which means that the position of MVPD services even in the near term is uncertain. These facts mean that the benefits of collusion are relatively lower, and the payoffs to deviation are relatively higher. These forces lower the return to collusion and make it less likely.

3. Supply Factors

186. For more typical theories of collusion, supply factors that facilitate collusion include:

(1) Symmetry in product offerings,[219]

(2) Symmetry in costs, and

(3) Symmetry in beliefs.

187. It is commonly thought that it is easier for symmetric firms to reach a collusive agreement.[220] It is clear that asymmetries can make the choice of the same strategy difficult. For example, if the firms have products that are much different from each other, the firms may have different long term goals. Those different goals can hamper the ability of the firms to achieve an agreement on a collusive outcome.

188. For example, as mentioned earlier in this report, New Charter and Comcast have made different technological choices. New Charter has invested in its World Box and Spectrum Guide, while Comcast has invested in its Xfinity box. The value of these different investments is likely maximized by the firms pursuing different strategies. For example, New Charter intends to pursue a strategy that, in order to satisfy demand, incorporates OVDs into its Spectrum Guide in positions adjacent to its traditional MVPD program offerings. It believes that following that strategy will maximize the value of its investment by attracting more MVPD subscribers. On the

[219] Symmetry in market shares is often cited also, but more properly belongs to settings where the two firms share a market. In the case analyzed here, each cable company serves a different geographic area.

[220] It is not clear that symmetry has anything to do with ability to monitor an agreement, though some sorts of punishment would also be more effective as a firm's market share grows.

other hand, Comcast has not incorporated OVDs into its program guides. Rather, Comcast has focused on offering itself, through content it owns or distributes, the programming a consumer might want.

189. New Charter and Comcast are on different paths in the technology market. Comcast plans to sell its X1 boxes to other cable systems for use with their customers.[221] However, Charter has demonstrated the low cost of the DCAS technology.[222] The investments of Charter and Cablevision are creating a provider ecosystem that will reduce adoption cost of DCAS systems to small cable networks. The spread of DCAS may reduce the sales of X1.

190. Other asymmetries include the use of network interconnection fees and data caps. Comcast has these; New Charter will not.[223] This commitment is already evidence that New Charter will not be able to cooperate with Comcast's strategies.

191. New Charter and Comcast likely have different discount rates. A firm's discount rate embodies not only the firm's cost of capital, but also the firm's particular understandings and beliefs about the risks associated with future revenue streams. It is unlikely that any two firms have identical capital costs, understandings, and beliefs, and therefore unlikely that any two firms have the same discount rates. Charter's capital structure and its beliefs about its ability to generate revenues given its different strategy choices are likely to be much different than Comcast's. These differences will inevitably lead the companies to have different discount rates. Even not accounting for the differences in beliefs, each company has a different weighted average cost of capital (WACC) as shown in Table 12 below. For example, Charter has recently emerged from bankruptcy and is on the verge of launching completely new technology, one that is different than Comcast's. According to one commenter, New Charter will have a debt of $2,749 per customer relationship, while Comcast will have a debt of $1,777 per customer relationship.[224] When a firm has a high level of debt, it needs immediate cash flow to make the payments on the debt. Such a firm is "impatient." This means that the firm is very unwilling to invest in a long term risky project such as tacit collusion that is costly now but might have a payoff in a few years, compared to realizing revenue today. Charter is therefore not likely to value the future in the same way as Comcast – and, moreover, it wants a different future – and this will make it difficult for them to agree on any strategy to affect that future.

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[221] See, for example. "Comcast Revving Up X1 Rollout," Multichannel News, July 23, 2015, available at http://www.multichannel.com/news/next-tv/comcast-revving-x1-rollout/392432.

[222] See discussion in § III.

[223] See discussion in § III.

[224] See *Free Press Comments*, p. 20. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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192. Perhaps most importantly, Comcast is vertically integrated with national programming content (through its ownership of NBCUniversal), while New Charter will not be. Because of this, Comcast's incentives regarding the distribution of programming are certain to be different from New Charter's.

193. These various asymmetries between New Charter and Comcast are fundamental and create enormous difficulties for New Charter and Comcast to reach any type of collusive agreement.

I. Enforcement and Punishment

194. Recall that collusion requires firms to reach, monitor, and enforce a collusive agreement. Above, I have discussed the absence of various facilitating factors that increase the likelihood that firms can succeed in these necessary tasks for collusion. In addition, I should emphasize that the different theory of collusion I am considering here—one involving no direct competition between the colluding firms for customers—suggests an important lack of ability to enforce a collusive agreement that makes collusion very unlikely.

195. The traditional methods of enforcing a collusive agreement, such as a price war, are not available to firms that do not compete for customers. Suppose that New Charter and Comcast did in fact attempt to collude by taking certain actions to disadvantage OVDs. Suppose further that the companies could monitor each other and verify that specific actions had been taken. What would one company do if the other defected from the agreement? How could one company punish the other for defection?

196. In a more traditional setting, where the companies involved competed for the same customers, one company could punish the other by cutting price and stealing the deviating company's customers. That type of strategy is not available in this case. The two firms are both negotiating with programmers and potentially contracting for innovative sources of OVD content, which means there are fewer available options, and they occur less frequently, to the companies to use as punishment to enforce a collusive agreement. For example, Comcast could refuse to allow New Charter to carry NBC programming. Alternatively, New Charter could refuse to carry

NBC programming. This option is both very visible and very expensive. When punishments are expensive, any collusive agreement between New Charter and Comcast becomes harder to enforce and therefore less likely.[225]

IX. Economies of Scale

197. Some commenters are concerned that the size of New Charter will cause harm.[226] These commenters have noted that New Charter may benefit from cost improvements in video and/or broadband via volume discounts or other economies of scale. Commenters have expressed a concern that these economies of scale are applied in a competitive fashion. The benefits of increased scale are detailed below across several areas. Each of these can help improve competition among providers.

A. Increased scale

198. Based on the parties' EOY 2014 subscriber counts, the increase in scale due to the transaction ranges from 58% to 842%, depending on the stand-alone firm and the service. See Table 13. For example, Charter has about 5 million broadband customers and BHN only about 2 million. The merger will join these two entities with TWC and increase TWC's scale from 12.3 million to over 19 million broadband subscribers.

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[225] See Fiona Scott Morton, Entry and Predation: British Shipping Cartels 1879–1929, 6 J. ECON. & MGMT. STRATEGY 679 (1997); Joel M. Podolny & Fiona M. Scott Morton, Social Status, Entry and Predation: the Case of British Shipping Cartels 1879–1929, 47 J. INDUS. ECON. 41 (1999) for analysis of cartels in the shipping industry.
[226] See e.g., *Public Knowledge Comments*, and *Free Press Comments*.

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B. Economies of scale will increase the incentives to make fixed cost investments

199. Suppose a new product is valuable to subscribers, such as a modem with faster transfer speeds in the home, and that subscribers are more willing to subscribe or to pay more for the improved speeds. A firm will have an incentive to provide this valuable product, if the additional subscribers and revenue is enough to recover the cost of providing the product. The additional amount must cover both the variable and fixed costs of the product. Variable costs are costs that increase with the number of subscribers. Part of the cost of the modem is likely variable—you need one modem for every subscriber and, as you increase subscribers, you will increase the number of modems you need. But part of the cost of the modem is also fixed. The investment in the design of the modem, for example, is a fixed cost that does not vary as the number of subscribers increases. The additional revenue a firm can earn from a product is the per-subscriber incremental revenue times the number of subscribers. Holding all else constant, the additional revenue increases with the number of subscribers, while the fixed cost stays the same. The more subscribers there are, the more likely it is that the additional revenue outweighs the fixed cost. Thus, it is clear that more fixed cost investments will be undertaken as the number of subscribers, or scale, increases.[227]

200. New Charter will have an increased incentive to invest in new and upgraded technology and services, because the post-merger firm will have increased scale and scope relative to any of the stand-alone firms. This

[227] A more formal exposition of the principle that a larger scale will lead to more fixed investment can be based on the classic Dorfman-Steiner Model. See Dorfman, Robert, and Peter O. Steiner, "Optimal Advertising and Optimal Quality," *American Economic Review* 44, p. 826-36 (1954).

increased incentive is procompetitive and will lead New Charter to increase its investments. Those increased investments will benefit subscribers.

201. The reason it makes sense to highlight the fixed costs of investment is because there are many important innovations whose costs are mostly fixed. Software such as the Spectrum Guide is a good example; it costs the same amount to write the code no matter how many subscribers use it. When a large number of subscribers use the innovation, the per-subscriber fixed cost is very low. Therefore, it is much easier for the firm to earn a positive return on a software innovation when it has larger scale.

202. Because of the economic benefits of scale, New Charter will have an incentive to incur much larger fixed cost investments in order to create a new product or service than any of the stand-alone firms. The increased incentive to incur larger fixed cost investments will lead to the creation of new products and services that would not have been invested in by the stand-alone firms. These products and services will be valuable to subscribers and will make the combined firm's products more attractive and competitive with substitute products.

203. For example, consider the fixed costs associated with Charter's Spectrum Guide shown in the table below.[228]

[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[228] See Charter document "Spectrum Guide Deployment Cost per Sub," June 17, 2015.

204.

[END HIGHLY CONFIDENTIAL INFORMATION] This analysis illustrates the significantly lower per subscriber cost of a fixed investment for the post-merger firm compared to the stand-alone firms. Because the per-subscriber cost is so much lower, New Charter will have an increased incentive to make fixed investments in products like the Spectrum Guide.

205. Some of the products and services that New Charter will invest in will create new or increased competition in adjacent markets. For example, the post-merger firm will have an increased incentive to invest in wi-fi technology and deployments that will allow it to compete on a facilities basis with current cellular providers. Wi-fi provides customers alternative access to data services for tablets and other devices from those offered by cellular providers.

206. Moreover, the effects of scale are amplified in this case by the synergies between the two firms. One potential technology called Home as a Hotspot makes home wireless routers act as wireless hotspots, enabling customers to easily get online from locations away from their own homes. Both TWC and BHN are members of the Cable WiFi consortium **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] With a large network of hotspots, New Charter would be in a position either to rent its network, or launch its own wireless service that requires less additional coverage from a wireless carrier partner.

207. There are many examples of fixed cost investments that the stand-alone firms have chosen not to make due to lack of scale. For example, all three firms cite a lack of scale as a reason for having smaller research and development teams. With more scale, the incentive to increase the size of those teams will increase. TWC, which is the largest of the stand-alone firms, has delayed investments in: **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[229] See *Response of Charter Communications Inc. to Information and Data Requests Dated September 21, 2015*, October 13, 2015, Response to Request 74(d).

[END HIGHLY CONFIDENTIAL INFORMATION]

208. Similarly, Charter reports that if it had more scale over which to spread development costs it would have been able to: **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

209. With the increased scale, the post-merger firm will be more likely to recover the costs of all of these investments, and is therefore more likely to make them promptly. The result will be higher quality services for subscribers.

C. Increased geographic scope

210. Along with increased scale, the post-merger firm will have increased geographic scope. Its increased geographic scope will make certain types of investments more efficient. For example, New Charter will have an increased incentive to invest in attracting and maintaining its subscribers using mass market advertising. Because mass market advertising like television ads are purchased for an entire DMA, the value of the mass market advertising to New Charter increases as New Charter's geographic coverage within a DMA increases. New Charter will be more likely to spend resources using mass marketing to attract and maintain its subscribers because each advertisement will reach a larger number of subscribers or potential subscribers.

211. While other providers, like DirecTV, DISH, AT&T, Verizon, and others, also compete as MVPDs within different DMAs, cable multiple systems operators ("cable MSOs") serve virtually non-overlapping regions. Because their regions are virtually non-overlapping, a higher share of cable MSO subscribers serves as excellent proxy for a

[230] Based on input from Peter Stern, Executive Vice President and Chief Product, People and Strategy Officer for TWC, provided June 7, 2015.
[231] See *Response of Charter Communications Inc. to Information and Data Requests Dated September 21, 2015*, October 13, 2015, Response to Request 3.
[232] Based on input from Richard DiGeronimo, Executive Vice President of Product and Strategy for Charter, provided June 9, 2015.

cable MSO's breadth of geographic coverage within a DMA. For example, in Q1 2015 Charter accounted for approximately 14% of the cable MSO video subscribers in the Los Angeles DMA, TWC for 73%, and BHN for none. The post-merger New Charter would serve 87% of cable MSO video subscribers in the Los Angeles DMA.[233] Table 14 illustrates for five large DMAs how post-merger New Charter will create wide geographic coverage.

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Table 14

Summary of Cable MSO and Other MVPD Subscriber Clustering

Five Large DMAs where Merger of Charter, TWC, and Bright House Creates Clustering

	Los Angeles, CA	Dallas-Ft. Worth, TX	Charlotte, NC	Raleigh-Durham (Fayetteville), NC	Milwaukee, WI
DMA Rank by Total HHs	**2**	**5**	**23**	**25**	**36**
Number of Subscribers					
Time Warner Cable	1,277,907	309,688	361,935	405,770	296,920
Charter	247,454	107,385	80,940	30,119	68,845
Bright House	0	0	0	0	0
Charter - TWC	**1,525,361**	**417,073**	**442,875**	**435,889**	**365,765**
Other Cable	**233,264**	**76,040**	**59,595**	**26,334**	**820**
Total Cable	**1,758,625**	**493,113**	**502,470**	**462,223**	**366,585**
Other MVPD					
DirecTV	1,094,248	520,648	213,493	221,118	143,694
DISH	707,169	344,628	149,064	152,018	96,353
AT&T U-Verse	396,228	461,313	69,597	50,186	130,847
Verizon FiOS	520,005	253,291	NA	NA	NA
Total MVPD	**4,476,275**	**2,072,993**	**934,624**	**885,545**	**737,479**
Share of Cable Subscribers					
Time Warner Cable	72.7%	62.8%	72.0%	87.8%	81.0%
Charter	14.1%	21.8%	16.1%	6.5%	18.8%
Bright House	0.0%	0.0%	0.0%	0.0%	0.0%
Charter - TWC	**86.7%**	**84.6%**	**88.1%**	**94.3%**	**99.8%**
Share of Total MVPD Subscribers					
Time Warner Cable	28.5%	14.9%	38.7%	45.8%	40.3%
Charter	5.5%	5.2%	8.7%	3.4%	9.3%
Bright House	0.0%	0.0%	0.0%	0.0%	0.0%
Charter - TWC	**34.1%**	**20.1%**	**47.4%**	**49.2%**	**49.6%**

Source: SNL-Kagan, 2015 Q1.

[233] But note that the post-merger firm would only serve 34% of all MVPD subscribers in the Los Angeles DMA. Other providers like DirecTV, DISH, Verizon, and AT&T would serve 24%, 16%, 12%, and 9% respectively.

[234] Based on input from Jonathan Hargis, Executive Vice President and Chief Marketing Officer for Charter, provided June 3, 2015.

212. The post-merger firm's increase in geographic scope will make the per-subscriber advertising cost of mass market advertising fall. As such, the post-merger firm will have an increased incentive to advertise, which will intensify competition with rivals and benefit consumers.

213. Although not related to the firm's incentive to invest, another benefit of increased geographic scope is that the post-merger firm will be better able to serve multi-location businesses. Businesses with locations that currently span a combination of the Charter, TWC and BHN networks will be better served by the post-merger firm, because all of the business's locations will be served by a single provider rather than two or three separate providers. Thus, these multi-location businesses will gain a "one-stop-shopping" benefit that will reduce their costs.[235] A similar benefit will accrue to advertisers that seek to buy advertising on cable TV. Post-merger, advertisers that want to reach subscribers spanning a combination of Charter, TWC, or BHN networks will be able to reach those subscribers by buying ads from a single cable MSO rather than two or three cable MSOs.

D. Lower marginal costs

214. Because of its increased scale, the post-merger firm's marginal cost will decrease. Professor Michael Katz has analyzed the combined firm's programming costs and concluded that marginal costs are likely to fall by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** I understand that this is driven by the fact that TWC generally has lower programming costs than Charter. Because programming costs are typically paid on a per-subscriber basis, if New Charter can lower its programming costs for current Charter subscribers by purchasing all of its programming under TWC's terms, it will reduce New Charter's marginal cost per video subscriber. Part of that reduction in cost will benefit subscribers in the form of lower prices; Professor Katz estimates **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** will be passed through.[236]

215. In addition, the post-merger firm's marginal cost of capacity will decrease because it will be purchasing higher volumes of inputs like co-axial cable, construction services, set-top boxes, and modems. These higher volumes will allow the post-merger firm's suppliers to achieve economies of scale and their associated cost savings. A portion of these cost savings will likely be passed through to the post-merger firm in the form of lower input prices. In turn, the post-merger firm will likely pass through a portion of the savings associated with lower input

[235] Note that this benefit does not have a potential countervailing harm, as there is no reduction in competition for subscribers from the merger. See § II above.

[236] See "Charter-TWC-BHN: Efficiencies Analysis: Reply Declaration of Michael Katz," Professor Michael Katz, November 2, 2015.

prices to its subscribers.[237] Thus, both suppliers and subscribers will benefit from the post-merger firm's increased scale.

216. Charter's World Box is also a likely source of reduced marginal cost. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

E. Increased speed as a consequence of scale

217. The post-merger firm will have an increased incentive to invest in its network to the benefit of subscribers as described above. A significant aspect of these investments in fiber, software, and hardware is the increased speed that will become available to the post-merger firm's broadband subscribers. See Table 15 for counts of broadband subscribers by ISP.[240]

Table 15

[237] A profit maximizing firm that faces a downward sloping demand curve will pass through a portion of the marginal cost savings in the form of lower prices. If the demand curve is linear, the firm will pass through 50% of the marginal cost savings.
[238] See internal document about STB purchasing request, "Time Warner Cable STB Information."
[239] See, for example, Charter's presentation "World Box and DCAS/DRM Summary," July 2014.
[240] Note that figures in Table 15 duplicate broadband subscriber figures in Table 1.

Top 20 Broadband Providers - Ranked by 2Q 2015 Subscribers

Rank	Company Name	Broadband Subscribers	
	Total for Top 72 Multichannel Operators	92,438,161	
1	Comcast Corporation	22,548,000	24%
	Pro Forma New Charter	20,248,092	22%
2	AT&T / DTV	15,961,000	17%
3	Time Warner Cable Inc.	12,770,000	14%
4	Verizon Communications Inc.	9,221,000	10%
5	CenturyLink, Inc.	6,108,000	7%
6	Charter Communications, Inc.	5,294,000	6%
7	Cox Communications, Inc.	4,953,868	5%
8	Cablevision Systems Corporation	2,781,000	3%
9	Frontier Communications, Inc.	2,407,000	3%
10	Bright House Networks, LLC	2,184,092	2%
10	Suddenlink Communications	1,248,600	1%
11	Mediacom Communications Corporation	1,051,000	1%
12	WideOpenWest Networks, LLC d/b/a WOW!	713,100	1%
3	DISH Network Corporation	595,000	1%
14	Cable One, Inc.	497,036	1%
15	RCN Corporation	409,066	0%
17	Midcontinent Communications	272,630	0%
19	Armstrong Utilities, Inc. d/b/a Armstrong Cable Services	236,218	0%
18	Atlantic Broadband Group, LLC	204,967	0%
20	Service Electric Cable TV Incorporated	91,969	0%

Source: SNL Kagan. AT&T and DirecTV have been combined to reflect merger. Note: DirecTV figures include U.S. and international subscribers. SNL Kagan omitted Frontier Communications from this list. Frontier was added based on quarterly report.

Investment in broadband speed is widespread in the industry. EOY 2014 broadband subscriber counts are shown in Table 15. I understand that all major ISPs are investing in improving their networks and attracting more broadband subscribers. For example, companies like Google, AT&T, Cox, CenturyLink and others have announced their intention to invest in gigabit Internet services.[241] Thus, while the merging firms are increasing their number of high speed subscribers, the total number of high speed subscribers is also increasing rapidly, which makes broadband shares a moving target.

218. The increasing number of subscribers with faster broadband speeds does indicate a clear conclusion: investments in complements to speed will become more profitable and more prevalent over time. Complements such as content itself, software interfaces, and mobile applications will all be faster, higher quality, and therefore in higher demand by subscribers as speeds increase. ISPs will want to sell subscribers services they demand, and will have an incentive to invest as described earlier. In particular, subscribers are likely to take advantage of speed by

[241] See, for example, "Race to gigabit Internet service takes off," CNET, August 31, 2014, http://www.cnet.com/news/race-to-gigabit-internet-service-takes-off/.

consuming more OVD services. The primary rationale for such speed increases is to *facilitate* use of streaming video services. A credible signal of the post-merger firm's strategy to enhance entry of OVDs is therefore its investment in broadband speed.

219. Note that the value of increased broadband speed to subscribers is almost certainly enormous, and greatly exceeds any amount subscribers are currently willing to pay for increased speed. The next generation's Amazon, Google, eBay, or Facebook may well arise because of, or benefit from, increased broadband speeds. The value of increased speed will likely be closely tied to the value of new Internet innovations that require speed. With more investment in speed, innovation is more likely to occur faster.

X. Conclusion

220. The Proposed Transactions will benefit consumers.

221. New Charter views OVDs as complements to its MVPD services. New Charter has strong financial incentives to make sure high quality OVD services are easily accessible to consumers in order to attract profitable broadband subscribers. Thus New Charter does not have an incentive to foreclose OVDs in any way.

222. New Charter's strategy results in an attractive partner and entry point for OVDs, thereby lowering entry costs for OVD partners, increasing consumption of OVD services, and encouraging innovation in OVD services.

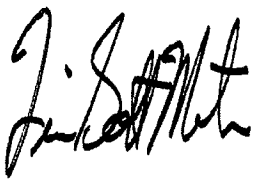
223. TWC's current strategy is less comprehensive in its embrace of OVDs, whereas TWC combined with Charter have a suite of technologies that are OVD-friendly. Thus there is a merger-specific benefit to OVDs, and therefore consumers, from the proposed transactions.

224. Because Comcast and New Charter have different strategies and goals, they would have no reason to tacitly collude. Moreover, tacitly colluding to create advantageous contract terms with programmers that spill over and benefit other MVPDs is complex and difficult to coordinate. The firms could have to determine which terms to affect and divide up the programmers to equalize costs, all while wanting to achieve different goals. This concern is speculative at best.

225. New Charter's technology is innovative and low cost and, due to the merger, will become available in BHN's and TWC's footprint and benefit those consumers.

226. The significantly improved economies of scale of New Charter will incentivize New Charter to invest in higher quality and more innovative technology and speed.

Respectfully submitted,



Fiona Scott Morton

EXHIBIT B

CHARTER-TWC-BHN: EFFICIENCIES ANALYSIS

Reply Declaration of Michael L. Katz

November 2, 2015

CONTENTS

I. INTRODUCTION AND OVERVIEW

1. I begin by summarizing my qualifications, my assignment, and my principal findings.

A. QUALIFICATIONS

2. I hold the Sarin Chair in Strategy and Leadership at the University of California at Berkeley. I hold a joint appointment in the Haas School of Business Administration and in the Department of Economics. I have also served on the faculty of the Department of Economics at Princeton University and the Stern School of Business at New York University. I received my A.B. from Harvard University *summa cum laude* and my doctorate from Oxford University. Both degrees are in Economics.

3. I specialize in the economics of industrial organization, which includes the study of antitrust and regulatory policies. I am the co-author of a microeconomics textbook, and I have published numerous articles in academic journals and books. I have written academic articles on issues regarding the economics of network industries, two-sided markets, systems markets, and antitrust enforcement. I am a co-editor of the *Journal of Economics and Management Strategy* and serve on the editorial boards of *Information Economics and Policy* and the *Journal of Industrial Economics*.

4. In addition to my academic experience, I have consulted on the application of economic analysis to issues of antitrust and regulatory policy. I have served as a consultant to both the U.S. Department of Justice and the Federal Communications Commission on issues of antitrust and regulatory policy. I have served as an expert witness before state and federal

courts. I have also appeared before state regulatory commissions and testified before the U.S. Congress.

5. From January 1994 through January 1996, I served as the Chief Economist of the Federal Communications Commission. I participated in the formulation and analysis of policies with respect to all industries under Commission jurisdiction. As Chief Economist, I oversaw both qualitative and quantitative policy analyses.

6. From September 2001 through January 2003, I served as the Deputy Assistant Attorney General for Economic Analysis at the U.S. Department of Justice. I directed a staff of approximately fifty economists conducting analyses of economic issues arising in both merger and non-merger enforcement. My title as Deputy Assistant Attorney General notwithstanding, I am not an attorney.

B. ASSIGNMENT

7. Charter Communications, Inc. ("Charter"), Time Warner Cable Inc. ("TWC"), and Advance/Newhouse Partnership (Bright House Network or "BHN") have requested the consent of the Federal Communications Commission ("Commission") to approve the transfer of licenses and authorizations in conjunction with the merger of these firms to create "New Charter."[1]

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[1] *Application of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, June 25, 2015.

8. At the request of counsel for Charter, I have conducted a quantitative assessment of the consumer benefits that will result from programming cost savings that the proposed transactions will enable.[2] I have also been asked by counsel to assess claims made by opponents to the transaction with respect to the competitive effects of Charter's and TWC's programming contracts, particularly the most-favored nation ("MFN"), windowing, and alternative distribution means ("ADM") provisions of those contracts.[3] This declaration

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2 Because BHN systems purchase most of their video programming through contracts negotiated with programmers by TWC, in what follows I will generally refer to TWC and BHN systems collectively as TWC systems to streamline the exposition.

3 Specifically, I focus on the following filings: Comments of Cincinnati Bell Extended Territories LLC, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *Cincinnati Bell Comments*); Petition to Deny of COMPTEL, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *COMPTEL Petition*); Petition to Deny of DISH Network Corporation, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *DISH Petition*), including Declaration of Roger J. Lynch, October 13, 2015, Exhibit B to *DISH Petition* (hereinafter, *Lynch DISH Declaration*); Petition to Deny of Entravision Communications Corporation, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *Entravision Petition*), including Professor John Kwoka, "Economic Analysis of the Effects of the Proposed Merger of Charter Communications, Time Warner Cable, and Bright House Networks on Program Providers Serving the Latino Market" Appendix 1 to *Entravision Petition* (hereinafter, *Kwoka White Paper*); Petition to Deny of Free Press, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *Free Press Petition*); Comments of Hawaiian Telecom Services Company, Inc., *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *Hawaiian Telecom Comments*); Petition to Hold in Abeyance of the National Association of Broadcasters, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for*

provides a summary of the findings I have reached to date based on my analysis of the relevant facts and economic theory, and taking into account the relevant economic arguments made in filings before the Commission by commenters and opponents to the proposed transactions.

C. OVERVIEW OF FINDINGS

9. My central findings are as follows. The proposed transactions will allow New Charter to realize lower marginal costs of video programming, particularly for legacy Charter systems. The lower marginal costs resulting from the proposed transactions will benefit consumers by generating economic incentives for the combined firm to offer better and cheaper video services. Moreover, the lower prices and higher quality of the combined firm's services can be expected to create competitive pressures for rival service providers to reduce prices and improve their services in response, further benefiting consumers. Opponents of the

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Consent to the Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, October 12, 2015 (hereinafter *NAB Petition*); Petition to Deny of Public Knowledge, Common Cause, Consumers Union, and Open Mic, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *Public Knowledge Petition*): and Petition to Deny of Writers Guild of America West, Inc., *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to the Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, October 13, 2015 (hereinafter *WGAW Petition*).

The comments and petitions to condition or deny submitted in this proceeding contain numerous overlapping opinions and statements. Although I have not tried to rebut every claim made by parties opposed to the transaction, my declaration is intended to cover all of the major categories of opposition based on economic assertions relevant to assessing the consumer benefits of programming cost savings and the competitive effects of MFN, windowing, and ADM clauses in contracts between programmers and New Charter. Any silence with respect to a particular empirical or theoretical claim stated should not be interpreted as agreement with that claim unless I specifically state such an agreement.

transactions have not provided any credible arguments that the proposed transactions will have any adverse effects on competition as a result in the application of, or changes to, contracts between the merging parties and video programmers.

10. Specifically, I find that:

- *The proposed transactions will lead to a reduction in the programming prices paid by New Charter and will thus create incentives to charge lower prices to consumers than otherwise.* Content costs make up the majority of the merging parties' marginal costs of providing video services. As the Commission has recognized, marginal cost savings create incentives for merging parties to lower the prices they charge to consumers, all else equal.

  — *A top-down analysis projects that New Charter will be able to lower its marginal costs by stepping into TWC contracts where they offer more-favorable rates.* TWC currently pays lower overall content fees on a per-subscriber basis than does Charter. Based on a top-down approach utilizing publicly available information regarding TWC's programming costs per subscriber, Charter's management projects that the proposed transactions will give rise to *average total* cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month on legacy

Charter systems, based on 2015 contract terms.[4] As discussed below, the majority of these cost savings will be marginal cost savings, which are the savings relevant to the analysis of pass through to consumers. Adjusting Charter management's projection methodology to account for certain savings that may not be marginal-cost savings yields predicted marginal cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month on legacy Charter systems.

— *A bottom-up analysis projects that New Charter will be able to lower its marginal costs on legacy Charter systems by stepping into TWC contracts where they offer more-favorable rates.* Using TWC's programming contracts, which are not available to Charter's management, staff working under my direction have applied a bottom-up approach to project marginal cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month on legacy Charter systems in 2015. The fact that two very different methodologies give rise to such similar projections provides confidence in the projected cost savings.

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[4] Charter management focused on average total cost savings because total cost savings are relevant to evaluating the financial implications of the proposed transactions for the companies' owners and lenders. In contrast, evaluation of the pass-through benefits to consumers focuses on marginal cost savings.

— *Consumers will benefit from the proposed transactions because the marginal-cost reductions will generate incentives for New Charter to charge lower prices than otherwise for video services, whether offered alone or in bundles.* When any rational firm concerned with profitability enjoys a reduction in its marginal costs of providing output, that firm has economic incentives to charge lower prices than it would have absent the cost reduction. The ratio of the price decrease to the cost decrease is known as the *pass-through rate.* Several different pieces of evidence indicate that New Charter's pass-through rate is reasonably projected to be greater than 50 percent, and a calibrated logit model projects a pass-through rate of 60 percent. Given the projected marginal cost savings described above, pass-through rates ranging from 50 to 60 percent will result in New Charter's customers' enjoying initial savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] per year as result of programming cost savings alone.[5]

- *Petitioners' claims that the proposed transactions will lead to output reductions lack any sound basis in theory or fact.* Although the proposed transactions will

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[5] Given the rate at which programming costs are projected to continue rising, even the programming cost savings generated by the proposed transactions will not be enough to reverse the tide of rising costs. Rather, the cost savings will slow the rate of increase and, thus, lessen—but not eliminate—future pressures on New Charter to raise the quality-adjusted prices of its video services. Consumers will benefit from the cost savings because quality-adjusted video services prices will rise more slowly than they would in the absence of the proposed transactions.

allow New Charter to achieve programming cost savings, some petitioners make unsupported claims that the savings will not benefit consumers because the proposed transactions will lead to reduced output and lower programming quality.

— *The proposed transactions will not give rise to monopsony output restrictions.* Some petitioners claim that New Charter will restrict the amount of programming by exercising monopsony power. This claim rests on a fundamental misconception of the programming marketplace and a misunderstanding of the applicability of the monopsony model to it. Contrary to petitioners' unfounded assertions, New Charter's marginal cost savings will in fact create incentives for the firm to purchase *additional* programming.

— *Programmer investment will not be harmed.* Some petitioners voice concern that programmers will reduce investment or programming quality as a consequence of the lower programming prices New Charter will obtain. However, examination of the programming industry reveals that there is no basis for concern that the programming cost savings enabled by the proposed transactions will harm consumers.

— *The proposed transactions will not raise the programming costs of smaller video distributors.* Some petitioners claim the cost savings enjoyed by New Charter will trigger cost increases for smaller video distributors. These claims are inconsistent with basic economic logic and have no factual support.

- *MFN and ADM provisions in Charter's and TWC's contracts with programmers promote consumer welfare by facilitating the sale of high-quality programming.*

Although some opponents of the proposed transactions assert that MFN and ADM provisions harm competition, these opponents do not identify any merger-specific adverse effects related to MFN or ADM clauses. Indeed, contrary to the claims made by opponents of the proposed transactions, Charter's and TWC's MFN and ADM provisions (as well as various windowing provisions) support efficient contracting and, thus, serve consumer interests.

11. The remainder of this declaration explains these findings in greater depth and provides details of the facts and analyses that led me to reach them.

II. CONSUMER BENEFITS OF REDUCED PROGRAMMING COSTS

12. The proposed transactions will reduce the merging parties' marginal costs by generating programming cost savings that could not be realized absent the proposed transactions. As the Commission has recognized—most recently in its AT&T-DIRECTV order—reductions in the marginal cost of programming will be substantially passed through to consumers in the form of lower service prices and are cognizable efficiencies.[6]

A. THE PROPOSED TRANSACTION WILL SAVE HUNDREDS OF MILLIONS OF DOLLARS OF PROGRAMMING COSTS ANNUALLY.

13. There is substantial evidence that Charter will realize programming cost savings as a result of the proposed transactions.

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[6] Federal Communications Commission, Memorandum Opinion and Order, *In the Matter of Applications of AT&T Inc. and DIRECTV For Consent to Assign or Transfer Control of Licenses and Authorizations,* MM Docket No. 14-90, rel. July 28, 2015 (hereinafter *AT&T-DIRECTV Order*), ¶¶ 287 and 290.

1. Content prices generally fall as MVPD scale increases.

14. Content costs are determined as a result of negotiations between a programmer and a video service provider that wants to transmit the content to its customers. For a multichannel video programming distributor ("MVPD"), the license fees usually take the form of a per-subscriber, per-month payment from the MVPD to the programmer. The economic theory of bargaining indicates that the license fee agreed to by the video service provider and the programmer is determined both by the total amount of value, or surplus, created by the transmittal of the programming and by the video service provider's and programmer's "disagreement points," which are determined by what would happen to each party's profits in the absence of an agreement.[7] If the video service provider and programmer cannot come to an agreement on license fees, then the video service provider cannot transmit the content; this is costly to both the programmer and the video service provider. To the extent that the total number of subscribers under license declines, the programmer foregoes license fees as well as advertising revenues in the absence of an agreement.[8] The video service provider's profits decline to the extent that it loses subscribers and advertising revenues when it cannot transmit the programming.

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[7] As discussed further in Section II.D.1 below, bargaining theory offers a better model of the private negotiations and agreements that characterize the purchase of video network carriage rights by MVPDs than does the standard theory of monopsony.

[8] Because some of the bargaining video service provider's subscribers may switch to another video service in order to gain access to the programming, the number of licensed subscribers lost by the programmer may be less than the number of subscribers to the bargaining video service provider.

15. Bargaining theory identifies two broad mechanisms through which a merger can enable the merging parties to negotiate lower programming fees. First, a programmer may enjoy benefits of scale in selling to a larger video service provider.[9] In this situation, the monetary value of the license fee per subscriber falls with increased scale because the video provider is creating benefits for the content owner in other ways. Second, disagreement points may not change proportionately with the scale of the buyer and, as noted above, the economic theory of bargaining identifies the bargaining parties' disagreement points as key determinants of the bargaining outcome. The research literature has shown that, in theory, a larger video service provider may be in a stronger or weaker bargaining position and, consequently, pay higher or lower programming fees per subscriber.[10]

16. Although the results of the theoretical literature are ambiguous, industry participants and financial analysts have found that larger MVPDs generally pay lower programming fees per channel per subscriber than do smaller MVPDs.[11] Some petitioners themselves make this

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9 For some programmers the scale relevant to the various mechanisms affecting disagreement points and/or economies of scale is calculated at the national level. For others (*e.g.*, RSNs and broadcast television stations selling retransmission rights), the relevant scale is calculated over regional or local areas.

10 Alexander Raskovich (2003), "Pivotal Buyers and Bargaining Position," *The Journal of Industrial Economics*, 51(4): 405-426; 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.

11 The Commission has noted several pieces of evidence that industry participants believe that greater scale results in lower programming costs: SNL Kagan has contended that larger MVPDs have greater bargaining power in acquiring programming, and the American Cable Association has contended that larger MVPDs have greater bargaining power vis-à-vis content providers than do smaller MVPDs. (Federal Communications Commission, Sixteenth Report, *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 12-203, March 15, 2015, *available at*

point. For example, in a paper submitted as part of the present proceeding, Professor John Kwoka identifies several pieces of evidence on which he has relied to reach the conclusion that "there is a widely understood and well documented inverse relationship between the size of an MVPD and its programming costs per subscriber."[12] The industry's use of size-based price MFN clauses[13] also suggests that content owners charge lower (per-channel, per-subscriber) content prices to larger MVPDs.

17. Figure 1 below shows the programming costs per subscriber per month and the number of subscribers for several large MVPDs. This simple comparison of average programming costs per subscriber is consistent with the belief of industry participants that larger MVPDs pay lower prices for programming costs than do smaller distributors. Econometric studies have reached a similar conclusion.[14]

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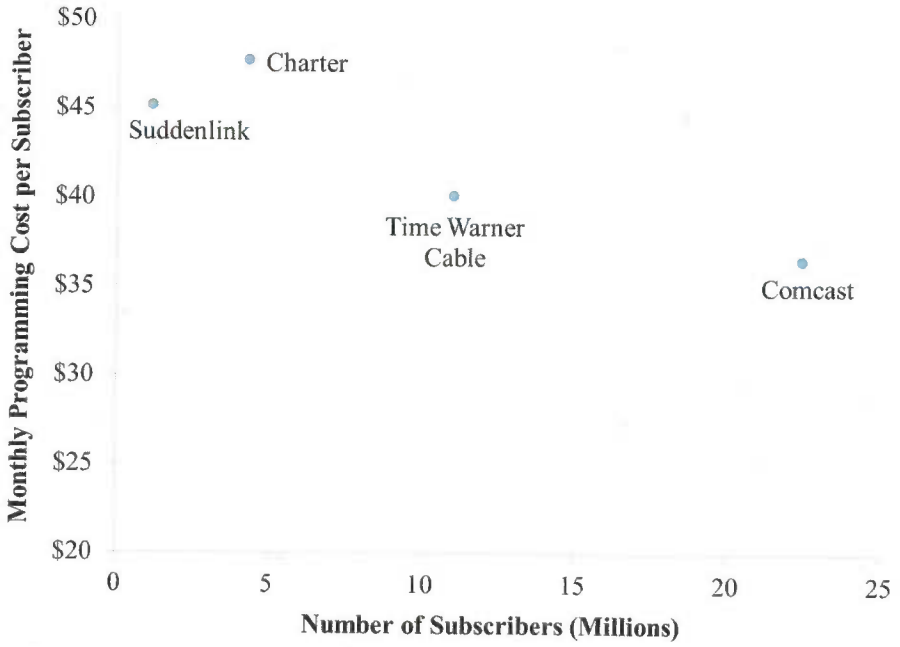
https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-41A1.pdf, site visited October 25, 2015 (hereinafter *16th Video Competition Report*)).

12 *Kwoka White Paper,* ¶ 40. See also, *COMPTEL Petition* at 7 and 11-12.

13 *Cincinnati Bell Comments* at 14.

14 These econometric studies, as well as the observations by industry analysts and participants, do not distinguish between an improvement in a service provider's bargaining position (possibly for reasons correlated with size, but not size itself) and the realization of increasing returns to scale by programmers. The most recent and best econometric study is by Crawford and Yurukoglu, who conduct a structural empirical analysis of MVPD pricing, but still estimate the relationship between content costs and MVPD size without distinguishing between bargaining position and increasing returns to scale and without accounting for confounding factors that may be correlated with both. (Gregory S. Crawford and Ali Yurukoglu (2012), "The Welfare Effects of Bundling in Multichannel Television Markets," *American Economic Review*, 102(2): 643-685.)

Figure 1
Monthly Programming Cost per Subscriber vs. Number of Subscribers Year End 2014: MVPDs with Greater than 1% Share of U.S. Multichannel Video Market that Report Programming Costs in 10-Ks



Notes: Cablevision, DISH, AT&T, Verizon, Cox, Bright House, and DIRECTV do not report programming-specific costs in their public financial statements.

For each MVPD, programming costs are identified from annual financial statements under item "Programming" under operating expenses; the value is divided by 12 to reflect monthly costs, and then divided by the number of subscribers to determine per-subscriber costs.

Subscribers are reported by SNL Kagan as the number of year-end December 2014 basic subscribers.

Sources: SNL Kagan, "Top Cable MSOs," *available at* https://www.snl.com/interactivex/TopCableMSOs.aspx, site visited October 19, 2015.

SNL Kagan, "U.S. Multichannel Operator Comparison by Market," *available at* https://www.snl.com/interactivex/OperatorComparisonByMarket.aspx, site visited October 19, 2015.

SNL Kagan, "U.S. Multichannel Industry Benchmarks," *available at* https://www.snl.com/interactivex/MultichannelIndustryBenchmarks.aspx, site visited October 19, 2015.

Cequel Communications Holdings I (Suddenlink), Form 10-K, 2014, at 50; Charter Communications, Inc., Form 10-K, 2014, at F-26; Time Warner Cable Inc., Form 10-K, 2014, at 42; Comcast Corporation, Form 10-K, 2014, at 57.

2. A Top-Down Projection of Marginal Cost Savings for Programming

18. The ability of New Charter to step into TWC contracts (*i.e.*, apply to legacy Charter systems the prices in TWC's programming contracts where such prices are lower than the corresponding prices under Charter's current contracts) is projected to give rise to programming cost savings. Specifically, Charter's management has estimated that TWC generally pays lower content fees than does Charter. Because the details of TWC's existing programming contracts are not publicly available,[15] Charter executives used a top-down approach that relied on TWC financial and operating data that were publicly reported at an aggregate level. The analysis generates a projected *average total* programming cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month. I converted this figure to arrive at a projected *marginal cost* savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** for use in a pass-through analysis.

a) Projected Total Programming Cost Savings

19. Charter executives used publicly available data for TWC's programming expenditures and video customer counts to infer TWC's programming expenditure per video customer per month.[16] Charter executives adjusted this figure—as well as the corresponding figure for

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15 TWC's programming contracts have non-disclosure clauses that prohibit the disclosure of contractual or rate details to third parties.

16 "Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx."

Charter—to account for several differences between Charter's and TWC's video offerings as well as certain differences in the companies' methodologies for external reporting of video customer counts. Adjustments were made to account for the following differences:[17]

- *TWC's total reported programming costs include costs associated with being the distributor of TWC's Los Angeles Lakers and Los Angeles Dodgers regional sport networks:* Charter reduced TWC's total programming costs by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in 2014 to back out the costs of being an RSN distributor from the costs associated with purchasing programming for distribution over TWC cable systems. The latter is the relevant base for comparison with Charter's programming costs.

- *Differences in methodologies for external reporting of subscriber counts:* When reporting a single subscriber count, an MVPD has to combine information from commercial sales, bulk sales, and traditional residential sales. There is more than one accepted methodology for doing so. The published video customer counts for the two companies were adjusted to put them on a common equivalent basic unit ("EBU") basis. Charter's video customer base was multiplied by a factor of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, and TWC's reported video customer base was multiplied by a factor of **[BEGIN HIGHLY CONFIDENTIAL**

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17 *Id.*

INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** These two figures were used to convert corresponding total programming costs into per-customer costs.

- *Differences in projected programming cost growth rates:* Based on public statements by TWC executives and on Charter management experience, Charter estimated that TWC's programming cost per video customer will grow by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent in 2015. This assumption was used to adjust the publicly available, historical TWC programming costs to the right "base" level for 2015 to compare against Charter's 2015 budgeted programming costs.

- *Differences in the video product mixes:* In comparison with Charter's video customer base, a higher proportion of TWC video customers subscribe to *limited basic video service* (a value-oriented video product comprising broadcast channels and PEG networks) than to *expanded basic video service* (which offers a wide range of national cable networks). Because of differences in the programming included in the services, expanded basic has significantly higher programming costs per subscriber per month than does limited basic. Charter executives made adjustments to account for this source of the difference in expenditures, which is driven by differences in the amounts purchased rather than in the prices paid per unit purchased. Specifically, Charter executives estimated that TWC's expanded basic video penetration is **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percentage points lower than Charter's. Based

on the difference between Charter's programming costs for limited basic and expanded basic, and making a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percent adjustment to account for TWC's assumed lower programming costs, Charter estimated that a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percentage point increase in expanded basic penetration (to be comparable to Charter) would increase TWC's average programming costs per subscriber by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month.

20. After making the above adjustments, Charter executives estimated that the difference between TWC's and Charter's programming costs per video customer to be approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per video customer per month (or **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent based on Charter's **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** expenditure per subscriber per month).[18]

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[18] Using Charter's internally forecasted average video customer count, the total savings would be approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in 2016 if the transactions were to close at the end of 2015, increasing to over **[BEGIN HIGHLY CONFIDENTIAL**

21. It should be noted that this projection is conservative in that it assumes that the combined entity will benefit from the application of the rates in TWC's current contracts with programmers but assumes neither that New Charter will be able to obtain lower rates than TWC would, nor that legacy TWC systems will be able to take advantage of any instances in which Charter has negotiated more favorable programming prices than has TWC.

b) Conversion to Marginal Cost Savings

22. The **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per-subscriber, per-month figure reported above is Charter's projection of the *average total* cost savings from lower programming prices that would be realized on Charter legacy systems as a result of the proposed transactions. It is necessary to make an adjustment to this figure before using it to project programming cost savings pass through to consumers in the form of lower quality-adjusted service prices. The need for an adjustment arises because pass through occurs for *marginal* cost savings.[19]

23. Staff working under my direction identified contracts between Charter and a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] Payments made under these **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL**

INFORMATION] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** over time, as explained further below.

[19] See Section II.B.1 below.

INFORMATION] contracts account for approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's total programming expenses. If the payment amounts under these contracts truly are **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** then the associated marginal costs are zero. Although it is possible (and indeed likely) that the long-run marginal costs are strictly positive[20] and, thus, could be subject to savings, I conservatively assume that there are no marginal-cost savings for any network for which Charter **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

24. To infer marginal cost savings from moving legacy Charter systems to TWC's programming contracts, I adjusted Charter's projected costs savings by first removing from both Charter's and TWC's programming expenditures all programming costs associated with **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** On this adjusted basis, I calculated TWC's and Charter's programming expenditures per video customer per month to be **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY**

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[20] See the discussion in Section II.A.3.a) below.

CONFIDENTIAL INFORMATION], respectively, yielding a differential in variable programming expenditures per subscriber per month of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** (compared to the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** differential in total programming expenditures per subscriber per month). Adjusting the difference in programming costs per subscriber per month to account for TWC's higher penetration of limited basic video service yields a marginal cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** (compared to the average total cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**). Table 1 below provides details of the adjustment.

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c) Future Growth in Savings

25. Charter executives have also projected that the programming cost savings per video customer will grow over time as the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**-percent programming savings rate is realized on a growing base of per-subscriber programming expenses. New Charter's business plan assumes that programming cost per video customer for current Charter customers will grow at an **[BEGIN HIGHLY CONFIDENTIAL**

INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]**-percent compound annual growth rate ("CAGR") from 2015 to 2019.[21] Charter executives also project that TWC's programming costs will grow at the same rate, holding programming line-ups constant.[22] The equal projected growth rates imply that the programming cost savings per video customer will also grow at an **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**-percent compound annual growth rate.[23]

3. A Bottom-Up Projection of Marginal Cost Savings for Programming

26. Until the proposed transactions are consummated, Charter executives do not have access to the TWC programming contracts and data necessary to generate fully documented projections of the costs savings. I have been asked by outside counsel for Charter and TWC to develop such projections using highly confidential, proprietary information obtained from both companies but not shared between them. Staff under my direction calculated the amount

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21 "Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx."

22 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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23 In addition, the total number of video customers is projected to grow, so the rising per-customer cost savings will be realized for increasing numbers of customers. ("Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx.") Using Charter's multi-year internally forecasted video customer count, the programming cost savings are expected to grow to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** in 2018.

by which Charter's 2015 programming expenses would fall if these expenses were calculated according to the terms of the TWC contracts.

a) Overview of Bottom-Up Methodology

27. Access to programming contracts allows for a detailed construction of projected cost savings. However, it is necessary to address several issues and, sometimes, to make working assumptions.

28. **Ability to step into contracts.** For purposes of my economic analysis, counsel for Charter instructed me to assume the parties have structured the proposed transactions so that: (a) New Charter will be entitled to apply the terms of TWC's contracts with programmers to legacy Charter systems; (b) in the few instances in which Charter currently obtains more favorable rates than does TWC, the legacy Charter systems will continue to pay those rates under New Charter for the remaining lives of the relevant contracts; and (c) legacy TWC systems will continue to pay the rates determined by current TWC contracts under New Charter for the remaining lives of those contracts.[24]

29. **Considerations relevant to the contractual determination of monthly, per-subscriber affiliation fees.** Because the two companies do not have identical programming lineups, tiers, and coverage regions, one cannot simply apply TWC's rates to Charter's subscribers. Instead, to make an apples-to-apples comparison, one must evaluate several factors that can influence the applicable contractual rate for a network, including:

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[24] In situations where multiple networks are covered by a single contract, the determination of whether TWC's terms are more favorable than Charter's was made at the contract level.

- *Volume or Penetration Thresholds:* To the extent TWC received discounts in return for achieving either company-wide or system-level subscriber counts or penetration thresholds, it was analyzed whether New Charter would qualify for the discounts as well.

- *Tiers:* A programmer may provide a discount or lower per-subscriber rate when its programming is distributed on a more popular tier (*e.g.*, expanded basic). For legacy Charter systems, New Charter was assumed to keep cable networks on the same tiers as at present.

- *Viewer Location or Zones:* The affiliate fees associated with the transmission of a particular RSN or the retransmission of a particular terrestrial broadcast station's signal frequently vary by geographic region. For instance, the monthly per-subscriber fees are often higher in areas located near the homes of any major league sports teams carried by an RSN. Where the necessary zone definitions were available, staff calculated the cost savings at the zone level.

- *Channel Numbers and Neighborhoods:* Some contracts contain discounts for placing a network on a low channel number or in a programming neighborhood (*e.g.*, placing a news network on a channel adjacent to other news networks). When staff working under my direction observed that Charter and/or TWC could receive a channel-placement discount, actual payment rates were compared to contractual payment rates to determine whether Charter and/or TWC receives the discount. If it was determined that TWC receives a channel-placement discount, staff verified whether Charter would qualify for TWC's discount based on communication with TWC personnel. For the purposes of these calculations, Charter's present rate was compared to TWC's non-discounted rate unless it was verified that Charter would qualify for the discount under the relevant TWC contract. Consequently, this approach tends to underestimate the cost savings New Charter would enjoy.

- *Acquired Systems:* Some contracts define separate rates for acquired cable systems. Where a difference between the rates for existing and acquired systems was identified, the acquired-system rate was used to calculate the cost savings.

30. **Treatment of contra programming expenses and certain adjustments.** There are several other types of adjustments and monetary transfers between MVPDs and program suppliers that can affect programming costs:

- *Bad-Debt Allowances:* **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

  [END HIGHLY CONFIDENTIAL INFORMATION] For TWC, bad debt expenses include "amounts charged to

expense associated with the [MVPD]'s allowance for doubtful accounts and collection expenses, net of late fees billed to subscribers."[25]

- *Marketing Payments:* A programmer may pay an MVPD to promote the programmer's network. These payments can take the form of a discount off of the per-subscriber, per-month affiliate fee or a separate payment to the MVPD.

- *Launch Support:* A programmer may pay an MVPD to support the launch of the programmer's network on the MVPD's systems.

- *Programming Vendor Advertising:* A programmer may negotiate payments for advertisement as part of its programming contract with an MVPD. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

These adjustments amount to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of total programming costs at Charter and TWC, respectively. In other words, TWC's programming offsets are **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month larger than Charter's. This differential suggests that accounting for contra programming expenses and other adjustments would increase the estimated cost savings that will be realized by New Charter. There are, however, complex issues involved in converting this figure to marginal cost savings. For example, the treatment of bad-debt allowances raises issues of the extent to which the different allowance rates are due to contractual differences versus customer-mix differences. The former could trigger cost

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[25] Time Warner Cable Inc., "2013 Time Warner Cable Annual Report," 2013, *available at* http://ir.timewarnercable.com/files/doc_financials/Annual%20Reports/twc%20ar%202013.pdf, site visited October 8, 2015, at 51.

savings when Charter steps into TWC contracts, but the latter might not. In order to be conservative, I do not credit any of the differences between Charter and TWC described in this paragraph as sources of programming cost savings.

31. **Treatment of [BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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32. Using the approach outlined above and described in greater detail in Technical Appendix V.A below, staff working under my direction calculated Charter's per-subscriber cost savings for each programming service (*e.g.,* national cable network or retransmitted broadcast signals) studied. Staff did so by calculating the difference between: (a) the price paid by Charter, and (b) what the price would have been had Charter systems been covered

under the corresponding TWC contract. The per-programming service savings were then weighted by the relative number of subscribers to each programming service. This analysis projects that New Charter will realize programming marginal cost savings of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month on legacy Charter systems by optimally stepping into TWC's contracts—a savings rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent.

b) The Bottom-Up Estimates Are Likely to Be Conservative

33. For at least three reasons in addition to those identified above, the savings in programming marginal costs could be greater than the figure just reported.

34. First, there will very likely be growth in the base on which savings will be earned. MVPDs' programming costs increased at a 10-percent CAGR from 2007 to 2014, and are projected by SNL Kagan to continue growing at an eight-percent CAGR through 2018.[26] New Charter's business plan assumes that programming cost per video customer will grow at an **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percent CAGR from 2015 to 2019 for current Charter video customers.[27] To the extent that Charter continues to earn savings equal to

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26 SNL Kagan, "Multichannel Programming Fees as a % of Multichannel Video Revenues," April 2015, *available at* https://www.snl.com/interactivex/doc.aspx?id=32259219&IOP=1, site visited October 13, 2015.

27 "Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx."

approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of what would otherwise have been its programming costs, its savings per subscriber will rise.[28]

35. Second, as discussed above, for purposes of the present analysis, I have been instructed by counsel for Charter to assume that legacy TWC systems will continue to pay the rates determined by current TWC contracts under New Charter for the remaining lives of those contracts even where the Charter contracts contain lower rates. This approach is conservative to the extent that TWC may in theory obtain these lower rates either by stepping into Charter's contracts or as a result of the application of any unexercised MFN rights that were not previously detected by TWC.

36. Lastly, as described above, industry participants, financial analysts, and recent econometric work all find that that content costs per subscriber generally fall as MVPD size increases. Hence, as programming contracts come up for renewal, New Charter's post-transaction content fees may be lower than TWC's fees would have been absent the proposed transactions (although programming costs per subscriber are expected to continue rising).

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[28] Charter also projects that, on an EBU-basis, its subscriber count will grow by a total of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent from 2014 to 2018 (a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** CAGR). ("Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx.") Therefore, any given rate of savings per subscriber will translate into growing total savings.

4. The projected programming cost savings are merger specific.

37. The programming cost savings identified above are merger specific. It is highly unlikely that Charter could achieve similar programming cost savings through participation in a joint-purchasing arrangement, such as a buying cooperative. Although buying cooperatives may achieve cost savings when buyers are seeking similar products under similar terms, MVPDs such as Charter and TWC negotiate complex distribution rights, license content for different programming lineups, and have different licensing priorities.

38. A typical contract between an MVPD and programmer involves a large number of terms and conditions, and the contract is frequently renegotiated and amended. The buyer has to decide which terms are most important to it and what concessions and compromises it is willing to make to reach agreement with the programmer. Different buyers will seek to make different tradeoffs regarding the many potential contractual provisions. Inter-company differences make it extremely difficult for two MVPDs to jointly bargain with a programmer effectively.[29, 30]

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29 Interview with Scott O'Donnell, Vice President, Associate General Counsel, Charter Communications, Inc., August 21, 2015.

30 The TWC-BHN relationship is not a counterexample to the statement that cooperative purchasing groups are of limited value. TWC and Advance/Newhouse have a long-term, partnership that enables a high level of coordination. As a result of this long-term relationship, employees engage in regular discussions of the companies' technology road maps and other operational decisions that involve the sharing of proprietary, business-sensitive information. This close coordination has resulted in the two companies' adopting largely the same technological platform, which furthers additional coordination. (Interview with David Christman, Senior Vice President and Deputy General Counsel, Time Warner Cable Inc., October 23, 2015.)

39. Charter's experience with an attempt to create a cooperative purchasing group demonstrates the serious limitations of such groups.[31] In early spring 2009, an effort was begun to create a cooperative purchasing group under the auspices of the National Cable Television Cooperative. However, members of the group found it very difficult to reach agreement among themselves because of the wide disparities among their interests. These disparities stemmed from differences in business models, cost structures, network configurations, operational strategies, and "corporate personalities." Moreover, there was a lack of uniform contract expiration dates across cable operators, making joint negotiations with a programmer difficult. To compound the cooperative's problems, the members could not agree on the circumstances under which they all would walk away from a negotiation. Hence, Charter did not anticipate the cooperative's being able to obtain prices in negotiations that were as favorable as those that could have been obtained if the members truly spoke as a single organization. The lack of broad overlap in terms of broadcast stations carried by the cooperative's members created even bigger problems for retransmission consent negotiations, and the cooperative never even got to the point of planning to engage in joint retransmission consent negotiations, which account for approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's total programming costs. The effort to create the

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[31] The facts in this paragraph are all based on interviews with Scott O'Donnell, Vice President, Associate General Counsel, Charter Communications, Inc., August 21, 2015, and October 28, 2015.

cooperative was abandoned in November 2009 without ever having made any joint purchases of carriage rights.

B. THE PROGRAMMING COST SAVINGS CAN BE EXPECTED TO BE SUBSTANTIALLY PASSED THROUGH TO CONSUMERS.

40. Programming costs structured on a per-subscriber, per-month basis are marginal costs. Textbook economic theory predicts at least some pass-through of reduced marginal costs, regardless of market structure.[32] In fact, even a monopolist—which New Charter clearly will not be—would be expected to pass some portion of its cost savings through to consumers in the form of lower quality-adjusted prices. Economic logic clearly indicates that New Charter will have incentives to pass through some or all of the marginal cost reductions enabled by the proposed transactions. Therefore, consumers will benefit from lower prices as a result of the content cost savings realized through the proposed transactions.

1. The Economics of Pass Through

41. To the extent that any profit-maximizing firm experiences a reduction (increase) in its marginal cost of production, the firm will re-optimize and reduce (increase) its price, which then induces other firms in the market to react by changing their prices. A new market equilibrium is reached when the profit-maximizing conditions for all firms are satisfied under

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[32] Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Eighth ed. (2013), Prentice Hall, Boston, at 284-287, 358-360. See also, Jeremy I. Bulow and Paul Pfleiderer (1983), "A Note on the Effect of Cost Changes on Prices," *Journal of Political Economy*, **6**(1): 182-85.

the new costs and prices. The pass-through rate is the ratio of the change in price to the change in the cost that triggered the price change.[33]

a) Differentiated Bertrand Competition and Pass Through

42. The pass-through rate for a profit-maximizing firm depends on market characteristics that are difficult to measure in practice. In Technical Appendix V.B.1, I present the well-known result that the pass-through rate for a single firm holding constant the prices charged by its rivals depends on the second derivative of its firm-specific demand curve. Specifically, when the demand curve is linear, the second derivative is equal to zero and the pass-through rate equals ½. For non-linear demand curves, the pass-through rate is greater than ½ when the second derivative is positive (*i.e.,* convex demand), and less than ½ when the second derivative is negative (*i.e.,* concave demand). Professor Jerry Hausman and Dr. Gregory Leonard have argued that convex demand is the typical case.[34] Widely used examples of demand are convex, including constant elasticity demand (which has a pass-through rate greater than 100 percent),[35] as well as logarithmic,[36] exponential,[37] and quadratic[38] demand curves.

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33 Own-firm pass-through is the change in a seller's price in response to the change in the seller's cost, and cross-firm pass-through is the change in the seller's price in response to the change in another firm's cost.

34 Jerry A. Hausman and Gregory K Leonard (1999), "Efficiencies from the Consumer Viewpoint," *George Mason Law Review*, 7(3): 707-727.

35 *Id.* at 709.

36 Denote p as price and q as quantity demanded. The logarithmic demand function $q = \alpha - \beta \ln(p)$, where α and β are positive constants, has a second derivative that is equal to β/p^2, which is positive.

43. If the firm under consideration is a monopolist, then its firm-specific demand curve is equal to the market demand curve. However, when the firm faces competition, its firm-specific demand curve reflects the prices charged by its product-market rivals. Similarly, the firm-specific demand curves faced by rival suppliers depend, in part, on the price charged by the firm whose costs have changed. This interdependence of firm-specific demand curves implies that when one firm changes its price, that change will set off a round of price changes by competing suppliers.[39] As is well known, differentiated-products Bertrand competition gives rise to situations in which suppliers' choices of prices are strategic substitutes: as one competitor lowers its price, other competitors will be driven to lower their prices in response, which will lead to further price reductions until a new equilibrium is attained.[40]

44. This analysis tells us that, if the second derivative of its firm-specific demand curve is non-negative, then a supplier will pass through to consumers more than half of any marginal cost reduction. Moreover, the firm's product-market rivals will also lower their prices, further benefiting consumers.

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37 The exponential demand function $q = \alpha e^{-\beta p}$ has a second derivative that is equal to $\beta^2 \alpha e^{-\beta p}$, which is always positive. This demand function can also be written as $\ln(q) = \gamma - \beta p$, where $\gamma = \ln(\alpha)$.

38 The quadratic demand function $q = \alpha + \beta p + \gamma p^2$ has a second derivative that is equal to 2γ, which is positive if $\gamma > 0$.

39 In a Bertrand market equilibrium, each supplier's price is the profit-maximizing one given the prices charged by the other suppliers in the market. When a firm experiences a change in its costs, the new equilibrium price of the firm must adjust in response to not only the change in its cost, but also the changes in the equilibrium prices of the other firms. Similarly, the new equilibrium prices of the other firms are adjusted in response to the changes in the equilibrium prices of the other firms, even though those firms do not experience a change in cost.

40 Carl Shapiro, "Theories of Oligopoly Behavior," in *Handbook of Industrial Organization*, Vol. 1., Eds. R. Schmalensee and R.D. Willig (1989), Elsevier, San Diego, at 347-348.

b) Logit Demand and Projected Pass Through

45. In its assessment of the AT&T-DIRECTV transaction, the Commission relied on a modified version of the parties' proprietary simulation and explicitly accepted nested logit as a reasonable functional form of demand.[41] In Technical Appendix V.B.3, I present the formula for the pass-through rate in a model of Bertrand competition with logit demand.[42]

46. The logit-demand pass-through rate depends on market conditions. To project the pass-through rate for New Charter, the logit pass-through formula was applied to market data at the zip code level[43] and then aggregated up to project the average rate at which Charter would pass through the savings in programming marginal costs realized from the proposed transactions.[44]

47. The logit-demand pass-through formula requires data on the share of the so-called outside good (*i.e.,* television households that do not subscribe to any pay television service).[45]

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41 *AT&T-DIRECTV Order,* ¶103.

42 Logit demand is a simplified form of the nested logit model used in the assessment of the AT&T-DIRECTV transaction. (*AT&T-DIRECTV Order,* Appendix C, ¶25.)

43 Data for the second quarter of 2015 from SNL Kagan, "Channel Lineups by Headend," *available at* https://www.snl.com/SNLWebPlatform/Content/SNLReporting/SNLReporting.aspx?ReportID=9cbadc09-4958-47b9-9732-6940db409389, sited visited September 30, 2015. Because a zip code can fall into multiple DMAs, the analysis was conducted for each combination of zip code and DMA.

44 The analysis was conducted at the zip code level because pay television provider's market shares, including Charter's, can vary substantially within a given DMA. Because there is no horizontal overlap between Charter and TWC, the calculation excludes instances in which the data suggest both companies are present in the same zip code.

45 Arguably, one should include in the outside good homes passed that do not have television, either pay or over-the-air. Doing so would result in lower estimated market shares for Charter and, thus, higher projected pass-through rates.

Share data for the outside good were not available at the zip code level, and share data at more aggregated geographies may not provide an accurate view of actual market conditions. Two approaches were used to work around this data limitation:

- The first approach assumes that the share of the outside good is everywhere zero. This assumption clearly is unrealistic—there are non-pay-television households. Given the nature of the logit pass-through formula, this assumption generates lower projected pass-through rates than would using actual data if they were available. The resulting projection of an average pass-through rate of 58 percent is thus conservative.

- The second approach utilizes DMA-level data on non-pay-television households, which are available, and it assumes that the outside good's share is the same for all zip codes in a given DMA.[46] This approach yields an estimated average pass-through rate of 62 percent.

c) The Effects of Nationwide Pricing

48. The pass-through analysis of the previous subsection assumes that New Charter will separately set the prices in each of the various geographic areas in which it sells video services. It is very likely that New Charter's pricing strategy will have both national and local elements.[47] This fact raises the possibility that New Charter's prices in different areas will be linked. In Technical Appendix V.B.2 below, I examine the case of a supplier that: (a) sells its

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46 Data for the second quarter of 2015 from SNL Kagan, "All Video by DMA," *available at* https://www.snl.com/SNLWebPlatform/Content/SNLReporting/SNLReporting.aspx?ReportID=bd86d36e-134b-40aa-80eb-7d77dca5e937, sited visited September 29, 2015.

47 The latter can arise, for example, when consumers in certain areas take greater advantage of retention offers.

output in several different markets but sets a common price in all of them, and (b) realizes marginal costs savings in only a subset of these markets. I first show that, although pass through still will occur, it is difficult to predict the pass-through rate for arbitrary demand functions. I also show that, if the market-level demand curves are linear and satisfy a certain proportionality condition, then the firm will pass one half of its aggregate cost savings through to consumers by lowering its common price (holding fixed the prices charged by rival suppliers). Thus, even consumers in those markets in which marginal costs have not fallen benefit from the cost savings. Moreover, under Bertrand competition, rivals will respond by lowering their prices in all markets, further benefiting consumers.

2. Market evidence indicates that programming cost savings will be passed through to consumers.

49. Both econometric studies of the MVPD industry and Charter's own experience indicate that programming cost savings will be passed through to consumers.

50. In their econometric analysis of the cable television industry, Ford and Jackson (1997) found that lower programming costs are passed through to consumers in the form of lower prices with a pass-through rate of 50 percent.[48] Using a structural model of U.S. multichannel television markets, Crawford and Yurukoglu (2012) found that large distributors have lower prices and lower marginal costs compared to small distributors, conditional on the

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[48] George S. Ford and John D. Jackson (1997), "Horizontal Concentration and Vertical Integration in the Cable Television Industry," *Review of Industrial Organization,* **12:** 501-518, at 514.

characteristics of the TV bundle offered.[49] Their finding suggests that consumers ultimately benefit through lower prices from programming cost savings of larger distributors. An econometric analysis by Commission staff also concluded that the pass-through of cost savings occurs.[50]

51. As I will now explain, because of the multidimensional nature of MVPD pricing, as well as the limited number of data points and many coincident marketplace changes, it is difficult or even impossible to determine a specific pass-through rate from Charter's recent pricing behavior. Nonetheless, Charter's recent behavior is consistent with the company's engaging in substantial pass through. Specifically, Charter has raised its rates in response to increased programming costs through at least three different mechanisms. First, it has pursued a policy of generally passing retransmission-consent cost increases through to consumers on a one-for-one basis in the form of the Broadcast TV Surcharge.[51] Table 2 summarizes changes in Charter's retransmission costs per subscriber and its Broadcast TV Surcharge over the period from July 2012 to January 2015. The average retransmission cost

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49 Gregory S. Crawford and Ali Yurukoglu (2012), "The Welfare Effects of Bundling in Multichannel Television Markets," *American Economic Review,* **102**(2): 643-685, at 672.

50 Federal Communications Commission, Report on Cable Industry Prices, *In the Matter of Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992; Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment,* MM Docket No. 92-266, January 16, 2009, *available at* https://apps.fcc.gov/edocs_public/attachmatch/DA-09-53A1.pdf, site visited October 17, 2015, Appendix B, ¶ 9 ("The negative coefficient for the vertically integrated variable suggests that vertically integrated operators pass some of their cost savings to their subscribers.").

51 Charter Communications, "Broadcast TV Surcharge," *available at* https://www.myaccount.charter.com/customers/Support.aspx?SupportArticleID=2594, site visited October 8, 2015.

pass-through rate was **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent over this time period.[52]

Table 2
Changes in Charter's Broadcast Surcharge and Retransmission Costs Per Subscriber, July 2012 to January 2015
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52. Viewed through the lens of economic analysis, this strategy is better seen as a component of a broader strategy of partially passing through all programming cost changes.

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[52] As is evident from Table 2, although the average rate of increase in the Broadcast Surcharge is roughly equal to the increase in retransmission consent fees over the period covered, it is also the case that individual increases in the Surcharge do not necessarily correspond to the contemporaneous increases in retransmission consent fees. The lack of an exact match at the micro level is due to the fact that both the Broadcast Surcharge and the retransmission consent fees are only periodically updated, and those updates do not occur on congruent schedules. Thus, it is necessary for Charter's management to update the Surcharge based on predictions of future retransmission fee increases. As is inevitable with predictions, they are not always accurate. (Interview with David Andreski, Vice President, Market Analysis & Forecast, Charter Communications, Inc., October 29, 2015.)

Reasons for reaching this conclusion include: (a) the Broadcast Surcharge is calculated and levied on a national scale, not a local one, so that the pass through is not tied to a given system's specific retransmission-consent costs; and (b) there is no economic reason that the marginal costs associated with retransmission consent should drive a tier's prices in a different manner than the marginal costs associated with other programming on that tier. Increases in retransmission consent costs accounted for **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of all programming cost increases from 2014 to 2015 and approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent from the last six months of 2012 to the last six months of 2014. Hence, the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percent pass through of retransmission consent cost increases—by itself—corresponds to an overall pass-through rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent.[53]

53. The actual pass-through rate has been higher because adjustments to customer premises equipment charges have served, in part, as a second mechanism for partially passing through programming cost increases.[54] When Charter introduced its New Pricing Plan in July

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53 To the extent that Charter's rivals simultaneously faced programming cost increases, the observed pass-through rate would not be a purely firm-specific number.

54 Factual statements made in this paragraph are based on interviews with David Andreski, Vice President, Market Analysis & Forecast, Charter, September 3, 2015, and October 29, 2015.

2012, it provided customers with set top boxes for a monthly charge of $5.00 per box, which was half of what it had been charging for boxes with high-definition and/or digital video recorder capabilities. The monthly rental fee was increased to $5.99 in February 2013, and then to $6.99 in January 2014. If these price increases are attributed to programming cost pass through, the estimated pass through rate rises to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent.[55]

54. Charter has also made other adjustments to the quality-adjusted prices for its video services. However, these changes are very difficult to quantify. For example, some networks were dropped in order to reduce programming expenditures and thus lessen the need to raise

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[55] Approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of all residential video subscribers are on Charter's new pricing plans. These video subscribers rent an average of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** set top boxes per subscriber. Under the assumption that all subscribers on Charter's new pricing plans experienced increases of $1.99 per set top box, these consumers experienced average price increases of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** more than is reflected in the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percent pass-through figure that is based solely on the $3.90 increase in the Broadcast Surcharge. I conservatively assume that other consumers experienced no price changes for set top boxes. Thus, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of video subscribers experienced prices increased of $3.90 +$1.99 × **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent experienced prices increases of $3.90. The overall pass-through rate averaged over all video subscribers thus equals the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**-percent pass-through figure (which is based on the Broadcast Surcharge alone) times **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**. (Charter Data on Subscriber Service Plans for August 2015, "R188.dat".)

the prices of Charter's video services.[56] A reduction in the set of networks offered to consumers can be seen as a form of programming cost pass through: rising programming costs led to an increase in quality-adjusted prices.[57] There may also be changes in other prices but these changes are difficult to discern due to the sophistication of the overall pricing strategy, which involves bundle discounts, introductory offers, and retention offers, and because there are other reasons that Charter changes its prices.

55. Lastly, it is important to view these figures in a broader context. Specifically, it is critical to recognize that Charter's recent pass-through rates may have been unsustainably low. Prices have been held down, in part, through a transition to a new pricing and packaging strategy.[58] Economic principles indicate that, in the longer run, Charter may be commercially compelled to raise its prices to a greater degree to reflect future increases in programming costs. For this reason, a projected pass-through rate of 50 to 60 percent is consistent with Charter's observed behavior, and the programming cost savings that will be generated by the proposed transactions are an important merger-specific, consumer benefit.

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56 Interview with David Andreski, Vice President, Market Analysis & Forecast, Charter Communications, Inc., October 29, 2015.

57 The same logic applies in the other direction: the programming cost savings generated by the proposed transactions create economic incentives for New Charter to purchase additional network carriage rights.

58 Interview with David Andreski, Vice President, Market Analysis & Forecast, Charter Communications, Inc., October 29, 2015.

3. Petitioners' arguments asserting a lack of pass through are without merit.

56. Although some petitioners argue that the cost savings will not be passed through to consumers in the form of lower prices, their arguments have no basis in sound economic analysis or marketplace facts.

57. COMPTEL makes an implicit claim that the pass through of programming costs savings to consumers is not economically rational.[59] However, COMPTEL offers no theoretical or empirical support for this claim. This lack of support is unsurprising: COMPTEL's implicit claim is a direct contradiction of the fundamental principle that profit-maximizing prices depend, in part, on marginal costs, from which it follows that changes in marginal costs generally lead to changes in profit-maximizing prices.[60]

58. Free Press and Writers Guild of America West claim that the level of competition in the industry is insufficient for pass through of cost savings to occur.[61] The claim that a

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59 *COMPTEL Petition,* footnote 23 ("Notably, New Charter has made no commitment to pass through to consumers the savings it anticipates from lower programming costs.").

60 See, for example, Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Eighth ed. (2013), Prentice Hall, Boston, at 284-287, 358-360.

61 Free Press claims "Applicants… do not confront the fact that the transaction is occurring in a largely monopoly market. This means that any scale-related efficiencies would accrue to the Applicants, not their customers." (*Free Press Petition* at 52.) Writers Guild of America West, Inc., asserts:

> However, this argument [that programming cost savings will benefit consumers] would have more force if there were sufficient competition to ensure that such savings would be passed on to consumers. Because Applicants make no promise to lower prices to consumers, it would seem that this scale benefit will inure solely to New Charter.

(*WGAW Petition* at 38.)

supplier with market power will not pass through cost reductions in the form of lower quality-adjusted prices lacks any support in economic theory. Content costs, which are contractually structured on a per-subscriber, per-month basis, are marginal costs. It is a well-established principle taught in freshman economics courses that even a monopolist—which the merged entity manifestly would not be—has incentives to pass through marginal cost savings to consumers in whole or in part.[62] As succinctly stated by Werden, Froeb, and Tschantz,[63]

> It has been suggested that the force of competition is what causes cost reductions to be passed on to consumers. … The analysis of pass through with monopoly makes it clear that this argument has no support in economic theory. A monopolist passes through marginal-cost reductions to a significant extent, and that extent is determined by the curvature of the monopolist's demand curve, rather than by its "good intentions".

59. Economic theory does not generally predict that a firm competing in a concentrated market will likely pass through less of the cost savings than a firm in a more competitive market.[64] Indeed, a perfectly competitive firm facing a highly elastic demand curve will pass

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62 See, *e.g.,* Tyler Cowen and Alex Tabarrok, *Modern Principles: Microeconomics*, Second ed. (2013), Worth Publishers, New York, at 234-237.

63 Gregory J. Werden, Luke M. Froeb, and Steven Tschantz (2005), "The Effects of Merger Efficiencies on Consumers of Differentiated Products," *European Competition Journal,* **1**(2): 245-264, at 260-261.

Those authors make an even stronger claim "that higher own pass-through rates are likely to be associated with greater market power because demand curvature substantially determines both." (*Id.* 261.)

See also, Joseph Farrell and Carl Shapiro (2010), "Recapture, Pass-Through and Market Definition," *Antitrust Law Journal,* **76**(3): 585-604, at 597 ("Some mistakenly believe that a firm with substantial market power will have a low (or zero) pass-through rate." (Footnote omitted)).

64 This point can be seen by considering the comparative statics of the workhorse model of a Cournot competition in a market with linear demand for a homogeneous product. As shown in Technical Appendix V.B.4, the pass-through rate *declines* as competition (*i.e.,* the number of active suppliers) in the industry rises.

through essentially none of its firm-specific cost savings, while a monopolist typically will find it profitable to lower its price in response to a decline in marginal cost, passing through at least some of the cost reduction.[65]

4. Several petitioners confuse harm to competitors with harm to competition and implicitly concede that consumers will receive substantial benefits from programming cost savings.

60. Several petitioners implicitly concede that consumers will receive substantial benefits from programming cost savings. For example, Cincinnati Bell asserts that the reduction in programming costs "strengthens New Charter and will make it that much more formidable as a competitor to the detriment of local competition."[66] COMPTEL also objects to the proposed transactions' programming cost savings on the grounds that these savings will make the merging parties stronger competitors and, thus, make it more difficult for rivals to compete against them.[67]

61. It is not surprising that competitors are concerned about the prospect that Charter will enjoy lower programming costs when the proposed transactions are consummated: any reduction in Charter's marginal costs will increase the competitive pressures faced by rival MVPDs, to consumers' benefit, if not the rivals'. Indeed, MVPD petitioners' concerns with New Charter's programming cost savings should be taken as evidence that these petitioners

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65 See, *e.g.,* Paul L. Yde and Michael G. Vita (1996), "Merger Efficiencies: Reconsidering the 'Passing-On' Requirement," *Antitrust Law Journal*, **64**(3): 735-47.

66 *Cincinnati Bell Comments* at 13.

67 *COMPTEL Petition* at 12 ("The feedback from COMPTEL's membership, however, is that New Charter's cost advantage for video programming would make irrational any thought of investing in broadband to compete against the new firm.").

expect significant pass through to occur. This conclusion follows because rival MVPDs will be disadvantaged by Charter's becoming a stronger competitor as the result of programming cost savings *only* if those savings lead New Charter to offer more attractive services to its customers, which creates pressures for rival suppliers to improve their offerings or risk losing customers.[68]

62. Petitioners' attempt to characterize the increased competitive pressures generated by programming cost savings as a public-interest harm is a classic example of confusing harm to competitors (which is what Cincinnati Bell and others are claiming) with harm to competition (which is a valid concern of public policy).[69] Antitrust enforcement and modern telecommunications regulation are designed to protect competition because of the benefits that competition brings to consumers.[70] There is a critical difference between protecting the competitive process and protecting individual competitors from the rigors of the marketplace, as the following hypothetical example makes clear. When an MVPD invests in an innovative, proprietary programming guide that is extremely attractive to consumers, the introduction of the new guide harms competitors. But the innovation benefits consumers and is, indeed, a benefit of the competitive process in action. A pro-consumer public policy properly favors

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68 As discussed in Section II.D.3 below, petitioners' claims that New Charter's cost savings will trigger programming cost increases for smaller MVPDs are also without merit.

69 This confusion is central to Cincinnati Bell's comments, which focuses on the welfare of rival MVPDs rather than consumers. Public Knowledge *et al.* also confuse increased competition with harm to competition. (*Public Knowledge Petition* at 17.)

70 These benefits typically take the form of lower prices, greater innovation and variety, and/or improved product and service quality.

innovation and seeks to protect competition. In contrast, a pro-competitor public policy might block the introduction of an innovative guide.

63. In the present instance, the situation in which Charter will realize lower programming costs and, thus, be "more formidable as a competitor" is one in which competition will be strengthened, not harmed. The only "harm" is that competitors such as Cincinnati Bell may find their profits reduced as they have to make more attractive offers to consumers in order to compete with New Charter.

64. Hawaiian Telecom Services Company, Inc. ("Hawaiian Telecom") also complains that it will be less able to compete with New Charter as the result of the latter's passing on programming cost savings to consumers. Hawaiian Telecom attempts to couch its argument in terms of harm to competition—rather than simply harm to competitors—by invoking the notion of predatory pricing.[71] Although economic theory identifies situations in which predatory pricing can be profitable, Hawaiian Telecom does nothing to demonstrate that predatory pricing is likely in the present context. There is no analysis whatsoever regarding whether such a strategy would be profitable for New Charter nor is there any demonstration of likely consumer harm. This is a very serious failing because it is widely understood that unfounded claims of predatory pricing risk chilling vigorous price competition that would otherwise benefit consumers.[72] Hawaiian Telecom also provides no discussion of the fact that

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71 *Hawaiian Telecom Comments* at 19.

72 As the Supreme Court explained,

> the mechanism by which a firm engages in predatory pricing—lowering prices—is the same mechanism by which a firm stimulates competition; because `cutting prices in

the antitrust laws protect it and other video distributors from anticompetitive predatory pricing.

C. ESTIMATED PASS THROUGH OF SAVINGS TO CONSUMERS

65. Applying the pass-through rates derived above (which range from 50 to 60 percent) to the projected marginal cost savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month per subscriber on legacy Charter systems yields initial projected consumer savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month per subscriber on legacy Charter systems. Multiplying these figures by the number of subscribers on legacy Charter systems and then multiplying by twelve yields the projected total annual consumer savings. These calculations reveal that New Charter's subscribers can be expected to realize initial savings of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY**

> order to increase business often is the very essence of competition . . . [;] mistaken inferences . . . are especially costly, because they chill the very conduct the antitrust laws are designed to protect.'" *Cargill, supra,* at 122, n. 17 (quoting *Matsushita, supra,* at 594). It would be ironic indeed if the standards for predatory pricing liability were so low that antitrust suits themselves became a tool for keeping prices high.

(*Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.,* 509 U.S. 209, 226-227 (1993).)

It is widely understood that rivals may attempt to label a firm's prices as predatory in an attempt to weaken competition by forcing higher prices. (See, *e.g.,* R. Preston McAfee and Nicholas V. Vakkur (2004), "The Strategic Abuse of the Antitrust Laws," *Journal of Strategic Management Education,* **1**(3): 1-17, *available at* http://www.justice.gov/sites/default/files/atr/legacy/2006/12/27/220039.pdf, site visited October 14, 2015.

CONFIDENTIAL INFORMATION] per year as result of the proposed transactions' programming cost savings alone.[73]

66. As noted above, there are several respects in which the cost-savings estimation methodology is conservative. Hence, the cost savings—and the resulting pass through of those savings to consumers—could well be larger. Moreover, as described above and widely recognized in the industry, programming costs are expected to continue to rise. As long as the programming cost savings *rate* remains constant or nearly so, programming cost savings per subscriber per month will grow over time, generating additional consumer benefits.

67. Contrary to DISH Network's claim that Charter has not shown that the proposed transactions will give rise to any merger-specific, verifiable consumer benefits, the preceding analysis, which is based on sound economic principles and a careful review of market facts, does exactly that for programming cost savings.[74] Similarly, although Free Press speculates that, "Applicants likely do not make any claims about future programming savings because all available evidence indicates any such merger-specific savings would be miniscule," the analysis above provides strong evidence that there will be substantial merger-specific savings passed on to consumers.[75]

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73 Given the rate at which programming cost are projected to continue rising, even the programming cost savings generated by the proposed transactions will not be enough to reverse the tide of rising costs. Rather, the savings will slow the rate of increase and, thus, lessen—but not eliminate—the future pressure on New Charter to raise quality-adjusted prices of its video services.

74 *DISH Petition,* § V.

75 *Free Press Petition* at 23.

D. THE PROPOSED TRANSACTIONS WILL NEITHER GIVE RISE TO MONOPSONY OUTPUT RESTRICTIONS NOR REDUCE THE SUPPLY OF PROGRAMMING.

68. Some opponents of the proposed transactions assert that New Charter will exercise monopsony power or restrict the supply of programming in some other way. As I now discuss, these arguments are without merit.

1. The proposed transactions will not give rise to monopsony output restrictions.

69. Some petitioners admit that the proposed transactions will lead to lower programming costs, but they claim that New Charter will exercise monopsony power and, thus, restrict the amount of programming sold in the marketplace. These claims rest on a fundamental misconception of the nature of the programming marketplace and a misunderstanding of the applicability of monopsony models to it. As I will now discuss, New Charter's ability to obtain lower programming prices will not give rise to monopsony output-reduction effects. Indeed, because the programming cost savings resulting from the proposed transactions are marginal cost savings, the creation of New Charter will create incentives for the firm to purchase *additional* programming, either in the form of: (a) additional networks per subscriber,[76] or (b) additional subscribers to existing networks as these new subscribers are attracted by the lower service prices that will result from the pass through of programming cost savings.

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[76] This relationship is consistent with data indicating that larger MVPDs tend to offer more channels than smaller distributors. (Tasneem Chipty (1995), "Horizontal Integration for Bargaining Power: Evidence from the Cable Television Industry," *Journal of Economics and Management Strategy*, **4**(2): 375-397.)

70. A critical reason that monopsony output reduction will not occur is that the standard monopsony model does not apply to the bargaining context in which programmers sell their services to MVPDs. The nature of the contracting in this industry is such that the parties negotiate a price and the buyer then chooses a quantity. Hence, when the buyer succeeds in negotiating a lower price, the buyer has incentives to purchase more of the input and expand output.[77] This outcome is the direct opposite of that predicted by the monopsony model. Moreover, under many programming contracts, the buyer receives a lower price as it expands its purchase of content. Again, this is the direct opposite of the monopsony model, in which the buyer faces an upward-sloping supply curve.

71. No petitioner contradicts this analysis or presents a framework in which monopsony theory is applicable.[78] To the contrary, in an economics white paper attached to one of the petitions to deny, Professor Kwoka correctly observes that the appropriate model is one of bargaining, not traditional monopsony:[79]

> For many markets with large numbers of agents and continuous transactions in homogenous commodities, competition issues can be analyzed in a conventional supply-demand framework. But where the commodities are

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77 As long as the price is above the programmer's marginal cost net of marginal advertising revenues, the seller benefits from the additional sales.

78 Public Knowledge *et al.* quote a discussion of monopsony power but do nothing to show that it applies to the markets at hand. (*Public Knowledge Petition* at 15 citing a discussion of agricultural markets.) It should be noted that Public Knowledge *et al.*'s repeated references to "volume discounts" directly undermine the claim that the exercise of buyer power is leading to lower unit sales.

Likewise, Hawaiian Telecom invokes the term "monopsony power" but provides no analysis and does nothing even to claim that the proposed merger would give rise to the standard monopsony output distortion. (*Hawaiian Telecom Comments* at 18-19.)

79 *Kwoka White Paper,* ¶ 35.

> differentiated and perhaps unique, where each seller engages with each buyer in a bilateral negotiation, and where the transaction is mutually advantageous and hence essentially certain to be consummated, the key question of price is best analyzed with a somewhat different framework. That framework is *bargaining theory.* [Footnote omitted; emphasis added.]

The fact that bargaining theory offers a better model of the private negotiations and agreements that characterize the purchase of video programming distribution rights by MVPDs than does the standard theory of monopsony is well-recognized in the relevant economics literature, which models the interaction of buyers and sellers almost exclusively under a bilateral-bargaining framework rather than as an instance of monopsony.[80] The Commission has also reached the conclusion that the monopsony model is inappropriate for analyzing the purchase of video programming distribution rights.[81]

72. The fact that monopsony is the wrong model matters because the predictions of a monopsony model are so different from those of bilateral bargaining. The key reason for the difference in the predicted efficiency of monopsony and bilateral bargaining frameworks stems from the incentives of the buyers. When the parties are engaged in bilateral (or multilateral) negotiations, buyers and sellers have incentives to maximize the size of the available surplus and then divide it between themselves. In contrast, in the monopsony

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80 See, for example, Alexander Raskovich (2003), "Pivotal Buyers and Bargaining Position," *The Journal of Industrial Economics*, **51**(4): 405-426; 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; Gregory S. Crawford and Ali Yurukoglu (2012), "The Welfare Effects of Bundling in Multichannel Television Markets," *American Economic Review*, **102**(2): 643-685.

81 *AT&T-DIRECTV Order,* ¶ 236 ("In addition, the Commission has determined previously that, for several reasons, the monopsony model is not useful in analyzing the impact of an MVPD's market power on programming rates and that 'the usual incentive for a firm to exercise monopsony power does not occur in this market.'" (Footnote omitted)).

framework, the buyer is able to exercise market power only by reducing the quantity purchased below the efficient level in order to drive down the price paid.

73. In concluding this discussion, it is notable that Hawaiian Telecom and New Charter will be competitors of one another. If the proposed transactions triggered monopsonistic output reductions, Hawaiian Telecom would face weaker competition and earn greater profits. However, if New Charter obtains lower prices through more effective bargaining and expands its output, then Hawaiian Telcom will face stronger competition and expect to earn lower profits, all else equal. Hence, Hawaiian Telecom's opposition to the proposed transactions[82] suggests that Hawaiian Telecom itself believes the proposed transactions will be output enhancing rather than lead to monopsonistic output reductions.

2. There is no evidence that the programming cost savings will harm consumers by reducing programmer investment.

74. Entravision and Public Knowledge *et al.* raise the possibility that programmers will reduce investment or programming quality as a consequence of the lower programming prices New Charter will obtain.[83] In this section, I examine the likely effects of programming cost reductions on program investment and quality. As will become evident, a broad examination of the programming industry reveals that there is no basis for concern that the programming cost reductions enabled by the proposed transactions will harm consumers. Although Entravision argues that there is a particular concern with harm to programming targeted to

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82 *Hawaiian Telecom Petition* at 17-20.

83 *Public Knowledge Petition* at 16; *Entravision Petition* at 11-12.

Latino viewers, examination of the relevant facts demonstrates that Entravision's arguments are fatally flawed.

a) The programming industry is healthy and growing.

75. The programming industry can be divided into the creators of individual series or shows (*e.g.*, "Orange is the New Black" or "Deadwood") and creators of networks or packages of programming (*e.g.*, CBS Television Network or USA Network). For expositional simplicity, I will refer to the former as "content creators" and the latter as "programmers." In most instances, content creators sell the rights to their content to programmers that then offer linear networks or some sort of video on demand ("VOD") service, which then seek distribution through a variety of means. In some cases, content creators create content at the request of—and financed by—programmers. In other cases, content creators finance production and then sell the rights to one or more programmers, including broadcast networks, cable networks, MVPD VOD services, and online video distributors ("OVDs").

76. Programmers' demand for content is derived from the demand for programming. To realize the latter demand, programmers require distribution. Video programmers have a wide array of distribution options available to them, including MVPDs (both traditional cable companies and satellite and telephone company ("telco") video providers), broadcast television, and Internet distribution. The latter includes both OVDs (*e.g.*, Netflix and Hulu), and stand-alone streaming services (*e.g.*, HBO GO).

77. New Charter's average share of MVPD subscribers would be 17.4 percent nationally, as of the second quarter of 2015.[84] This figure falls far below the 30-percent national ownership limit that the Commission re-imposed in a decision that was later vacated by the D.C. Circuit, which observed that "the record is replete with evidence of ever increasing competition among video providers [… and] over the same period there has been a dramatic increase both in the number of cable networks and in the programming available to subscribers."[85] Given the substantial entry into video programming distribution in recent years and the expected continued growth, there is even less concern with national cable concentration today than there was then.

78. There has been growth by incumbent MVPDs and new entrants, and that growth is continuing. There is planned expansion by existing MVPDs, such as AT&T[86] and Frontier,[87]

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84 Data for the second quarter of 2015 from SNL Kagan, "All Video by DMA," *available at* https://www.snl.com/SNLWebPlatform/Content/SNLReporting/SNLReporting.aspx?ReportID=bd86d36e-134b-40aa-80eb-7d77dca5e937, sited visited September 3, 2015.

85 *Comcast Corp. v. FCC*, 579 F.3d 1 (D.C. Cir. 2009) at 14.

86 As a condition for approving AT&T's acquisition of DIRECTV, the Commission required that "… AT&T will deploy its highest-speed fiber connections (U-verse FTTP) to at least 12.5 million more customer locations within four years of the transaction closing." (*AT&T-DIRECTV Order*, ¶ 394.) This commitment will increase video competition for millions of customers by expanding AT&T's wireline MVPD footprint and by offering additional broadband Internet access that can support video distribution services offered by other providers.

87 Having acquired Verizon's FiOS business in California, Texas, and Florida in 2015, Frontier Communications plans to expand operations in these areas. (Sean Buckley, "Frontier Acquires Verizon Wireline Assets in 3 States for $10.5B," *Fierce Telecom*, February 5, 2015, *available at* http://www.fiercetelecom.com/story/frontier-acquires-verizon-wireline-assets-three-states-105b/2015-02-05, site visited October 23, 2015; Sean Buckley, "McCarthy: Frontier Will Expand FiOS in Markets It Purchased from Verizon," *Fierce Telecom*, May 22, 2015, *available at* http://www.fiercetelecom.com/story/mccarthy-frontier-will-expand-fios-markets-it-purchased-verizon/2015-05-22, site visited October 23, 2015.)

and entry by new fiber overbuilders, such as Google,[88] and municipal utilities.[89] And several new OVDs have recently entered the market (*e.g.,* DISH's Sling TV, DreamWorks and Technicolor's M-GO, Warner Brothers Studios' Warner Archive Instant, WWE's new online WWE Network, and Disney's Disney Movies Anywhere),[90] and individual networks such as CBS, HBO, and Showtime are increasingly making their original content available online through stand-alone services.[91]

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88 Google has introduced MVPD and broadband Internet access services in at least three cities (Austin, Kansas City, and Provo), with plans to expand across nine metropolitan areas. (See, *e.g.,* Google, "Google Fiber: Cities and Plans," *available at* https://fiber.google.com/newcities/, site visited October 13, 2015; and Google, "Residential Plans," *available at* https://fiber.google.com/cities/provo/, site visited November 1, 2015.)

89 *Broadband Communities* reported that there are 165 public or public/private fiber network projects in the U.S. in 2015. 135 such projects were identified in 2013. (Masha Zager, "Census of Community Fiber Networks Rises to 165," *Broadband Communities,* August/September 2015 *available at* http://www.bbcmag.com/2015mags/Aug_Sep/BBC_Aug15_CensusCommunityFiber.pdf, site visited October 23, 2015, at 14; Masha Zager, "Number of Municipal FTTP Networks Climbs to 135," *Broadband Communities*, May/June 2013 *available at* http://www.bbpmag.com/2013mags/may-june/BBC_May13_MunicipalNetworks.pdf, site visited October 23, 2015, at 22.)

90 *16th Video Competition Report*, ¶¶ 269; DISH, "The Walt Disney Company and DISH Network Sign Groundbreaking Long-Term, Wide-Ranging Agreement," March 3, 2014; Seth Shafer, "Profile: M-GO," SNL Kagan, May 15, 2013; Deana Myers, "WWE's jump into OTT," SNL Kagan, January 16, 2014; Brooks Barnes, "Disney Throws Open the Gates to Its Own Digital Movie Service," *New York Times*, February 25, 2014.

91 *16th Video Competition Report*, ¶¶ 268; CBS, "CBS Brings Programming Direct to Consumers with New Multi-Platform Digital Subscription Service," October 16, 2014; Joe Flint and Shalini Ramachandran, "HBO to Launch Stand-Alone Streaming Service," *Wall Street Journal*, October 15, 2014; Sarah Perez, "Showtime Debuts A Standalone Streaming Service Aimed At Cord Cutters," *TechCrunch*, June 3, 2015.

79. Overall, Internet distribution is becoming an increasingly powerful option for programmers.[92] OVDs have signed numerous distribution agreements with programmers.[93]

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92 Some petitioners themselves make the point that online distribution is increasingly becoming a distribution outlet for video programming. (*DISH Petition,* § III.B; *Free Press Petition* at 29-31.)

93 Netflix: "Netflix Licenses Global Streaming Rights for "Colony" from Legendary Television and Universal Cable Productions," *PR Newswire*, September 28, 2015; Shirley Pelts, "Netflix's Deal with Disney for Original Content," *Market Realist*, August 21, 2015; Brooks Barnes, "DreamWorks and Netflix in Deal for New TV Shows," *New York Times*, June 17, 2013; Lauren A.E. Schuker and Jessica E. Vascellaro, "Lions Gate Finalizing Netflix Deal to Stream All Seasons of 'Mad Men'," *Wall Street Journal*, April, 5, 2011; Netflix, "Gotham Coming Exclusively to Netflix Members Around the World," September 2, 2014; Graeme McMillan, "The CW Signs Potential Billion-Dollar Netflix Streaming Deal," *Time,* October 14, 2011; Joe Flint, "Netflix Lands Animated Films from Sony Pictures," *Los Angeles Times,* May 27, 2014.

Amazon: Charles Warner, "The Amazon Deal With HBO," *Forbes*, April 26, 2014; "Prime Instant Video Adds Exclusive Subscription Streaming Access to Popular NBCUniversal Shows Covert Affairs, Defiance, Grimm, Hannibal and Suits," *Business Wire*, May 16, 2013; "Amazon and EPIX Announce New Prime Instant Video Agreement - Prime Instant Video Selection has more than Doubled since the Launch of Kindle Fire Last Year," *Epix Press*, September 4, 2012; Dante D'Orazio, "Amazon Prime Instant Video adds A&E, History, and Lifetime after Netflix's Deal Falls Through," *The Verge,* January 4, 2013; Todd Spangler, "Amazon Lands Exclusive Rights to 'Wolf Hall,' Other PBS 'Masterpiece' Series," *Variety,* June 30, 2015; Sarah Perez, "Amazon's Exclusive Deal With Turner And Warner Bros. Brings Two Top TNT Shows To Amazon Instant Video," *TechCrunch*, December 17, 2012; Don Reisinger, "Amazon Expands Streaming Deal with MGM, Gets 'Fargo,' 'Platoon,'" *CNet*, October 22, 2013; "Amazon Link Up with Paramount for Movie Streams," *World TV PC*, May 25, 2012.

Hulu: Rodrigo Mazon, "Hulu Becomes the Exclusive Subscription Streaming Home to Resurrection, Devious Maids and Mistresses," *Hulu*, December 16, 2014; "Hulu Inks Exclusive Streaming Deal With NBCUniversal Series," *Deadline Hollywood*, April 2, 2014, *available at* http://deadline.com/2014/04/hulu-streaming-deal-nbcuniversal-brooklyn-nine-nine-mindy-project-708443/, site visited October 26, 2015; "Hulu and Viacom Expand Content Partnership In Robust, New Multi-Year Agreement," *Hulu Blog*, October 6, 2015, *available at* http://blog.hulu.com/2015/10/06/hulu-and-viacom-expand-content-partnership, sited visited October 23, 2015.

Sony: "Crackle Service Streams Funimation Anime on Xbox Live," *Anime News Network,* February 6, 2012; "Sony's Crackle Adds Animax Anime Channel," *Deadline*, January 17, 2012; "Vin Diesel's the Ropes to Debut March 1," *Crackle*, March 1, 2012; "Crackle and

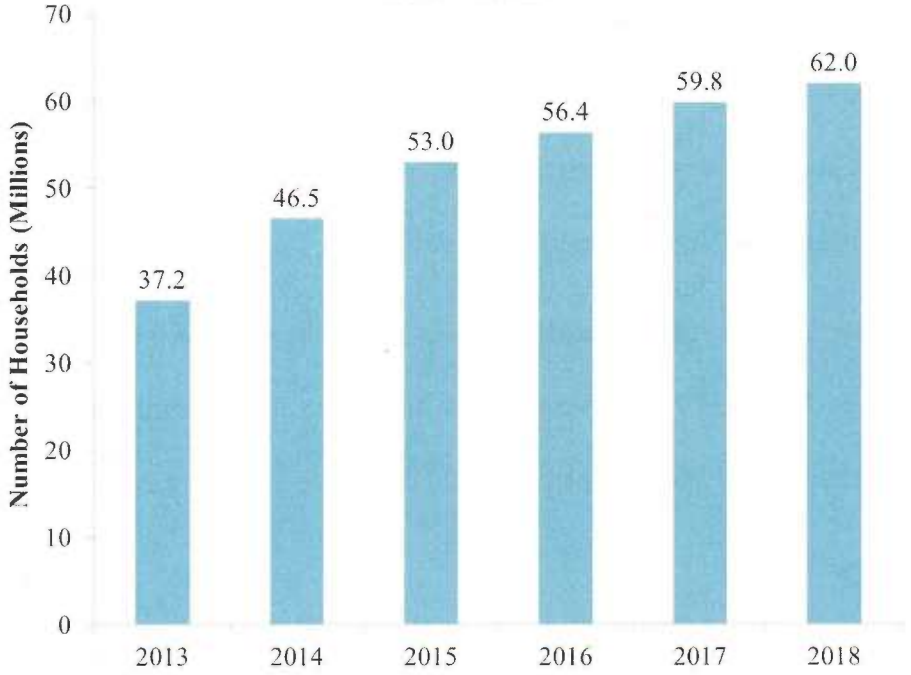
80. Access to fast Internet connections that are capable of serving as video platforms has increased dramatically over the last few years, with 85 percent of the population now having access to a wireline Internet access connection offering a download speed of at least 25 Mbps, compared to just under 50 percent in 2010.[94] As shown in Figure 2 below, the number of U.S. households subscribing to online video services increased by 42 percent over three years, from 37.2 million in 2013 to 53.0 million in 2015.[95] Further, the number of online-video subscribers is projected to continue increasing to a total of 62.0 million in 2018.

NBCUniversal Television & New Media Distribution Announce Exclusive Multi-Year Licensing Feature Films Deal," *PR Newswire*, April 3, 2014.

94 NTIA, "Nationwide Availability of Broadband Download Speed by Technology Type," in *Broadband Statistics Report*, March 2015, *available at* http://www.broadbandmap.gov/download/Technology%20by%20Speed.pdf, site visited October 23, 2015; NTIA, "All Broadband Availability by Speed: June 2010, June 2011, and June 2012," Figure 1 in *U.S. Broadband Availability: June 2010 – June 2012*, *available at* http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf, site visited October 23, 2015.

95 Similarly, a 2014 PwC report notes that "more people [are] subscribing to direct-to-consumer online streaming services, on-demand, and alternative forms of television." (PwC, "Feeling the Effects of the Videoquake," 2014, *available at* https://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-cis-videoquake-video-content-consumption.pdf , site visited October 23, 2015, at 3.)

Figure 2
U.S. Households Subscribing to Online Video Services
Actual and Projected
2013 – 2018



Notes: Households are those with one or more subscriptions to an online service offering on-demand access to video. The estimate does not include use of non-subscription services to access video content (*e.g.*, YouTube).

Data for 2015-2018 are SNL Kagan's projections of households subscribing to online video on-demand services.

Source: SNL Kagan, "Internet Video-On-Demand Revenue Projections," 2015, *available at* https://www.snl.com/interactivex/file.aspx?IOP=1&Id=25517113&KIDT=22&KeyFileFormat=XLSX, site visited October 13, 2015.

81. Video services are viewable on an increasing number of devices, and several services often are pre-installed on purchased devices.[96] The share of households with at least one

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96 For example, Netflix and Amazon Video are currently available on multiple brands of game consoles, Blu-Ray players, HDTVs, set-top boxes, mobile phones, and tablets. (Netflix, "Supported Devices," *available at* https://www.netflix.com/Watch?locale=en-US&Inkce=nrd-, site visited October 23, 2015; Amazon, "Amazon Video Compatible Devices," *available at*

device capable of streaming Internet video to a television set or other viewing screen are growing.[97] In the first quarter of 2014, 64 percent of broadband households had at least one Internet-connected consumer electronics device, such as a game console, smart TV, or Blu-ray player.[98] The increasing use and capabilities of mobile devices are also creating new opportunities for programmers. For example, the NFL recently reached a deal with Verizon to stream certain games to Verizon smartphone devices.[99]

82. One measure of the strength of these trends is that the share of households who rely solely on Over-the-Top ("OTT") delivery to view television shows or movies is projected to rise from 4.6 percent in 2013 to 10.2 percent in 2018. Table 3 below provides additional detail.

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https://www.amazon.com/gp/video/ontv/devices?ie=UTF8&*Version*=1&*entries*=0, site visited October 23, 2015.)

97 Nielsen, "The Digital Consumer," February 10, 2014, *available at* http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2014%20Reports/the-digital-consumer-report-feb-2014.pdf, site visited October 7, 2015.

98 Parks Associates, "Nearly Two-thirds of U.S. Broadband Households Have at Least One CE Device Connected to the Internet," April 30, 2014, *available at* http://www.parksassociates.com/blog/article/cus-2014-pr9, site visited October 23, 2015.

99 SNL Kagan, "The State of Online Video Delivery," September 24, 2014, a*vailable at* https://www.snl.com/InteractiveX/Article.aspx?id=29302644, site visited September 15, 2015, (hereinafter *State of Online Video*), at 19.

Table 3
U.S. MVPD Households vs. OTT-Only Households
Actual and Projected

	Households (Millions)					
	2013	**2014**	**2015**	**2016**	**2017**	**2018**
MVPD Subscriber Households	99.5	99.5	99.4	99.4	99.4	99.4
% of Total Occupied Households	*83.9%*	*83.5%*	*83.0%*	*82.4%*	*81.9%*	*81.3%*
OTT-Only Households	5.4	6.8	8.2	9.6	11.0	12.5
% of Total Occupied Households	*4.6%*	*5.7%*	*6.8%*	*8.0%*	*9.1%*	*10.2%*
Total Occupied Households	118.6	119.2	119.8	120.6	121.4	122.3

Notes: 2013 is estimated based on a full year of actual data; 2014-2018 are forecasts. All estimates are based on proprietary SNL Kagan research.

MVPD households include households with subscriptions to cable, DBS, telco and other multichannel platforms. Households may include MVPD subscribers who also view television shows or movies using an OTT service. Each MVPD household is counted only once; additional subscriptions for households with multiple multichannel subscriptions are excluded.

OTT-only households are those households that rely only on OTT delivery to view television shows or movies in lieu of a traditional multichannel subscription; this includes households that only use free OTT services.

Source: SNL Kagan, "Projected U.S. Multichannel Subscription Substitution with Over-The-Top Video Delivery," 2014, *available at* https://www.snl.com/interactivex/doc.aspx?id=29399619, site visited October 13, 2015.

83. In the light of the growing number of outlets for programming, it is not surprising that investment in content creation and acquisition is growing and that programmers have been spending increasing amounts to purchase content.[100] Figure 3 below shows that the expenses incurred by cable and broadcast networks, which include the direct cost of creating and acquiring programming have been steadily increasing from 1995 through 2014; over this time,

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[100] As the Writers Guild of America West observes, the increased demand and outlets for programming benefits content creators: "The rise of the OVD market has produced new creative and economic opportunities for writers. Writers have also benefited from services that offer consumers online availability of television series and feature films." (*WGAW Petition* at 6; see also, 23.)

network programming expenses increased by more than 180 percent in real dollar terms, reaching over $56 billion in 2014. Further, in recent years, OVDs have begun investing in original programming of the type associated with broadcast and cable television networks.[101] The three largest OVDs (Netflix, Amazon, and Hulu) all produce original content.[102] Netflix and Amazon are estimated to have collectively spent almost a billion dollars on original content in 2014. Expenditures on original content by Netflix, Amazon, and Hulu are expected to increase in the future.[103] Other OVDs such as Sony's Crackle are currently producing original content as well.[104] So, too, are Internet companies, including Yahoo, YouTube, and AOL.[105]

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101 In these cases, content creators bypass traditional MVPD services entirely. Broadcast television networks and cable television networks can also use the Internet to bypass traditional MVPDs.

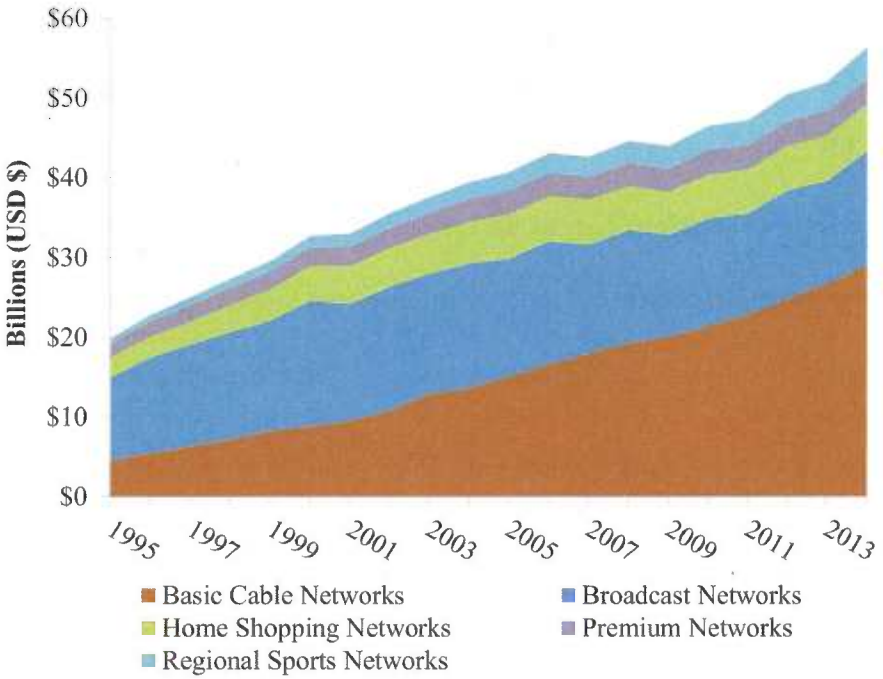
102 Netflix first offered original content in 2009 with the horror miniseries *Splatter*. (Tyler Gray, "What 'Splatter' Means for the Future of Netflix," *Fast Company*, October 16, 2009, *available at* http://www.fastcompany.com/1407386/what-splatter-means-future-netflix, site visited October 18, 2015.) Amazon launched Amazon Studios in 2010. (Amazon, "Amazon Media Room Timeline," *available at* http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-corporateTimeline, site visited October 18, 2015.) Hulu launched original content in 2011. (Charlotte Koh, "'A Day in the Life' at Hulu," *Hulu*, August 3, 2011, *available at* http://blog.hulu.com/2011/08/03/a-day-in-the-life-at-hulu/, site visited October 18, 2015.)

103 Samantha Bookman, "A Closer Look at the Billions of Dollars Netflix, Amazon and Hulu are Spending on Original Content," *FireceOnlineVideo*, June 4, 2014, *available at* http://www.fierceonlinevideo.com/offer/gc_oc?sourceform=Organic-GC-OC-FierceOnlineVideo, site visited October 18, 2015 (hereinafter *A Closer Look at Spending*); *State of Online Video* at 8.

104 *16th Video Competition Report*, ¶ 237.

105 *State of Online Video* at 16-17; *16th Video Competition Report*, ¶ 286.

Figure 3
Programming Expenses Incurred by Cable and Broadcast Networks
1995 – 2014



Notes: Programming Expenses are direct costs of creating, acquiring and distributing content and services incurred by networks.

Networks include basic cable, broadcast, home shopping, premium, and regional sports networks in the U.S., as identified by SNL Kagan.

All values represent U.S. expenses and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "TV Network Summary: Programming Expenses – Broadcast Networks," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=2&YTo=2015&YFrom=1989&FinOp=33757&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 13, 2015.

SNL Kagan, "TV Network Summary: Programming Expenses – Basic Cable," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2015&YFrom=1989&FinOp=33757&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 13, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

84. In addition to driving greater investment in programming, the increasing competition among video outlets is driving up programming fees. First, there is greater demand for

programming, which pushes programming prices upward. Second, a programmer can threaten to withhold its programming if its demands are not met, and an MVPD risks losing a substantial number of subscribers if the programmer makes good on that threat. For example, TWC lost more than 300,000 subscribers during a 2013 carriage dispute with CBS in which CBS prevented TWC's subscribers from accessing CBS content on television or online. Analysts attributed the "shocking" loss to the lack of CBS programming and noted that TWC lost phone and broadband subscribers (and the margins that would otherwise have been earned from them), whereas it was otherwise expected to gain broadband subscribers.[106]

85. As Figure 4 shows, affiliate fees paid by MVPDs to cable networks have been steadily increasing for the past two decades.

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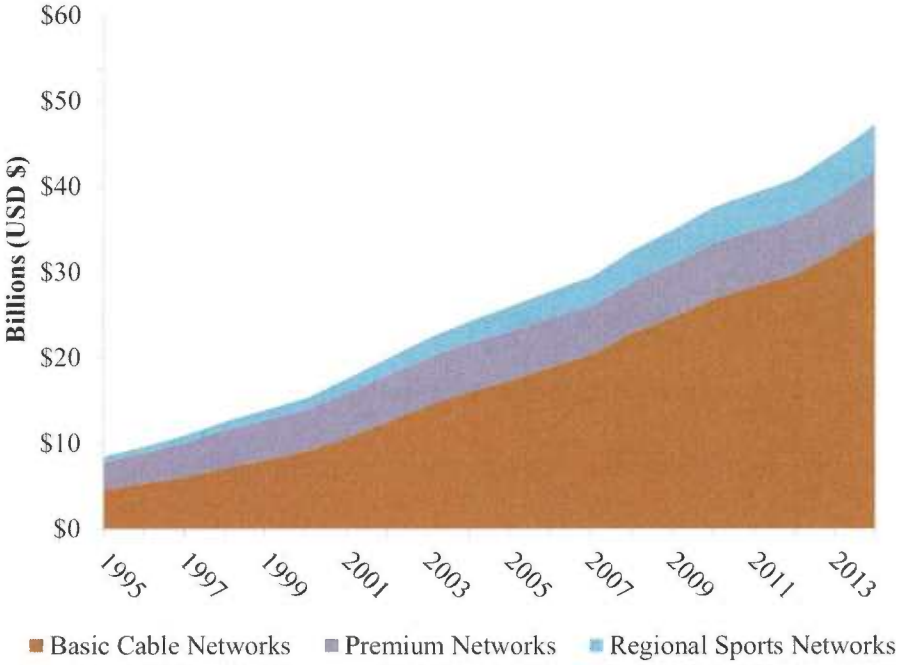
106 Brian Stelter, "Time Warner Left Bruised in Fee Battle with CBS," *New York Times*, October 31, 2013, at B1, *available at* http://www.nytimes.com/2013/11/01/business/media/time-warner-reports-record-quarterly-loss-of-tv-subscribers.html, site visited October 22, 2015.

Figure 4
Affiliate Fee Revenue Received by Cable Networks
1995 - 2014



Notes: Affiliate Fee Revenue is revenue from fees paid by multichannel video providers to basic cable, premium, and regional sports networks for distribution of network programming.

All values represent U.S. revenues and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "U.S. TV Network Industry Benchmarks," *available at* https://www.snl.com/interactivex/tv_IndustryBenchmarks.aspx, site visited October 13, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

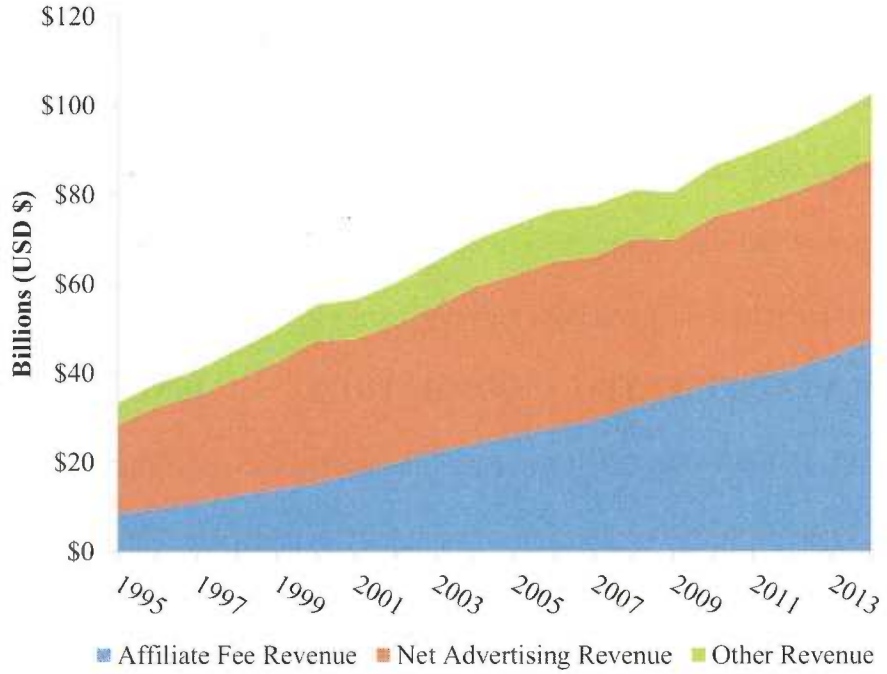
b) The cost savings will not constitute a significant change in programming industry revenues.

86. Petitioners provide no empirical basis for a prediction of harm to program creation. In fact, although the total programming cost savings the combined firm will achieve will be significant from the perspective of New Charter's customers, the programming cost savings

will not be of a magnitude expected to affect the quality or variety of programming that the content industry would be able to offer. This point can be seen in several ways.

87. U.S.-based cable and broadcast networks earn significant domestic revenues. Revenues attributable to programming can be divided into three main categories: affiliate fees, advertising, and other revenues. As shown in Figure 5 below, from 1995 through 2014, networks' annual U.S. operating revenues grew at a CAGR of 6.1 percent, reaching $102.5 billion in 2014. Revenues for cable and broadcast networks have grown across all of the different categories of revenue. Over the same period, affiliate fee revenue, advertising revenue, and revenue from other sources (*e.g.*, digital revenues, merchandising, and DVDs) had CAGRs of 9.5, 3.8, and 6.1 percent, respectively.

Figure 5
Components of U.S.-Based Cable and Broadcast Network Revenues
1995 – 2014



Notes: Networks include basic cable, broadcast, home shopping, premium, and regional sports networks in the U.S., as identified by SNL Kagan.

Affiliate Fee Revenue is revenue from fees paid by multichannel video providers. Net Advertising Revenue is revenue from carrying advertisements, after expenses paid to an ad agency. Other Revenue is operating revenue derived from all other sources.

All values represent U.S. revenues and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "U.S. TV Network Industry Benchmarks," *available at* https://www.snl.com/interactivex/tv_IndustryBenchmarks.aspx, site visited October 13, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

88. The programming savings for legacy Charter systems will account for a very small percentage of U.S. cable and broadcast networks' U.S. revenues. Indeed, as shown below in Table 4, the companies that will make up New Charter's *total* programming expenditures were less than eight percent of U.S. cable and broadcast networks' U.S. operating revenue

during the 2012 to 2014 period. More important, as discussed above, the top-down approach indicates that New Charter will save approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of the total programming costs (both marginal and fixed) incurred by legacy Charter systems, which accounted for only around two percent of U.S. cable and broadcast networks' U.S. annual operating revenues during the 2012 to 2014 period. Therefore, the estimated annual programming cost savings associated with legacy Charter systems constitute less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of the annual U.S. operating revenues of cable and broadcast networks. Such a small change is unlikely to materially change the incentives faced by programmers to create programming, particularly given that U.S.-based cable and broadcast networks are global in scope and also earn significant revenues from regions outside of the U.S.[107]

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[107] SNL Kagan reports that 17 percent of all 2014 revenue for U.S.-produced programming was derived from sales in international markets. (SNL Kagan, "Worldwide TV Outlet Market for U.S. Produced Programming," 2014, *available at* https://www.snl.com/InteractiveX/doc.aspx?id=30365530&IOP=1, site visited October 12, 2015.)

Table 4
U.S.-Based Cable and Broadcast Network Revenues Compared to TWC and Charter Programming Expenses (in Millions)
[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION]

Notes: Networks include basic cable, broadcast, home shopping, premium, and regional sports networks in the U.S., as identified by SNL Kagan.

Total U.S. Operating Revenues are composed of Affiliate Fee Revenue, Net Advertising Revenue, and Other Revenue. Affiliate Fee Revenue is revenue from fees paid by multichannel video providers. Net Advertising Revenue is revenue from carrying advertisements, after expenses paid to an ad agency. Other Revenue is operating revenue derived from all other sources.

Estimated programming cost savings for New Charter are calculated as **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of Legacy Charter's actual programming cost for 2012 to 2014. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] See Table 2.

Sources: SNL Kagan, "U.S. TV Network Industry Benchmarks," *available at* https://www.snl.com/interactivex/tv_IndustryBenchmarks.aspx, site visited October 13, 2015.

Charter Communications, Inc., Form 10-K, February 24, 2015, at F-26.

Time Warner Cable Inc., Form 10-K, February 13, 2015, at 42.

"Project Safari II_Business Plan_DRAFT 2015-04-30_2.xlsx."

89. Moreover, the proposed transactions are likely to increase the monetization opportunities of content providers because a larger video service provider can offer a content owner greater distribution, which enhances the value that it can offer advertisers. For example, advertisers prefer one-stop shopping with a video service provider that can offer broad exposure. Because a large video service provider can give a content owner greater distribution, this enhances the value that it can offer advertisers. Bargaining theory predicts that some of this incremental benefit will be appropriated by programmers.

90. Public Knowledge *et al.* fail to engage the substantial evidence described above and simply speculate that: "a programmer that must grant … discounts [due to the exercise of increased buyer power] may have to reduce the quality of its programming."[108]

91. The National Association of Broadcasters ("NAB") has petitioned the Commission to block or delay the creation of New Charter on the basis of effects of MVPD consolidation on broadcasters.[109] The NAB asserts that MVPD consolidation "Imperils the Economic Support for the Public's Free, Local Television Service."[110] Specifically, the NAB asserts that:[111]

> Consummation of the proposed merger will impair the ability of local TV broadcasters to compete with consolidated MVPDs for local, regional and national advertising revenues and to negotiate for fair compensation through retransmission consent.

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108 *Public Knowledge Petition* at 16 ("a programmer that must grant such discounts may be forced to charge more to smaller video distributors, raising costs to consumers, and harming MVPD and online video competition.").

109 *NAB Petition* at i-ii.

110 *NAB Petition* at 14.

111 *Id.*

92. The NAB is making two arguments in the quotation above. One is that consolidation will make the merging parties more attractive to potential advertisers and, thus, stronger rivals to broadcasters. In other words, the NAB is objecting that the proposed transactions will lead to more intense competition in the video advertising marketplace. This is once again a classic case of confusing harm to competitors with harm to competition. This increased competition will promote consumer welfare and is a public-interest benefit.

93. The NAB's second argument is that the merged parties may have a stronger bargaining position vis-à-vis broadcasters. The NAB provides no evidence that any such change in its members' bargaining position will give rise to consumer harms. The NAB petition does not demonstrate (or even claim to try to demonstrate) that incentives to create and offer programming will be adversely affected by the proposed transactions. Rather, the petition solely expresses concern that MVPD consolidation may weaken broadcasters' bargaining positions in negotiations with MVPDs. The NAB's lack of evidence of consumer harms stands in contrast to the substantial evidence of consumer benefits discussed in my present declaration.

c) Entravision's analysis of programming targeted at Latino audiences is fatally flawed.

94. Entravision argues that the proposed transactions will lead to lower prices that will, in turn, reduce investment in—and the quantity and quality of—video programming targeted at Latino audiences.[112] Entravision relies on a report submitted by Professor John Kwoka.[113]

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[112] Petition to Deny of Entravision Communications Corporation, *In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership*

There are several serious flaws in Professor Kwoka's analysis of market conditions.[114] Moreover, rather than provide any evidence that there will be material harm to programming investment or quality, Professor Kwoka simply asserts that it will occur.

95. First, consider Professor Kwoka's argument that MVPD markets are much more concentrated than the programming market.[115] Professor Kwoka appears to be comparing MVPD concentration based on market shares[116] to a count of the number of Latino-oriented programmers without reference to shares.[117] This is not an appropriate basis of comparison. If he were to compare numbers on both sides, Professor Kwoka would find that there are 660 cable operators with a total of 5,208 cable systems in the U.S.[118] In contrast, SNL Kagan identifies just 47 Spanish-language broadcast and cable networks in the U.S., owned by 26

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for Consent to the Transfer Control of Licenses and Authorizations, MB Docket No. 15-149, October 13, 2015 (hereinafter *Entravision Petition*).

113 *Kwoka White Paper.*

114 I note in passing that Professor Kwoka apparently is misinformed about the pre-transaction status of the companies. He repeatedly asserts that the proposed transactions will reduce the number of potential buyers of programming by two. (*Kwoka White Paper,* ¶¶ 24 and 30.) In fact, BHN generally is not an independent buyer of programming today, so that the number of independent buyers will fall by one. (See Bright House Networks Response to Specification 18, *In The Matter of Applications of Comcast Corp. and Time Warner Cable Inc. For Consent to Assign or Transfer Control of Licenses and Authorizations*, MB Docket No. 14-57, September 11, 2014, at 31 ("With respect to Bright House's video services, Bright House has the contractual right to rely on TWC to purchase third-party programming and routinely takes advantage of that opportunity with respect to cable programming networks and many broadcast stations."))

115 *Kwoka White Paper,* ¶ 31 ("[T]he market for Latino-oriented video programming consists, on the supply side, of many mostly small providers, and on the buying side, a handful of large and diversified media companies.").

116 *Kwoka White Paper,* ¶ 22.

117 *Kwoka White Paper,* ¶ 20.

118 National Cable Television Association, "Industry Data," *available at* https://www.ncta.com/industry-data, site visited September 28, 2015.

companies in 2014.[119] Hence, using Professor Kwoka's count metric, Latino-oriented programming supply is much more concentrated than is video distribution.

96. Although Professor Kwoka characterizes the Latino-oriented programming industry as being "quite fragmented,"[120] Univision owns two national broadcast networks (*Univision* and *Unimas*) with local affiliates, as well as 10 basic cable networks offering music, sports and other content targeting Spanish-speaking audiences. Moreover, Univision is the fifth largest U.S. broadcast network, reaching 94.1 million U.S. households over the air and through MVPD distribution.[121] In addition, several popular Spanish-language broadcasters are affiliated with major U.S. companies providing programming. For example, Disney offers sports content to Spanish-speaking audiences through *ESPN Deportes*, Discovery Communications offers *Discovery en Espanol* and *Discovery Familia*, Fox offers *FOX Deportes* and *FOX Life*, and Viacom offers *Tr3s* and *VH Uno*.[122] To the extent that these major programmers offer Spanish-language programming as part of bundles of other

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119 SNL Kagan, "TV Network Advanced Search," *available at* https://www.snl.com/interactivex/bbsearch.aspx?activeTabIndex=9, site visited October 15, 2015.

120 *Kwoka White Paper*, ¶ 20.

121 Univision Communications Inc., "Univision Network," *available at* http://corporate.univision.com/media-property/univision-network/ site visited October 15, 2015.

122 Discovery Communications, Disney, FOX, and Viacom are four of the seven U.S. companies identified by the U.S. General Accounting Office as accounting for "95 percent of all television viewing hours in the United States" in its report *Video Marketplace: Competition is Evolving, and Government Reporting Should Be Reevaluated*, June 2013, which was cited by Professor Kwoka in support of the proposition that "majority programming sources" in the U.S. are consolidated. See *Kwoka White Paper*, footnote 17.

programming, they would likely enjoy significant bargaining power vis-à-vis negotiations with MVPDs, including New Charter.

97. Rather than counting the number of companies, a more-informative method of comparison is to examine concentration of the two industries based on market shares. Using data from SNL Kagan, one can compute shares of advertising revenue and viewership ratings for each of 47 Spanish-language networks grouped by their company affiliation for 2014.[123] Based on shares of advertising revenues from Spanish-language programming for each of the 26 companies, the Herfindahl-Hirschman Index ("HHI") for the Spanish-language programming market segment for 2014 is 3,956; using shares of viewership ratings, the HHI for the Spanish-language programming market segment is 2,007.[124] In contrast, the HHI for the MVPD industry using the market shares of subscribers presented by Professor Kwoka in his Table 2 *after* the proposed transactions are consummated is 1,769, less than half the

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123 For example, SNL Kagan reports that the twelve broadcast and cable networks operated by Univision generated $1.04 billion in advertising revenue, or 57 percent of the advertising revenue generated by Spanish-language networks. Comcast Corporation, the owner of Telemundo (the second-largest Spanish-language broadcaster in the U.S.) received $473 million, or 25.9 percent of advertising revenue. No other network has a market segment share of advertising revenue of more than four percent. (SNL Kagan, "TV Network Summary – Broadcast Networks," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=2&YTo=2019&YFrom=1995&FinOp=39938&Export=0&Printable=1&ksp=d494a5e9-7a76-47ab-a6d9-3803ba40eae2&Excel=1, site visited October 19, 2015; SNL Kagan, "TV Network Summary – Basic Cable," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2019&YFrom=2012&FinOp=39938&Export=0&Printable=1&ksp=2e626ac9-acba-485f-9c6a-43ac662326ee&Excel=1, site visited October 19, 2015.)

124 The Department of Justice website indicates that an HHI in excess of 2,500 is "highly concentrated." See U.S. Department of Justice, "Herfindahl-Hirschmann Index," *available at* http://www.justice.gov/atr/herfindahl-hirschman-index, site visited October 23, 2015.

advertising revenue-based concentration measure for Spanish-language programming.[125] In summary, whether comparing firm counts to firm counts or market-share concentration to market-share concentration, the Spanish language programming industry is more concentrated than is the MVPD industry.

98. Moreover, these figures overstate the concentration of video distribution. As Professor Kwoka acknowledges in a footnote, "both OTA broadcast and alternative distribution methods, such as OVD, can affect interpretation of these calculations."[126] Over-the-air broadcasts (which cable companies can be forced to carry under must-carry rules) and alternative distribution methods represent additional options for programmers to reach viewers without relying on New Charter and, thus, weaken the latter's bargaining position with programmers. Internet-based options are increasingly available to Latino-oriented programmers.[127]

99. Professor Kwoka asserts that MVPD concentration is especially high in the DMAs most relevant to Latino-oriented programmers. However, Professor Kwoka fails to acknowledge that New Charter's market share in the 20 DMAs on which he focuses generally would be little different from the largest share of each of the individual companies (*i.e.,* that

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125 The actual HHI for the MVPD market is lower than the figure in the text because I have conservatively treated the "other" subscribers in Professor Kwoka's Table 2 as if they all subscribed to a single MVPD. These subscribers are, in fact, distributed across the more than 600 other cable companies operating in the U.S.

126 *Kwoka White Paper,* footnote 24.

127 See, *e.g., Lynch DISH Declaration,* ¶ 15 ("In addition, Sling Latino offers a suite of standalone and add-on Spanish-language programming packages tailored to English-dominant, bilingual, and Spanish-dominant U.S. Hispanics.").

there is little geographic overlap).[128] Even more striking, Professor Kwoka does not acknowledge that his *own data and methodology* indicate that New Charter would be *less* of an alleged bottleneck for Latino-oriented programming than for other programming. Specifically, he calculates that New Charter would have a market share 15.5 percent in his 20 critical DMAs (his Table 3), which is *lower* than the 17.3-percent market share that he calculates at the national level (his Table 2).

100. Lastly, Professor Kwoka asserts that lower programming prices will harm Latino viewers by leading to "consequent compromises in its quality, novelty, and other improvements that would otherwise have occurred."[129] However, he makes no attempt to quantify this harm. His only attempt even to demonstrate that it is anything more than a theoretical possibility consists of citing testimony before Congress by the president of Writers Guild of America West.[130] For at least two reasons, this reference fails to provide meaningful support for Professor Kwoka's claim. First, he cites the testimony as support for the claim that there has been a "decline of independently produced programming and increasing demands on the talent community" but offers no explanation of how this is related to reduced programming quality or harm to consumers.[131] Second, in making this claim, Professor Kwoka ignores the many pieces of evidence of above that the programming industry is

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128 *Kwoka White Paper,* Table 2.

129 *Kwoka White Paper,* ¶ 45. See also, ¶ 43 also alleging harms to advertisers but providing no quantification or any evidence of significance.

130 *Kwoka White Paper,* ¶ 44, citing Testimony of Christopher Keyser, President, Writers Guild of America, West, before the Subcommittee on Antitrust, Competition Policy, and Consumer Rights, June 24, 2014.

131 *Kwoka White Paper,* ¶ 44.

healthy,[132] including Writers Guild of America West's filing in the present proceeding in which it states that "[t]he rise of the OVD market has produced new creative and economic opportunities for writers. Writers have also benefited from services that offer consumers online availability of television series and feature films."[133]

101. Given the growth in the Latino-oriented market documented by Professor Kwoka[134] and the concentration of programming described above, it is not surprising that Spanish-language broadcast and cable networks have experienced significant growth in recent years. For example, as shown in Figure 6 below, the advertising revenues received by Spanish-language networks more than doubled in real dollar terms between 2000 and 2014, from less than $755 million to more than $1.8 billion in 2014, representing a CAGR of 6.5 percent.

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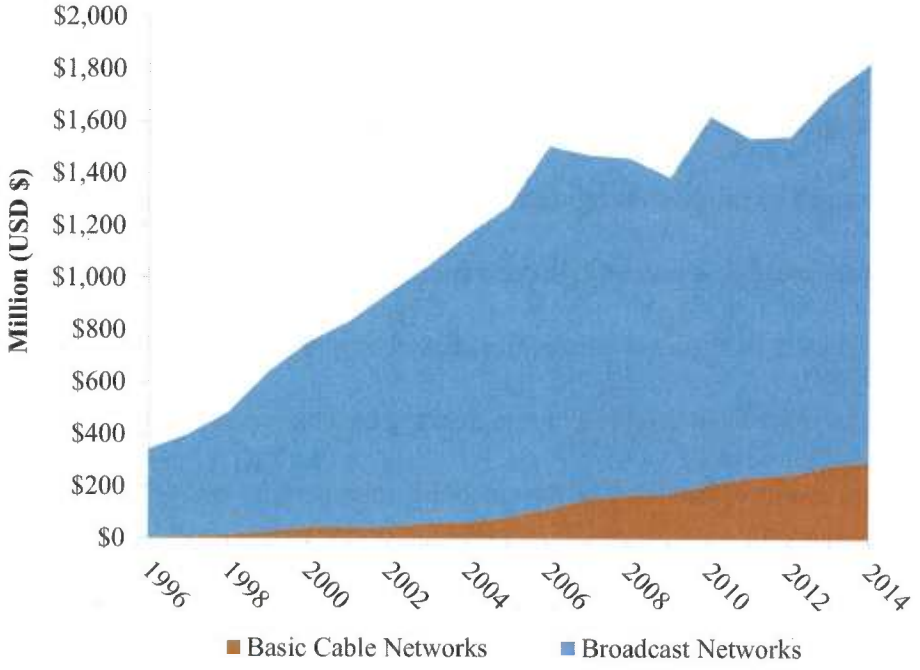
132 See Section II.D.2.a) above.

133 *WGAW Petition* at 6; see also, 23.

134 *Kwoka White Paper*, ¶14.

Figure 6
Net Advertising Revenue Received by Spanish Language Cable and Broadcast Networks
1996 – 2014



Notes: Net Advertising Revenue is revenue from carrying advertisements, after expenses paid to an ad agency.

Spanish speaking networks are identified using SNL Kagan by searching all TV networks for networks in the U.S. with a language of Spanish. SNL Kagan does not identify any Spanish speaking premium, home shopping, or regional sports networks.

All values represent U.S. revenues and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "TV Network Summary – Broadcast Networks," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=2&YTo=2019&YFrom=1995&FinOp=39938&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 15, 2015.

SNL Kagan, "TV Network Summary – Basic Cable," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2019&YFrom=1995&FinOp=39938&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 15, 2015.

SNL Kagan, "TV Network Advanced Search," *available at* https://www.snl.com/interactivex/bbsearch.aspx?activeTabIndex=9, site visited October 15, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

102. Similarly, Figure 7 demonstrates the increasing ability of Spanish-language programmers to receive affiliate fees from MVPDs. In 2000, affiliate fees for Spanish-language programming were less than $22M in total in real dollar terms; in 2014, programmers received more than 23 times that much ($510 million) in affiliate fees. Professor Kwoka does not address the ability of many programmers to earn revenues selling their program in foreign markets, presumably including the "innumerable foreign program suppliers" to which he points.[135]

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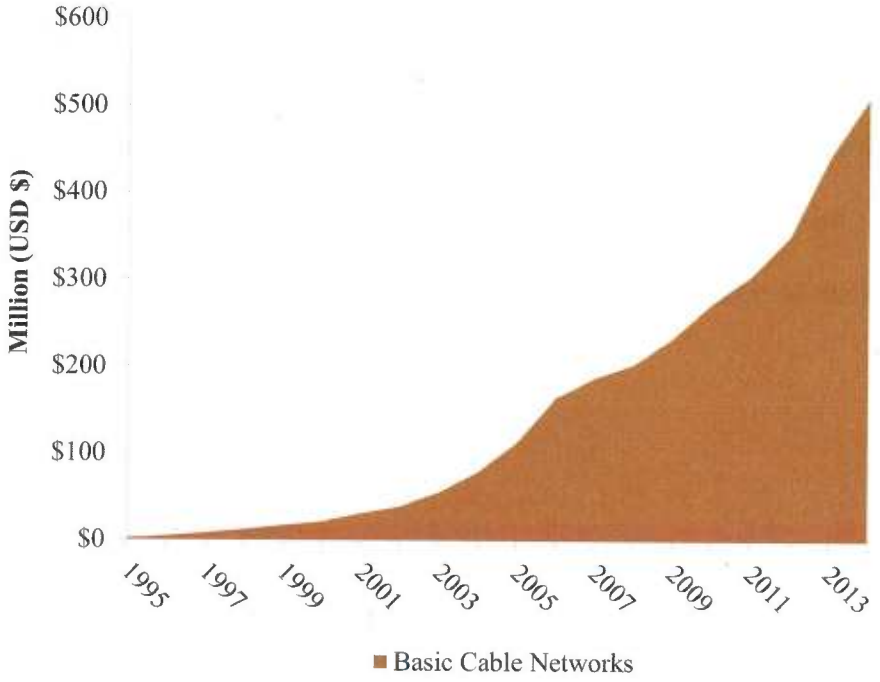
135 *Kwoka White Paper*, ¶ 20.

Figure 7
Affiliate Fee Revenue Received by Spanish Language Cable Networks
1995 – 2014



Notes: Affiliate Fee Revenue is revenue from fees paid by multichannel video providers to basic cable, premium and regional sports networks for distribution of network programming.

Spanish speaking networks are identified using SNL Kagan by searching all TV networks for networks in the U.S. with a language of Spanish. SNL Kagan does not identify any Spanish speaking premium, home shopping, or regional sports networks.

All values represent U.S. revenues and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "TV Network Summary," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2019&YFrom=1995&FinOp=39921&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 15, 2015.

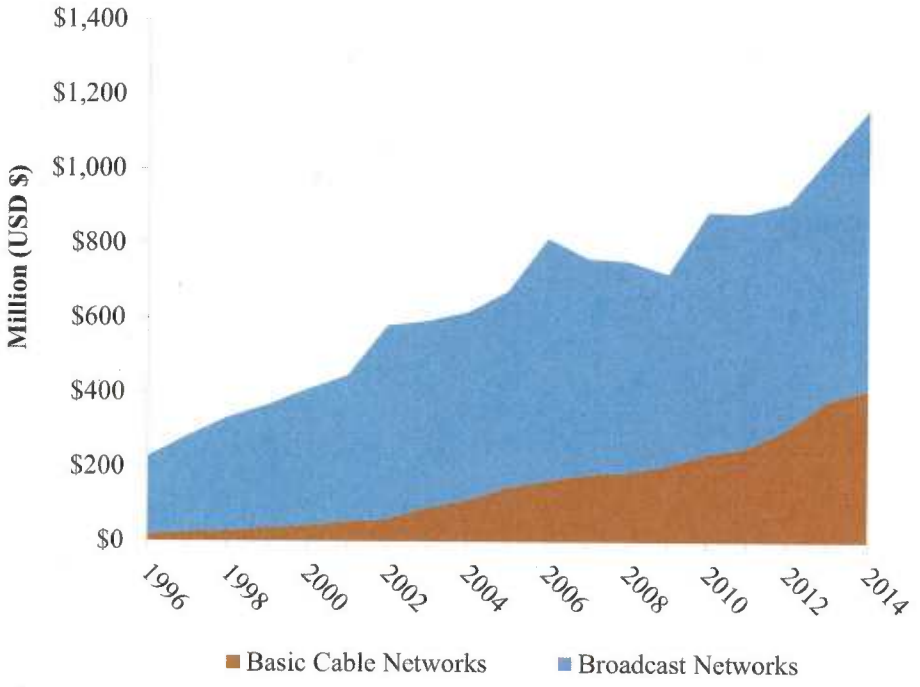
SNL Kagan, "TV Network Advanced Search," *available at* https://www.snl.com/interactivex/bbsearch.aspx?activeTabIndex=9, site visited October 15, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

103. Like the broader video programming industry, Spanish-language programmers continue to make significant investments in creating and acquiring new programming. Figure

8 below shows the growth of these expenditures. In 2000, Spanish-language programmers incurred programming expenses in total of $408 million in real dollar terms across broadcast and cable networks; in 2014, those expenses were nearly $1.2 billion. As the discussion above makes clear, neither Entravision nor Professor Kwoka has put forth a sound reason to be concerned that the proposed transactions might materially harm investment in Latino-oriented programming.

Figure 8
Programming Expenses Incurred by Spanish Language Cable and Broadcast Networks
1996 – 2014



Notes: Programming Expenses are direct costs of creating, acquiring and distributing content and services incurred by networks.

Spanish speaking networks are identified using SNL Kagan by searching all TV networks for networks in the U.S. with a language of Spanish. SNL Kagan does not identify any Spanish speaking premium, home shopping, or regional sports networks.

All values represent U.S. expenses and are inflation-adjusted to 2014 dollars.

Sources: SNL Kagan, "TV Network Summary – Broadcast Networks," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=2&YTo=2019&YFrom=1995&FinOp=33757&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 15, 2015.

SNL Kagan, "TV Network Summary – Basic Cable," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2019&YFrom=1995&FinOp=33757&Export=0&Printable=1&ksp=3e457b38-f7f8-4fbd-9fb1-b82dd0605c8d&Excel=1, site visited October 15, 2015.

SNL Kagan, "TV Network Advanced Search," *available at* https://www.snl.com/interactivex/bbsearch.aspx?activeTabIndex=9, site visited October 15, 2015.

U.S. Bureau of Labor Statistics, "Consumer Price Index - All Urban Consumers," *available at* https://research.stlouisfed.org/fred2/series/CPIAUCSL, site visited October 13, 2015.

104. As does Entravision, Public Knowledge *et al.* hypothesize that there may be harm to a particular segment of programmers: "Independent programmers, particularly those catering to diverse or niche interests, may struggle to come to terms with the merged entity. This may undermine their business or keep them off the cable dial entirely."[136] This claim ignores the fact that larger MVPDs have been found to carry more networks, not fewer.[137] It also fails to identify any merger-specific effects. Lastly, the claim is somewhat ironic because, as I explain in Section III.A below, the MFN provisions that Public Knowledge attacks may, in fact, facilitate coming to terms.

105. In its AT&T-DIRECTV decision, the Commission concluded that:[138]

> Commenters have not provided adequate empirical evidence to show that the reduction in programming rates that the combined entity might achieve would curtail investment in content production. Thus, we find that the record here does not allow us to conclude that a decrease in programming rates would have the net effect of lowering the quality or quantity of programming. [Internal footnotes omitted.]

The Commission rightly rejected unsubstantiated claims of harm in its AT&T-DIRECTV decision, and the Commission should so do here as well.

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136 *Public Knowledge Petition* at 16.

137 Tasneem Chipty (1995), "Horizontal Integration for Bargaining Industry Power: Evidence from the Cable Television Industry," *Journal of Economics and Management Strategy*, 4(2): 375-397.

138 *AT&T-DIRECTTV Order*, ¶ 235.

3. There will be no adverse effect on the prices of programming supplied to smaller MVPDs.

106. Several petitioners claim that New Charter's ability to obtain lower programming prices as result of the proposed transactions will lead to an increase in the programming costs of smaller MVPDs. For example, Hawaiian Telecom asserts that: [139]

> the natural incentive of every company is to maximize profit. If programmers must increase the discount they provide to the combined entity, it is only natural that they would look for places to recoup all or part of their money, such as from MVPDs that lack the bargaining clout accumulated by the merged Charter/TWC/Advance.

Cincinnati Bell, DISH, and Public Knowledge *et al.* make similar claims.[140] These claims have no support in economic logic, and no party offers empirical evidence of the existence of the effects they claim would occur.[141]

107. Simply claiming that such behavior "is only natural" does not overcome the fact that such behavior is inconsistent with programmer profit maximization. An economically rational programmer will negotiate with other MVPDs based on the specific circumstances, including the value of the programming to the MVPDs, the incremental advertising revenues that the programmer and those MVPDs can obtain from distribution of the programming, and

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139 *Hawaiian Telecom Comments* at 20.

140 *Cincinnati Bell Comments*, § II.A ("Price/Cost Reductions Extracted by New Charter will Shift Costs, Resulting in Higher Prices to all Other MVPDs, Uniquely Impacting Cincinnati Bell."); *DISH Petition* at 65 (footnote omitted). ("New Charter will likely be able to extract concessions from large, third-party programmers and those programmers will, in turn, seek to recoup costs from smaller MVPDs."); *Public Knowledge Petition* at 16 ("a programmer that must grant such discounts may be forced to charge more to smaller video distributors, raising costs to consumers, and harming MVPD and online video competition.").

141 I also note that one implication of adopting the policy standard implicitly endorsed by the petitioners would be to conclude that no MVPD should negotiate for lower programming prices because doing so would harm its rivals. This manifestly would not be a sensible policy.

the programmer's opportunity cost of licensing to the MVPDs.[142] In negotiating with those other MVPDs, a profit-maximizing programmer will try to strike the best deals for itself that it can, regardless of the terms it reaches with New Charter.

108. It also should be remembered that, as discussed in Section II.D.2.b) above, the savings enjoyed by New Charter will be only a small fraction of total programmer revenues, calling into question the significance of the claimed effect on other MVPDs even if, counterfactually, it had a logical basis.

109. In the *AT&T-DIRECTV* proceeding, the Commission found that commenters failed to provide evidence that programmers charged higher prices to small MVPDs when larger MVPDs received volume discounts.[143] Petitioners have similarly failed to provide such evidence in the present proceeding, and their unsubstantiated claims should be rejected.

III. CHARTER'S AND TWC'S MFN AND ADM PROVISIONS BENEFIT CONSUMERS BY FACILITATING THE SALE OF HIGH-QUALITY PROGRAMMING.

110. Cincinnati Bell, DISH, and Public Knowledge assert without foundation that the proposed transactions will harm competition because of MFN and ADM provisions in Charter's and TWC's contracts with programmers. Even taken at face value, Cincinnati Bell's, DISH's and Public Knowledge's arguments fail to identify any merger-specific effects. Moreover, there are several mechanisms through which the MFN and ADM provisions

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142 In fact, to the extent that these MVPDs compete with New Charter for customers, the programmer's opportunity cost of licensing to these MVPDs will fall as New Charter obtains lower prices from the programmer.

143 *AT&T-DIRECTV Order*, ¶ 190.

strengthen competition and, thus, benefit consumers by supporting efficient contracting between buyers and programmers that facilitate the provision of lower-cost, higher-quality services.

A. THE MFN, ADM, AND WINDOWING PROVISIONS IN CHARTER'S AND TWC'S CONTRACTS WITH PROGRAMMERS ARE EFFICIENT RESPONSES TO WELL-RECOGNIZED CONTRACTING CHALLENGES.

111. The MFN and ADM provisions contained in Charter's and TWC's contracts with programmers are efficiency-enhancing responses to well-recognized contracting challenges. So, too, are the windowing provisions. By facilitating the sale of the rights to distribute high-quality programming, these provisions strengthen competition and benefit consumers.

112. There are several ways in which these provisions generate efficiency benefits. First consider the mechanisms by which MFN provisions do so:

- *Facilitate Price Discovery.* Price MFN clauses reduce buyer's and seller's costs of negotiating (and re-negotiating) price in a dynamic marketplace. The provisions do so by enabling the buyer to economize on the costs of price discovery. That is, these provisions assist the buyer in learning the value of the programming at the time of contracting, including renewals. Because a significant component of programming value is common to all MVPDs, there is valuable information in knowing what other distributors pay, including ones that do not compete with the buyer for subscribers.[144]

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144 Relatedly, financial markets judge Charter by whether it is able to achieve financial results that compare favorably with other firms in the industry (even those that do not have overlapping footprints) and programming costs are a significant driver of Charter's financial performance.

These provisions thus help Charter (or TWC) and programmers streamline carriage negotiations and, in part, are a rational response to the lack of price transparency in programming markets. The provisions also lessen the likelihood of a carriage disruption around contract renegotiations.

- *Reduce Bargaining Delays.* In markets that are constantly changing, such as the programming and distribution markets, buyers may anticipate that prices and other contract terms will change or improve over time as new programs and methods of distribution and viewing are developed and accepted by consumers. As a result, buyers may delay committing to fixed contract terms because they anticipate that, by waiting, they will have access to better contract terms in the future. MFN clauses mitigate this delay by guaranteeing that buyers will receive the best terms offered as the market changes. Without the MFN provisions, negotiations (and re-negotiations) would take longer and require considerable diligence to satisfy the buyer that the terms it is receiving are appropriate for the marketplace. MFN provisions may be particularly beneficial for new cable networks. MFN provisions provide early adopters of a new cable network with some measure of protection should price fall as market experience is gained. In this way, MFN clauses make MVPDs more willing to sign carriage agreements with the new network. The new network might otherwise not be able to launch due to a chicken-and-egg problem whereby substantial numbers

of potential distributors wait to see how the programmer fares and what price is established before those distributors are willing to enter carriage agreements.[145]

- *Future-Proof Long-Term Contracts.* MFN provisions covering economic and non-economic terms reduce transaction costs and facilitate efficient, long-term contracting by "future-proofing" the contract. Long-term contracts can promote stable relationships that allow both programmers and MVPDs to invest in those relationships, to the benefit of both parties and, ultimately, consumers.[146] However, both the programming and distribution markets are rapidly evolving in ways that cannot be fully foreseen, which puts strains on long-term contracting. For example, an MVPD may find itself paying more than the market rate for a particular video programming service if, during the term of the MVPD's agreement with the programmer, demand for the programmer's content declines, say due to a decrease in the quality of the content or a change in viewer tastes.[147] Or, given the emergence of

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145 For a general discussion of how MFN clauses can reduce delays in transacting, see Jonathan B. Baker and Judith A. Chevalier (2013), "The Competitive Consequences of Most-Favored-Nation Provisions," *Antitrust*, 27(2): 20-26, at 21.

146 Charter's and TWC's contracts with programmers are frequently **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** years in length.

147 The OECD Competition Committee observed that this use of MFN clauses is common:

> In their many variations, … MFNs can introduce valuable price flexibility into long term contracts and may also offer valuable insurance to certain actors. That may explain why they are found in a wide range of market settings and are often adopted unilaterally by sellers sometimes on request by their customers.

(OECD (2001) "Price Transparency," *OECD Directorate for Financial, Fiscal and Enterprise Affairs, Committee on Competition Law and Policy, Policy Roundtables*,

new online distribution channels, an MVPD may find itself subject to distribution-technology limits that are not present in the programmer's new deals with other distributors. Given the many possible contingencies, it is impossible to cover all future contingencies with explicit contract terms and even trying to cover the most likely ones would be costly and complex. MFN provisions allow the contract to respond to future market developments in a flexible way that does not require detailed predictions and specification of what those developments are.

- *Expand Ways in which the MVPD Can Serve its Customers.* MFN clauses regarding expanded rights such as authenticated streaming (*e.g.,* TV Everywhere), VOD, or OVD, allow the contract to adjust to changing market conditions with respect to distribution rights. Charter and TWC seek to offer video programming to its customers anywhere, anytime, anyplace in order to provide the highest value service to them. In some cases, programmers are not, at present, willing to license the full set of rights that an MVPD would like to purchase. However, market conditions may change as consumer tastes and technology continue to evolve. The MFN provisions provide a means for Charter and/or TWC to obtain these broader rights—and better serve their customers—if the programmer changes its position in the future.

- *Assure Quality and Prevent Holdup.* Provisions such as those requiring that the buyer receive the "service in its entirety" (*i.e.,* the buyer receives the same programming

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DAFFE/CLP(2001)22, *available at* http://www.oecd.org/competition/abuse/2535975.pdf, site visited October 22, 2015, at 12.)

content as other distributors also buying that service with no surcharge for receiving the same content on the same service as others) are part of the definition of the product the MVPD is purchasing from the programmer. Charter's and TWC's subscribers reasonably expect nationally branded cable networks to carry the marquee programming content with which they are associated. Inability to view this content would degrade the value Charter's and/or TWC's customers expect to receive from that program service and thus from Charter's and/or TWC's subscription services. The provisions help ensure that the cable companies and their subscribers receive the value they expect to receive from nationally branded program services. Ensuring that the buyer's subscribers receive the content available to subscribers receiving the network through other MVPDs is a means of defining the quality for a product for which quality is a complex, multi-dimensional concept that is impossible to define by specifying the precise characteristics of the programming.

There is also a dynamic component to the benefits of these provisions. **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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113. Next, consider the mechanisms by which ADM provisions generate efficiency benefits. ADM provisions can include distribution-rights MFN clauses and/or terms that are extensions of the windowing restrictions that content owners have long imposed on video distribution platforms. Windowing refers to the practice of granting partial exclusivity to certain distribution channels for certain time periods. Windowing has long been used by content rights-holders in the entertainment industry. For example, motion picture studios have for decades used windowing to create multiple revenue streams through multiple cycles of release at different venues and mediums (*e.g.,* theatrical release, hotel/airline on-demand, DVDs and home on-demand, premium networks, cable and broadcast networks). As expected, the definitions of windows has evolved—and continues to evolve—in response to technological change, evolving consumer tastes, and other marketplace developments, such as the emergence of new business models.

114. Windowing provisions generate consumer benefits through at least two, closely related, mechanisms:

- *Specify Product Characteristics.* The programmer chooses how and where it will make its programming available. Windowing provisions help to define what product the buyer is purchasing from the programmer. In short, they help to make sure the

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148 Response of Charter Communications, Inc. To Requests for Additional Information and Documentary Material, September 18, 2015, Response to Specification 13(a)-(b), at 41.

buyer gets what it paid for. In this sense, these provisions are the counterparts to contractual terms regarding carriage (*e.g.*, specification of the tier on which the MVPD will carry the network), which define for the programmer the nature of the distribution it will receive. By delineating what rights the MVPD is purchasing, these provisions enable the MVPD to accurately assess the value of what it is purchasing.

The value of a program network to an MVPD depends on how and when that network's programming is available to the MVPD's current and potential future subscribers. For example, a network is less valuable to Charter if its subscribers can simultaneously access that network's programming for free through either over-the-air, terrestrial broadcasts (the original source of concern leading to these provisions) or over the Internet. The logic is clear: if the programming is available to them for free, then consumers are less willing to pay Charter to provide access to that programming and, hence, the programming is less valuable to Charter. It follows that, to know the value of carrying a programming network, Charter needs to know how else the programming will be made available to consumers (*i.e.*, it wants to know that it is going to get what it paid for). In this regard, the provisions are no different than any other contract specifying product characteristics or quality (here, the quality is the value of the programming to the viewers, which will be very low if it is otherwise available for free). Absent these provisions, Charter might have to assume the programming would simultaneously be available to consumers at very low cost or even for free and, thus, would be unwilling to pay a high price for distribution

rights.[149] For this reason, these provisions are in the interests of the programmer as well as Charter. [150]

- *Facilitate distributor investment in program promotion.* Windowing provisions can also enable distributors to make appropriate decisions with respect to how much to invest in promoting a program network in addition to how much to pay for it. For example, Charter advertises programming both on its systems and through media channels (such as broadcast television) that reach broad audiences beyond its cable subscribers. Charter's incentives to make these investments depend, in part, on the rights that it and other companies have to distribute this programming. Again, by enabling a programmer to commit to the value proposition of its choosing, these provisions benefit the programmer as well as Charter. The U.S. Department of Justice has concluded that windowing has "procompetitive" effects when it encourages distributors to promote content because they are protected from free riding by other distributors and, thus, "increases the profitability of producing quality programming

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149 In some cases, a programmer might develop a reputation with respect to the scope of its overall distribution strategy, which might serve as a partial substitute for explicit provisions. In the other direction, the problems in the text might be exacerbated by the fear of hold up by the programmer.

150 The value of windowing to content creators has long been recognized. For example, in 1972, the Commission implemented syndicated exclusivity and network non-duplication rules on cable systems, which prohibited cable operators from airing programs within a certain window of when it was locally broadcast over the air. The exclusivity protections made broadcast networks willing to pay a higher value for programming knowing that the audience market would not be spoiled by earlier airings of the programming on cable. As the authors explain, "The broadcasters were willing to pay the full value of the program because they knew that they would be able to show it to an audience unspoiled by a previous cable showing." (Gillis Heller (1981) "Regulatory Versus Property Rights Solutions for the Cable Television Problem," *California Law Review*, **69**(2): 527-554, at 538-543.)

and encourages the production of more high-quality programming than otherwise would be the case."[151]

115. In summary, the ADM and MFN provisions in Charter's and TWC's contracts with programmers promote consumer welfare by facilitating efficient contracting.

B. OPPONENTS FAIL TO OFFER A SOUND ANALYSIS OF THE COMPETITIVE EFFECTS OF MFN OR ADM PROVISIONS.

116. Cincinnati Bell, DISH, Public Knowledge, and Writers Guild of America West, Inc. assert that MFN and ADM provisions can be used to harm competition. However, none of their three filings provides meaningful evidence that the proposed transactions will harm competition as the result of MFN or ADM clauses. Instead, at most, the three filings offer: (a) broad theories that are not calibrated to the facts of the marketplace, and (b) vague assertions that the proposed transactions would worsen an alleged problem.

117. Cincinnati Bell simply makes a claim in passing that MFN clauses are harmful,[152] while Writers Guild of America West, Inc. asserts that New Charter may be able to "limit the attractiveness of competing services" through restrictive distribution deals.[153] DISH and

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151 United States Department of Justice, Competitive Impact Statement, *United States v. Comcast Corp.*, No. 1:11-cv-00106, (D.D.C. Jan. 18, 2011), *available at* http://www.justice.gov/file/492251/download, site visited October 22, 2015, at 35.

The Department also has concluded that windowing provisions have procompetitive effects by allowing the programmer to engage in price discrimination and, thus, earn greater profits from the sale of high-quality programming, which encourages investment in it. (*Id.*)

152 *Cincinnati Bell Comments* at 15.

153 *WGAW Petition* at 17.

Public Knowledge *et al.* offer somewhat more-developed theories of alleged harm. Public Knowledge *et al.* assert that:[154]

> MVPDs that secure MFNs not only benefit from any contractual terms or rates that other MVPDs might secure, but would gain the same kind of access to programming that an online distributor might secure.
>
> Because of these kinds of terms, a programmer might not be able to give a special break to a new entrant in order to promote competition, or to grant an online provider on-demand access to programs, without also granting these rights to an incumbent cable company.

DISH's theory of alleged harm is similar, but is more narrowly tailored to ADM provisions:[155]

> In particular, New Charter—with its greater scale—would possess even more leverage than the Applicants' companies have now to: (a) acquire the most robust OTT distribution rights from third-party programmers in order to increase the appeal of its own video platform; and (b) restrict the ability of third-party programmers to grant online rights to competing OTT services, like DISH's.

DISH objects to MFN provisions solely as they relate to the granting of OTT distribution rights.[156]

118. At the outset it should be recognized that, to the extent that DISH and Public Knowledge *at al.* are objecting that New Charter will obtain robust distribution rights, these petitioners are again confusing harm to competitors with harm to competition. Greater distribution rights for New Charter can increase OVD and OTT competition by facilitating New Charter's entry into new services. Such entry would strengthen competition, not harm it.

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154 *Public Knowledge Petition* at 13.

155 *DISH Petition* at 64.

156 *DISH Petition* at 68.

119. ADM provisions in Charter's and TWC's contracts do not prevent programmers from choosing to license on any terms that they and potential entrants or other distributors choose. However, along with windowing clauses, ADM provisions do require the programmer to define what product Charter is paying for when it reaches a carriage agreement. A programmer is free to reduce the length of holdbacks or eliminate window provisions when negotiating with Charter, TWC, or New Charter. However, the programmer has to be willing to bear the financial consequences: by offering a lower-quality product, it would have to expect to receive a lower price, as is the case in any well-functioning market. Likewise, MFN provisions with respect to distribution rights do not restrict the development of new distribution means—Charter would have the opportunity to pursue that means as well, which could provide programmer additional routes for monetization.

120. Public Knowledge *et al.* attempt to support their argument that New Charter's MFN provisions will harm competition by stating that:[157]

> For example, then-Deputy Assistant Attorney General, Antitrust Division Fiona Scott-Morton noted that when an "MFN is in place, the incumbent is contractually entitled to the low price of the entrant. Thus the entrant can never create an advantage vis-a-vis the incumbent, and entry is blocked."

Taken out of context, this quotation paints a misleading picture of Professor Scott Morton's message. Professor Scott Morton was making the point that there are circumstances under which MFN clauses can have harmful effects, and she presented a highly stylized hypothetical

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157 *Public Knowledge Petition* at 13-14 (footnote omitted citing Fiona Scott Morton, "Contracts that Reference Rivals," Presented at Georgetown University Law Center Antitrust Seminar, April 5, 2012, *available at* http://www.justice.gov/atr/file/518971/download, site visited October 21, 2015 (hereinafter, *Scott Morton Speech*), at 13).

setting to make that point.[158] In presenting that hypothetical setting, she *assumed* that the only way in which the entrant could successfully compete was to negotiate an input price lower than the one paid by the incumbent. Given this assumption, it follows that, entry is impossible if the incumbent has an MFN provision that is effective and guarantees the incumbent a price that at least as low as the one paid by the entrant.

121. The issue in the present proceeding is not whether MFN provisions hypothetically can harm competition. The question is whether the proposed transactions will harm competition through the operation of MFN clauses and, if there are any such harms, whether they are balanced by merger-specific consumer benefits. With respect to this balancing, it should be noted that Public Knowledge fails to acknowledge that Professor Scott Morton also identified potential efficiencies associated with MFN provisions, and more generally, that "contracts that reference rivals," of which MFN and ADM clauses are two types, can have procompetitive benefits.[159] As described in the previous subsection, the Charter's and TWC's ADM and MFN provisions have substantial efficiency benefits.

122. Moreover, in assessing the actual effects of MFN and ADM provisions in the video distribution marketplace, it is essential to recognize that this actual marketplace differs from

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158 *Scott Morton Speech* at 13.

159 *Scott Morton Speech* at 13. Professor Scott Morton states that "The most well-known efficiency in the static MFN context comes from Crocker and Lyon (1994). They highlight that the MFN allows transaction prices to reflect current market conditions in a setting with very volatile prices where efficient investments depend on that price." (Footnote omitted citing Keith J. Crocker & Thomas P. Lyon (1994), "What Do 'Facilitating Practices' Facilitate? An Empirical Investigation of Most-Favored-Nation Clauses in Natural Gas Contracts," *Journal of Law & Economics,* **37**(2): 297-322.)

Professor Scott Morton's hypothetical setting in at least two critical respects. First, if it is the case that price MFN clauses are effective, then negotiating lower programming prices manifestly is not necessary for successful entry to occur. As documented elsewhere in my declaration, there has been very substantial entry by OVDs. This finding is not surprising because, in practice, there are other ways that an entrant can create a competitive advantage for itself. The considerable entry that has taken place in the presence of the MFN provisions that petitioners assert stifle entry is strong refutation of the petitioners' claims.

123. A second way in which the actual marketplace under consideration in the present proceeding differs from Professor Scott Morton's hypothetical setting is that MFN clauses are less effective in practice than in theory. One reason is that an MVPD may lack the information necessary to enforce its MFN protections fully.[160] For example, the prices paid for programming typically are confidential and not publicly revealed.[161] Consequently, in some instance, a buyer that it entitled to a lower price paid by another firm may be unaware

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160 Interview with Melinda Witmer, Executive Vice President, Chief Video Officer & Chief Operating Officer, Time Warner Cable Inc., September 28, 2015.

161 The following comment on DISH's suit against Disney over allegations that the latter violated its MFN commitments reflects the lack of information:

> "All contracts are confidential and for most-favored-nation, it's difficult to maintain compliance," Aditi Bagchi, a professor of contract law at Fordham University Law School in New York, said in a phone interview. "Suing is a way to extract information. Dish can claim the contract's been violated and force some information out of ESPN."

(Don Jeffrey, "ESPN Accused in Dish Case of Giving Comcast Better Terms," *Bloomberg Business*, February 11, 2013, *available at* http://www.bloomberg.com/news/articles/2013-02-11/espn-accused-in-dish-case-of-giving-comcast-better-terms, site visited October 23, 2015.)

that the other firm is paying a lower price.[162] A second reason that MFN clauses are less effective in practice than theory is that actual MFN clauses have provisions that limit cherry picking, which is the practice of applying an MFN clause to obtain the more-favorable terms of another buyer's contract without having to apply materially related terms of that other buyer's contract that may be less favorable than those the buyer invoking the MFN clause currently has. Absent the ability to cherry pick, an incumbent may be unable to invoke an MFN clause because the related terms obtained by the other buyer render the MFN clause inapplicable.[163]

124. There is also question of whether even a fully enforced MFN provision would have any effect on the prices programmers charge entrants. Even absent any MFN clauses, an economically rational programmer would not want to give entrants particularly low prices if doing so would significantly divert viewing from other distributors paying the programmer higher prices. It is not in programmers' interests to undermine current revenue sources with poorly monetizing products. And, given the general relationship between distributor size and programming prices, one would expect entrants—who will tend to be smaller than incumbents—to pay higher prices than incumbents, thus rendering the MFN provisions moot

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162 This is not to say that MFN clauses are completely ineffective. Some programmers voluntarily inform buyers that they are entitled to lower prices as the result of MFN provisions. For example, in 2014 Charter received refunds from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** as a result of MFN clauses in Charter's contracts. (Response of Charter Communications, Inc. to Requests for Additional Information and Documentary Material, September 18, 2015, Response to Specification 21, at 59-60.)

163 Interview with Melinda Witmer, Executive Vice President, Chief Video Officer & Chief Operating Officer, Time Warner Cable Inc., September 28, 2015.

with respect to their effects on entrants' programming fees. Indeed, it is widely reported in the industry that new entrants generally pay strictly higher prices than incumbents, so that price MFN clauses (whether or not size-based) are not binding and do not drive the rates paid by entrants.[164] Any theory that an entrant would emerge with an entirely new business model that would break this pattern would be entirely speculative. Moreover, such a theory would have to confront the fact that Charter and TWC generally do not have cherry-picking MFN provisions and, thus, they would not be able to demand an entrant's more-favorable rate—if such a case were to arise—without also taking on materially related terms and conditions. Consequently, it might be difficult, if not impossible, for Charter or TWC to use their MFN clauses to prevent the emergence of such an entrant.

125. In addition to making unsound and incomplete arguments about the competitive effects of MFN clauses generally, opponents fail to identify any merger-specific adverse effects related to MFN provisions. For example, even if it were correct, the entry-deterrence theory sketched above would be very unlikely to identify a merger-related harm: any new entrant would presumably come in at a smaller scale than Charter is today, so Charter's size-based MFN clauses would apply to that entrant whether or not the proposed transactions are consummated.

126. Cincinnati Bell asserts that TWC already has the scale necessary to obtain MFN clauses with the purpose "to suppress competition" and asserts that MFN clauses are already

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[164] U.S. Government Accountability Office, "Video Marketplace Competition is Evolving, and Government Reporting Should Be Reevaluated," June 2013, *available at* http://gao.gov/assets/660/655476.pdf, site visited October 20, 2010, at 22.

having this effect.[165] However, even if one accepted Cincinnati Bell's assertion that MFN clauses are suppressing competition, it would *not* follow that the proposed transactions would harm competition. The issue for merger analysis would be whether and how the proposed transactions would *change* the level of suppression. Suppose, for the sake of argument, that New Charter would be able to reach agreements with some programmers to obtain price MFN clauses for legacy Charter systems that Charter currently lacks, and consider the implications of these additional MFN clauses for the theory that entry will be harmed because it will be more costly for the relevant programmers to offer especially low prices to an entrant, such as an OVD. As described above: (a) there would be questions whether the New Charter would even be able to invoke the price MFN clauses if there were other differences in the terms offered the entrant; (b) it is speculative and inconsistent with industry experience to assume that programmers would otherwise want to offer lower prices to a small entrant; especially given that (c) even absent price MFN clauses, it generally is not in a programmer's interest to cannibalize its high-price sales with low-price sales.

127. In addition, even if New Charter were able to invoke the price MFN clauses and programmers were willing to ignore the adverse effects of cannibalization on their profits, the proposed transactions would still be unlikely to have a large effect on entry because extending price MFN clauses to legacy Charter systems would likely represent a small percentage change in the subscriber base of MVPDs entitled to price protection. This is so because Comcast and AT&T-DIRECTV are larger than TWC and may already have price MFN

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165 *Cincinnati Bell Comments* at 15.

clauses with the relevant programmers. Indeed, DISH—which is also larger than Charter—may well have such MFN clauses too.[166] A programmer considering the possibility of lowering prices for an entrant would have to weigh the benefits of broader distribution against the costs associated with triggering price MFN clauses in all of the programmer's contracts with MVPDs containing such provisions. Given that Charter represents less than six percent of the subscriber base of all MPVDs as large as or larger than TWC, extending TWC's MFN protections to Charter is unlikely to alter the programmers' decision to lower its price.[167]

128. A similar logic regarding the lack of transaction-specific effects through price MFN clauses applies to the analysis of ADM provisions. In fact, in important respects, it is even stronger. The analysis of the effects of the proposed transactions depends, in part, on the nature of the ADM terms. There are two types of ADM provision to consider. First, suppose that an ADM provision prohibits one or more types of distribution. When the prohibition applies to a given geographic area, the effects are the same whether one MVPD has such a clause or multiple ones do. Thus, extending a nationwide TWC clause to Charter would have no effect. Similarly, if one or more MVPDs other than Charter and TWC already have a clause enforcing a nationwide prohibition, then the proposed transactions would have no effect even if they allowed New Charter to obtain clauses that neither Charter nor TWC could

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166 For example, DISH sued Disney in a dispute over the enforcement of the MFN provisions between the two companies. (Don Jeffrey, "ESPN Accused in Dish Case of Giving Comcast Better Terms," *Bloomberg Business*, February 11, 2013, *available at* http://www.bloomberg.com/news/articles/2013-02-11/espn-accused-in-dish-case-of-giving-comcast-better-terms, site visited October 23, 2015.)

167 Subscriber numbers taken from NCTA, "Top 10 Video Subscription Services," *available at* https://www.ncta.com/industry-data, site visited October 23, 2015.

obtain as an independent entity.[168] Second, consider an ADM provision that amount to a distribution-rights MFN clause, whereby Charter or TWC receives a distribution right if the programmer grants that right to another distributor. In this case, the number of MVPDs with the MFN protection can affect the programmer's decision calculus. When TWC already has an MFN clause that applies nationwide, extending the MFN protection to Charter will not make any difference if Charter does not already have the clause in its corresponding contract. And, if Charter does already have the clause, then the "cost" to the programmer of triggering the MFN clause might actually be lower after the proposed transactions are completed because triggering the MFN clause will extend the covered distribution rights to a single firm, New Charter, rather than to both Charter and TWC separately.

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168 One would expect ADM provisions with respect to Internet-based distribution means often to be nationwide because content available over the Internet outside of an MVPD's footprint could also be accessed by customers inside the footprint. Both Charter (*e.g.*, with **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**) and TWC (*e.g.*, with **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**) have entered into programming contracts that apply ADM provisions on a nationwide basis. (**[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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Indeed, it is my understanding that Charter's ADM provisions covering Internet-based distribution typically are national or even international in scope. (Interview with Scott O'Donnell, Vice President, Associate General Counsel, Charter Communications, Inc., October 28, 2015.)

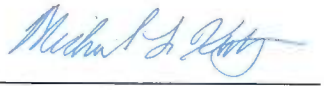
129. Lastly, in addition to clearing these hurdles, the theory of harm would have to demonstrate that the programmers with whom additional MFN or ADM provisions were reached were important to the success of potential entrants, something that no opponent of the transaction has done.

130. In closing, opponents of the proposed transactions have not identified transaction-specific harms and, even if opponents had done so, those harms would have to be weighed against the proposed transactions' consumer benefits. Similarly, a balancing test would also be necessary before concluding that imposing merger conditions that limited MFN or ADM provisions would promote competition or consumer welfare. This is so because, as described in Section III.A above, Charter's and TWC's MFN and ADM provisions promote competition and consumer welfare by facilitating more efficient contracting.

IV. CONCLUSION

131. Based on my analysis of the relevant facts and economic theories, and for the reasons described above, I find that consummation of the proposed transactions will generate substantial consumer benefits due to the pass through of programming cost savings. I also find that the proposed transactions will not generate competitive harms through the operation of MFN and ADM provisions.

Executed on Monday, November 2, 2015.



Michael L. Katz

V. TECHNICAL APPENDIX

132. This appendix addresses several technical issues. The first section provides a discussion of the general methodology used to estimate programming cost savings. The second section provides various derivations of pass-through rates.

A. PROJECTION OF PROGRAMMING COST SAVINGS

133. The core task in projecting programming cost savings is to identify for each program service (*i.e.*, cable network or broadcast television signal retransmission) that Charter carries how the per-subscriber fee Charter currently pays for carriage rights compares to the per-subscriber fee Charter would pay under the terms of the corresponding TWC contract. The identification of these fees relies on five principal data sources (described below), supplemental data sources, programming contracts, and interviews with personnel from both companies.[169]

134. Each of the five principal data sources is maintained by the relevant company in the ordinary course of business. The five sources are:

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169 Staff under my direction worked with the following Charter and TWC personnel to understand the data: Julie Unruh, Vice President, Revenue Assurance, Charter Communications, Inc.; Cheryl Von Sprecken, Vice President, Programming, Charter Communications, Inc.; Keely Bostock, Vice President, Content Acquisition, Time Warner Cable Inc.; and Andrew Rosenberg, Senior Vice President, Content Acquisition, Time Warner Cable Inc.

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TWC Rate Book:[173] These data summarize programming-service-level rate information as specified in TWC's contracts with programmers, including information regarding discounts for which TWC may qualify, such as penetration or channel placement discounts.

TWC Payments Data:[174] These data contain TWC's estimated net effective rates. My understanding is that these rates reflect TWC's actual payments to programmers for each programming service, accounting for discounts off of the monthly, per subscriber rate that TWC receives. The rates do not include marketing or launch support payments, which are considered contra programming expenses. The net effective rates sometimes differ from the corresponding rate book rates because of differences in accounting allocations between BHN and TWC and because of one-off reasons (*e.g.*, a temporary carriage disruption).

1. Outline of the Projection Process

135. Cost savings were calculated through an eight-step process:

Step 1: The 50 programming invoices that accounted for the largest contributions to Charter's overall programming costs were identified **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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174 "TWC-BHNsubs by service by tier and net rates.xlsx."

[END HIGHLY CONFIDENTIAL INFORMATION] A single invoice might include a single programming service or a bundle of cable networks or broadcast stations, depending on the contractual arrangement. The top 50 invoices include payments for: **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** national cable networks; **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** premium cable networks; **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** broadcast station owners; and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** regional sports networks. Together, the cable networks and broadcast stations covered by the top 50 invoices accounted for approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of the total programming expenses in **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

Step 2: For each programming service covered by a top-50 invoice, it was determined whether Charter pays for carriage **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END**

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HIGHLY CONFIDENTIAL INFORMATION] Charter **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] covered by Charter's top 50 invoices. No cost savings were imputed to these program services. Further, because **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION], it was determined that there was an insufficient basis for determining a cost-savings percentage to apply to the entire set of premium networks. To be conservative, I assumed that there would be no cost savings derived from any premium network.

Step 3: For each of the remaining programming services covered by a top-50 invoice, the programming cost rate differential for January 2015 was calculated. In some instances, as described below, additional program services were selected to supplement the review. If TWC's rate was lower than Charter's rate for a given programming service, the rate differential was calculated to be the difference between Charter's and TWC's rates. However, if TWC's rate was higher than Charter's rate, or if TWC did not have a rate into which Charter could step, then the rate differential was assumed to be zero.

Step 4: For each programming service, the cost savings for that service were calculated by multiplying the rate differential times the number of Charter subscribers for that service, as reported by **[BEGIN HIGHLY CONFIDENTIAL**

INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** These savings were summed for each category of service (*i.e.*, national cable network, broadcast stations, and regional sports networks) to calculate the total cost savings for the analyzed services for each programming service category.

Step 5: The cost-savings percentage within each programming services category was calculated by dividing the category-specific total cost savings (from Step 4) by category-specific total programming costs associated with the programs services analyzed, for January 2015. Category-specific total programming costs were calculated using: (a) the same Charter rates that were used to calculate rate differentials in Step 3, and (b) the subscriber numbers used in Step 4.[176]

Step 6: **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**, the total invoice amounts for July 2014 through June 2015 were calculated for each of three categories of programming: national cable networks, broadcast stations, and regional sports networks. Using information from SNL Kagan[177] and **[BEGIN HIGHLY**

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176 Actual payments made by Charter to these network and station owners are smaller than the calculated payments, because actual payments reflect certain discounts (*e.g.*, channel placement discounts), which my calculation ignores. Thus, my reliance on calculated payments for this purpose is conservative because I would have calculated higher percentage savings within each category had I used actual payments instead of calculated payments.

177 SNL Kagan, "TV Network Summary – Basic Cable," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=4&YTo=2019&YFrom=2012&FinOp=39905&Export=0&Printable=1&ksp=2e626ac9-acba-485f-9c6a-43ac662326ee&Excel=1, site visited September 3, 2015;

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[END HIGHLY CONFIDENTIAL INFORMATION],[178] each programming service included in **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** was classified as belonging to one of these three categories or as being a premium network. Where the necessary information was not available from these sources, staff under my supervision conducted additional research to determine the programming service's category. Any service that could not otherwise be identified was classified as "other."[179] These "other" services were not analyzed and, as such, do not contribute to the projected cost savings.

Step 7: Projected cost savings for each category of programming were calculated by multiplying the total annual invoice amount for each programming category (from

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SNL Kagan, "TV Network Summary – Broadcast Networks," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=2&YTo=2019&YFrom=2012&FinOp=39937&Export=0&Printable=1&ksp=2e626ac9-acba-485f-9c6a-43ac662326ee&Excel=1, site visited September 3, 2015;

SNL Kagan, "TV Network Summary – Premium," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=1&YTo=2019&YFrom=2012&FinOp=39905&Export=0&Printable=1&ksp=2e626ac9-acba-485f-9c6a-43ac662326ee&Excel=1, site visited September 3, 2015;

SNL Kagan, "TV Network Summary – RSN," *available at* https://www.snl.com/InteractiveX/tv_NetworksSummary.aspx?NST=3&YTo=2019&YFrom=2012&FinOp=39905&Export=0&Printable=1&ksp=2e626ac9-acba-485f-9c6a-43ac662326ee&Excel=1, site visited September 3, 2015.

178 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

179 Approximately one percent of Charter's programming costs fell into this category.

Step 6) times the cost-savings percentage calculated for the category (from Step 5).[180] Total projected annual cost savings are the sum of projected annual cost savings on national cable network, broadcast stations, and regional sports networks.

Step 8: Finally, monthly per-subscriber programming cost savings were calculated by dividing total projected annual cost savings by twelve times the number of Charter's average monthly video subscribers from July 2014 to June 2015.[181]

136. Cost savings for national cable networks and regional sports networks were generally calculated for each service based on the difference between **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] For broadcast stations, rates from owner-level invoices from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION], as these data provided the clearest indication of rates

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180 Note that by multiplying percent cost savings times the total invoice amount from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

181 I understand from Charter that **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** monthly subscriber count is a good proxy for Charter's total number of video subscribers in any given month. I use **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** subscriber count for each month from July 2014 through June 2015 to calculate Charter's average number of monthly video subscribers during that period.

by subscriber type (*i.e.,* In-Market, Significantly Viewed, and Out of Market). In each instance, rates from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

2. National Cable Networks

137. Of the national cable networks among Charter's top 50 invoices, Charter pays: (a) **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** networks individually, on a network-by-network basis; (b) **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION];[182] and (c) **[BEGIN HIGHLY CONFIDENTIAL INFORMATION**

[END HIGHLY CONFIDENTIAL INFORMATION][183] TWC **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]. TWC's **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] However, TWC's **[BEGIN HIGHLY**

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[182] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

[183] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION] To arrive at an apples-to-apples comparison, the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] To do so, it was necessary to utilize information on **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** that were not included in Charter's top 50 invoices.[184] Thus, in total, my review focused on the programming cost savings associated with **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** national cable networks, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** of which are among Charter's top 50 invoices, as identified in the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** These **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** networks accounted for about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's national cable network service

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[184] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

programming costs and about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's overall programming costs, as of January 2015.

138. Charter's contract expiration dates for these **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** national cable networks ranged from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Currently, Charter's contract for **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** is **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Among the non-expired contracts, TWC's contract expiration dates ranged from **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] The cost-savings calculations estimate the amount by which Charter's 2015 programming expenses would have fallen had these expenses been calculated according to the current terms of the TWC contracts.

139. Based on this information, programming cost savings were calculated using the steps described below.

140. **Identify Rate Differential for Each Network.** The programming rate differentials for each network were generally calculated as the difference between **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] (corroborated with other data sources), as these rates represent each company's expectations for the incremental rate that they expect to pay for that service. The calculation of the differentials was sometimes complicated by the presence of subscriber-volume or system-penetration discounts, special-event surcharges, or bundle discounts. In these cases, staff under my direction reviewed the specific terms described in the affiliation contracts and evaluated information from Charter to assess whether Charter would qualify for these discounts given its current offering. If Charter would not currently qualify for the discount, then the discount was not applied.

141. **Calculate Cost Savings.** For each of the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** national cable networks **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION], the rate differentials were multiplied by the number of subscribers for that network in January 2015 to calculate cost savings. I refer to the sum of these cost savings as the total cost savings for analyzed networks.

142. **Extrapolate Savings to All National Cable Networks.** The cost savings calculated for analyzed networks were then extrapolated to the full set of national cable networks offered by Charter through the following steps:

First, an overall savings rate was calculated by dividing Charter's total cost savings for analyzed networks by Charter's cost of licensing these analyzed networks (with the latter calculated using: (a) the same Charter rates that were used to calculate rate differentials in Step 3 above, and (b) the subscriber numbers used in Step 4 above).

Second, Charter's total annual national cable network programming costs were calculated using **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

Third, Charter's annual cost savings for the category national cable network was estimated by multiplying the overall savings rate by total annual national cable network programming cost.

3. Broadcast Stations

143. Because the stations covered by Charter's top 50 invoices accounted for only about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's total retransmission costs,[185] all other stations owned by the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** owners of the stations covered by Charter's top 50 invoices were also analyzed, as were stations owned by the next

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185 The stations included in Charter's top 50 invoices are: **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

[BEGIN HIGHLY CONFIDENTIAL INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** largest station owners and the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** The resulting sample contains over **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** broadcast stations, including all of the owned and operated stations associated with the Big Four networks (*i.e.*, ABC, CBS, FOX, NBC). These stations collectively accounted for **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's retransmission programming costs in January 2015.

144. Table 5 below displays the names of the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** broadcast station owners considered in the analysis, as well as the year in which Charter and TWC's retransmission consent agreements will expire. Charter has an **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] and TWC **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

Table 5

Retransmission Agreement Expiration Dates for Charter and TWC

[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION]

Sources: "Contractual Rates and Vol by Rate 09022015.xlsx."
"Programming Ratebook -6-19-15 (regions).xlsx."
Various TWC Retransmission Consent Agreements.

145. The following data were used to calculate the cost savings, including four of the five main data sources described above:

[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION]

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[186] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION]

[187] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION]

[188] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

TWC Rate Book:[189] These data report TWC's contractual per-subscriber rates, by owner, by station. The Rate Book also identifies the contract expiration data, and whether TWC pays that rate on in-market subscribers or all subscribers who receive the station from TWC.

TWC Retransmission Agreements and Amendments: In select instances, the carriage agreements between TWC and station owners were reviewed to corroborate and supplement the TWC Rate Book.

Communication with Charter and TWC: When the applicable rates were unclear from the above data sources, supplemental information was obtained through discussions with Charter and TWC personnel as appropriate.

SNL Kagan broadcast station database:[190] These data list the primary network affiliation and television market associated with U.S. broadcast stations. This information was used to identify the network and DMA associated with each of the stations carried by Charter.

146. Using this information, cost savings for broadcast stations were calculated using the steps described below.

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189 "Programming Ratebook -6-19-15 (regions).xlsx."

190 SNL Kagan, "TV Stations by Market and Affiliation," *available at* https://www.snl.com/interactivex/TVStationsByMarketAndAffiliation.aspx, site visited September 9, 2015.

147. **Determine Station Characteristics.** For each station owned by the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** selected broadcasters, the primary network and DMA were identified using the SNL Kagan data.[191] For those stations that were not identified in the SNL Kagan data, Charter supplied the missing network and DMA information.

148. **Identify the Rate(s) Charter Pays for Each Station. [BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

149. **Identify the Number of Charter Subscribers that Receive Each Station.** Charter's detailed invoice data were then used to identify the number of subscribers that received each

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191 SNL Kagan, "TV Stations by Market and Affiliation," *available at* https://www.snl.com/interactivex/TVStationsByMarketAndAffiliation.aspx, site visited September 9, 2015.

station in January 2015. The process is described below, depending upon the fee schedule that Charter negotiated with that programmer:

> If Charter pays a positive rate for IM subscribers and a zero rate for all other subscribers, then the detailed invoice data were used to identify the number of subscribers who were IM (*i.e.*, line items associated with a positive rate), and the number of subscribers who were either sig viewed or OOM (*i.e.*, line items associated with a zero rate).
>
> If Charter pays a positive rate for IM subscribers, a lower positive rate for either sig viewed or OOM subscribers,[192] then the number of subscribers associated with IM, sig viewed, and/or OOM subscribers were identified based on the different rates associated with the different line items.
>
> If Charter pays the same rate for all subscribers, then the detailed invoice data cannot be used to distinguish between IM, sig viewed, and OOM subscribers. This is the case for stations owned by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
>
> **[END HIGHLY CONFIDENTIAL INFORMATION]**
>
> For these stations, Charter supplied auxiliary data that report the number of IM and OOM subscribers, for each of the stations owned by those programmers.[193] This file

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192 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

193 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION]

was used to identify the number of subscribers who are IM and who are sig viewed or OOM.

150. **Identify the Rate(s) TWC Pays for Each Station.** Next, staff working under my direction identified and reviewed, with the assistance of TWC personnel, TWC's retransmission agreements with the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** selected broadcast station owners. In each instance, they reviewed the agreement and associated amendments to identify the rate(s) for January 2015 associated with stations carried by Charter. These rates were subsequently cross-checked with the rates reported in TWC's Rate Book. That source lists rates by owner, for individual stations, as well as whether TWC pays that rate for in-market subscribers only, or all subscribers.[194]

151. Some retransmission agreements explicitly list individual stations and associated rates, including stations that TWC does not carry as of January 2015. Where a Charter station was identified in a TWC contract, I was instructed to assume that Charter would be able to step into the terms and rates specified in the contract. When a Charter station was not identified in a TWC contract, it was determined with TWC's assistance whether the TWC contract with

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[194] To the extent that there was a discrepancy between the rates reported in the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** and observed in the retransmission agreement, the higher TWC rate was used to err on the side of being conservative.

the broadcaster could extend to that Charter station.[195] In some cases, it was determined that it would, and in other cases, it was conservatively assumed that there would be no cost savings.

152. **Calculate Cost Savings.** For those stations in which a TWC rate was identified, cost savings were calculated for IM subscribers as the difference between the IM rate paid by Charter and the IM rate paid by TWC, multiplied by the number of IM Charter subscribers. To the extent that either Charter or TWC pays a positive rate for either sig viewed or OOM subscribers, the cost savings associated with those sig viewed or OOM subscribers were calculated in a similar manner and added to the cost savings for IM subscribers.

153. **Extrapolate Savings to All Charter Retransmission Arrangements.** Cost savings were extrapolated to all stations offered by Charter by multiplying the retransmission cost savings percentage calculated in the previous step times Charter's total annual retransmission programming cost reported in the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

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[195] For example, it was determined that all **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** Charter Big Four **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** stations would be covered under TWC's **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** Big Four rate, even if the stations was acquired after the execution date of the TWC-**[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** agreement.

4. Regional Sports Networks

154. Of the top 50 Charter invoices identified for review, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** were regional sports networks. Of these, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** were owned by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** TWC and Charter both have global affiliation agreements with **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** that cover all **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the RSNs, along with other RSN and non-RSN programming.[197] To conduct a more complete analysis, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** additional RSNs were identified for review for the next top **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** RSN owners by their total invoice amount from the **[BEGIN HIGHLY**

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196 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

197 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

CONFIDENTIAL INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** These include **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** RSNs owned by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**,[198] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** RSNs owned by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**,[199] and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** RSN owned by the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**[200] Together, the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** RSNs selected for my review account for about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's RSN programming costs, and

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198 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

199 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

200 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** percent of Charter's overall programming costs, as of January 2015.

155. Table 6 below displays the names of the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** RSN owners (which collectively own the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** RSNs) considered in the analysis, as well as the dates on which Charter and TWC's affiliation agreements will expire.

Table 6

RSN Agreement Expiration Dates for Charter and TWC

[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION]

156. For a given RSN, programming rates can differ across zones or geographical area of service. To ensure an accurate comparison between the rates paid by Charter and by TWC, staff under my direction reviewed Charter and TWC's contractual agreements with RSN programmers to match Charter's service zones and areas to those of TWC. When contract agreements were not available to me, Charter or TWC rate or invoice data were used identify the geographical areas covered by each service zone.

157. The following data were used to calculate the cost savings, including the five main data sources described above:

[BEGIN HIGHLY CONFIDENTIAL INFORMATION]

[END HIGHLY CONFIDENTIAL INFORMATION]

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201 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION]

202 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION]

203 **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

TWC Rate Book:[204] These data summarize programming-service-level rate information as specified in TWC's contracts with programmers, including information regarding discounts for which TWC may qualify, such as penetration or channel placement discounts.

Charter and TWC Affiliation Agreements and Zone Rate Schedules:[205] The affiliation agreements provide details on the geographical areas covered by each service zone. If a per-subscriber rate for a particular zone or area was not reported in the TWC Rate Book, TWC's agreements with the RSN were reviewed to determine whether there were rates specified for that zone or service area in the agreements.

Communication with Charter and TWC: When the applicable rates were unclear from the above data sources, calculations were based on supplemental information gathered from communications with company personnel.

158. Using this information, cost savings for broadcast stations were calculated using the steps described below.

159. **Calculate Costs Savings for Analyzed RSNs.** Programming cost savings were calculated for a specific RSN zone or area by comparing the rates in **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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204 "Programming Ratebook -6-19-15 (regions).xlsx."

205 "RSN Zone Schedules.pdf."

[END HIGHLY CONFIDENTIAL INFORMATION] Total programming cost savings were then calculated by multiplying the per-subscriber cost savings estimate in the zone or area times the number of Charter subscribers who received that service in a given zone or area in January 2015.

160. Based on communication with TWC, it is my understanding that, when programming fees for a particular zone or area are not reported in TWC's Rate Book or contracts, TWC has not negotiated a rate for that zone or area. In these instances, it is assumed that Charter will continue to pay the rates specified in its own contracts for that zone or area after the proposed transactions are consummated. In other words, it is assumed there will be no savings.

161. **Extrapolate Savings to All RSNs.** The cost savings calculated for analyzed RSNs were then extrapolated to the full set of RSNs offered by Charter. This was done in the following steps:

First, overall savings for the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** analyzed RSNs were estimated by summing across the zone- and service-level total savings estimates. In cases where the net cost savings across all

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206 The majority of the rates in **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

RSNs owned by a particular owner were negative, it was assumed that New Charter would stay with its existing rate rather than adopt TWC's higher rate for all RSNs, and therefore, the savings rates for all RSNs for that owner were assumed to be zero.

Second, the programming cost savings percentage for the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** analyzed RSNs was calculated by dividing the overall cost savings calculated in the first step by Charter's cost of providing these **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** RSN services.

Third, Charter's annual programming cost for all RSNs was calculated, using **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

Fourth, Charter's annual programming cost savings for all RSNs was estimated by multiplying the RSN cost savings percentage for the analyzed RSNs calculated in the second step times the annual RSN programming cost for all RSNs calculated in the third step.

B. PASS-THROUGH RATES

162. In this section, I briefly review the relevant economics of pass-through. I consider the case of suppliers with constant marginal costs, which is a reasonable representation of MVPDs' costs of video programming.

1. Pass Through without Accounting for Rivals' Reactions

163. I begin by considering the pricing behavior of the single supplier for which costs have changed. Specifically, consider a profit-maximizing firm, *i*, that produces a single service at constant marginal cost c_i and faces the firm-specific demand curve $x_i(p_i)$, where p_i is the price firm *i* charges for its service. The firm's profits are thus $\{p_i - c_i\}x_i(p_i)$ minus any fixed costs of production. The first-order condition for profit-maximization is $\{p_i - c_i\}x_i'(p_i) + x_i(p_i) = 0$, where the prime denotes the first derivative. Totally differentiating this expression, substituting terms based on the fact that the first-order condition holds, and rearranging terms yields the pass-through rate

$$\frac{dp_i}{dc_i} = \frac{1}{2 - \frac{x_i''(p_i)x_i(p_i)}{x_i'(p_i)^2}},$$

where $x_i''(p_i)$ is the second derivative of the firm-specific demand curve. The sign of

$$-\frac{x_i''(p_i)x_i(p_i)}{x_i'(p_i)^2}$$

is the opposite of the sign of $x_i''(p_i)$. For a linear demand curve, $x_i''(p_i) = 0$ and, thus, the pass-through rate equals ½. For non-linear demand curves, the pass-through rate is greater than ½ when $x_i''(p_i) > 0$ and less than ½ when $x_i''(p_i) < 0$.

2. Multimarket Pass-Through Rates

164. I now assume that the firm sells its output in a total of *T* independent markets and sets a common price, p_i, in all of them. I also assume that the firm's marginal costs change by dc_i

in T_c of these markets, where $T_c \leq T$. Markets are indexed by k =1,2, …, T, and for convenience they are labeled so that the cost change occurs in markets k = 1, 2, …, T_c. Generalizing the earlier notation, firm i has a constant marginal cost of c_{ik} in market k, where it faces the firm-specific demand curve $x_{ik}(p_i)$. The firm's profits are thus $\sum_{k=1}^{T}\{p_i - c_{ik}\}x_{ik}(p_i)$ minus any fixed costs of production. The first-order condition for profit-maximization is $\sum_{k=1}^{T}\left(\{p_{ik} - c_{ik}\}x_{ik}'(p_i) + x_{ik}(p_i)\right) = 0$. Totally differentiating this expression and rearranging terms yields

$$\frac{dp_i}{dc_i} = \frac{\sum_{k=1}^{T_c} x_{ik}'(p_i)}{\sum_{k=1}^{T}\left(\{p_{ik} - c_{ik}\}x_{ik}''(p_i) + 2x_{ik}'(p_i)\right)},$$

where $x_{ik}''(p_i)$ is the second derivative of the firm-specific demand curve.

165. Define γ_{ik} as the rate at which firm i would pass through cost change dc_i if the change occurred solely in market k and the firm were free to set its price in market k independently of its prices in other markets. This expression can be solved using the approach applied to the single-market monopolist above. Doing so, and rearranging terms in a slightly different way, yields

$$\gamma_{ik} = \frac{x_{ik}'(p_i)}{\{p_{ik} - c_{ik}\}x_{ik}''(p_i) + 2x_{ik}'(p_i)}.$$

Hence, the pass-through rate when the firm charges the same price in every market and costs change by dc_i in the first T_c markets is

$$\frac{dp_i}{dc_i} = \frac{\sum_{k=1}^{T_c} \gamma_{ik}\left(\{p_{ik} - c_{ik}\}x_{ik}''(p_i) + 2x_{ik}'(p_i)\right)}{\sum_{k=1}^{T}\left(\{p_{ik} - c_{ik}\}x_{ik}''(p_i) + 2x_{ik}'(p_i)\right)}.$$

This expression is difficult to interpret for arbitrary demand functions.

166. When demand is linear, $x_{ik}''(p_i) = 0$, and this expression becomes

$$\frac{dp_i}{dc_i} = \frac{1}{2}\frac{\sum_{k=1}^{T_c} x_{ik}'(p_i)}{\sum_{k=1}^{T} x_{ik}'(p_i)}.$$

Under the assumption that the ratio of marginal sales to total sales (*i.e.*, $x_{ik}'(p_i)/x_{ik}(p_i)$) is roughly the same in any two markets,[207] the overall pass-through rate can be approximated by

$$\frac{dp_i}{dc_i} = \frac{1}{2}\frac{\sum_{k=1}^{T_c} x_{ik}(p_i)}{\sum_{k=1}^{T} x_{ik}(p_i)},$$

which equals ½ times the share of firm *i*'s total sales that are made in markets 1 through T_c. It follows that total savings passed through to consumers are

$$\sum_{k=1}^{T} x_{ik}(p_i)dp_i = \frac{1}{2}\sum_{k=1}^{T_c} x_{ik}(p_i)dc_i.$$

In words, the firm passes one half of its aggregate cost savings through to consumers.

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207 This assumption will hold, for example, when consumer tastes are distributed similarly in different markets but those markets have different numbers of potential customers in them.

3. Logit Demand and Bertrand Price Competition

167. Assume that there are M consumers and N firms in a differentiated-products market, with each firm producing a single product. Further, suppose that consumer m's utility from product i is a weighted function of the price (p_i) and other characteristics (X_i) of the product, plus an unobserved error term (ε_{mi}):

$$u_{mi} = -\alpha p_i + X_i\beta + \varepsilon_{mi}$$

where the error term follows the Type I extreme value distribution. Consumers may opt not to purchase any of the products in the market, and instead choose the "outside good." Utility from the outside good, $i = 0$, is normalized to zero: $u_{m0} = 0$.

The quantity share of each product i is given by:

$$s_i = \frac{\exp(-\alpha p_i + X_i\beta)}{1 + \sum_{k=1}^{N} \exp(-\alpha p_k + X_k\beta)}$$

Differentiation with respect to price yields:

$$\frac{\partial s_i}{\partial p_i} = -\alpha s_i(1 - s_i) \text{ and } \frac{\partial s_i}{\partial p_j} = \alpha s_i s_j \text{ for } j \neq i$$

168. Assume that firms engage in Bertrand price competition and that they have a constant marginal cost of production. Each firm takes the prices of all other firms as given, and chooses its own price to maximize its profits:

$$\pi_i = (p_i - c_i)s_i M.$$

The first-order conditions for market equilibrium are:

$$\frac{\partial \pi_i}{\partial p_i} = \left((p_i - c_i)\frac{\partial s_i}{\partial p_i} + s_i \right) M = 0$$

or

$$(p_i - c_i) - \frac{1}{\alpha(1-s_i)} = 0 .$$

169. Verboven and van Dijk (2009) show that when a single firm *i* experiences a change in its costs, the pass-through rates are given by:[208]

$$\tau_{ii} = \frac{\mathrm{d}p_i}{\mathrm{d}c_i} = \frac{s_i}{(1-s_i)^2 + s_i} S_i + \frac{(1-s_i)^2}{(1-s_i)^2 + s_i}$$

$$\tau_{ij} = \frac{\mathrm{d}p_j}{\mathrm{d}c_i} = \frac{s_j}{(1-s_j)^2 + s_j} S_i \text{ for } j \neq i ,$$

where

$$S_i = \frac{s_i(1-s_i)^2}{(1-s_i)^2 + s_i} \Big/ \left(s_0 + \sum_{k=1}^{N} \frac{s_k(1-s_k)^2}{(1-s_k)^2 + s_k} \right) .$$

This formula was applied to data to obtain the figures reported in the text.

4. Competition can reduce pass through.

170. Consider a homogenous good, Cournot oligopoly with inverse demand curve $P(X)$.[209] As is well known, the equilibrium quantity can be determined from the following first-order condition:

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208 Frank Verboven and Theon Van Dijk (2009), "Cartel Damages Claims and the Passing-On Defense," *The Journal of Industrial Economics*, **57**(3): 457-491 at 488.

209 I consider a homogenous product market in this example because it is difficult to make comparisons across market structures with differentiated products due to the shifts in firm-specific demand curves as the set of substitute products changes.

$$nP(X) + P'(X)X = C,$$

C is the sum of the marginal costs of the suppliers that are active in equilibrium. Totally differentiating this expression, rearranging terms yields

$$\frac{dX}{dC} = \frac{1}{\{n+1\}P'(X) + P''(X)X}$$

It follows that

$$\frac{dP}{dc_i} = \frac{1}{\{n+1\} + \frac{P''(X)X}{P'(X)}},$$

where

$$\frac{P''(X)X}{P'(X)}$$

is the elasticity of the slope of demand. For linear demand, or any other demand curve for which the elasticity of the slope is constant, the pass-through rate falls as the number of active suppliers rises.

EXHIBIT C

REDACTED - FOR PUBLIC INSPECTION

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	
Application of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership For Consent to the Transfer of Control of Licenses and Authorizations	MB Docket No. 15-149

Analysis of Video Programming Foreclosure Issues Involving Dr. John Malone and Advance/Newhouse Partnership

Steven C. Salop

Robert Stillman

Jarrod R. Welch

Serge Moresi

November 2, 2015

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. We are: Steven C. Salop, Professor of Economics and Law at the Georgetown University Law Center, and Senior Consultant at Charles River Associates; Robert Stillman, Vice President, Charles River Associates; Jarrod Welch, Senior Associate, Charles River Associates; and Serge Moresi, Vice President and Director of Competition Modeling, Charles River Associates. Professor Salop has written a number of articles on the law and economics of vertical foreclosure, vertical mergers and partial ownership interests. Dr. Stillman has worked on previous pay TV matters, including issues involved with News Corporation's proposed increase in its ownership interest in BSkyB in Europe and the recent AT&T/DIRECTV merger. Dr. Welch also consulted on the recent AT&T/DIRECTV merger. Dr. Moresi is the author (with Professor Salop) of a recent article on input foreclosure, as well as articles on upward pricing pressure and the Sirius/XM merger. Some or all of us have been involved in previous U.S. telecommunications merger matters, including the AT&T/DIRECTV merger, the proposed AT&T/T-Mobile merger, the Sirius/XM merger, the Sprint/Nextel merger, News Corporation's acquisition of a partial ownership in DIRECTV, the AOL/Time Warner merger, and the proposed Primestar joint venture, as well as various other telecommunications competition issues analyzed by the Commission and by the DOJ and FTC. Our CVs are attached in Appendix D.

2. We have been asked by Charter to analyze the commenters' concerns about vertical foreclosure and its impact on affiliate fees in connection with the programming interests held by Dr. John Malone and Advance/Newhouse Partnership ("A/N") resulting from the creation of New Charter from the combination of existing (or "Old") Charter, Time Warner Cable ("TWC"), and Bright House Network ("BHN"). This Declaration presents our analysis of these issues.

3. Dr. Malone and A/N are significant shareholders in Discovery Communications, Inc. ("DCI"; "Discovery"), which is the owner of The Discovery Channel, TLC, Animal Planet, and other programming. Dr. Malone also has an equity interest in Starz. In addition, Dr. Malone and A/N will together have attributable equity interests in New Charter after the transaction is consummated. These "partial ownership interests" theoretically could raise input and customer foreclosure concerns, if one were to assume that Dr. John Malone and A/N could

instruct DCI or New Charter to act in their own narrow interests, rather than the interests of other shareholders who hold interests in only one of the firms. While such actions would be a breach of their fiduciary duties and would violate the law, we nonetheless consider the incentives of Dr. Malone and A/N to engage in these foreclosure strategies as if they were legally unconstrained and assuming that they could resolve all conflicts between one another.

4. Vertical mergers involving MVPDs sometimes can lead to foreclosure concerns involving video programming. There are two general types of foreclosure concerns that have been suggested by commenters, input foreclosure (e.g., withholding Discovery or Starz programming from MVPD rivals) and customer foreclosure (e.g., New Charter's refusal to carry an unaffiliated program service that competes with Discovery programming or Starz). The potential for foreclosure can also affect the affiliate fees negotiated between video content providers and MVPDs.

5. In previous transactions, the Federal Communications Commission ("FCC"; "Commission") has analyzed the possibility that a merger might lead to input foreclosure concerns involving cable programming networks. In the Hughes/News Corporation transaction in which News Corporation acquired partial ownership interests in DIRECTV ("DTV"), for example, the FCC analyzed the possibility that the combination of News Corporation and DTV might have the incentive to engage in an input foreclosure strategy against MVPDs that competed with DTV.[1] The FCC analyzed whether DTV might gain sufficient subscribers to offset the reduction in profits suffered by News Corporation from having reduced carriage of its programming, if Fox programming were withheld from DTV's rivals.

6. Input foreclosure concerns also were analyzed in the Comcast/NBCU transaction. The FCC analyzed whether the merged firm might have the incentive to withhold the NBC local broadcast stations, NBC's suite of cable programming services or the Comcast RSNs from rival MVPDs, in order to increase the number of Comcast subscribers.[2] In the AT&T/DTV

[1] *General Motors Corporation, Transferors, and the News Corporation Limited, Transferee*, Memorandum Opinion and Order, MB Docket No. 03-124 (2003) ("News Corp./Hughes Order") at ¶¶78-79.

[2] See generally the discussion in *Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc., for Consent to Assign Licenses and Transfer Control of*

transaction, the FCC similarly analyzed whether the merged firm might have the incentive to withhold programming from rival MVPDs, but concluded that there were no potential merger-specific effects. There was only one area (Houston) where the parties owned a RSN and where they both offered MVPD service. The FCC concluded that the parties were already in a joint venture prior to the merger and so the merger would be unlikely to have any incremental effect on foreclosure incentives.[3]

7. In the News/Hughes and the Comcast/NBCU transactions, the FCC analyzed the likely profitability of permanent foreclosure. Permanent foreclosure refers to a long-term (i.e., permanent) policy of withholding of programming owned by a vertically integrated MVPD from one or more rival MVPDs. For some content, the FCC also analyzed the likely profitability of temporary foreclosure. Temporary foreclosure refers to a short-term withholding of the programming. In these previous transactions, the FCC analyzed temporary foreclosure strategies of varying lengths. In the News/Hughes proceeding, the Commission used a one-month period of withholding.[4] In the Comcast/NBCU proceeding, the FCC used a six-month period of temporary foreclosure to correspond to the data it used for its estimates of the actual subscriber departure rate from rival MVPDs in the event of any withholding of the NBC owned-and-operated stations from those rivals.[5]

8. In some situations, the FCC also has analyzed the likely impact of the mergers on the affiliate fees charged to rival MVPDs. For example, in Comcast/NBCU, the FCC analyzed the impact of the merger on the equilibrium affiliate fees for the NBC-owned suite of cable networks (including MSNBC, Bravo, and USA Network) that would be owned by the merged firm.[6] In carrying out this analysis, the FCC applied the Nash Bargaining

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Licenses, Memorandum Option and Order, MB Docket No. 10-56 (2011) ("Comcast/NBCU Order"), Appendix B.

[3] *Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations,* Memorandum Opinion and Order, MB Docket No. 10-56 (2015) ("AT&T/DTV Order") at ¶167.

[4] News Corp./Hughes Order at ¶157.

[5] Comcast/NBCU Order, Appendix B at ¶28.

[6] *Id.* at ¶46 and note 41.

Equilibrium ("NBE") model to predict how the merger would affect the parties' profits if a mutually beneficial program carriage agreement were not achieved, and how the relative impacts on the two sides would lead to a change in the equilibrium affiliate fee.[7] The NBE model was also used to estimate the likely departure rate of an MVPD's subscribers if the MVPD were foreclosed from certain programming, either as a result of an inability to reach a programming agreement or as a result of a foreclosure strategy by the vertically integrated MVPD.[8]

9. In some of these previous transactions, the FCC has analyzed customer foreclosure concerns. For example, in the Comcast/NBCU transaction, the Commission analyzed the possibility that the merged firm might refuse to carry certain programming that competed with programming that it owned.[9] In its analysis, the FCC focused on four services (Style, G4, Versus and Golf) in which Comcast had a controlling interest.[10] The concern was that the foreclosure of rival networks might increase the profits of these services owned by Comcast/NBCU, either on Comcast's own systems, or nationally by destroying the viability of the foreclosed programming, which could in turn allow the programming owned by the merged firm to gain additional carriage or charge higher fees.

10. Input and customer foreclosure concerns related to the interests of Dr. Malone and A/N have been raised by commenters in this matter, principally Writers Guild of America West ("WGAW") and the American Cable Association ("ACA"). In this Declaration, we respond to those concerns with our analysis of the profitability of these various foreclosure strategies. We show that the available evidence does not support claims that these various foreclosure concerns are significant or that the merger would lead to significant increases in affiliate fees.

11. We have analyzed permanent input foreclosure. We specifically have analyzed whether Dr. Malone and A/N could increase their net profits as shareholders in both New Charter and Discovery, if they hypothetically jointly instructed DCI not to supply Discovery

[7] *Id.* at ¶¶36-39.

[8] *Id.* at ¶¶41-42.

[9] *Id.* at ¶65.

[10] *Id.* at ¶68.

programming to MVPDs that compete with New Charter. We have examined a strategy of nationwide foreclosure and also a strategy of foreclosure targeted at Nielsen Designated Marketing Areas ("DMAs") in which New Charter will operate and account for a large share of total cable subscribers. Based on this analysis, we have concluded that a strategy of permanent input foreclosure would be unlikely to profit Dr. Malone and A/N, even assuming that they were to have the ability to instruct DCI to do so. We similarly have concluded that input foreclosure of Starz to competing MVPDs likely would be unprofitable.

12. We also have considered the possibility of temporary input foreclosure. However, we have concluded that a reliable empirical analysis of the profitability of temporary foreclosure is not possible here, given the lack of available evidence. Therefore, we have not carried out empirical analysis of a possible temporary foreclosure strategy.

13. We also have analyzed the possible impact of the merger on the equilibrium affiliate fee that DCI would receive for Discovery programming, if Dr. Malone and A/N hypothetically could ensure that the negotiations would be focused on their narrow interests. The estimated increase in the fee is only about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Based on this analysis, we have concluded that a significant increase in equilibrium affiliate fees is unlikely.

14. Finally, we have analyzed customer foreclosure. We specifically have analyzed the possible impact if Dr. Malone and A/N hypothetically jointly instructed New Charter to refuse to carry certain content that competes with Discovery content as a way to increase their net profits as shareholders in both New Charter and Discovery. Based on this analysis, we have concluded that such a customer foreclosure strategy is unlikely to be a profitable strategy for Dr. Malone and A/N, even assuming that they were to have the ability to instruct DCI to do so. We similarly have concluded that a failure to carry competitors to Starz would be unprofitable.

15. Charter has explained why the transaction will lead to a variety of procompetitive efficiency benefits.[11] These benefits are discussed by others.[12] It has been suggested by ACA that

[11] Charter/TWC Public Interest Statement, Section IV.

those benefits could lead to increased incentives to foreclose and could put further upward pressure on affiliate fees.[13] We find that the likely impact on affiliate fees would be trivial. Moreover, cognizable efficiency benefits also would lead to downward (quality-adjusted) pricing pressure on New Charter's monthly subscription prices. The competitive benefits of those lower prices and any increased competition from them would have to be balanced against any increases in the equilibrium affiliate fees for DCI programming. There is no reason to think that these efficiencies on balance would lead to consumer harm.

16. We have organized the remainder of this report as follows. In Section II, we analyze the input foreclosure issues and the possible impact of the transaction on the equilibrium affiliate fee. In Section III, we analyze the customer foreclosure issues. Section IV concludes. Appendices A-C provide discussion of the data and technical economic details. Appendix D contains our CVs.

II. INPUT FORECLOSURE CONCERNS

A. Introduction

17. In this section, we analyze potential input foreclosure concerns that have been raised because Dr. Malone and A/N will have equity interests in New Charter and DCI. Some of the commenters note in addition that Dr. Malone will also have an equity interest in Starz. Even if Dr. Malone and A/N lacked any legal constraints over their ability to engage in the input foreclosure strategies suggested by certain commenters (which the applicants contest), we conclude that these equity interests of Dr. Malone and A/N would not likely lead to any harms from input foreclosure.

18. WGAW has suggested that the transaction will lead Dr. Malone, either individually or jointly with A/N, to cause DCI to withhold Discovery Channel (and possibly other DCI programming) from MVPDs that compete with New Charter, on either a permanent or

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[12] Reply Declaration of Professor Michael Katz, Charter-TWC-BHN (November 2, 2015) ("Katz Reply Declaration"): Efficiencies Analysis, Sections II.A-B; Statement of Dr. Fiona Scott Morton re the mergers of Charter, TWC, and BHN (November 2, 2015) ("Scott Morton Statement"), Sections IV and IX.

[13] ACA Comments at 12.

temporary basis.[14] WGAW also suggests that Starz might also be instructed by Dr. Malone to participate in an input foreclosure strategy.[15] The alleged goal of this strategy would be to induce subscribers at rival MVPDs to switch to New Charter in order to be able to continue watching Discovery or Starz content.[16] WGAW notes that the input foreclosure also might involve withholding Discovery and/or Starz content from OVDs.[17]

19. ACA, by contrast, does not express concern about permanent or temporary foreclosure. The ACA suggests instead that the proposed merger will result in MVPDs that compete with New Charter having to pay higher prices for the right to offer content from Discovery and Starz. The ACA further suggests that these higher affiliate fees would force New Charter's rivals to raise their prices to subscribers, resulting in consumer switching and an increase in New Charter's subscribership and/or subscription prices.[18]

20. AT&T and Hawaiian Telecom have also suggested that the interests of Dr. Malone and A/N in Discovery Communications are relevant in the analysis of the proposed merger but neither has explained with any specificity how these equity interests might result in harm to

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[14] WGAW Comments at 12-13.

[15] See e.g. WGAW Comments at 11-12.

[16] See e.g. WGAW Comments at 12 ("New Charter may engage in anticompetitive strategies such as temporary or permanent foreclosure of access to affiliated programming or limiting on-demand licensing of affiliated programming in order to increase the attractiveness of New Charter's service compared to direct competitors.").

[17] See e.g. WGAW Comments at 15, 25. The WGAW suggests that Dr. Malone and A/N might want to limit OVD access to Discovery and (in the case of Dr. Malone) Starz content as part of, and as a complement to, a broader strategy of limiting the competition that New Charter will face from OVDs. For an extended discussion of why limiting OVD access would not be profitable, see generally Scott Morton Statement, Section VI.

[18] See e.g. ACA Comments at 3 ("Specifically, the transaction will increase the incentive and ability of cable programmers affiliated with New Charter, such as Discovery and Starz, to impose higher prices and more onerous terms and conditions on MVPDs whose service areas overlap with those of TWC and BHN, and will increase their incentive to raise prices in areas that overlap with Charter today.") The ACA's emphasis on higher prices "in areas that overlap with Charter today" presumably is meant to suggest that higher prices for Discovery and Starz programming will result in consumers switching to New Charter.

competition.[19] We therefore focus in this response on the comments from WGAW and ACA.

21. WGAW suggests that Starz, as well as Discovery, might be part of an input foreclosure strategy, and ACA similarly suggests that the proposed merger might lead to higher prices for Starz, as well as Discovery content. However, the emphasis in both the WGAW and ACA comments is on Discovery. We explain at the end of our analysis why the analysis of Discovery is likely to apply equally to Starz.

Dr. Malone and A/N do not own outright either DCI or New Charter. However, both have partial equity interests and governance roles in the two entities. Dr. Malone and Steven Miron (the CEO of A/N) both sit on the board of DCI. Dr. Malone has a 28.7% voting interest and A/N has 24.9%, for a combined DCI voting interest of 53.6%. They also have significant financial interests in DCI.[20] Dr. Malone has a 4.8% equity interest and A/N has 31.0% of the equity, for a combined equity share of 35.8%. Their equity interests in New

[19] AT&T asserts that cable companies "have an incentive to share programming with each other at reasonable rates, while using that same programming to raise their rivals' costs." AT&T Comments at 2. AT&T seems to be suggesting that, because of Dr. Malone's interests in New Charter and various programming entities, the proposed merger will increase the competitive harm resulting from this alleged coordination. To the extent AT&T is concerned about the possibility that the merger will result in higher prices for Discovery programming, this concern is the same as ACA's and will be addressed below. To the extent AT&T is concerned about coordination, this concern is addressed by Professor Scott Morton assessing the impact of the transaction on the likelihood of increased coordinated interaction. See Scott Morton Statement, Section VIII. Hawaiian Telecom is less specific, noting simply that it is important for it to have access to Discovery programming at reasonable prices and noting that the FCC has indicated concerns in the past about the possibility that vertically integrated MVPDs might have an incentive to set rates for affiliated programming that discriminate against competing MVPDs. Hawaiian Telecom Comments at 14-15.

[20] While Advance/Newhouse Partnership itself has no direct ownership in DCI, Advance/Newhouse Programming Partnership ("ANPP"), an entity affiliated with A/N, holds a minority ownership interest in DCI. For purposes of this analysis, we have attributed the economic interests of A/N and ANPP to each other based on the commonality of their corporate parents and refer to the interests of both as being held by A/N for simplicity.

Charter are lower. Dr. Malone will have an attributable interest of 1.7% in the New Charter equity.[21] A/N will own 13.0%, for a combined total of 14.7%.[22]

22. In a separate filing, New Charter's attorneys have explained why conduct by Dr. Malone and A/N to cause DCI to take actions to benefit New Charter that are not in the independent self-interest of DCI would violate the fiduciary obligations they have as DCI board members. Dr. Malone currently has a 2.24% attributable equity interest in Charter, while A/N has 100% of the economic interest in BHN.[23] The commenters have provided no evidence that either Dr. Malone or A/N has taken such actions in the past to benefit Charter or BHN, two MVPDs in which they already have equity interests.

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[21] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] See Response of Charter to FCC Information and Data Request No. 16(a).

[22] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**
[END HIGHLY CONFIDENTIAL INFORMATION] Charter Response to Information and Data Request No. 15(ii). A/N has no interest in Starz.

[23] Response of Charter to FCC Information and Data Request No. 15(ii). **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION] See, for example, BHN's response to Specification 18 of the Commission's Request for Information in MB Docket No. 14-57 to BHN, p. 30 (filed September 11, 2014) **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

[END HIGHLY CONFIDENTIAL INFORMATION]

23. We nonetheless have analyzed the possible economic incentives of Dr. Malone and A/N to jointly instruct DCI to take actions that are not in DCI's direct best interests, for the purpose of benefitting New Charter, under the hypothetical assumptions that they have the unconstrained legal ability to instruct DCI to take such actions and that they would resolve conflicts between themselves with side payments. In particular, we have examined whether they would have joint financial incentives to instruct DCI to forgo programming deals (either nationally or in certain local areas) with MVPDs that compete with New Charter,. Our analysis indicates that they are unlikely to have any such incentives. In addition, we have analyzed the likely effects of the proposed merger on future affiliate fees for Discovery programming. We show that any such effects are likely to be minimal. Therefore, New Charter would lack the incentive to raise its monthly subscription fees.

24. In what follows, Section B sets out our basic incentives analysis of input foreclosure. Section C then presents our empirical analysis and concludes that the evidence does not support WGAW's claim that the merger is likely to result in permanent foreclosure of DCI content from MVPDs that compete with New Charter. Section D follows with a discussion of temporary foreclosure. Section E presents our analysis of the potential impact on affiliate fees for DCI content, and concludes that concerns of significant price increases are not warranted. Section F briefly discusses input foreclosure concerns relating to Starz. Section G concludes.

B. Basic Incentives Analysis for Input Foreclosure

25. The incentives analysis underlying the input foreclosure concerns of the commenters is closely related to the analysis of the potential competitive effects when a firm has a partial equity interest in a competitor.[24] If a firm-A owns a financial interest in a firm-B, firm-A might have the incentive to take certain actions that are not profit-maximizing in isolation for firm-A in order to increase the returns it earns from its investment in firm-B. For example, if the two firms are competitors, these actions could involve raising the price or reducing the output of firm-A.

[24] See e.g. Daniel P. O'Brien & Steven C. Salop, *Competitive Effects of Partial Ownership: Financial Interest and Corporate Control,* 67 ANTITRUST L.J. 559 (2000).

26. In the case of a vertical merger, where firm-A provides critical inputs to the competitors of firm-B, firm-A might have the incentive to raise its prices or refuse to sell its inputs to those competitors in order raise their costs or reduce their product quality. If these effects occur and the competitors lack equally cost-efficient alternatives, the disadvantages faced by those competitors may permit firm-B to gain "power over price."[25] Firm-B may choose to raise its output price, increase its market share, or some combination of the two, and thereby increase its profits. If the increase in profits earned by merging firm-B exceeds the decrease in profits suffered by merging firm-A, then the merged firm would have the incentive to carry out this exclusionary conduct.[26]

27. The analysis is similar when there is only partial ownership of firm-A. Suppose that a large investor in firm-A is also a large investor in firm-B, and suppose that it is assumed that the large investor has the legal and practical ability to control the actions of firm-A. Under these circumstances, the investor might have the incentive to instruct firm-A to raise its prices or refuse to sell inputs to the competitors of firm-B in order to disadvantage those firms, in order to permit firm-B to gain the power to raise its output price and/or increase its market share. The large investor would have this incentive if the investor's share of the increased profits earned by firm-B exceeds the investor's share of the decrease in profits suffered by firm-A.

28. This partial ownership analysis can be applied to the alleged incentives of Dr. Malone and A/N to withhold Discovery content from MVPDs that compete with New Charter (principally AT&T/DTV, DISH, and Verizon).[27] We will assume hypothetically that Dr.

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[25] Steven C. Salop and Thomas G. Krattenmaker, *Anticompetitive Exclusion: Raising Rivals' Costs to Gain Power Over Price*, 96 ANTITRUST L.J. 209 (1986).

[26] For the basic framework, see Michael H. Riordan and Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach*, 63 ANTITRUST L.J. 943 (1995).

[27] This type of analysis also can be applied to their possible incentives also to attempt to inhibit the subscribers of rival MVPDs from obtaining access to Discovery content over the internet from OVDs as part of the foreclosure strategy. Discovery content is currently available over the internet through Discovery.com, Amazon Instant Video, iTunes, Google Play and Hulu. While DCI could target input foreclosure at MVPDs that compete with New Charter (AT&T/DTV, DISH and Verizon) by simply refusing to supply these MVPDs, it would be more difficult to engage in a targeted strategy designed to inhibit subscribers of these rival MVPDs (and only

Malone and A/N act in concert, rather than individually, and redistribute the gains or losses through appropriate side-payments to eliminate any divergent interests that they might have.

29. To understand the forces driving the possible incentives of Dr. Malone and A/N, suppose that DCI were to consider a foreclosure strategy of withholding its video programming from all the MVPDs that compete with New Charter (i.e., all DBS and Telco MVPDs). There are two conflicting effects on the profits of Dr. Malone and A/N.

30. On the one hand, this hypothetical foreclosure strategy would reduce DCI's profits by some amount, and Dr. Malone and A/N would share a fraction of these profit reductions earned as a result of their 35.8% combined equity interest in DCI. The foreclosure would reduce DCI's profits in two ways. First, it would reduce DCI's affiliate revenues from the foreclosed MVPDs. Second, it would reduce DCI's advertising revenues. These revenue reductions would be mitigated to the extent that the subscribers of the foreclosed MVPD responded to the loss in access to the Discovery programming by switching to New Charter or another cable MVPD that continued to offer Discovery programming. Subscriber switching of this type would increase the affiliate revenues collected by Discovery from non-foreclosed cable MVPDs. Subscriber switching of this type would also mitigate the negative impact of the foreclosure on Discovery's viewership and advertising revenues.[28]

31. On the other hand, the hypothetical foreclosure strategy also would tend to raise New Charter's profits. If some of the subscribers of these foreclosed MVPDs choose to subscribe to New Charter cable systems, this would increase the subscriber revenues and profits of

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these subscribers) from obtaining access to Discovery content through OVDs. DCI in theory could license to OVDs on the condition that they block access to Discovery content from broadband users served by AT&T or Verizon (and the restriction in theory could apply only to IP addresses in specific areas). But a blockade of this type likely would be imperfect. Such a blockade also would block cord-cutters receiving only broadband service from these rival MVPDs that DCI might not want to block. In addition, to the extent DBS subscribers (DISH and DTV) receive broadband service from New Charter, the hypothesized blockade would not prevent these DISH and DTV subscribers from turning to Discovery content over the internet – assuming that Dr. Malone would not want New Charter to prevent its own broadband users from having access to Discovery content from OVDs.

[28] The revenue reductions also would be mitigated to the extent that subscribers of the foreclosed MVPDs would be able to respond to the loss in access to Discovery programming by viewing Discovery content through OVDs that pay viewership fees to DCI.

New Charter. Dr. Malone and A/N would obtain a share of those additional profits from their combined 14.7% equity interest in New Charter. The incremental profits to New Charter and these investors from this hypothetical foreclosure strategy would depend on the number of MVPD subscribers that care enough about Discovery programming to switch from their current (but now foreclosed) MVPD to New Charter in order to continue to have MVPD access to Discovery programming.[29] New Charter's benefit would equal the number of subscribers of the foreclosed MVPD who divert to New Charter, multiplied by the average gross margin that New Charter would realize on the service purchased by these subscribers.[30] The benefits to Dr. Malone and A/N would be the benefit to New Charter, multiplied by their 14.7% combined equity interest in New Charter.

32. Whether the profits of Dr. Malone and A/N would rise or fall depends on the balance of these two conflicting effects.

C. Empirical Analysis of Permanent Foreclosure

33. The MVPDs that compete with New Charter for subscribers are principally AT&T/DTV, DISH, and Verizon.[31] We examine the likely profitability to Dr. Malone and A/N of two potential foreclosure strategies against those competing MVPDs, (a) foreclosure of Discovery programming on a nationwide basis, and (b) foreclosure targeted only at the DMAs where New Charter has a large share of total MVPD subscribers. In each scenario, we assume that the foreclosure takes place simultaneously against all of the competing MVPDs, the strategy that would produce the highest benefits for New Charter. We find that

[29] If OVD access is not inhibited, the ability of DBS and Telco subscribers to access certain Discovery programming through OVDs would tend to limit those MVPDs' subscriber losses, which would reduce the benefits to New Charter.

[30] We hold subscription prices constant for this exercise.

[31] There are some small Telco MVPDs besides AT&T and Verizon that collectively account for approximately one million subscribers nationally. Throughout this discussion we will sometimes refer to the foreclosed firms as AT&T/DTV, DISH and Verizon, but our empirical analysis is based on foreclosure of all DBS and Telco MVPDs. Note also that Verizon has sold its landline operations (including its MVPD operations) in several states to Frontier Communications. For expositional convenience, we will continue to refer to "Verizon."

neither of these hypothetical foreclosure strategies (nationwide or targeted) is likely to be profitable.

34. Foreclosure targeted at certain areas in New Charter's footprint is more likely to be profitable than nationwide foreclosure. A nationwide foreclosure strategy would cause Discovery to lose affiliate and advertising revenues on a nationwide basis. By contrast, New Charter potentially would gain subscribers only in those areas in the country where New Charter operates. A foreclosure strategy targeted at areas served by New Charter would be less costly to Discovery (and hence to Dr. Malone and A/N), while producing the same gains to New Charter. We find, however, that a hypothetical targeted foreclosure strategy also is unlikely to be profitable, even if the foreclosure were limited solely to the DMAs in which New Charter operates and in which New Charter has its largest share of total subscribers. Even with a targeted foreclosure strategy of this type, it is unlikely that enough subscribers would depart from their current MVPD and switch to New Charter for the strategy to be profitable to Dr. Malone and A/N.

35. To analyze these effects in a simple static framework with constant prices, we first estimate the expected fraction of a foreclosed rival MVPD's subscribers that would leave that MVPD if it was foreclosed ("estimated actual departure rate"), while other MVPDs were not. We next estimate the departure rate that would be necessary to make a foreclosure strategy profitable ("critical departure rate"). We then examine whether the estimated actual departure rate is larger or smaller than this critical departure rate. In this framework, the foreclosure strategy would be profitable only if the estimated actual departure rate were greater than the critical departure rate.

1. The departure rate that could be expected if rival MVPDs hypothetically were unable to offer Discovery programming

36. While certain Discovery programming is popular, Discovery programming is not unique. There are numerous substitutes for the broad array of programming carried on The Discovery Channel and the other DCI channels. These include programming on the History Channel, National Geographic Channel, PBS stations, Food Network, Smithsonian Channel, Travel Channel, and HGTV, among others. DCI's children's programming competes with programming on the Disney Channel, Nickelodeon, Cartoon Network, and others.

Substitutes for the Oprah Winfrey Network ("OWN"), which is 50%-owned by DCI, include Lifetime and Oxygen, as well as programming on the major over-the-air networks. The existence of various alternatives to the type of programming offered by Discovery will tend to reduce the extent to which subscribers would switch to a non-foreclosed MVPD, if their current MVPD hypothetically were unable to offer Discovery programming.

37. In addition, if Discovery content were to remain available through OVDs, this factor would limit the expected amount of subscriber switching to non-foreclosed MVPDs. If Discovery content were still available through OVDs, subscribers of foreclosed MVPDs could continue to watch Discovery content over the internet without having to switch MVPD providers.[32] Episodes of many current and past Discovery programs are available on Amazon Instant Video,[33] Hulu,[34] iTunes[35] and Google Play.[36] In addition, selected episodes are available for free from Discovery.com.[37] These internet options may be sufficient for many viewers of Discovery programming.

38. If MVPDs expect to lose a significant number of subscribers if they were foreclosed from Discovery programming, this should increase the maximum amount that they were willing to pay for the programming, which in turn should have an impact on the affiliate fees that are negotiated with DCI. So, if the departure rate were expected to be very high, one would expect high affiliate fees.

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[32] For the availability of Discovery programs on the leading OVDs as listed on sidreel.com, http://www.sidereel.com/_television/genres/discovery (viewed October 23, 2015).

[33] For the availability of Discovery programs on Amazon Instant Video, see generally https://www.amazon.com/b?_encoding=UTF8&node=9005936011 (viewed October 25, 2015).

[34] For the availability of Discovery programs on Hulu, see generally http://www.hulu.com/companies/discovery-channel (viewed October 24, 2015).

[35] For the availability of Discovery programs on iTunes, see generally https://itunes.apple.com/us/tv-season/best-of-discovery-channel/id480186299 (viewed October 25, 2015).

[36] For the availability of Discovery programs available on Google Play, see generally https://play.google.com/store/movies/collection/promotion_collections_tv_networks (viewed October 25, 2015).

[37] For the availability of Discovery programs available on Discovery.com, see generally http://www.discovery.com/videos/ (viewed October 20, 2015).

39. In its Comcast/NBCU Order, the Commission made use of this relationship between affiliate fees and departure rates to estimate the departure rates that are consistent with the observed level of affiliate fees.[38] In conducting this analysis, the Commission assumed that MVPDs and content providers negotiate bilaterally according to the NBE model, with the further assumption that the bargaining surplus (gain from trade) is divided equally.[39] The Commission calculated the gains from a given carriage agreement (between the content provider and a given MVPD), assuming that the bargaining parties take the carriage agreements between the content provider and other MVPDs as given.[40] We follow a similar approach here to estimate actual departure rates for Discovery.

40. The method used by the Commission in Comcast / NBCU requires estimates of the profits per subscriber that the MVPDs would lose if an agreement were not reached. It further requires an estimate of the advertising revenues that the content provider would lose (in addition to the losses in affiliate revenue) if there were no agreement. With these assumptions and estimates, one can calculate the departure rate that is consistent with the observed affiliate fee.

41. In reality, different MVPDs may pay different fees for Discovery programming. However, because we lack access to data on the prices paid by the DBS and Telco MVPDs that will compete with New Charter, we base our estimates of actual departure rates on the average affiliate fees for Discovery programming, as estimated by SNL Kagan. We understand that DCI typically licenses its different channels as a bundle, but where some channels will be carried by MVPDs on Expanded Basic and others will be carried on higher-level packages

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[38] See generally Comcast/NBCU Order, Appendix B at ¶¶42-46.

[39] The Commission performed alternative calculations under the assumption that in renegotiating its current affiliation agreement for the bundle of NBCU national cable networks NBCU had more bargaining power and obtained 2/3 of the bargaining surplus, and alternatively that NBCU had less bargaining power and earned 1/3 of the bargaining surplus. Comcast/NBCU Order, Appendix B at note 52. We make the assumption that the parties divide the bargaining surplus equally.

[40] In the economics literature on bargaining, this approach is referred to as the "Nash-in-Nash" assumption. See e.g. Allan Collard-Wexler, Gautam Gowrisankaran and Robin S. Lee, *'Nash-in-Nash' Bargaining: A Microfoundation for Applied Work*, (August 29, 2015), *available at* http://www.people.fas.harvard.edu/~robinlee/papers/BargainingInBilateralOligopoly.pdf.

that are purchased by fewer subscribers. As a result, the number of subscribers varies across channels. The affiliate revenue per channel thus equals the affiliate fee per subscriber, multiplied by the number of subscribers with access to the particular channel. As shown in Appendix A (Table 4), if the total amount paid by MVPDs for the Discovery bundle is divided by the number of subscribers to The Discovery Channel (the channel with the most subscribers), the average price paid by MVPDs is $1.31 per subscriber, as analyzed in Appendix A.[41]

42. We have conducted the type of analysis of the estimated actual departure rates that the Commission performed in Comcast/NBCU, based on the hypothetical assumption that Dr. Malone and A/N instruct DCI to act in their interest.[42] The proposed merger will have no effect on the ownership interests, board positions, or shares of voting stock in DCI held by Dr. Malone and A/N. For this reason, the commenters' assumption that Dr. Malone and A/N will have the ability and incentive to instruct DCI to act in their interest after the merger also would apply before the transaction.

43. The results of our estimation of actual departure rates for Discovery are set out in Appendix B. Assuming a bundle affiliate fee of $1.31 per subscriber and the assumptions regarding margins and advertising revenue that set out in Appendix A, this analysis produces an estimate of the actual departure rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Stated differently, if the observed affiliate fee of $1.31 per subscriber is the Nash Bargaining Equilibrium, then this equilibrium fee implies that an MVPD would expect to lose less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of its subscribers, if it were foreclosed from Discovery programming while other MVPDs continued to carry that content.[43]

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[41] DCI has a 50% interest in OWN and Discovery Family. Adjusting for these partial interests, we assume that the amount received by DCI for its programming content would be approximately $1.18 per subscriber.

[42] As mentioned above, we understand that it would be a breach of their fiduciary duties if Dr. Malone and A/N attempted to influence DCI in this way and there is no evidence that they do so.

[43] As explained in Appendix B, this **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** departure rate

44. Whether or not it would be profitable for Dr. Malone and A/N to instruct DCI to engage in input foreclosure after the merger will depend on whether the actual rate at which subscribers would switch MVPDs if Discovery programming were not available exceeds or falls short of the estimated "critical departure rate" that makes the strategy just profitable. This estimated actual departure rate of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** thus has a key role in the analysis that follows.

2. Critical departure rate for a strategy of nationwide permanent foreclosure

45. We next analyze the critical rate of departure from rival MVPDs that would be required to make a nationwide permanent foreclosure strategy jointly profitable for Dr. Malone and A/N. This analysis is followed with an analysis of critical departure rates for a targeted foreclosure strategy that would prevent rival MVPDs from offering Discovery programming only in selected DMAs in the New Charter footprint. In each of these analyses, we focus on the profitability to Dr. Malone and A/N of instructing DCI to engage in a strategy of permanent foreclosure.[44]

a. Costs of foreclosure to Discovery

46. As discussed above, the costs to Discovery of any of the foreclosure strategies would have two elements, foregone affiliate revenues (i.e., the amounts that MVPDs pay for programming rights) and foregone advertising revenues. We focus on foreclosure of all DCI content. We understand that **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]**

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is derived on the assumptions that Dr. Malone and A/N already direct DCI to act in their interests and that Discovery programming will be available on all other MVPDs, whether or not agreement is reached between DCI and a particular MVPD. As such, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** is likely an overestimate of the implied actual departure rate if DCI refused to supply Discovery programming simultaneously to all DBS and Telco MVPDs.

[44] We discuss temporary foreclosure *infra* Section II.D.

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47. To estimate the affiliate revenues that DCI would lose if it refused to supply any of its programs to AT&T/DTV, DISH, and Verizon on a nationwide basis, we utilize the data reported above from SNL Kagan on affiliate revenues per MVPD household. As explained above, the average price paid by MVPDs for the Discovery bundle is $1.31 per subscriber. Taking into account the fact that Discovery has only a partial interest in certain channels (OWN and Discovery Family), the average price received by Discovery would be $1.18 per subscriber. This is the relevant figure for calculating the cost to Discovery of an input foreclosure strategy. DBS and Telco MVPDs (comprised primarily of AT&T/DTV, Verizon, and DISH) nationally account for approximately 45.6 million subscribers.[45] This implies that the total affiliate revenue Discovery would forego from DBS and Telco MVPDs if they foreclosed these MVPDs on a nationwide basis is equal to approximately $53.8 million per month.[46] Based on data from SNL Kagan and explained in Appendix A, we assume that aggregate advertising revenues for DCI programming are 1.1 times affiliate revenues for the same programming, bringing the total cost to DCI of nationwide foreclosure (before incorporating the mitigation effects mentioned above) to approximately $2.48 per subscriber,[47] or approximately $113 million per month.[48]

b. Benefits of foreclosure to New Charter

48. The benefits to New Charter from the hypothetical foreclosure strategy would equal the number of subscribers that would depart from these foreclosed MVPDs and divert to New Charter in order to continue to have access to Discovery programming, multiplied by the average profit margin that New Charter would earn on these subscribers. The average profit

[45] According to SNL Kagan, in 2014 Q4, AT&T/DTV, Verizon, and DISH had 44.2 million subscribers combined – over 99% of all DBS and Telco subscribers nationwide.

[46] I.e., $1.18 x 45.6 million.

[47] I.e., $1.18 x 2.1.

[48] I.e., $2.48 x 45.6 million. (We note that our calculations do not always equal the numbers in the text because of rounding.) If lower subscriber coverage were to reduce the advertising price per subscriber, this calculation would understate the cost of foreclosure and the critical departure rate, as discussed below.

margin in turn would depend on the extent to which the new subscribers only subscribe to video service from New Charter, as opposed to also subscribing to broadband and/or phone service from New Charter.

49. Using revenue and cost data obtained from Charter and TWC, combined with data on the number of Charter, TWC and BHN subscribers taking standalone video and the different video bundles, we have calculated and based our analysis on an assumed weighted average margin of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per video subscriber per month. We first analyze the critical departure rate for a nationwide foreclosure strategy, and then for a foreclosure strategy targeted at New Charter's largest DMAs.

c. The critical departure rate for a strategy of nationwide foreclosure

50. If the costs to Discovery of permanent foreclosure on a nationwide basis were $113 million per month, then Dr. Malone and A/N's share of these costs would be approximately $40.5 million per month.[49] This raises the question of whether or not a sufficient number of subscribers would switch to New Charter to make the strategy profitable to Dr. Malone and A/N, in light of their 14.7% attributable share of profits gained by New Charter and their 35.8% share of the costs borne by Discovery. To assess whether there likely would be sufficient switching to make this foreclosure profitable, we estimate the critical departure rate, that is, the fraction of subscribers at each possibly foreclosed MVPD that would have to switch to non-foreclosed MVPDs to make foreclosure profitable, after allowing for the fact that some of the switchers would not switch to New Charter.

51. To estimate the critical departure rate from the foreclosed MVPDs, we first estimate the profits per incremental New Charter subscriber accruing to Dr. Malone and A/N. If the average subscriber that would divert to New Charter would generate profits for New Charter of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per month, then Dr. Malone and A/N's

[49] I.e., 35.8% x $113 million. This calculation does not take into account the possible effect that substitution towards OVDs might have on DCI's OVD revenues and its impact on the departure rate. The impact of substitution to OVDs on the foreclosure analysis is discussed *infra* ¶58.

14.7% share of these incremental profits would be **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month.[50] We assume that Discovery also realizes $1.18 per subscriber in affiliate revenue and an associated $1.30 per subscriber in advertising revenue on all subscribers who switch to an MVPD that still carries Discovery programming, of which Dr. Malone and A/N's share is $0.89 per sub.[51] This implies that Dr. Malone and A/N's profits on subscribers diverted to New Charter are about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber.[52] In addition, they would earn $0.89 on each subscriber that switches to another non-foreclosed MVPD that offers Discovery programming.[53]

52. As a formal matter, suppose that a fraction d of subscribers of a foreclosed MVPD would in fact switch to a non-foreclosed MVPD and suppose that this departure rate d is the same for all foreclosed MVPDs. The foreclosed MVPDs would be DBS and Telco MVPDs, and the non-foreclosed MVPDs would be New Charter and all other cable MVPDs. Let Q_{nc} equal the number of DBS and Telco subscribers in the New Charter system footprint. Let Q_{oc} equal the number of DBS and Telco subscribers in the footprints of other cable MVPDs in the geographic area that has been targeted for foreclosure.[54] Then the critical departure rate, which we denote by d^* (i.e., the departure rate required to make foreclosure profitable from Dr. Malone and A/N's perspective), is determined by the following equation:

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[50] I.e., 14.7% x **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**.

[51] I.e., 35.8% x $2.48.

[52] I.e., **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** + $0.89.

[53] Where cable MVPD footprints are non-overlapping, Dr. Malone and A/N would not have an incentive to prevent DCI from supplying Discovery programming to those other cable MVPDs.

[54] If the foreclosure is national, then Q_{oc} would equal the number of DBS and Telco subscribers throughout the country in areas served by other cable MVPDs. If the foreclosure is targeted only particular DMAs, then Q_{oc} would equal the number of DBS and Telco subscribers in the sections of those DMAs served by other cable MVPDs.

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This equation implies that the hypothesized nationwide foreclosure strategy would be profitable only if the estimated actual departure rate exceeds the critical departure rate:

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53. As noted above, the total number of DBS and Telco subscribers in the US is currently approximately 45.6 million. Some of these DBS and Telco subscribers reside in areas that are not served by cable. We follow an approach that has been used by the Commission in other cases.[55] We assume that the number of DBS and Telco subscribers that reside in areas passed by New Charter can be estimated by multiplying total DBS and Telco subscribers by a diversion ratio equal to (a) New Charter subscribers divided by (b) the subscribers of all non-foreclosed MVPDs (i.e., all cable MVPDs). At a national level, New Charter's share of all MVPD subscribers will be about 17%. However, its share of cable MVPD subscribers will be on the order of 33%. Thus, in the analysis of nationwide foreclosure, we assume that approximately 33% of departing DBS and Telco subscribers would divert to New Charter.[56]

54. If 33% of departing subscribers were diverted to New Charter, the weighted average gain to Dr. Malone and A/N on diverted subscribers would be approximately **[BEGIN HIGHLY**

[55] See Comcast/NBCU Order, Appendix B. In this analysis, the FCC acknowledges that DBS products might be closer substitutes to each other than to cable and makes an adjustment to the assumption of proportional diversion. They do, however, use the assumption of proportional diversion between cable and Telco MVPDs. In this case, since we are considering hypothetical foreclosure of both DBS firms, an adjustment to the proportional diversion assumption is unnecessary.

[56] If sufficient data were available, it might be possible to estimate diversion ratios in a way that takes into account the number of DBS and Telco subscribers in areas passed by cable.

CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION] per subscriber that departs from the foreclosed MVPDs. This is comprised of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** on the 33% of the departing subscribers that divert to New Charter, plus $0.89 in affiliate and advertising revenue on the 67% of the departing subscribers that divert to other MVPDs.[57]

55. It follows that for the strategy of permanent foreclosure on a nationwide basis to be profitable for Dr. Malone and A/N, approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers would have to depart from the foreclosed MVPDs in response to the foreclosure. At an average profit per subscriber of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, these **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers would generate profits of approximately $40.5 million, which is approximately Dr. Malone and A/N's share of Discovery's costs of the foreclosure.[58] These **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers equate to a critical departure rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the 45.6 million subscribers of the foreclosed MVPDs.

56. We next compare this critical departure rate to the estimate of the actual departure rate calculated earlier. This critical departure rate of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** substantially exceeds the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** estimate of

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[57] I.e., 0.33 x **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** + 0.67 x $0.89 =**[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[58] I.e., **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**=$40.5 million.

the actual departure rate from foreclosed MVPDs. This comparison confirms that a strategy of nationwide foreclosure would clearly be unprofitable from the perspective of Dr. Malone and A/N.

57. The availability of streaming DCI content over OVDs can have two conflicting effects. On the one hand, the estimated actual departure rate to New Charter would be reduced further by the extent that subscribers of the foreclosed MVPDs do not switch MVPDs but instead watch Discovery content on OVDs. On the other hand, increased viewership of Discovery content over the internet would tend to increase its current or future OVD revenue, this effect would tend to reduce the costs to Discovery of the foreclosure strategy, which would tend in turn to reduce the critical departure rate. We have no practical way of estimating either of these effects. However, it seems unlikely that the downward effect on the critical departure rate would exceed the downward effect on the estimated actual departure rate by enough to affect our conclusions, given how large the critical departure rate is relative to the estimated actual departure rate.

3. Critical departure rates for a strategy of targeted permanent foreclosure

58. This section analyzes the profitability to Dr. Malone and A/N of a hypothetical strategy of *targeted* permanent foreclosure. Rather than analyzing a hypothetical strategy in which Discovery programming is blocked from DBS and Telco MVPDs throughout the country, we analyze a hypothetical strategy of foreclosing access to Discovery programming to DBS and Telco MVPDs only in DMAs in which New Charter has a large share of cable subscribers.[59] Even for targeted foreclosure, the estimated actual departure rate from the foreclosed MVPDs falls short of the critical departure rates. Thus, under our assumptions, the foreclosure strategy likely would be unprofitable.

59. While targeted foreclosure would be less costly to DCI, it also might be more likely to violate demonstrably the FCC program access rules. Because of the targeting, the

[59] This analysis assumes that DBS and Telco MVPDs would enter into distribution agreements with DCI that granted rights to distribute DCI programming services only in selected DMAs. This is contrary to industry practice for nationwide programming services and, we understand is unlikely to occur as a practical matter. Nonetheless, for purposes of this analysis, we presume that it would, thereby enabling targeted foreclosure.

foreclosure might be more difficult to disguise as a normal contract dispute over price. Such targeted foreclosure also might cause DCI to suffer bad publicity in the media, which could harm its reputation with viewers. In what follows, we conservatively do not take these possible constraints into account.

60. New Charter realizes no benefits if Discovery programming is unavailable to DBS and Telco MVPDs in DMAs where New Charter does not operate. A foreclosure strategy therefore would be more likely to be profitable if it could be targeted at the DMAs in which New Charter operates. It would be even more likely to profitable it could be targeted only at the DMAs in which New Charter accounts for a large share of cable subscribers.

61. Table 1 identifies six DMAs from the 35 largest DMAs where New Charter will have a share of 85% or more of total cable subscribers *and* where New Charter's share is significantly higher than the share held either by Old Charter or Old BHN.[60] Under the assumption that Dr. Malone and A/N can instruct DCI to act in their interests, Dr. Malone and A/N could have instructed DCI not to supply rival MVPDs in areas where Old Charter and/or Old BHN had large shares before the merger. The areas with the largest potential incremental targeted foreclosure are those areas in the New Charter footprint in which Old TWC had a large share.

Table 1

Merging Parties' Shares of Cable MVPD Subscribers
In Selected DMAs For Analysis of Targeted Foreclosure

DMA	Old Charter	TWC	BHN	New Charter	Total Cable Subs
Milwaukee, WI	18%	81%	0%	100%	376,792
Raleigh-Durham (Fayetteville), NC	6%	88%	0%	95%	487,438
San Antonio, TX	0%	91%	0%	91%	317,762
Charlotte, NC	16%	72%	0%	88%	506,184
Los Angeles, CA	14%	73%	0%	87%	1,772,869
Dallas-Ft. Worth, TX	21%	63%	0%	85%	499,856

Source: SNL Kagan, 2014 Q4.

[60] We exclude those DMAs where either Old Charter or Old BHN have a significant pre-merger share. This is because there would be less significant incremental effects on the incentives of Dr. Malone and A/N to implement the hypothesized input foreclosure strategy in those areas, relative to their incentives before the merger.

62. In these six DMAs, AT&T/DTV, Verizon, and DISH account for approximately 5.9 million subscribers.[61] Using the same figure of $2.48 per subscriber in lost affiliate and advertising revenues from DBS and Telco MVPDs, then the total cost of foreclosure to Discovery in these six DMAs (before allowing for mitigation effects) is approximately $14.6 million per month.[62] Dr. Malone and A/N's share of these costs would be approximately $5.2 million per month.[63]

63. The benefits to New Charter of Dr. Malone's and A/N's withholding Discovery programming from AT&T/DTV, DISH or Verizon in these six DMAs would equal the number of subscribers that would switch from these other MVPDs to New Charter in order to continue viewing Discovery programming, multiplied by the average profit margin that New Charter would realize on these new subscribers. For this calculation, we assume the same average profit margin and proportional diversion as in the scenarios above. In these six DMAs, New Charter would have 89% of the cable MVPD market.[64] If 89% of departing subscribers are diverted to New Charter, the weighted average gain to Dr. Malone and A/N on diverted subscribers is approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber that departs from the foreclosed MVPDs.[65] At an average of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, this foreclosure would be profitable for Dr. Malone and A/N only if approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** subscribers or more would depart from those foreclosed MVPDs.[66] This corresponds to a critical departure rate of

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[61] See Appendix A (Table 2).

[62] I.e., 5.9 million x $2.48.

[63] I.e., 35.8% x $14.6 million.

[64] *Id.*

[65] I.e., 89% x **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** + 11% x $0.89.

[66] I.e., $5.2M/**[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**[67]

64. This critical departure rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** exceeds the approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** estimate for the actual departure rate.[68] Thus, this analysis indicates that a foreclosure strategy targeted only at DMAs in the New Charter footprint in which Old TWC had a large share likely also would be unprofitable from the perspective of Dr. Malone and A/N.

65. The lack of foreclosure today in DMAs where Old BHN or Old Charter have very large shares also raises doubts about the likelihood of a post-merger foreclosure strategy. For example, BHN is the only cable MVPD in Tampa/St. Petersburg (Sarasota), which would make it a favorable candidate for benefiting from input foreclosure, *ceteris paribus*. BHN is owned 100% by A/N, so the merger does not raise New Charter's MVPD share in this area. Before this transaction, A/N and Dr. Malone have a 35.8% attributable equity interest in DCI. Yet, Dr. Malone and A/N did not instruct DCI to engage in input foreclosure against the non-cable MVPDs in this area.

66. For these reasons, the evidence does not support the claim that the merger likely will lead to foreclosure of DCI content to rival MVPDs of New Charter. These results likely are highly robust. If the assumed margin were reasonably higher or lower, foreclosure would remain unprofitable.

D. Analysis of Temporary Foreclosure

67. In some previous transactions, the Commission has analyzed the impact of a vertical merger on the profitability of a strategy of temporary (rather than permanent) foreclosure when the

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[67] I.e., **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** / 5.9 million.

[68] The estimated actual departure rate of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** is a national average. The actual departure rates in the six DMAs could be somewhat higher or lower than this estimated national average.

contracts with rival MVPDs expire.[69] The analysis compared the profitability of continuing an expiring contract at the current price with the profitability of a strategy of temporary blackout before the contract is renewed. Citing this prior analysis, WGAW suggests that there should also be concerns in this case about temporary foreclosure. They suggest that Dr. Malone and A/N might instruct affiliated programming entities such as DCI to implement a temporary blackout when the contracts expire as a way to increase profits by inducing subscriber switches away from rival MVPDs to New Charter.[70]

68. Temporary foreclosure can lead to higher affiliate fees in renewal negotiations, regardless of whether the content provider is a vertically integrated MVPD. This has been a particular Commission concern regarding broadcaster content.[71] However, quantitative analysis of the profitability of temporary foreclosure is complex and prone to error. To evaluate the profitability of temporary foreclosure and how it would change as a result of a vertical transaction, it would be necessary to estimate the short-term and longer-term responses of the subscribers of the foreclosed MVPD. That analysis would require assumptions about subscriber expectations and subscriber inertia that are difficult to measure in a careful way, absent a focused natural experiment. Subscriber movements in the short run and expectation of longer run movements also will change the affiliate fees that would be struck after the temporary foreclosure episode ends. In the absence of reliable evidence of these effects, the analysis will be overly speculative.

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[69] See, for example, News Corp./Hughes Order, Appendix D at ¶¶33-47; Comcast/NBCU Order, Appendix B at ¶¶28-35.

[70] WGAW Comments pp. 12-13.

[71] Two of us have previously discussed temporary foreclosure and foreclosure threats, focused particularly on negotiations between broadcasters and MVPDs. We explained several reasons why threats and temporary blackouts generally provide bargaining advantages to the broadcasters, though the paper acknowledges that MVPDs sometimes also may engage in such brinkmanship. That analysis did not attempt to quantify the impact. Moreover, it did not attempt to quantify the impact on foreclosure incentives of a merger between a broadcaster or other content provider and an MVPD. Steven C. Salop, Tasneem Chipty, Martino DeStefano, Serge X. Moresi, and John R. Woodbury, *Economic Analysis of Broadcasters' Brinkmanship and Bargaining Advantages in Retransmission Consent Negotiations* (June 3, 2010), filed as an attachment to the Reply Comments of Time Warner Cable Inc., MB Docket No. 10-71 (filed June 3, 2010).

69. Understanding subscriber expectations and subscriber inertia is key to analyzing the profitability of temporary foreclosure. Faced with an impending blackout of Discovery programming, viewers may not choose to divert quickly to the vertically integrated MVPD. They may have an expectation that the blackout will be quickly resolved, so it would not be worth the trouble to switch, particularly since the subscribers have revealed a preference for their current MVPD. There also can be transaction costs of switching MVPDs, including waiting at home (and possibly missing work) for the new MVPD's installer to arrive, as well as having to return the set top boxes to the old MVPD. For triple play or double play subscribers, the transactions costs also may involve concerns about switching telephone providers and email addresses. The departure rate of DTV subscribers also may be constrained by their contracts with AT&T/DTV. For example, DTV offers discounts to new subscribers that agree to a 24-month contract.[72] Thus, a significant number of DTV subscribers might not choose to depart DTV in response to an expected temporary blackout, even if they have a strong preference for certain Discovery programming.

70. Similar inertia issues also would apply to behavior after the blackout ends for those subscribers who do switch MVPDs. The profitability of a temporary foreclosure strategy depends on the speed with which those subscribers return to their original MVPD.[73] The profitability also depends on the extent to which viewership of the blacked out programming might suffer after carriage is restored, as a result of subscribers changing their viewing habits. Analysis of a temporary foreclosure strategy requires that all these effects be reliably

[72] See https://www.directv.com/DTVAPP/pepod/configure.jsp?CMP=KNew Charter-CBR-5-414-10405873&keninvocaid=chid.1.custid.1646684190.4bd9bac1-9e47-4d25-9787-ae9957ac4fd3.kwidt.kwd-14700391.adgidt.17154743589.campidt.125757669#zipcode (visited October 2, 2015); https://www.att.com/shop/tv/u-verse.html (viewed October 2, 2015).

[73] In analyzing a temporary foreclosure strategy in the News Corp/DTV transaction, the FCC took into account the fact that DTV subscribers typically had 12 month contracts. News Corp./Hughes Order, Appendix D, ¶¶35-36. In contrast, we understand that Charter and TWC do not have early termination charges and that New Charter plans to continue that practice. See Charter-TWC-BHN Public Interest Statement (June 25, 2015) at 3; Charter Response to FCC Information and Data Requests Dated September 21, 2015 (October 13, 2015), Response to Request 32. Imposing early termination fees would reduce New Charter's profits by increasing the risk for new subscribers and thereby reducing the number of new subscribers obtained. Thus, it would be necessary to carry out further analysis to show that these losses are more than offset by the increased profits from the foreclosure strategy.

predicted. In addition, these effects might differ according to the length of the blackout period, which further complicates the analysis.

71. Another significant complexity involves the post-foreclosure affiliate fee. Inertia will affect this fee, so it also must be estimated rather than assumed to be constant. It likely would not be the same fee that would have been negotiated before the blackout episode. If some subscribers divert away from the foreclosed MVPD and are not expected to return immediately, the values to the two negotiating MVPDs of restoring carriage would be different than they were before the blackout. If the temporary foreclosure episode leads subscribers to switch away from the foreclosed MVPD, either permanently or for a long period, that will reduce that MVPD's maximum willingness to pay for the content after the episode ends. If it cannot recapture those subscribers, the withheld network will have less value that it did previously.

72. Although this latter effect on the post-foreclosure affiliate fee may not have been taken into account in previous analysis, it is required for a careful analysis of the profitability of a temporary foreclosure strategy. The post-blackout fee also will depend on all of the expectation and inertia factors listed above, as well as the length of the blackout. If all the subscribers who departed in response to the blackout were expected to migrate back immediately to their old MVPD, both the post-blackout and the pre-blackout equilibrium affiliate fees would be affected. Estimates of these expectations are required in order to determine the equilibrium affiliate fees.

73. We lack sufficient evidence to estimate the magnitude of these various factors reliably. In light of the lack of reliable evidence and all the possible scenarios and assumptions that must be made, we are concerned that empirical estimates of the profitability of temporary foreclosure in the end would amount to little more than speculation wrapped up in complex spreadsheets. For these reasons, we have chosen not to carry out this type of estimation.

E. Impact on Equilibrium Affiliate Fees

74. ACA has raised the concern that Dr. Malone and A/N might instruct DCI to negotiate a higher affiliate fee when the contracts come up for renewal instead of foreclosing rival

MVPDs.[74] ACA implicitly assumes that Dr. Malone and A/N already have the ability and thus the incentive to influence the bargaining positions taken by DCI in negotiations with MVPDs over affiliate fees. ACA then suggests that after the merger, Dr. Malone and A/N will benefit from diversion to TWC, as well as from diversion to Charter and BHN. This increase in the gains to Dr. Malone and A/N if DCI does not reach agreement with DBS and Telco MVPDs could increase the minimum price that DCI will find acceptable. This higher minimum price in turn would lead to a higher equilibrium affiliate fee, given the estimates of actual departure rates reported above.

75. Allowing for this possible effect on DCI's minimum acceptable price, we have estimated the impact of the merger on the NBE for the renewal affiliate fees.[75] In conducting this analysis, we have simply assumed that Dr. Malone and A/N currently are already influencing Discovery's negotiations with DBS and Telco MVPDs in a way that takes into account their pre-merger interests in Charter and BHN. Thus, we have focused on the possible incremental effects of the proposed transaction.

76. The estimated incremental effect on the affiliate fee is only about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month. This is less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the current affiliate fee and a trivial percentage of the monthly subscription fee. The details of this analysis are presented in Appendix C.

77. The ACA has suggested that efficiency benefits from the merger will lead to larger increases in the equilibrium affiliate fee.[76] To the extent that efficiency benefits reduce New Charter's costs or raise its quality so that its quality-adjusted margin rises, the equilibrium affiliate fee

[74] ACA Comments at 2.

[75] Two of us have elsewhere set out an approach for estimating first-round price effects, based on a model in which the vertically integrated firm sets prices. Serge Moresi and Steven C. Salop, *vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers,* 79 ANTITRUST L.J. 185 (2013). However, in this report, we apply the approach used by the Commission in which the input prices are determined by bargaining. There are several other differences in the assumptions used in each of the approaches, so they are complementary to one another.

[76] ACA Comments at 12.

may increase. However, this likely effect is trivial. As discussed in Appendix C, even if New Charter's post-merger margin were $5 higher, the NBE affiliate fee would barely change. In addition, those same efficiencies also would incentivize New Charter to reduce its quality-adjusted monthly subscription prices.[77] These lower New Charter subscription prices in turn would place some downward pressure on rival MVPDs' monthly fees, *ceteris paribus*.[78] It thus follows that an increase in the equilibrium affiliate fee by itself would overstate the overall competitive impact on consumer welfare from merger-specific efficiencies. In this matter, there is no reason to think that consumers would be harmed on balance from greater efficiencies.[79]

F. Analysis of Input Foreclosure Involving Starz

78. WGAW and ACA have also noted Dr. Malone's voting interest in Starz, but not his much lower 6% equity interest in Starz.[80] They have suggested that, as a result of this voting interest, Starz also might be part of an input foreclosure strategy following the merger (WGAW)[81] or that the merger could result in higher affiliate fees for Starz (ACA).[82] However, the incentives to foreclose or negotiate that higher fee would depend on his equity interests. Voting interest relates to ability, not incentive.

79. Starz is a premium channel that traditionally featured movies but which increasingly has been featuring original content. It competes for viewers primarily with HBO and Showtime. Starz revenues are derived nearly entirely from the prices paid by MVPDs and other

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[77] See Katz Reply Declaration, Section II.B (cost pass-through).

[78] In the AT&T/DTV transaction, some comments asserted that as a result of the efficiencies of the merger between AT&T and DTV, the profit margin would rise, leading to an increase in "the combined entity's opportunity cost of selling affiliated programming to rival MVPDs, leading in turn to higher prices for rivals and ultimate consumers. AT&T/DTV Order at ¶173. The Commission made the point that some of these efficiencies "would be passed onto consumers in the form of lower prices," which were not taken into account by the commenters. *Id.* at ¶175.

[79] Modern merger policy is premised on the idea that merger-specific efficiencies generally benefit consumers on balance, not the opposite.

[80] Charter Response to Information and Data Request No. 15(ii).

[81] WGAW Comments at 11-12.

[82] ACA Comments at 9-10.

distributors (e.g. OVDs) that carry its programming. The profit to an MVPD that carries Starz has two parts. An MVPD profits from the difference between the revenues that it collects from subscribers that take the Starz premium channel and the amount that the MVPD has to pay Starz. It also profits from any incremental subscribers that are attracted to its system because it offers the Starz premium channel.

80. It seems highly unlikely that Dr. Malone and A/N would have an incentive after the merger to instruct Starz not to enter carriage agreements with other MVPDs that compete with New Charter. Similarly, it seems unlikely that the merger would lead them to issue instructions to Starz's negotiators that would have a material incremental effect on the prices agreed with these MVPDs. Not many subscribers would switch to New Charter or another non-foreclosed MVPD, if Starz refused to make its programming available to AT&T/DTV or Verizon. HBO and Showtime are strong substitutes. Starz also faces competition from OVDs like Netflix.

81. In principle, one might be able to conduct an analysis of the profitability of foreclosure and the likely impact of the merger on equilibrium prices for Starz similar to the previous analysis of Discovery. The analysis of Starz would be more complicated because MVPDs charge a separate price for Starz programming, which would affect the estimate of the departure rate that would be implied by the pre-merger contract prices.

82. Given these facts, we have not attempted to conduct any further analysis of the input foreclosure allegations related to Starz.

G. Conclusions

83. For these reasons, our analysis does not indicate substantial economic concerns regarding input foreclosure of Discovery or Starz.

III. CUSTOMER FORECLOSURE CONCERNS

A. Introduction

84. While the focus of the comments of WGAW is on the possibility of input foreclosure, WGAW also suggests that the transaction will lead Dr. Malone, either individually or jointly

with A/N, to cause New Charter to refuse to carry certain video programming that competes with Discovery Channel (and possibly other DCI programming) or Starz.[83]

85. As discussed above, Dr. Malone and A/N are not the sole owners of either DCI or New Charter. Dr. Malone and A/N have a combined equity interest of 35.8% in DCI's equity (4.8% for Dr. Malone and 31.0% for A/N). Their interests in New Charter are lower. Dr. Malone will have a 1.7% attributable equity interest in New Charter while A/N will own 13.0%, for a combined share of 14.7%.

86. Putting aside the legal constraints, we have analyzed the economic incentives of Dr. Malone and A/N to instruct New Charter to take actions that are not in its direct best interests but are designed for the purpose of benefitting DCI or Starz. We specifically have analyzed whether they would have financial incentives to instruct New Charter to refuse to carry certain national programming that competes with that affiliated programming. Our analysis indicates that they are unlikely to have any such incentives.

B. Basic Incentives Analysis

87. Suppose that New Charter were to consider a foreclosure strategy of refusing to carry certain video programming that competes with The Discovery Channel and other DCI programming. This hypothetical foreclosure strategy would reduce New Charter's profits by some amount, and Dr. Malone and A/N would share a fraction of these profit reductions as a result of their 14.7% combined equity interest in New Charter.

88. On the one hand, this foreclosure would reduce New Charter's profits in that some New Charter subscribers that enjoy the foreclosed programming might choose to depart New Charter for an MVPD that carries the desired programming. New Charter would lose the margin on those subscribers, net of the affiliate fees saved by New Charter on the foreclosed programming.

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[83] As stated by WGAW, "Vertically-integrated MVPDs have an incentive to favor affiliated networks in distribution. New Charter's increased scale in distribution will enhance its power to foreclose programming competitors by temporarily or permanently refusing to carry unaffiliated networks on New Charter's cable systems." WGAW Comments at 16.

89. On the other hand, this hypothetical customer foreclosure strategy would provide some benefits to DCI, an entity in which Dr. Malone and A/N have a combined 35.8% equity interest. Some of the subscribers that remain with New Charter would increase their viewership of DCI programming, which would increase DCI's advertising revenues. DCI would lose New Charter affiliate revenue on the New Charter subscribers that depart New Charter for other MVPDs. However, DCI would recapture affiliate fees from the MVPDs to whom those subscribers divert. Whether this impact on affiliate fees is a net gain or loss to DCI would depend on the relative affiliate fees it charges to the various MVPDs.

90. Thus, the profitability of this hypothetical foreclosure strategy for Dr. Malone and A/N would depend on the number of MVPD subscribers that care enough about the foreclosed programming to depart New Charter for another MVPD, the margin lost by New Charter on those subscribers, the fraction of the remaining New Charter subscribers that increase viewership of DCI programming, the advertising revenue gained by DCI from that increased viewership, and the relative affiliate fees DCI charges to New Charter and other MVPDs. The incremental profits of Dr. Malone and A/N also would depend on their relative equity interests in New Charter and DCI. In the simplest of terms, they would suffer a 14.7% share of the reduction in New Charter profits and gain a 35.8% share of the increase in profits accruing to DCI.

91. A refusal by New Charter to carry certain programming in theory also could have an impact on the viability or investment incentives of networks that New Charter chooses not to carry. For example, suppose that New Charter were to stop carrying an established network that competes closely with a network owned by DCI. If the loss in carriage on New Charter were to drive the competing network below minimum viable scale or substantially to reduce its investment, and if there were insufficient competition and expansion of that type of programming from other networks, then the foreclosure in theory might permit DCI to charge higher fees to other MVPDs. A similar analysis could be applied to new entrant networks. Again, the issue would be the harms suffered by New Charter as a result of having a less desirable program package versus the gains to DCI from any additional market power, weighted by the relative equity interests of Dr. Malone and A/N.

92. In addition to instructing New Charter not to carry programming that competes with DCI programming in its MVPD service, in theory, one might also consider the possibility that they would instruct New Charter to inhibit the ability of its broadband subscribers to access streaming versions of this competitive content by OVDs. New Charter's lack of incentives to foreclose OVD content has been discussed in New Charter's Public Interest Statement and in other submissions.[84] This type of targeted foreclosure also would seem very difficult if the competing content remained available by OVDs. New Charter would not be able to block just the targeted content; it would be required to block all the content of the relevant OVDs. Even aside from the harm to New Charter from blocking OVDs in this way, blocking OVDs also would harm DCI, whose content is streamed in that way as well.

C. Empirical Analysis

93. To make the empirical analysis concrete, we consider the example of the likely profitability of foreclosure of a specific competing network, the National Geographic Channel ("NGC"), by all New Charter cable systems. Foreclosing on a nationwide basis would have the most significant effects on the competitor. We find that this foreclosure likely would be unprofitable for Dr. Malone and A/N. This example illustrates the methodology and indicates why foreclosure of this type is unlikely to be profitable.

94. We first analyze the impact on New Charter's profits. Suppose that New Charter were to cease carriage of NGC. According to SNL Kagan, the average affiliate fee paid by MVPDs for NGC in 2014 was $0.25 per subscriber.[85] The subscriber base on which Charter pays affiliate fees to National Geographic equals about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of Charter's total subscribers, or about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of New Charter's **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** On the assumption that

[84] For an extended discussion, see the Charter/TWC Public Interest Statement, Section V.B; Scott Morton Statement, Section VI.

[85] See Appendix A.

this ratio and the affiliate fees are similar for TWC and BHN, the amount of the affiliate fees that New Charter would save if it did not carry NGC would be about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million per month.[86]

95. The fact that Charter, TWC and BHN all agree to pay the fees and to carry NGC implies that they believe that they would lose more than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million per month as the result of lost subscribers if they did not carry NGC. We have previously explained how to estimate the actual departure rate from the affiliate fee paid by New Charter's rivals for the right to carry DCI programming.[87] In Appendix B, we apply the same NBE analysis to the NGC affiliate fee of $0.25 per subscriber. We show that it implies an estimated actual departure rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** away from New Charter, if NGC were not carried. Suppose therefore that **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of the New Charter subscribers with access to NGC would migrate to an MVPD that continues to carry NGC, if NGC were not available on New Charter. Assuming that New Charter would lose the monthly margin of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, the loss to New Charter from lost subscribers would equal approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million per month.[88] Thus, the net loss suffered by New Charter would be approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL**

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[86] I.e., $0.25 per sub, multiplied by New Charter's approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers.

[87] See *supra* Section II.

[88] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

INFORMATION][89] Dr. Malone and A/N would bear 14.7% of this loss, or **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

96. If **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of New Charter subscribers migrated to other MVPDs, the affiliate fees paid to DCI by New Charter would decline, but the affiliate fees paid to DCI by other MVPDs would increase. We have assumed that these effects approximately cancel each other out.

97. We next analyze the effect on DCI's advertising revenue. Suppose that New Charter were to cease carriage of NGC and some fraction of the NGC viewers that remained with New Charter responded by increasing their viewership of DCI content. That increased viewership would permit DCI to earn more advertising revenue. The assumption most likely to produce profitable foreclosure would be to assume that these subscribers increase their viewership of The Discovery Channel ("TDC"), DCI's most popular offering, rather than other DCI programming. We understand that TDC's advertising revenue is equal to about $0.47 per subscriber per month, given its current viewership. Charter's subscriber base for calculating affiliate fees on TDC equals about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of its total subscribers. On the assumption that this is a good proxy for the fraction of Charter subscribers that have access to TDC and that a similar percentage of TWC and BHN subscribers have access to TDC, New Charter will have approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers[90] with access to TDC, which would imply total advertising revenue for TDC of approximately **[BEGIN HIGHLY CONFIDENTIAL**

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[89] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[90] I.e., **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** multiplied by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers.

INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** million per month.[91]

98. Suppose that NGC viewers that remain at New Charter would spend 30% of their previous NGC viewing time watching TDC instead, that is, a viewership diversion ratio of 30%. Kagan estimates that an average of 0.25 percent of all TV households view NGC during a typical 24-hour day during 2013, as compared with 0.44 percent for TDC, a ratio of 0.57.[92] During prime-time, the figures in 2013 were 0.41 for NGC and 0.84 for TDC, a ratio of 0.49. Based on these data, a conservative estimate is that the total time spent watching NGC equals about 60% of the time spent watching TDC. Assuming that the same is true for TWC and BHN subscribers, TDC viewership (measured in time spent watching TDC) would increase by about 18%.[93] Assuming that advertising revenues would increase by the same proportion, DCI's advertising revenues would rise by approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** million per month.[94] Dr. Malone and A/N would accrue 35.8% of this gain, or approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** million per month.

99. Based on these assumptions, the customer foreclosure strategy would be unprofitable. The net impact on Dr. Malone and A/N would be a reduction in monthly profits of about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY**

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[91] I.e., **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** million subscribers, multiplied by $0.47 per subscriber per month.

[92] I.e., 0.25 divided by 0.44. SNL Kagan, Economics of Basic Cable Networks (2014) at 266, 491. (2013 was the last year for which Nielsen ratings were reported in this source.)

[93] I.e., 30% x 60%.

[94] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]** Advertising prices rise slightly with the overall viewership. Given the roughness of these calculations, we have not taken this effect into account, just as we did not in our earlier input foreclosure analysis, when we analyzed the impact of DCI losing subscribers and viewers.

CONFIDENTIAL INFORMATION][95] Even with an estimated departure rate of only **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, the increase in TDC advertising revenues falls short, given the 30% viewership diversion to TDC.

100. In order for the customer foreclosure to be profitable, the departure rate away from New Charter would need to be substantially lower or the viewership diversion ratio of remaining NGC subscribers to TDC would need to be substantially higher, or some combination. For example, given the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** estimated actual departure rate, the foreclosure would only turn profitable if the viewership diversion ratio from NGC to TDC were almost **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** instead of 30%.[96] While our analysis does not generate specific estimates of this viewership diversion ratio, it seems unlikely that New Charter subscribers that watch NGC would spend **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** of this time watching TDC if New Charter hypothetically did not carry NGC. There are numerous other programming alternatives available to these subscribers in addition to TDC, including other DCI programming that earns lower advertising rates.

101. It is theoretically possible that the foreclosure from carriage on New Charter systems (which represent about 17% of total MVPD subscribers) could marginally weaken NGC's investment incentives. If NGC's program quality were significantly lower as a result, then TDC viewership could rise somewhat on other MVPDs (leading to further increases in advertising revenues) and DCI might also be able to negotiate somewhat higher affiliate fees

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[95] **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[96] The critical diversion rate DR^* is the diversion rate at which Dr. Malone's and A/N's share of DCI's increase in advertising revenues just equals their share of the costs to New Charter of not carrying NGC. Using the numbers cited in the text, the critical diversion rate is the rate for which **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**that is, $DR =$ **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

when its contracts expire. Evaluating the impact in a reliable way would be difficult. It would require taking into account the likely substitution to other networks and expansion of their programming to provide more of the type of programming previously aired on NGC. If these other networks gained more viewers, they would have the corresponding incentives to increase their investment, which would in turn limit the gains to DCI. There seems to be no way to estimate these various possible effects in a reliable way. In light of the various alternatives to the programming of NGC and DTC, it also seems unlikely to tip the balance.

102. This analysis of NGC also has not taken into account the potential countervailing power of 21st Century Fox, the 73% owner and controlling partner of the partnership that owns NGC.[97] Fox might retaliate against New Charter in various ways, including foreclosing one or more of the Fox RSNs from New Charter. The fear of such retaliation likely would raise the opportunity cost to New Charter, Dr. Malone, and A/N of undertaking this type of foreclosure strategy.

103. The analysis we have carried out here has been focused on just a single video network. The exact situation facing other networks might vary. However, in every case, there will be some likely departure of New Charter subscribers. In every case, the viewership diversion to DCI networks will be limited. DCI networks face competition from a variety of other networks. There is no competing network that solely competes with a DCI network. For these reasons, the evidence does not support the claim that the merger likely would lead to foreclosure of rival programming content by New Charter in order to benefit the interests of Dr. Malone and A/N.

104. While we have not carried out the corresponding empirical analysis for Starz, we doubt that such a customer foreclosure strategy would be profitable. HBO and Showtime could still reach New Charter subscribers by providing their services on an OVD basis. HBO and Showtime are popular premium networks, so that failure to carry them would cause some New Charter subscribers who do not want to opt for the OVD channel to depart. It also would cause New Charter to lose revenue from its subscribers who remain. If New Charter

[97] See e.g. http://press.nationalgeographic.com/2015/09/09/national-geographic-society-21st-century-fox-agree-to-expand-partnership/ (viewed October 24, 2015).

foreclosed only Showtime, but not HBO (or vice versa), much of the increased viewership would flow to the remaining competitor, not Starz. Similarly, if New Charter foreclosed a new premium network like these, it seems likely that HBO and Showtime would gain more than would Starz.

IV. CONCLUSIONS

105. Based on this analysis, and even putting aside the legal constraints arising from fiduciary obligations or FCC rules, the creation of New Charter is unlikely to create input or customer foreclosure concerns regarding Discovery and Starz, the programming in which Dr. Malone and A/N have equity interests. Nor is it likely to lead to significantly higher affiliate fees for that programming.

Executed on Monday, November 2, 2015

Steven C. Salop

Robert Stillman

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APPENDIX A

SUMMARY OF DATA AND CALCULATIONS

1. This Appendix describes the sources of data used for subscriber shares, margins, and revenues in the text of this submission.

I. SUBSCRIBER DATA

2. For MVPD video subscriber counts and shares, we use data from SNL Kagan. Table 1 shows national subscriber shares from 2014 Q4 for Charter, TWC, and BHN, individually and combined into New Charter, all other cable MVPDs combined, and DTV, DISH, AT&T, Verizon individually, and other Telco MVPDs combined. In addition, for use in our calculation of diversion ratios, we include the share of each cable (DBS and Telco) MVPD among all cable (DBS and Telco) MVPD subscribers.

Table 1

Summary of Subscriber Data (National)

MVPD	Video Subscribers	Share of Video Subscribers	Share of Cable Subscribers	Share of DBS and Telco Subscribers
Charter	4,159,979	4.3%	8.0%	
Time Warner Cable	10,788,974	11.1%	20.7%	
Bright House	1,985,334	2.0%	3.8%	
*New Charter Total**	16,934,287	17.3%	32.6%	
Other Cable	35,082,047	35.9%	67.4%	
DIRECTV	19,316,194	19.8%		42.3%
DISH	13,393,105	13.7%		29.4%
Verizon FiOS	5,584,193	5.7%		12.2%
AT&T U-verse	5,929,689	6.1%		13.0%
Other Telco	1,392,851	1.4%		3.1%
Total	**97,632,366**	**100%**	**100%**	**100%**

* New Charter represents a sum of Charter, TWC, and BHN, and is excluded from the totals.
Source: SNL Kagan, 2014 Q4.

3. For our targeted foreclosure analyses, we use six DMAs from the 35 largest DMAs where New Charter will have a share of 85% or more of total cable subscribers and where New Charter's share is significantly higher than the share held either by Old Charter or Old BHN.

Table 2 shows subscriber shares for these six DMAs, using data from 2014 Q4.[1]

Table 2

Summary of Subscriber Data (Select DMAs)

MVPD	Video Subscribers	Share of Video Subscribers	Share of Cable Subscribers	Share of DBS and Telco Subscribers
Charter	537,230	5.4%	13.6%	
Time Warner Cable	2,995,102	30.3%	75.6%	
Bright House		0.0%	0.0%	
*New Charter Total**	3,532,332	35.7%	89.2%	
Other Cable	428,569	4.3%	10.8%	
DIRECTV	2,315,454	23.4%		39.0%
DISH	1,554,327	15.7%		26.2%
Verizon FiOS	769,780	7.8%		13.0%
AT&T U-verse	1,254,636	12.7%		21.1%
Other Telco	38,441	0.4%		0.6%
Total	**9,893,539**	**100%**	**100%**	**100%**

*New Charter represents a sum of Charter, TWC and BHN, and is excluded from the totals.
Source: SNL Kagan, 2014 Q4.

II. DIVERSION RATIOS

4. Throughout our foreclosure and the Nash Bargaining Equilibrium ("NBE") analyses, we assume proportional diversion, as the Commission has assumed elsewhere.[2] We assume that, when subscribers leave MVPD-A, the fraction that will switch to MVPD-B is equal to the share of MVPD B among subscribers of all other MVPDs, excluding MVPD-A and also any MVPD that is not available to subscribers of MVPD-A. Formally, let S_X represent the share of MVPD-X among all MVPD subscribers, and let S_Y^{not} represent the share (among all MVPD subscribers) of all the MVPDs that are available to subscribers of MVPD-Y (excluding MVPD-Y). Then the diversion ratio from MVPD-A to MVPD-B is:

[1] Milwaukee; WI: Raleigh-Durham (Fayetteville); NC: San Antonio, TX; Charlotte, NC; Los Angeles, CA; Dallas-Ft. Worth, TX.

[2] See, for example, Comcast/NBCU Order, Appendix B. In this analysis the FCC acknowledges that DBS products might be closer substitutes to each other than to cable and make an adjustment to the assumption of proportional diversion. They do, however, use the assumption of proportional diversion between cable and Telco MVPDs. In this case, since we are considering hypothetical foreclosure of both DBS firms, an adjustment to the proportional diversion assumption is unnecessary.

$$DR_{A\to B} = \frac{S_B}{S_A^{not}}$$

5. For example, in the case of nationwide permanent foreclosure of the Discovery Channel to DBS and Telco MVPDs, the diversion ratio of DBS and Telco subscribers to New Charter would equal the national share of New Charter, divided by the share of all other MVPDs, excluding DBS and Telco MVPDs (i.e., all cable MVPDs):[3]

$$DR_{DBS/Telco\to NewCharter} = \frac{S_{NewCharter}}{1 - S_{DBS} - S_{Telco}} = \frac{0.173}{1 - 0.335 - 0.132} \cong 0.33$$

We therefore assume a diversion ratio of 33% from DBS and Telco to New Charter in our nation permanent foreclosure analysis (note that this is equal to the share of New Charter among cable MVPD subscribers, as shown in Table 1).

6. Similarly, the diversion ratio of Verizon subscribers to New Charter would equal the national share of New Charter, divided by the share of all other MVPDs, excluding Telco MVPDs (since no other Telco MVPD is available to Verizon subscribers).

III. MARGIN DATA

7. One input into our analyses is the average profit margin earned on subscribers who purchase video, either standalone or in a bundle. We use data received from Charter and TWC, supplemented with subscriber data from TWC and BHN to calculate a weighted average margin for all bundles that include video in the range of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber per month, as shown in Table 3, which we round up to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**[4] Because we lack access to data from other MVPDs, we assume that this estimate applies to all MVPDs.

[3] We note that the calculations shown in the text and footnotes throughout this report may not be exact because of rounding.

[4] Margins are based on calculations performed using Charter average revenue data from December 2014 and TWC average revenue data from September 2015, combined with Charter and TWC cost data covering the whole year 2014.

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IV. AFFILIATE FEES AND ADVERTISING REVENUES

8. For analyzing affiliate fees and advertising revenues for all of the Discovery programming, we use data from SNL Kagan from 2014. Table 4 lists the channels owned by DCI, the average affiliate fee for each, and calculates a weighted average affiliate fee paid by MVPDs for Discovery programming of $1.31 per subscriber per month, based on the household penetration of each channel.

9. DCI has only a 50% ownership of Discovery Family and OWN. As a result, DCI does not actually receive the full $1.31. If one accounts for the partial ownership of these two channels, the weighted average affiliate fee received by DCI is $1.18 per subscriber per month.

10. Data from SNL Kagan indicate that DCI programming generated approximately $1.5 billion in affiliate revenue, and approximately $1.7 billion in advertising revenue in 2014; this equates to a ratio of affiliate to advertising revenue of approximately 1.1.[5] We use this ratio to estimate a value of $1.30 per subscriber per month for advertising revenues received by DCI.

[5] Data pulled from SNL Kagan TV Network Summary Data Base: https://www.snl.com/interactivex/tv_NetworksSummary.aspx (viewed October 6, 2015).

Table 4

Summary of Discovery Communications Affiliate Revenue

MVPD	Ownership [1]	Affiliate Fee [2]	Subscribers *	Amount Paid *	Amount Received by DCI *
	[a]	[b]	[c]	[b] x [c]	[a] x [b] x [c]
Discovery Channel	100%	$0.40	96.6	$38.64	$38.64
TLC	100%	$0.20	95.1	$19.02	$19.02
Animal Planet	100%	$0.11	94.2	$10.36	$10.36
Investigation Discovery	100%	$0.09	86.1	$7.75	$7.75
OWN: The Oprah Winfrey Network	50%	$0.19	81.5	$15.49	$7.74
Science	100%	$0.07	75.7	$5.30	$5.30
Discovery Family (fka The Hub)	50%	$0.13	69.0	$8.97	$4.49
American Heroes Channel	100%	$0.07	60.2	$4.21	$4.21
Destination America	100%	$0.07	57.1	$4.00	$4.00
Velocity	100%	$0.12	61.3	$7.36	$7.36
Discovery Life (fka Discovery Fit & Health)	100%	$0.07	46.2	$3.23	$3.23
Discovery en Espanol	100%	$0.20	6.6	$1.32	$1.32
Discovery Familia	100%	$0.18	5.5	$0.99	$0.99
3net (closed Aug-2014)	100%	$0.33	0.0	$0.00	$0.00
Total				**$126.64**	**$114.41**
TDC Subscribers				**96.6 Million**	
Bundle Price per TDC Sub [3]				**$1.31**	**$1.18**

Notes:

1: Ownership figures reflect September 2014.

2: Average revenue per subscriber per month for 2014.

3: Total paid and received divided by the number of Discovery Channel subscribers.

*: Amounts are expressed in Millions.

Source: SNL Kagan 2014.

11. For National Geographic, SNL Kagan reports that MVPDs paid an average of $0.25 per subscriber per month for National Geographic in 2014. Total net advertising revenue for 2014 was approximately $160 million, and year-end number of subscribers was approximately 85 million; this equates to an average of $0.16 in advertising revenue per subscriber per month.

APPENDIX B

ESTIMATING THE ACTUAL DEPARTURE RATE BASED ON THE OBSERVED AFFILIATE FEE

1. In this Appendix, we estimate the actual departure rates for National Geographic Channel and Discovery content that are consistent with the current affiliate fees satisfying the conditions of the Nash Bargaining Equilibrium ("NBE").[1] We assume for purposes of this analysis that Dr. Malone and A/N instruct DCI to act in their interests.

I. DEPARTURE RATE FOR THE NATIONAL GEOGRAPHIC CHANNEL

2. MVPDs paid an average of $0.25 per subscriber per month for the National Geographic Channel in 2014.[2] We assume that an affiliate fee of $0.25 is the NBE price arising from bilateral negotiations between the National Geographic Channel ("NGC") and each of the MVPDs.[3] We further assume that NGC has no financial interests in the MVPD market and hence seeks to maximize the total affiliate and advertising revenues of NGC.[4] We also assume that the MVPD seeks to maximize the profits from its MVPD business.

3. We first describe formally the model sketched out in the previous paragraph and derive the formula for the estimated actual departure rate. We then apply the formula to estimate the actual departure rate of NGC, using the available data.

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[1] See Comcast/NBCU Order, Appendix B, at ¶¶42-46 and note 46 (citing Murphy Reports).

[2] See Appendix A at ¶11.

[3] The bilateral negotiations model that we analyze is the Nash-in-Nash model. See e.g. Allan Collard-Wexler, Gautam Gowrisankaran and Robin S. Lee, *'Nash-in-Nash' Bargaining: A Microfoundation for Applied Work*, (August 29, 2015) (available at http://www.people.fas.harvard.edu/~robinlee/papers/BargainingInBilateralOligopoly.pdf).

[4] The owners of NGC are 21st Century Fox and the National Geographic Society. See e.g. http://press.nationalgeographic.com/2015/09/09/national-geographic-society-21st-century-fox-agree-to-expand-partnership/ (viewed October 24, 2015).

4. We make the following simplifying assumptions. If an MVPD did not carry NGC, then NGC's advertising revenue per subscriber would not be affected; the MVPD would lose subscribers but the total number of MVPD subscribers would not decrease (no cord cutting). We also assume that the MVPD would not reduce the price it charges to its subscribers for video services.

5. Let F, A and M denote the affiliate fee, advertising revenue and MVPD margin, respectively (all in dollars per subscriber per month). Denote by N the MVPD's number of subscribers and by d the estimated departure rate - i.e., if the MVPD did not carry the programming, the number of subscribers that the MVPD would lose is equal to Nd, which corresponds to a loss in monthly profits equal to NdM. However, the MVPD would save the affiliate fee paid on the remaining $N(1-d)$ subscribers, which corresponds to a reduction in the MVPD's programming costs to those subscribers equal to $N(1-d)F$. It follows that losing the programming would cause the MVPD to lose a total of:[5]

$$NdM - N(1-d)F \tag{1}$$

6. If the MVPD did not carry the programming, the programmer would incur a loss in affiliate and advertising revenues equal to:[6]

$$N(1-d)(F+A) \tag{2}$$

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[5] We are assuming for simplicity that the MVPD would not reduce its margin, M, as a means to reduce the departure rate, d, for example, by reducing its subscription price or increasing other retention efforts. Otherwise, the values of M and d would have to be evaluated *after* the retention efforts and, furthermore, there would be an additional term in equation (1) to reflect the corresponding loss on the remaining subscribers, i.e., $N(1-d)c$, where c is the retention cost per subscriber.

[6] We are assuming for simplicity that, when a subscriber leaves the MVPD under consideration, the program network earns the same revenue $F + A$ from the subscriber's new MVPD as it earned from the MVPD under consideration. We further assume that the number of subscribers that would stay with the MVPD and watch the programming on OVDs is sufficiently small that it does not have a significant effect on the revenue loss suffered by the network. Otherwise, the loss in equation (2) would be reduced by the amount $N(1-d)av$, where a is the fraction of subscribers that remain with the MVPD that would watch the programming on OVDs and v is the revenue per subscriber that the program network would recapture from the OVDs.

This expression takes into account the fact that the dN subscribers that would leave the MVPD in question would switch to other MVPDs. This would increase the total affiliate fees paid by other MVPDs by FdN. The fact that these dN subscribers would continue to have access to the programming in question means that the net reduction in advertising revenues is only $N(1-d)A$.

7. In the NBE, the MVPD and the programmer split equally the "gains from trade" (or the "loss from no carriage"). Therefore, the assumption that the observed affiliate fee F is the NBE affiliate fee implies that no-carriage would cause equal losses to the MVPD and the programmer. That is, the loss given in equation (1) is equal to the loss given in equation (2). We can thus use this equilibrium condition to infer the value of the estimated departure rate, d, that is consistent with the observed affiliate fee. Solving this equation for the departure rate d yields the estimated actual departure rate ("ADR"):[7,8]

$$\text{ADR} = \frac{2F+A}{2F+A+M} \qquad (3)$$

8. We next apply this analysis to NGC. We assume $F = \$0.25$ for the affiliate fee per subscriber, $A = \$0.16$ for the advertising revenue per subscriber, and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**for the MVPD margin per subscriber.[9] From equation (3), we estimate an actual departure rate of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**as follows:

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[7] The formula of the estimated ADR does not depend on the number of subscribers (N) of the MVPD because N is a scale factor that affects the costs from no-carriage to both the programmer and the MVPD proportionally. Thus, the estimated ADR does not depend on whether the subscriber base on which the MVPD pays affiliate fees to the programmer is 100% or a smaller fraction of the MVPD's total subscribers.

[8] As explained *supra* notes 5-6, the formula of the estimated ADR implicitly assumes that, in case of no carriage agreement, the MVPD would not increase its retention efforts and the programmer would not recapture any revenues from OVDs. If these effects were significant, the estimated ADR would be lower than that in equation (3).

[9] See Appendix A at ¶¶7, 11.

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II. DEPARTURE RATE FOR DISCOVERY CONTENT

9. In estimating the actual departure rate implied by the affiliate fee for Discovery content previously agreed upon by MVPDs, we assume that Dr. Malone and A/N were influencing Discovery's bargaining position even before the proposed merger. The proposed merger has no effect on their combined 35.8% interest in DCI.[10]

A. Definitions, Assumptions and Notation

10. As explained above, the *departure rate* is denoted by d. The fraction of the departing subscribers that would switch to Charter or BHN (as opposed to some other MVPD that carries Discovery content) is called the "diversion ratio" and is denoted by α_C for the diversion to Charter and by α_{BHN} for the diversion to BHN. Currently, all the MVPDs carry Discovery content and pay an affiliate fee, denoted by F. DCI also earns advertising revenues per subscriber, denoted by A.

11. We make the following simplifying assumptions. If an MVPD did not carry DCI content, then (i) DCI's advertising revenue per subscriber (A) would not be affected; (ii) the MVPD would lose subscribers, but the total number of MVPD subscribers, denoted by T, would not decrease (no cord cutting); the MVPD would not reduce the price it charges to its subscribers for video services; and (iii) Charter and BHN would gain market share but would not increase the prices they charge to their subscribers for MVPD video services. Thus, the dollar margins per subscriber of Charter and BHN - denoted by M_C and M_{BHN} for Charter and BHN, respectively - would not be affected if an MVPD did not carry DCI content.

12. We also assume that DCI obtains approximately 90.1% of the advertising and affiliate revenues generated by Discovery content, and the remaining 9.9% of the revenues accrue to

[10] Dr. Malone and A/N have a combined 53.6% attributable voting interest in DCI.

other entities that have partial financial interests in Discovery content.[11] It follows that Dr. Malone and A/N together obtain approximately 32.2% of the advertising and affiliate revenues generated by Discovery content distributed through MVPDs.[12]

B. Estimating the Departure Rate of an MVPD's Subscribers

13. Currently, all the MVPDs carry Discovery content nationally. Consider the negotiations between DCI and each of the MVPDs that led to the current national carriage agreements. At the time of those negotiations, Dr. Malone had a 2.24% attributable equity interest in Charter and A/N had 100% of the economic interest in BHN.[13] Thus, given the DCI carriage agreements, the total profits of Dr. Malone and A/N were equal to:

$$0.322 \times T(A+F) + 0.0224 \times N_C M_C + N_{BHN} M_{BHN} \qquad (4)$$

where F denotes the average affiliate fee paid by MVPDs for Discovery content, and N_C and N_{BHN} denote the number of subscribers on the Charter and BHN systems, respectively. The first term is the total advertising and affiliate revenue obtained by Dr. Malone and A/N due to their 32.2% financial interests in Discovery content (see ¶12 above). The other terms involve the profits obtained by Dr. Malone and A/N from their 2.24% financial interests in Charter and 100% financial interests in BHN.

14. We analyze Nash-in-Nash bargaining.[14] Assume therefore that DCI and one of the MVPDs hypothetically had not entered into any carriage agreement for DCI content. In estimating the actual departure rate implied by the agreed-upon affiliate fee, we assume that DCI would have entered the same carriage agreements with all the other MVPDs as it did (even though it had not been able to reach agreement with that one MVPD). Suppose that the MVPD that

[11] As explained in Appendix A at ¶¶8-9, MVPDs on average pay an affiliate fee of $1.31 per subscriber. DCI obtains $1.18 and the remaining $0.13 goes to other entities that have financial interests in Discovery content. Therefore, DCI's share of the affiliate revenues of Discovery content equals approximately 90.1% (i.e., 1.18/1.31). We assume that DCI also obtains 90.1% of the advertising revenues of Discovery content.

[12] I.e., 0.358×0.901.

[13] See the body of our Declaration, *supra* ¶23.

[14] See *supra* note 3.

had not entered into a carriage agreement with DCI is a competitor of Charter and BHN. The total profits of Dr. Malone and A/N would have been given by:

$$0.322 \times [T(A+F) - N_R(1-d)(A+F)]$$
$$+ 0.0224 \times [N_C M_C + N_R d \alpha_C \bar{M_C}] + [N_{BHN} M_{BHN} + N_R d \alpha_{BHN} \bar{M_{BHN}}] \quad (5)$$

where N_R denotes the number of subscribers of the MVPD.[15]

15. The first term in square brackets in equation (5) is the profit earned by the owners of Discovery content if the MVPD does not carry Discovery content; the term $T(A+F)$ is the profit with a carriage agreement; and the term $N_R(1-d)(A+F)$ is the loss from no-carriage due to the fact that $N_R(1-d)$ subscribers would stay with the MVPD and therefore the owners of DCI content would lose the advertising and affiliate revenues from those subscribers. In equation (5), the profit earned by the owners of Discovery content is multiplied by 0.322, the share of the advertising and affiliate profits realized by Discovery content that accrues to Dr. Malone and A/N.

16. The second and third terms in square brackets in equation (5) are the profits earned by Charter and BHN if the MVPD does not carry Discovery content; the terms $N_C M_C$ and $N_{BHN} M_{BHN}$ are the profits with a carriage agreement; on Charter cable systems, Charter would capture a fraction α_C of the $N_R d$ subscribers lost by the MVPD, and Charter would obtain a profit margin equal to $\bar{M_C}$ on each of those captured subscribers, where $\bar{M_C}$ might be smaller than M_C because of subscriber acquisitions costs; and similarly on the BHN cable systems. The profits earned by Charter and BHN are multiplied by 0.0224 and 1, respectively, because Dr. Malone and A/N obtain 2.24% and 100% of those profits.

17. It follows that the difference between equations (4) and (5) determines the gain realized by Dr. Malone and A/N from the carriage agreement with that particular MVPD:

[15] As in Section I, we assume for simplicity that the affiliate fees are currently the same for all MVPDs. We also assume that in the event that no carriage agreement is made, DCI would not recapture any revenues from OVDs and the MVPD would not increase its retention efforts.

$$\text{Malone + A/N's gain} = 0.322 \times N_R(1-d)(A+F) - N_R d(0.0224 \times \alpha_C \bar{M_C} + \alpha_{BHN}\bar{M_{BHN}}) \quad (6)$$

18. The gain realized by the MVPD from the carriage agreement is determined in a similar way. The MVPD's profit with the carriage agreement is given by $N_R(M_R - F)$, where M_R denotes the MVPD's gross dollar margin per subscriber (before paying the affiliate fee). With no carriage agreement, the MVPD's profit would have been equal to $(1-d)N_R M_R$. That is, the MVPD would have lost a fraction of its subscribers (equal to the departure rate d), but it would have saved the cost of the affiliate fee. The difference between these two profits levels yields:

$$\text{MVPD's gain} = N_R d M_R - N_R F \quad (7)$$

19. We follow the FCC's methodology and assume that the bargaining surplus is divided equally between the bargaining parties.[16] Therefore, in the NBE, the gains in equations (6) and (7) are equal. Solving this equilibrium condition for the departure rate d yields the estimated *actual departure rate,* ADR:

$$\text{ADR} = \frac{0.322\times(A+F) + F}{0.322\times(A+F) + M_R + 0.0224\times\alpha_C\bar{M_C} + \alpha_{BHN}\bar{M_{BHN}})} \quad (8)$$

20. This formula of the estimated actual departure rate can be applied to each individual MVPD that negotiated bilaterally with DCI for carriage of Discovery content. These individual MVPDs include Verizon, DISH, AT&T and DTV. The next section applies this formula to estimate the actual departure rate of each of those four MVPDs.

C. Estimating the Actual Departure Rate of Verizon Subscribers, DISH Subscribers, AT&T Subscribers, and DTV Subscribers

21. When applied to Verizon, the ADR formula in equation (8) depends on the diversion ratios from Verizon to Charter and BHN, the two MVPDs in which Dr. Malone and A/N had interests prior to the proposed merger. The diversion ratios in fact would vary across areas. In particular, diversion to Charter and BHN would be zero in areas outside their footprints.

[16] Comcast/NBCU Order, Appendix B, at ¶¶40, 47, note 52.

In addition, the total diversion ratio from Verizon to Charter and BHN would depend on the extent to which Verizon's video service area overlaps with the Charter and BHN footprints. To simplify, we assume these two diversion ratios are proportional to the national shares of MVPD subscribers of Charter and BHN.[17] Thus, the diversion ratio from Verizon to Charter is equal to Charter's national share of MVPD subscribers divided by the total share of DBS and cable MVPDs, and similarly for the diversion ratio from Verizon to BHN. The reason for dividing by the total share of DBS and cable MVPDs (thus excluding Telco MVPDs) is that Telco MVPDs do not overlap.[18] Thus, we assume $\alpha_C = 4.9\%$ and $\alpha_{BHN} = 2.3\%$.[19] We also assume $A = \$1.44$, $F = \$1.31$, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**[20] It then follows from equation (8) that the estimated ADR for Verizon is approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

22. This **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** estimate of the actual departure rate means the following: If Verizon did not carry any Discovery content (and did not reduce its subscription price), while other MVPDs continued to carry Discovery content nationally (and did not increase their subscription prices), then Verizon would lose approximately **[BEGIN**

[17] See, for example, Comcast/NBCU Order, Appendix B, at ¶¶13-16. See also Appendix A at ¶¶4-6.

[18] If Verizon does not carry Discovery content, then a Verizon subscriber that wants to switch to a different MVPD in order to continue to watch Discovery content can switch to a DBS or cable MVPD, but not to AT&T or another Telco MVPD.

[19] See Appendix A (Table 1). We obtained $\alpha_C = 4.9\%$ using the 4.3% share of Charter and dividing it by the total share of DBS and cable MVPDs (86.8%); $\alpha_{BHN} = 2.3$ was obtained similarly.

[20] See Appendix A at ¶¶7-10. The margin of Verizon, M_R, is gross of the affiliate fee and thus is equal to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** Applying the 1.1 factor to the $1.31 affiliate fee yields the $1.44 advertising revenue.

HIGHLY CONFIDENTIAL INFORMATION] **[END HIGHLY CONFIDENTIAL INFORMATION]** of its subscribers nationally.

23. We next apply the ADR estimation formula to DISH. We assume that the diversion ratios from DISH to Charter and to BHN are equal to the Charter and BHN national shares, each divided by one minus the national share of DISH, i.e., $\alpha_C = 4.9\%$ and $\alpha_{BHN} = 2.4\%$.[21] (These diversion ratios are very similar to those of Verizon because the national share of DISH is similar to the total national share of Telco MVPDs.) We also assume the same advertising revenue, affiliate fees and video margins as above, so that equation (8) implies that the estimated ADR for DISH is approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

24. When DCI negotiated the current carriage agreements, AT&T and DTV were separate MVPDs. Therefore, we apply the ADR formula in equation (8) to AT&T and DTV separately. We assume the diversion ratios from AT&T to Charter and BHN are the same as the diversion ratios from Verizon to Charter and BHN. Intuitively, Telco MVPDs do not overlap and we assume that each DBS and cable MVPD has the same share in both Verizon and AT&T footprints. It follows that the estimated ADR for AT&T is approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

25. Turning next to DTV subscribers, we assume that the diversion ratios from DTV to Charter and BHN are equal to the Charter and BHN national shares divided by one minus the national share of DTV, i.e., $\alpha_C = 5.3\%$ and $\alpha_{BHN} = 2.5\%$.[22] We also assume the same advertising revenue, affiliate fees and video margins as above, so that equation (8) implies that the estimated ADR for DTV is approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION]** **[END HIGHLY CONFIDENTIAL INFORMATION]**

[21] See Appendix A (Table 1). We obtained $\alpha_C = 4.9\%$ using the 4.3% share of Charter and dividing it by 86.3% (one minus the share of DISH); $\alpha_{BHN} = 2.4\%$ was obtained similarly.

[22] The derivation of $\alpha_C = 5.3\%$ uses the 4.3% share of Charter, divided by 80.2% (one minus the share of DTV); the derivation of $\alpha_{BHN} = 2.5\%$ is similar.

D. Estimating the Actual Departure Rate of DBS and Telco MVPD Subscribers in the Event that *All* DBS and Telco MVPDs Would Not Carry Discovery Content

26. As explained above, the estimated actual departure rate of DISH subscribers in the event that DISH would not carry Discovery content is equal to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** if DTV, Telco and cable MVPDs carry the content. If instead DTV and Telco MVPDs also do not carry the content (together with DISH), then the actual departure rate of subscribers likely is lower than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** This is because subscribers are more likely to stay with their MVPD and forego watching Discovery content, if there are fewer MVPDs that carry the content to which subscribers could substitute.

APPENDIX C

PREDICTING THE POTENTIAL IMPACT OF THE PROPOSED TRANSACTION ON THE NASH EQUILIBRIUM AFFILIATE FEE

1. We use the bilateral negotiations model described in Appendix B to analyze the impact of the proposed merger on the Nash Bargaining Equilibrium ("NBE") affiliate fee on the assumption made for purposes of this analysis that Dr. Malone and A/N instruct DCI to act in their interests. The proposed merger of Charter, BHN and TWC has no effect on the gain from a Discovery carriage agreement realized by Verizon, DISH or AT&T/DTV. Within the framework of the NBE model, the gain to each MVPD is given by equation (7) in Appendix B, which we rewrite here as:

$$\text{MVPD's gain} = N_R d M_R - N_R F_R \quad (1)$$

where F_R denotes the affiliate fee to be paid by the MVPD under consideration. The gain from carriage obtained by the MVPD is given by equation (1) with and without the proposed merger.

2. The gain to Dr. Malone and A/N from a carriage agreement post-merger, however, will be different from pre-merger and is given by:

$$\text{Malone + A/N's gain} = 0.322 \times N_R[(1-d)(A+F_R) + d(F_R - F_{-R})] - 0.147 \times N_R d[\alpha_C \bar{M_C} + \alpha_{BHN}\bar{M_{BHN}} + \alpha_{TWC}\bar{M_{TWC}}] \quad (2)$$

where F_{-R} denotes the (equilibrium) affiliate fee paid by the other MVPDs.

3. The term $N_R[(1-d)(A+F_R) + d(F_R - F_{-R})]$ in equation (2) is the gain realized by the owners of DCI content from a carriage agreement at price F_R; without carriage they would lose $A + F_R$ per subscriber on the fraction $1-d$ of the MVPD's subscribers that would stay with the MVPD; and, in addition, they would lose (gain) the difference $F_R - F_{-R}$ per subscriber on the fraction d of the MVPD's subscribers that would departure, depending on whether the negotiated affiliate fee is higher (lower) than the affiliate fee paid by other

MVPDs. In equation (2), the profit earned by the owners of Discovery content is multiplied by 0.322, the share of the advertising and affiliate profits realized by Discovery content that accrues to Dr. Malone and A/N.

4. The term $N_R d[\alpha_C M_C^- + \alpha_{BHN} M_{BHN}^- + \alpha_{TWC} M_{TWC}^-]$ in equation (2) is the profit earned by New Charter if the MVPD does not carry Discovery content; on Old Charter cable systems, New Charter would capture a fraction α_C of the $N_R d$ subscribers lost by the MVPD, and New Charter would obtain a profit margin M_C^- on each of those captured subscribers; and similarly on the Old BHN and Old TWC cable systems. The profits earned by New Charter are multiplied by 0.147 because Dr. Malone and A/N obtain 14.7% of those profits.

5. Setting equal equations (1) and (2) above, and solving for F_R yields the post-merger NBE affiliate fee for the MVPD under consideration:[1]

$$F_R^{post} = \frac{1}{1.322}\left[dM_R + 0.147 \times d\alpha_{NC} M_{NC}^- - 0.322 \times \left((1-d)A - dF_{-R}\right)\right] \quad (3)$$

where $\alpha_{NC} M_{NC}^- = \alpha_C M_C^- + \alpha_{BHN} M_{BHN}^- + \alpha_{TWC} M_{TWC}^-$.

For Verizon, we previously have estimated that the actual departure rate is **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**and that the diversion ratios to the Charter and BHN systems are $\alpha_C = 4.9\%$ and $\alpha_{BHN} = 2.3\%$. We estimate the diversion ratio to the TWC system similarly and obtain $\alpha_{TWC} = 12.7\%$.[2] As in Appendix B, we assume $A = \$1.44$, $F_{-R} = \$1.31$, **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**and **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** It follows from equation (2) that the post-merger NBE affiliate fee for Verizon is **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per

[1] The post-merger NBE affiliate fee given by equation (2) implicitly assumes that the affiliate fees paid by other MVPDs are constant at their pre-merger level. This "partial equilibrium" assumption is convenient and commonly used.

[2] See Appendix A (Table 1). We obtained $\alpha_{TWC} = 12.7\%$ by using the 11.1% share of TWC and dividing it by the total share of cable and DBS (86.8%).

subscriber,[3] which corresponds to an increase of approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** per subscriber.[4]

6. The NBE analysis for DISH is very similar to that for Verizon, and the post-merger NBE affiliate fee also increases by approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** from $1.31 to **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** For AT&T/DTV, the NBE analysis also predicts a **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** increase in the affiliate fee, if one ignores the AT&T/DTV merger and treats AT&T and DTV as two separate entities. This simple approach is appropriate for two reasons. First, in the absence of the proposed merger of Charter, BHN and TWC, the recent merger of AT&T and DTV could lead to either an increase or a decrease in the NBE affiliate fee for AT&T/DTV.[5] Second, whether that NBE

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[3] The estimated ADR of **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** is a rounded figure. A more precise estimate for each MVPD is **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**, which yields the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** increase in the NBE affiliate fee. (Using the rounded **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** in the text would calculate erroneously that the NBE affiliate fee would decrease by **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** With small numbers close to zero, it is not surprising that rounding could change the sign.)

[4] The increase in the NBE affiliate fee paid by Verizon is less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** and assumes for simplicity that other MVPDs continue to pay $1.31. However, the NBE affiliate fees paid by other MVPDs increase as well. Accounting for this effect would result in (slightly) higher price increases but still less than **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

[5] It is possible that the departure rate of AT&T subscribers would not be significantly lower if DTV also did not carry Discovery content (relative to the case where DTV carried it). Intuitively, suppose in the extreme that *all* the disgruntled AT&T subscribers that would have substituted to DTV decide to switch to a different MVPD, so that AT&T/DTV does not recapture

affiliate fee for AT&T/DTV is lower or higher than $1.31 in the absence of the proposed transaction is unlikely to materially affect the magnitude of the price increase possibly generated by the proposed transaction. The New Charter transaction by itself likely would raise the NBE affiliate fee by about **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** to AT&T/DTV, as it does for the other MVPDs.

7. These results are robust to changes in New Charter's post-merger profit margin. For example, suppose that efficiencies led to New Charter having lower costs. Holding subscription prices constant, New Charter's margin would rise and that would affect the post-merger NBE. Even if New Charter's margin would increase by (say) $5 above the **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]** pre-merger margin assumed here, the increase in the NBE would still be approximately **[BEGIN HIGHLY CONFIDENTIAL INFORMATION] [END HIGHLY CONFIDENTIAL INFORMATION]**

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any of them. In this scenario, the departure rate would not change as a result of the AT&T/DTV merger. However, the diversion to Charter and BHN would increase, and thus the NBE affiliate fee paid by AT&T/DTV would increase even without the New Charter transaction. Alternatively, suppose instead that a relatively large fraction of the AT&T subscribers that would have switched to DTV prefers to stay with AT&T rather than substitute to DISH or cable. This recapture effect can outweigh the diversion effect, and lead to a lower Discovery affiliate fee for AT&T/DTV as a result of their merger.

APPENDIX D

CURRICULUM VITAE

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CURRICULUM VITAE
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PERSONAL Born, December 23, 1946; Married to Judith R.Gelman, three children; U.S. Citizen

FIELDS OF SPECIALIZATION

Industrial Organization, Competition and Antitrust Policy, Economics of Information, Economic Analysis of Law.

DEGREES

Ph.D.	Economics, Yale University, 1972
M. Phil.	Economics, Yale University, 1972
B.A.	University of Pennsylvania, 1968

AWARDS

AAI Antitrust Achievement Award (2010)
Summa Cum Laude, with Honors in Economics, University of Pennsylvania, 1968; Schoenbaum Prize in Economics, University of Pennsylvania, 1968; NSF Graduate Fellowship, 1968-72; Phi Beta Kappa, 1968.

EMPLOYMENT EXPERIENCE

Current Position: Professor of Economics and Law, Georgetown University Law Center (at GULC since August, 1981).

Guest Scholar, Brookings Institution, 1990-1991.

Visiting Professor, Massachusetts Institute of Technology, Spring 1986.

Visiting Interdisciplinary Professor, Georgetown University Law Center, July 1981-June 1982.

Associate Director for Special Projects, Bureau of Economics, Federal Trade Commission, January 1980-June 1981.

Assistant Director for Industry Analysis, Bureau of Economics, Federal Trade Commission, September 1979-January 1980.

Deputy Assistant Director for Consumer Protection, Bureau of Economics, Federal Trade Commission, December 1978-September 1979.

Economist, Division of Consumer Protection, Bureau of Economics, Federal Trade Commission. July 1978-December 1978.

Economist, Office of Economic Analysis, Civil Aeronautics Board, September 1977-July 1978.

Economist, Federal Reserve Board, July 1972-September 1977.

Adjunct Professor, Department of Economics, University of Pennsylvania, September 1977-June 1978.

Adjunct Professor, Department of Economics, George Washington University, September 1975-January 1978.

PUBLICATIONS

Books and Reports

Strategy, Predation and Antitrust Analysis. Editor. Federal Trade Commission, 1981.

Consumer Post-Purchase Remedies. With H. Beales et al. Federal Trade Commission Staff Report, 1980.

Consumer Information Remedies. With L. Kantor et al. Federal Trade Commission Staff Report, 1979.

Articles

"The Evolution and Vitality of Merger Presumptions: A Decision-Theoretic Approach," *Antitrust Law Journal* (forthcoming)

"Revising the Vertical Merger Guidelines: Policy Issues and an Interim Guide for Practitioners," *Journal of Antitrust Enforcement* (forthcoming) (with Daniel P. Culley)

"Jean Tirole's Nobel Prize in Economics: The Rigorous Foundations of Post-Chicago Antitrust Economics," *Antitrust* (Spring 2015) (with Carl Shapiro)

"What Consensus: Why Ideology and Elections Still Matter for Antirust," *Antitrust Law Journal (2014)*

"vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers," *Antitrust Law Journal* (2013) (with Serge Moresi)

"Merger Settlement and Enforcement Policy for Optimal Deterrence and Maximum Welfare," *Fordham Law Review* (2013)

"Developing an Administrable MFN Enforcement Policy, "*Antitrust* (April 2013) (with Fiona Scott-Morton)

Economic Analysis of the AT&T/T-Mobile Wireless Merger, *Journal of Competition Law and Economics* (2013) (with Stan Besen et. al.)

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"Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard," *Antitrust Law Journal* (2006).

"Anticompetitive Overbuying by Power Buyers," *Antitrust Law Journal* (2005)

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"Analyzing Vertical and Horizontal Cross Ownership in Cable Television: The Time Warner-Turner Merger." With S. Besen, J. Murdoch, D. O'Brien, and J. Woodbury. In J. Kwoka and L. White (eds.), *The Antitrust Revolution* 1998.

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"Proposed Legal Rule for Unilateral Refusals to Deal;" "Avoiding Error in Antitrust Analysis of Refusals to Deal;" "Opening Statement;" AMC Hearings on Section 2 (September 29, 2005)

"The Competitive Effects of Passive Minority Equity Interests: Reply," With Daniel O'Brien, *Antitrust Law Journal* (2001)

"Slap Their Wrists? Tie Their Hands? Slice Them Into Pieces? Alternative Remedies for Monopolization in the Microsoft Case," *Antitrust*, 1999

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"Exclusionary Access Rules in Standards and Network Joint Ventures." Testimony at FTC Hearings on Global and Innovation-Based Competition (December 1995).

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"More Value for the Legal Dollar: A New Look at Attorney-Client Fees and Relationships." With R. Litan. *Judicature* (1994).

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"Implications of the Georgetown Project for Treble Damages Reform." Senate Judiciary Committee, March 21, 1986.

"Policing Deceptive Advertising." Serial No. 97-134, 97th Congress.

"Entry Barriers, Consumer Welfare and Antitrust Reform." In Bock et al., *Antitrust and New Views of Microeconomics*. Conference Board, 1986.

"Buy American, Save Your Job?" In J. Tobin et al., *Macroeconomics, Prices and Quantities*. Brookings Institution, 1983.

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"Comment on R. Schmalensee, 'On the Use of Economic Models in Antitrust.'" In O. Williamson et al., *Antitrust Law and Economics*, 1980.

"Review of K. Lancaster, 'Variety, Equity and Efficiency,'" *Journal of Economic Literature*, 1980.

UNPUBLISHED PAPERS AND TEACHING MATERIALS

"The Appropriate Legal Standard and Sufficient Economic Evidence for Exclusive Dealing under Section 2: the FTC's *McWane* Case," (with Sharis Pozen and John Seward) (August 2014)

"Economic Reasoning for Lawyers: Cases and Materials" (2010)

SELECTED PROFESSIONAL ACTIVITIES

Associate Editor, Litigation Economics Review

Associate Editor, Journal of Industrial Economics (1997-2000)

Advisory Committee, FTC Hearings on Global and Innovation-Based Competition (1996).

Associate Editor (Industrial Organization), *Journal of Economic Perspectives* (1987-1993).

ABA Antitrust Task Force on Second Requests (1990).

Advisory Board, Georgetown Project on Treble Damages (1986-1987).

Associate Editor, *Journal of Industrial Economics* (1983-1988).

Associate Editor, *International Journal of Industrial Organization* (1984-1989).

Secretary, Antitrust Section, American Association of Law Schools (1983-1984).

Memberships: American Economic Association, American Bar Association, Phi Beta Kappa.

Nominating Committee: American Economic Association, 1982.

Economics Editorial Advisor, *Journal of Consumer Research*, 1982.

OTHER ACTIVITIES

Senior Consultant, Charles River Associates

President, Salop Economics Inc.

Board of Directors, Charles River Associates (1998-2008)

Board of Trustees, The Lowell School (1989-1995)

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Bob Stillman specializes in the analysis of competition issues and the quantification of damages in commercial litigation. Dr. Stillman worked out of CRA's offices in London and Brussels for approximately 10 years until January 2013 and now splits his time between CRA's offices in Europe and Chicago. Dr. Stillman has worked in recent years on some of the European Commission's highest-profile competition cases involving abuse of dominance, collusive conduct and mergers. He has also worked on competition matters in various other jurisdictions, including the US, UK, China and South Africa. In the area of financial economics, Dr. Stillman has testified on damages in various international arbitrations and has extensive experience in the analysis of damages in securities cases in the US.

Fields of Specialisation

Industrial Organization

Financial Economics

Education

Ph.D. Economics, University of California, Los Angeles

M.Sc. Economics, London School of Economics and Political Science

A.B. Economics, University of California, Berkeley

Professional History

2005 – *Vice President*, Charles River Associates, Chicago and London

2003–2005 *Director*, Lexecon Ltd., London

1980–2003	*Senior Vice President*, Lexecon Inc., Chicago, IL
1979–1980	*Post-Doctoral Research Fellow,* Center for the Study of the Economy and the State, University of Chicago, Chicago, IL
1974–1975	*Junior Staff Economist,* Council of Economic Advisers, Washington, D.C.

CONSULTING EXPERIENCE ON COMPETITION MATTERS SINCE 2009

Dr. Stillman has provided economic advice on a wide variety of competition matters in Europe, UK, US, South Africa and other jurisdictions. The following is a partial list of engagements in which he has been involved since 2009. Some of these matters have included expert testimony or presentations at oral hearings:

EU matters

- Advice to Deutsche Bank in connection with the EC's CDS investigation (2013)
- Advice to Deutsche Bank in connection with the EC's LIBOR investigation (2012-13)
- Advice to Baxter in connection with its proposed acquisition of Gambro (2013)
- Advice to Servier in connection with an Article 101 and 102 investigation of "reverse-payment" patent settlements with generic suppliers of perindopril (2011 - present)
- Advice to UTC in connection with its proposed acquisition of Goodrich (2012)
- Advice to Cisco Systems in connection with its acquisition of NDS (2012)
- Advice to Google in connection with its acquisition of Motorola Mobility (2011-12)
- Advice to Texas Instruments in connection with its acquisition of National Semiconductor in the analog semiconductor industry (2011)
- Advice to Bpost in connection with a state aid investigation (2010-11)
- Advice to News Corp on the competition issues related to its proposed increase in its ownership in BSkyB to from 39% to 100% (2010)
- Advice to a Japanese producer of auto wire harness cartel investigation (2010-2012)
- Advice to Cisco Systems on its merger with Tandberg in the teleconferencing equipment sector (2009-10)
- Advice to LVMH in connection with the revisions to the guidelines on vertical restraints (2009)
- Advice to a Japanese producer in the LCD cartel investigation (2008-09)
- Advice to a Japanese producer in the power transformer cartel investigation (2008-09)

UK matters

- Advice to Dow in connection with claims for damages by purchasers of synthetic rubber (2014)
- Advice to GSK in connection with the investigation by the CMA (previously the OFT) of agreements with generic suppliers of paroxetine (2012 – present)

US matters

- Advice to DirecTV in the AT&T – DirecTV merger (2014-15)

South African matters

- Advice to Netcare in connection with Department of Health proposals concerning hospital pricing (2010 - 2012)
- Advice to Freeworld, a producer of coatings, in connection with a takeover bid by Kansai (2011)
- Advice to Kumba Iron Ore on matters related to the iron ore and steel industries (2009 - 2012)
- Advice to Wispeco on its merger with Sheerline in the aluminium extrusions sector (2010)
- Advice to a large retailer concerning the competitive effects of restricted use terms in shopping centre leases (2010)
- Advice to Sasol Fertilizer concerning allegations of exclusionary conduct and collusion (2003 – 2010)
- Advice to a small steel producer regarding allegations of collusive conduct (2008-10)
- Advice to the lawyers conducting a company-wide "competition audit" of a large manufacturing company (2009)

Other jurisdictions

- Advice to Yandex in connection with an abuse of dominance complaint against Google in Russia (2015)
- Advice to NETS in connection with an investigation in Norway of NETS' acquisition of Nordea's merchant acquiring business (2015)
- Advice to Tetra Pak in connection with investigation of alleged abuse of dominance in China (2014-15)
- Advice to NETS in connection with possible regulation in Denmark of Betalingsservice, a direct-debit product used for payment of recurring bills (2014)
- Advice to an intervener to a merger in the tobacco products industry in Colombia (2009)

EXPERT TESTIMONY ON DAMAGES SINCE 2009

- *Setkom Ileri Teknoloji Urunleri Sanayi Ve Ticaret A.S v Motorola GmbH*

  Testimony in December 2009 on behalf of the claimant on damages in an arbitration related to an alleged breach by Motorola of its duty to operate in good faith. The matter concerned the distribution of radio equipment in Turkey.

- *Odfjell SE v JSC "PO Sevmash"*, in accordance with the Arbitration Rules of the Arbitration Institute of the Stockholm Chamber of Commerce

  Testimony in May 2009 on behalf of the claimants on damages in an arbitration related to alleged breach by Sevmash of a contract to supply specialised chemical tankers to Odfjell.

PUBLICATIONS

"Buyer Power as an Efficiency Defense" in M Sanderson, S Moresi and D Sokol (eds.), *Antitrust Economics for Lawyers* (forthcoming)

"Price Discrimination in Input Markets: Analyzing Competitive Effects Following the *Nationwide Poles* Case", with S Moresi and U Akgun, in K Moodaliyar and S Roberts (eds.), *The Development of Competition Law and Economics in South Africa* (2012)

"Economic Theories of Bundling and Their Policy Implications in Abuse Cases: An Assessment in Light of the *Microsoft* Case", with KU Kühn and C Caffarra, *European Competition Journal* (2005)

"The Competitive Effects of Fannie Mae", with D Carlton and D Gross, *I Fannie Mae Papers 1* (2002)

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"Analyzing the Competitive Effects of Mergers: Is There Anything Special About Railroads?" *34 Cleveland State Law Review 1* (1985–1986)

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"Examining Antitrust Policy Towards Horizontal Mergers", *11 Journal of Financial Economics 225* (1983)

"The Role of Governmental Incentives in Energy Production", with J Kalt, *Annual Review of Energy* (1980)

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PhD, Economics
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Dr. Jarrod Welch has been a Senior Associate in the Competition Practice of CRA since 2013. He is an applied econometrician and specializes in the empirical analysis of issues related to antitrust regulation and litigation.

Fields of Specialization

Applied Econometrics

Professional Experience

2013- Present	*Senior Associate,* Charles River Associates, Chicago
2011–2013	*Post-Doctoral Fellow and Applied Econometrician*, National Bureau of Economic Research

Consulting Experience

Merger cases

- Endicia – Stamps.com merger (2015)
- AT&T – DirecTV merger (2014-15)
- American Airlines – U.S. Airways merge (2013)

Antitrust litigation

- *In re Processed Egg Products Antitrust Litigation*. In the United States District Court for the Eastern District of Pennsylvania, MDL No. 08-MD-02002.

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Dr. Serge Moresi is a vice president in the Competition Practice of CRA and Director of Competition Modeling. He is an expert in the theory of industrial organization and specializes in applied game theory, including bidding and bargaining models. Dr. Moresi is also an expert in applied microeconomics theory, including search markets, network effects, and two-sided markets. He is an experienced developer of theoretical models and simulation programs dealing with strategic interactions among market participants. Dr. Moresi has provided clients with expert economic consulting services in many merger cases, antitrust litigations, damages cases, and regulatory proceedings spanning a large number of industries in North America, Europe, and Australasia. He has contributed to many staff filings before federal agencies and competition authorities in several jurisdictions in the US and abroad. Dr. Moresi is the author of several publications and conference papers on a variety of topics, including market definition, merger effects analysis, optimal taxation, insider trading, and ethical behavior. Before joining Charles River Associates, he served as Assistant Professor of Economics at Georgetown University from 1991 to 1998.

Professional experience

1998- Present — *Vice President,* Charles River Associates, Washington, DC

1991–1998 — *Assistant Professor*, Georgetown University, Washington, DC

- PhD courses: General equilibrium theory, game theory, contract theory
- BA courses: Microeconomic theory, applied game theory

1997 — *Economic Consultant*, The Brattle Group, Washington, DC

- Developed a simulation method to calculate Ramsey prices

1995 — *Invited Professor*, Université de Lausanne, Switzerland

- Graduate lectures on the microstructure of financial markets

1994 — *Visiting Researcher*, University of Maryland, College Park, MD

- Research on the competitiveness of decentralized markets

1994 *Economic Consultant*, World Bank, Washington, DC

- Analysis of the international competitiveness of Morocco

1989 *Economic Consultant*, State of Ticino, Switzerland

- Econometric analysis of the housing rental market of the city of Bellinzona

Testifying experience

Deposition testimony in *Church & Dwight Co. v. Mayer Laboratories, Inc.,* US District Court, Northern District of California, 2012 (on behalf of Church & Dwight)

Workshop of economists at the Federal Communications Commission to discuss certain economic issues of the AT&T/T-Mobile proposed merger, 2011 (on behalf of Sprint Nextel Corporation)

Selected consulting experience

Merger cases

Sysco/US Food blocked merger (Developed dynamic auction models with bilateral bargaining between bidding rounds)

AT&T/DIRECTV merger (Developed gross upward pricing pressure indices that account for mixed bundling of complementary services)

Hertz/Dollar Thrifty merger (Developed gross upward pricing pressure indices that account for capacity expansion incentives)

AT&T/T-Mobile blocked merger (Developed coordination price pressure index for parallel accommodating conduct)

CCC/Mitchell blocked merger (Developed merger simulation models of bidding competition)

Suncor/Petro-Canada merger (Developed a merger simulation model to analyze alternative divestiture scenarios)

Miller/Coors joint venture (Developed market definition tests for industries with multi-product firms. Developed price coordination models based on alternative tacit collusion agreements)

Sirius/XM merger (Developed theoretical and simulation models of competition with dynamic demand spillovers)

Harland/Clarke merger (Developed theoretical economic models of tournament competition, e.g., "beauty contests" and "bidding contests" with risky investments in product quality)

Sprint/Nextel merger (Developed a merger simulation model with capacity constraints and price coordination)

GE/Honeywell proposed merger (Developed theoretical economic models of mixed bundling strategies)

Heinz/Beechnut proposed merger (Developed a merger simulation model that accounts for price effects at the manufacturing and retailing levels and for efficiencies in the form of cost savings and quality increases)

CBS/Viacom merger (Developed a theoretical model of the entry investment process in the programming industry)

Regulatory proceedings

Report to the FCC suggesting policy changes for retransmission consent negotiations (Developed bargaining models with brinkmanship tactics and threats of temporary blackouts)

Report by Tasneem Chipty to the Copyright Board of Canada regarding royalties for online music (Developed bargaining models to set reasonable tariffs for right holders, i.e., CSI and SOCAN)

In the context of debit card interchange fee regulations in Australia (Developed simulation models of the effects of reducing debit card interchange fees on merchant profits and consumer welfare (under alternative assumptions on pass-through rates), and on prices of debit card services and other bank services, with and without cross-subsidization)

In the context of DOT's NPRM proposals regarding computer reservation system regulations (Developed theoretical and simulation models of vertical foreclosure in bargaining market)

Antitrust litigation

In the context of the Federal Trade Commission's investigation of Church & Dwight (Developed simulation models of shelf space share discounts)

In the context of the European Commission's investigation of Qualcomm (Developed a simulation model with pass-through and consumer harm from excessive royalties)

Damages

In the context of Ortho Biotech v. Amgen (Developed a damage simulation model of bundled discounts)

Selected consulting reports

"Why Restricting Participation in Spectrum Auctions Can Increase Bidder Participation, Increase Auction Revenues, and Increase Competition in Wireless Markets." With Stanley M. Besen and Steven C. Salop. Submitted to the Federal Communications Commission on behalf of Sprint Nextel Corporation, 2013.

"Critique of the Dominant Firm Model as Applied to the Proposed Hertz/Dollar Thrifty Transaction." With Steven C. Salop, John Woodbury, Peter Boberg, and Jeffrey Prisbrey. Submitted to the Federal Trade Commission on behalf of Hertz, 2011.

"Economic Analysis of the Merger of AT&T and T-Mobile." With Steven C. Salop, Stanley M. Besen, Stephen D. Kletter, and John R. Woodbury. Submitted to the Federal Communications Commission on behalf of Sprint Nextel Corporation, 2011.

"Economic Analysis of Debit Card Regulation Under Section 920." With Steve C. Salop, Craig Romaine, Steve Kletter, and Yianis Sarafidis. Submitted to the Federal Reserve Board on behalf of the Merchants Payments Coalition, 2010.

"Economic Analysis of Broadcasters' Brinkmanship and Bargaining Advantages in Retransmission Consent Negotiations." With Steven C. Salop, Tasneem Chipty, Martino DeStefano, and John R. Woodbury. Submitted to the Federal Communications Commission on behalf of Time Warner Cable, 2010.

"The Effects of Qualcomm's Excessive Handset Royalties on Retail Prices and Consumer Welfare: A Simulation Analysis." With John Hayes. Submitted to the European Commission on behalf of Broadcom, 2008.

"Economic Analysis of the Competitive Effects of the Sirius-XM Merger." With Steven C. Salop, Steven R. Brenner, and Lorenzo Coppi. Submitted to the Federal Communications Commission on behalf of XM, 2007.

"Listening To and Understanding Customers' Views: M & F Worldwide Corp.'s Proposed Acquisition of John H. Harland Company." With Andrew Dick. Submitted to the Department of Justice on behalf of M & F Worldwide Corp., 2007.

"Vertical Competition Issues in the Proposed Toll/Patrick Merger." With Henry Ergas, Gary Roberts, Mike Smart, Chris Pleatsikas, and Astrid Jung. Submitted to the Australian Competition and Consumer Commission on behalf of Toll Group, 2005.

"News Corporation's Partial Acquisition of DIRECTV: Economic Analysis of Vertical Foreclosure Claims." With Steven C. Salop, Carl Shapiro, David Majerus, and E. Jane Murdoch. Submitted to the Federal Communications Commission on behalf of DIRECTV, 2003.

Technical appendix to "Economic Analysis of DOT's NPRM Proposals." With Steven C. Salop and John R. Woodbury. Submitted to the Department of Transportation on behalf of Sabre, Inc., 2003.

"An Economic Analysis of the Effects of the AT&T-MediaOne Merger on Competition in the Supply and Distribution of Video Program Services: Response to the Critics." With Stanley M. Besen and John R. Woodbury. Submitted to the Federal Communications Commission on behalf of Sprint Communications Company, L.P., 1999.

"An Economic Analysis of the Effects of Partial Ownership Interests in Cable Systems." With Stanley M. Besen, Daniel P. O'Brien, and John R. Woodbury. Submitted to the Federal Communications Commission on behalf of Tele-Communications, Inc., 1998.

Publications

"Sirius/XM Satellite Radio Merger (2008)." With Steven C. Salop. In: *The Antitrust Revolution: Economics, Competition, and Policy*. Edited by J. Kwoka and L. White. New York: Oxford University Press, 6th ed., 2014.

"vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers." With Steven C. Salop. Forthcoming in *Antitrust Law Journal*.

"Commissioner Joshua Wright on Foreclosure Analysis As Applied to Exclusive Dealing, Slotting Contracts, and Other Vertical Restraints." *Antitrust Source*, 2013.

"An Economic Analysis of the AT&T-T-Mobile USA Wireless Merger." With Stanley M. Besen, Stephen D. Kletter, Steven C. Salop, and John R. Woodbury. *Journal of Competition Law and Economics*, 2013.

"Price Discrimination in Input Markets: Analysing Competitive Effects Following the *Nationwide Poles* Case." With Uğur Akgün and Robert Stillman. *The Development of Competition Law and Economics in South Africa.* Edited by K. Moodaliyar and S. Roberts. HSRC Press, Cape Town, South Africa, 2012.

"Unilateral Effects of Mergers with General Linear Demand." With Jerry Hausman and Mark Rainey. *Economics Letters*, 2011.

"Issues and Significance beyond US Enforcement." With Cristina Caffarra. *MLex Magazine*, 2010.

"The Use of Upward Price Pressure Indices in Merger Analysis." *Antitrust Source*, 2010.

"Implementing the Hypothetical Monopolist SSNIP Test with Multi-Product Firms." With Steven C. Salop and John R. Woodbury. *Antitrust Source*, 2008.

"A Few Righteous Men: Imperfect Information, Quit-for-Tat and Critical Mass in the Dynamics of Cooperation." With Steven C. Salop. *Economics for an Imperfect World: Essays in Honor of Joseph E. Stiglitz.* Edited by R. Arnott, B. Greenwald, R. Kanbur, and B. Nalebuff. MIT Press, Cambridge, Massachusetts, 2003.

"Information Acquisition and Research Differentiation Prior to an Open-Bid Auction." *International Journal of Industrial Organization*, 2000.

"Uncertain Lifetime, Risk Aversion and Intertemporal Substitution." *Economics Letters,* 1999.

"Front-Running by Mutual Fund Managers: A Mixed Bag." With Jean-Pierre Danthine. *European Finance Review*, 1998.

"Optimal Taxation and Firm Formation: A Model of Asymmetric Information." *European Economic Review*, 1998.

"Pure and Utilitarian Prisoner's Dilemmas." With Steven Kuhn. *Economics and Philosophy*, 1995.

"Volatility, Information, and Noise Trading." With Jean-Pierre Danthine. *European Economic Review*, 1993.

Unpublished articles

"Ricardian Equilibrium with Stochastic Free Entry." With Steven C. Salop. Mimeo, 2001.

"Decentralized Trading and the Walrasian Outcome: On the Importance of Search Costs." Mimeo, 1997.

"Optimal Consumption When Mortality Rates Are Not Constant: Time Consistency and the Role of Life Insurance Markets." With John Cuddington. Working Paper No. 95-06, Georgetown University, 1995.

"Insider Trading: Fundamentals-Information versus Trade-Information." With Jean-Pierre Danthine. Working Paper No. 94-01, Georgetown University, 1994.

"Intermediation in Markets with Sequential Bargaining and Heterogeneous Buyers and Sellers." PhD Thesis: Essay 1. MIT, 1991.

"Enchères et Contrats Linéaires Optimaux." MA Thesis: No. 12. DEEP, Université de Lausanne, Switzerland, 1986.

Working papers

"Strategic Incentives When Supplying to Rivals." With Marius Schwartz.

"cGUPPI: Scoring Incentives to Engage in Parallel Accommodating Conduct." With David Reitman, Steven C. Salop and Yianis Sarafidis.

"Recovering Diversion Ratios with Price Reactions Functions." With Peter Boberg and Yianis Sarafidis.

"A Model of Sequential Bargaining." With Steven C. Salop and Yianis Sarafidis.

"Two-Period Bertrand Simulation Model with Dynamic Demand." With Steven C. Salop.

"Mergers in Bargaining Markets." With Steven C. Salop.

"Bilateral Bargaining: A Pedagogical Note." With Steven C. Salop.

Referee reports

American Economic Review, *Economic Theory*, *European Economic Review*, *International Economic Review*, *Journal of Economic Theory*, *Journal of Economics*, and *RAND Journal of Economics*